

CLASS 84, MUSIC**SECTION I - CLASS DEFINITION**

This class includes the instruments used in producing music and includes (1) electrical music instruments, (2) automatic instruments, and (3) those hand played. The automatic instruments and the hand played instruments have a parallel classification so far as seems practical, and in both the patents are divided in the usual way into four groups, stringed, wind, rigid vibrators, and membranes. Then follow details or features common to groups (1), (2), and (3). This class also includes some accessory devices generally recognized as belonging to the art or industry.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

Instruments furnishing a sound of only one pitch, even if it might be used for musical purposes, are generally to be found in Class 116, Signals and Indicators; Class 446, Amusement Devices: Toys, subclasses 207-209 and 397-422; Class 472, Amusement Devices, subclass 64; or Class 623, Prosthesis (i.e., Artificial Body Members), Parts Thereof or Aids and Accessories Therefor, subclass 9 for larynxes.

Phonographs, unless in combination with a recognized musical instrument, are to be searched for in Class 369, Dynamic Information Storage or Retrieval.

Printed music and systems of notation are to be found in Class 84 (this class), Music, subclass 483.2.

Bellows and wind flow regulators, unless specifically adapted to musical instruments are to be found in Class 60, Power Plants; subclasses 407-412; Class 91, Motors: Expansible Chamber Type; Class 92, Expansible Chamber Devices; and Class 417, Pumps.

Many features of construction or manufacture should be sought for in woodworking or metal-working and many details not limited to this art in appropriate classes, such as pedals, supports, clamps, cases, springs, etc.

For instrument supports of general application not claimed in combination with musical instruments or structurally limited to use with specific musical instruments, see Class 248, Supports, appropriate subclasses.

SECTION III - REFERENCES TO OTHER CLASSES**SEE OR SEARCH CLASS:**

- 381, Electrical Audio Signal Processing Systems and Devices, subclass 118 for amplifying and reproducing the sounds of musical instruments.
- 984, Musical Instruments, an alternative search of the type of subject matter generally found in Class 84 may also be found in Class 984 which is based on a modification of the European Patent Office.

SUBCLASSES

- 1 INSTRUMENTS:**
This subclass is indented under the class definition. Patents not classified in any of the subclasses below.
- 2 Combined:**
The instrument includes two sets of sounding-bodies which belong to different groups, as specified above.
- (1) Note. Drums, chimes, etc., used as attachments to pianos belong here or in subclass 3 or subclass 6.
- 3 Electric:**
The instruments have electric circuits.
- 4 With phonograph:**
This subclass is indented under subclass 3. A piano or other accompaniment is provided for a phonograph cylinder or disk.
- SEE OR SEARCH CLASS:**
- 352, Optics: Motion Pictures, subclasses 12 through 24 for synchronizing a sound-producer with a cinematograph.
- 5 Electrical connections:**
This subclass is indented under subclass 4. The synchronizing devices include electric circuits.
- 6 Pneumatic:**
This subclass is indented under subclass 3. The sounding-bodies of one or both sets are operated by player-pneumatics.

- 7 Stringed:**
String-playing devices not belonging in a specific subclass.
- 8 With picking devices:**
This subclass is indented under subclass 7. Self-playing banjos, mandolins, zithers, etc., often with fingering devices and pneumatic mechanism.
- 9 Electric:**
This subclass is indented under subclass 8. The instruments have electric circuits.
- 10 With bowing devices:**
This subclass is indented under subclass 7. Self-playing violins, usually with fingering or stopping devices, sometimes with pneumatic mechanism.
- 11 Electric:**
This subclass is indented under subclass 10. The instruments have electric circuits.
- 12 With striking devices:**
This subclass is indented under subclass 7. Stringed instruments of various types with strikers, sometimes operated by pneumatics.
- 13 Pianos:**
This subclass is indented under subclass 7. Patents for the complete instrument or for features not specific to a subclass below.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
105 through 114, for players readily removable from the piano and applicable also to a reed-organ keyboard.
115 through 166, for an invention limited to features of the selecting mechanism.
- 14 Without keys:**
This subclass is indented under subclass 13. Instruments of the piano type for automatic playing exclusively.
- 15 Half width:**
This subclass is indented under subclass 14. Automatic pianos having the strings in two narrow sets.
- 16 Constant power:**
This subclass is indented under subclass 13. The blow is struck by power derived from a rotating shaft or other constantly-operating source.
- 17 Electric control:**
This subclass is indented under subclass 16. The connections between the source of power and the strikers are controlled electrically.
- 18 Key actuators:**
This subclass is indented under subclass 17. The power acts directly on the keys.
- (1) Note. Most of the patents in this and in the preceding subclass are of the roller-and-shoe type.
- 19 Electric power:**
This subclass is indented under subclass 13. The power is derived from a source of electricity.
- 20 Key actuators:**
This subclass is indented under subclass 19. The power acts on the keys.
- 21 With expression:**
This subclass is indented under subclass 20. These patents include means for varying the force of the blow, usually electric resistances.
- 22 By voltage change:**
This subclass is indented under subclass 21. Expression is secured by varying the voltage.
- 23 With expression:**
This subclass is indented under subclass 19. Devices similar to those of subclass 19, but the piano-key is not involved.
- 24 Pneumatic type:**
This subclass is indented under subclass 13. This is the common type of player-piano wherein the blows are caused by small bellows called "striker-pneumatics", one to each hammer.
- (1) Note. The patents classified herein generally disclose a complete mechanism and often claim details of selecting

- mechanism as well as the playing mechanism.
- 25 Key actuators:**
This subclass is indented under subclass 24. Like the preceding subclass except that the striker-pneumatic acts on the key.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
105 through 114, for this feature.
- 26 Grands:**
This subclass is indented under subclass 24. Patents showing a pneumatic action built into a grand piano.
- 27 Connections to piano action:**
This subclass is indented under subclass 26. Patents claiming novelty in the connections from the pneumatics to the grand-piano action.
- 28 Action above keyboard:**
This subclass is indented under subclass 24. Limited to patents in which the claims in terms or in substance require the striker-pneumatics to be above the keyboard.
- 29 Action below keyboard:**
This subclass is indented under subclass 24. Similarly limited to cases having the pneumatics below the keyboard.
- 30 Location of parts:**
This subclass is indented under subclass 24. Patents in which the parts are fitted into the piano in a novel way or are located in unusual positions.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
116, for patents wherein only the tracker-box location is novel.
- 31 With double tracker:**
This subclass is indented under subclass 24. The tracker has two sets of rows of note perforations, both normally in use to obtain expression.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
146, 148, and 152, for sheets and trackers.
- 32 Double length:**
This subclass is indented under subclass 31. The two rows are in the same line, so that the tracker is longer than usual.
- 33 Expression mechanism:**
This subclass is indented under subclass 24. Miscellaneous devices for giving expression to the music.
- (1) Note. In the art, the term “expression” usually refers only to controlling the force of the blow.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
128, through 131, for tempo control.
- 34 Parts of piano moved:**
This subclass is indented under subclass 33. The pedals or other parts of the piano are moved for expression.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
216 through 224, for expression devices.
- 35 Rest rail shifted:**
This subclass is indented under subclass 34. The hammer rest-rail is shifted, usually in sections and without depressing the pedal.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
219 through 223, for pianissimo devices.
- 36 Normally in short stroke position:**
This subclass is indented under subclass 35. Normally the hammers are in position for pianissimo effect.
- 37 Position controlled from reservoir:**
This subclass is indented under subclass 35. The rest-rail is automatically shifted as the wind-pressure in the reservoir varies.
- 38 Graduated shift:**
This subclass is indented under subclass 35. The ends of the rest-rail may move through unequal distances, so the musical effect is graduated from bass to treble.

- 39 Wind pressure varied:**
This subclass is indented under subclass 33. The pressure of wind supplied to some or all of the striker-pneumatics is varied to obtain accent.
- 40 By pumping:**
This subclass is indented under subclass 39. The variation is due to a change in the pumping.
- 41 By throttling:**
This subclass is indented under subclass 39. The variation is due to a change in the cross-section of the wind-passage.
- 42 By regulating chamber:**
This subclass is indented under subclass 39. The variation is due to the action of a variable chamber additional to the reservoir.
- 43 By use of two pressures:**
This subclass is indented under subclass 39. The variation is due to the alternate use of two wind-chambers holding air, respectively, at high and low tension.
- 44 Two cooperating pneumatics to each note:**
This subclass is indented under subclass 33. There are two striker-pneumatics for each note, one or both of which may be used.
- 45 Two opposing pneumatics to each note:**
This subclass is indented under subclass 33. The movement of the striker-pneumatic may be retarded by another pneumatic.
- 46 Transmission varied:**
This subclass is indented under subclass 33. The fulcrum of a lever is shiftable or the connections between the pneumatic and the hammer are otherwise varied.
- 47 Systematic variations:**
This subclass is indented under subclass 33. The force of the blow is systematically or periodically varied independently of the hand-controllers or note-sheet.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
157, for devices to avoid mechanically accurate playing.
- 48 Pneumatic details:**
This subclass is indented under subclass 33. Pneumatic details limited to parts of the expression mechanism.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
50, for similar constructions which do not have this limitation.
- 49 Hand controllers:**
This subclass is indented under subclass 33. Levers or buttons for controlling expression. The patents generally show also tempo-controllers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
164, for expression and tempo marks.
169, for indicators.
- 50 Pneumatic construction:**
This subclass is indented under subclass 24. Improvements in the controlling parts between the reservoir and the striker-pneumatics.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
48, for pneumatic details limited to expression mechanism.
79, for various elements that do not include controlling-pneumatics.
- 51 Both primaries and secondaries:**
This subclass is indented under subclass 50. The pneumatic train includes both primary and secondary valves, sometimes called the "double-valve system".
- 52 Lower leaf moved:**
This subclass is indented under subclass 51. The lower leaf of the striker-pneumatic is the movable one.
- 53 Lower leaf moved:**
This subclass is indented under subclass 50. Like the preceding subclass except that there is no secondary valve.
- 54 Striker pneumatics in wind chest:**
This subclass is indented under subclass 50. The striker-pneumatics are located in the wind-chest.

- (1) Note. Pneumatics in a wind-chest to operate valves are shown in many patents in this art and in the organ art.
- 55 Units:**
This subclass is indented under subclass 50. The construction involves many duplicate parts that are readily detachable.
- 56 Metal:**
This subclass is indented under subclass 55. These parts are of metal.
- 57 Tubes and junctions:**
This subclass is indented under subclass 50. Patents involving the position or location of tubes from the tracker or other part and means for connecting tubes, such as junction plates or bars.
- 58 Bleeds:**
This subclass is indented under subclass 50. Constructions having minute openings into a passage, especially into a tracker-duct.
- 59 With valve:**
This subclass is indented under subclass 58. The bleed is closed by a valve during part of the cycle of operations.
- 60 Valves and seats:**
This subclass is indented under subclass 50. Patents pertaining to automatics having novelty in the valve or its seat.
- 61 Inside:**
This subclass is indented under subclass 60. Patents for double valves, the operating-surfaces of which face one another.
- 62 Outside:**
This subclass is indented under subclass 60. Patents for double valves, the operating-surfaces of which face away from one another.
- 63 Adjustable:**
This subclass is indented under subclass 62. Similar to the preceding except that the distance between the surfaces is adjustable.
- 64 Screening and cleaning:**
This subclass is indented under subclass 50. Means to prevent dust from entering the action or for removing it.
- 65 Power pneumatics:**
This subclass is indented under subclass 24. Pneumatics to strike the keys or throw the hammers or exert power otherwise.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
50 through 64, for pneumatics that shift the valves.
- 66 Connections to hammers:**
This subclass is indented under subclass 65. Patents covering various forms of connections between the pneumatic and the hammer.
- 67 To key:**
This subclass is indented under subclass 66. The connection engages the key.
- 68 To abstract:**
This subclass is indented under subclass 66. The connection engages the abstract.
- 69 To wippen:**
This subclass is indented under subclass 66. The connection engages the wippen.
- 70 Wind-supply devices:**
This subclass is indented under subclass 24. Means not otherwise classified pertaining to the supply of wind.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
355, for wind supply devices.
- SEE OR SEARCH CLASS:
417, Pumps, appropriate subclasses for a pump, per se.
- 71 In grands:**
This subclass is indented under subclass 70. The construction is specially fitted for grand pianos.
- 72 Pedals:**
This subclass is indented under subclass 70. Pedals connected to operate bellows.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
225 through 233, for piano-pedals.
353, and 357, for organ-pedals.
- 73 Folding:**
This subclass is indented under subclass 72. The pedals may be folded into the piano-case.
- 74 With keylock:**
This subclass is indented under subclass 72. Devices to lock the keys when the pedals are drawn out.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
167, for other key-locks.
- 75 With doors:**
This subclass is indented under subclass 72. Pedals with doors to hide them.
- 76 Operating together:**
This subclass is indented under subclass 75. Mechanism to open the doors and throw down the pedals by a single action of the performer.
- 77 Door-carried pedal:**
This subclass is indented under subclass 76. The pedal is attached to the inside of the door.
- 78 Upper panel moved:**
This subclass is indented under subclass 76. The panel in front of the tracker-box is shifted simultaneously with the pedal-door.
- 79 Distribution:**
This subclass is indented under subclass 70. Various elements between the bellows and the controlling-pneumatics, especially reservoirs and wind-chests.
- SEE OR SEARCH CLASS:
417, Pumps, subclasses 279-311 for pumps having condition responsive control of the fluid handled by the pump.
- 80 Key slips:**
The key-slip or part of it is movable to uncover or shift various parts preparatory to playing.
- 81 Upper panel:**
Improvements relating to the panel in front of the tracker-box.
- 82 Lower panel:**
Improvements relating to the panel in front of the pedals.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
75 through 78, for pedals, if claimed.
- 83 Wind:**
Automatic wind instruments not otherwise classified, as accordions, flutes, etc.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
330 through 401, for features not limited to automatic instruments.
- 84 Organs:**
This subclass is indented under subclass 83. Miscellaneous organ constructions having either pipes or reeds, or both.
- 85 Stop actions:**
This subclass is indented under subclass 84. Improvements in the stop-action.
- 86 Cylinder:**
This subclass is indented under subclass 84. The selection of notes is determined by pins on a cylinder.
- 87 Disk:**
This subclass is indented under subclass 84. The selection of notes is determined by projections or perforations on a disk.
- 88 Electropneumatic action:**
This subclass is indented under subclass 84. Electropneumatic organs with automatic control.
- 89 Pneumatic action:**
This subclass is indented under subclass 84. Pneumatic organs with automatic control only.
- 90 With keys:**
This subclass is indented under subclass 89. Pneumatic organs with both automatic and key control.

- for, with a working surface having projections, indentations, or slits.
- 91 Pipe organ:**
This subclass is indented under subclass 89. Pneumatic pipe-organs with automatic control.
- 92 Organettes:**
This subclass is indented under subclass 83. Small reed-organs with hand-operated bellows and a paper sheet serving as valves for the reeds.
- 93 Mouth blown:**
This subclass is indented under subclass 83. The instruments are small enough to be blown by the player.
- 94.1 Combs:**
Miscellaneous instruments having a comb, the teeth of which are tuned to be the sounders.
- SEE OR SEARCH CLASS:
132, Toilet, subclasses 219-163 for toilet combs.
- 94.2 Combined:**
This subclass is indented under subclass 94.1. Miscellaneous instruments combined with other art devices.
- 95.1 Cylinder type:**
This subclass is indented under subclass 94.1. Subject matter wherein the teeth of the comb are picked by pins on a rotating cylinder.
- (1) Note. Includes Swiss music-boxes.
- 95.2 Combined:**
This subclass is indented under subclass 95.1. Subject matter combined with other art devices.
- 96 Cylinder construction:**
This subclass is indented under subclass 95.1. Details of the construction of the cylinder.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
86, for cylinders having pins determining note selection.
- SEE OR SEARCH CLASS:
492, Roll or Roller, subclasses 30-37 for a roll, per se, not elsewhere provided
- 97 Disk type:**
This subclass is indented under subclass 94.1. The teeth of the comb are picked by projections on a rotating disk.
- (1) Note. Includes Regina music-boxes.
- 98 With star wheels:**
This subclass is indented under subclass 97. Star-wheels are used between the disk and comb.
- 99 Multiple disks:**
This subclass is indented under subclass 97. Instruments with two or more disks and generally with devices for setting them in playing position.
- (1) Note. Some are coin-controlled.
- 100 With phonograph spindle:**
This subclass is indented under subclass 97. The motor of the music-box is utilized to drive a spindle for a phonograph.
- 101 Note-sheet type:**
This subclass is indented under subclass 94.1. The selector is a note-sheet and usually operates star-wheels.
- (1) Note. Sometimes the sheet controls the protrusion of pins beyond the surface of a cylinder.
- 102 Bars:**
Automatic instruments having vibrating bars and not elsewhere classifiable.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
2, 3, 6, 403, 404, and 405, for comparable inventions.
- 103 Bells:**
Automatic instruments having vibrating bells and not elsewhere classifiable.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
406, and 407, for comparable inventions.

- 104 Drums:**
Automatic instruments having vibrating drums and not elsewhere classifiable.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
2, 3 and 6, for comparable inventions.
- 105 Outside players:**
Instruments including a sheet or other selector, playing mechanism, and striker to act on the keys of a piano or organ and readily separable from the latter.
- (1) Note. Some have a set of reeds or other sounders.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
24 through 82, for pneumatic-type pianos unless the construction is limited to an outside player.
- 106 Cylinder or disk:**
This subclass is indented under subclass 105. The selector is a cylinder or disk.
- 107 Electric or electropneumatic:**
This subclass is indented under subclass 105. The power is electromagnetic or electropneumatic.
- 108 Cabinet type:**
This subclass is indented under subclass 105. The instrument stands on the floor instead of on the piano.
- 109 Case connectors:**
This subclass is indented under subclass 108. Means for detachably holding the cabinet to the piano.
- 110 Pneumatic:**
This subclass is indented under subclass 108. The playing mechanism includes pneumatics.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
24 through 82, for pneumatic-type pianos unless the construction is limited to an outside player.
- 111 Striker details:**
This subclass is indented under subclass 105. Details of the strikers or fingers that engage the piano-keys.
- 112 Constant power:**
This subclass is indented under subclass 105. The key-striker is operated from a constantly-moving source of power.
- 113 Electric control:**
This subclass is indented under subclass 112. The engagement between the source of power and the striker is controlled electrically.
- 114 Pneumatic control:**
This subclass is indented under subclass 112. The engagement between the source of power and the striker is controlled pneumatically.
- 115 Selectors:**
The means for determining which notes of the piano, organ, etc., shall be sounded.
- (1) Subject matter usually includes a tracker-bar, a perforated sheet, and driving means.
- (2) Note. These features are shown in automatic telegraphs and in patents in many other subclasses of this class, and are sometimes claimed along with playing mechanism, such as in subclasses 24 through 52.
- (3) Note. This subclass includes also details and optical or other attachments to the selector not otherwise classified.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
169, for indicators.
- 116 Tracker-box location:**
This subclass is indented under subclass 115. The invention is in the location or connection of the tracker-box.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
30, for location of piano parts.

- 117 Mechanical fingers:**
This subclass is indented under subclass 115. The note-sheet acts mechanically on movable fingers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
147, for electrical fingers.
- 118 Plurality of sheets:**
This subclass is indented under subclass 115. The instrument carries a plurality of note-sheets and means for driving them.
- 119 Synchronized:**
This subclass is indented under subclass 118. Two sheets are operated simultaneously.
- 120 Single tracker:**
This subclass is indented under subclass 118. The sheets are brought one at a time over a single tracker-bar and then driven separately.
- 121 Sheet not rolled:**
This subclass is indented under subclass 115. Various unusual forms of note-sheets and their feeding means, such as folding sheets, endless sheets, etc.
- 122 Winding and rewinding:**
This subclass is indented under subclass 115. Inventions for moving a sheet not elsewhere classifiable.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
92, for simple friction-rolls.
- 123 With electric features:**
This subclass is indented under subclass 122. Electric mechanism is involved.
- 124 For two types of rolls:**
This subclass is indented under subclass 122. Means to carry rolls of different type or different compass one at a time.
- 125 Shifting gear and clutch:**
This subclass is indented under subclass 122. The mechanism for driving the sheet forward and back includes a shifting-gear and clutch.
- 126 Two clutches:**
This subclass is indented under subclass 122. The mechanism for driving the sheet forward and back includes two clutches.
- 127 Gears:**
This subclass is indented under subclass 122. The mechanism for driving the sheet forward and back includes gears.
- 128 Speed control:**
This subclass is indented under subclass 122. Means for regulating the constant or momentary speed of the note sheet-tempo control.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
49, for hand-controllers.
- 129 Roller and disk or cone:**
This subclass is indented under subclass 128. Patents including this specific variable friction-gear.
- 130 By wind supply:**
This subclass is indented under subclass 128. The speed is controlled by regulating the supply of wind to air-motors.
- 131 Compensation for diameter:**
This subclass is indented under subclass 128. Means to keep the tempo constant as the diameter of the take-up roll increases.
- SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 540-546.1 for drive mechanisms for convolute winding in general, particularly subclass 541 for a linear winding drive.
- 132 Feeding:**
This subclass is indented under subclass 122. Miscellaneous devices for feeding a note-sheet forward. Includes some special take-up rolls.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
92, for most types of simple feed-rolls.

- SEE OR SEARCH CLASS:
226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.
- 242, Winding, Tensioning, or Guiding, subclasses 520-548.4 for convolute winding in general.
- 133 Rewinding:**
This subclass is indented under subclass 122. Devices involved in rewinding, such as springs and weights.
- 134 Brakes:**
This subclass is indented under subclass 122. Means to regulate the tension on the note-sheet.
- SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 410-423.2 for tension control of running material in general.
- 135 Sheet pressers:**
This subclass is indented under subclass 122. Means to control the pressure of the note-sheet on the tracker-bar.
- 136 Registration:**
This subclass is indented under subclass 122. Means to insure proper registration of the sheet perforations with the tracker-holes, usually automatic.
- (1) Note. The tracker may be shifted, or one or both rolls; centering or guiding means.
- SEE OR SEARCH CLASS:
226, Advancing Material of Indeterminate Length, subclass 10 for means to sense and position material of indeterminate length.
- 242, Winding, Tensioning, or Guiding, particularly subclasses 548-548.4 and 615-615.4 for guides of web material in general.
- 137 Movable detector at edge:**
This subclass is indented under subclass 136. The shifting is controlled by one or more movable fingers or other detectors at the edge of the sheet.
- 138 Controlling shifter bellows:**
This subclass is indented under subclass 137. The shifting is done by bellows controlled by the detector.
- 139 Single detector:**
This subclass is indented under subclass 138. The shifting is controlled by a single detector.
- 140 Extra end holes:**
This subclass is indented under subclass 122. The tracker has extra holes near its ends to control the shifting.
- (1) The sheet may or may not have extra cooperating perforations.
- 141 Single end hole:**
This subclass is indented under subclass 140. There is only one extra hole to control the shifting in both directions.
- 142 Extra center holes:**
This subclass is indented under subclass 122. Holes near the middle of the tracker are vented by note perforations in the sheet.
- 143 Flange shifted:**
This subclass is indented under subclass 122. One flange (or both) is shifted on one or both rolls.
- 144 Hand operated:**
This subclass is indented under subclass 122. The tracker-bar or some other part is shifted by hand.
- (1) Note. This feature is found in many patents in preceding subclasses. The shift may be great enough to cause transposition.
- 145 Transposition only:**
This subclass is indented under subclass 122. The relative shift of the tracker and sheet is through one or more semitones to cause a change of key.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
144, for hand-operated parts.
- 146 Trackers and sheets:**
This subclass is indented under subclass 115. Both the tracker and the sheet are modified.
- (1) Note. Includes devices for violins, etc.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
31, and 32, for trackers.
- 147 Electric:**
This subclass is indented under subclass 146. Electric circuits are controlled instead of pneumatic ducts.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
160, for pneumato-electric tracker-bars.
- 148 For organs:**
This subclass is indented under subclass 146. Provision is made for control of stops.
- 149 Vertical:**
This subclass is indented under subclass 146. The tracker is vertical.
- 150 Playing on wind and rewind:**
This subclass is indented under subclass 146. The sheet has two sets of perforations, one set to be used as usual, the other to be used during rewinding.
- 151 Trackers:**
This subclass is indented under subclass 115. Special forms or construction of the tracker or attachments thereto.
- 152 Double scale:**
This subclass is indented under subclass 151. Especially to allow the use of sixty-five or eighty-eight note-sheets at will. There are covers or other means to close either set of ducts.
- (1) Note. In the trackers of subclass 31, both rows are in use together.
- 153 Trackers rigidly connected:**
This subclass is indented under subclass 152. The two rows of holes are in the same bar or in bars fixed together.
- 154 Pivotaly mounted:**
This subclass is indented under subclass 153. The bar is pivoted.
- 155 With slide valves:**
This subclass is indented under subclass 153. Slide-valves determine which row shall be used.
- 156 Duct closers:**
This subclass is indented under subclass 151. Means to close a few ducts at the end of a row if a narrow sheet is used or to close all during rewinding or skipping.
- 157 Modified for expression:**
This subclass is indented under subclass 151. To avoid mechanically accurate playing.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
47, for systematic variations.
- 158 Metal:**
This subclass is indented under subclass 151. The tracker-bar is of metal.
- 159 Extensible:**
This subclass is indented under subclass 151. The bar is adjustable in length.
- 160 Pneumato-electric:**
This subclass is indented under subclass 151. The tracker-bar has ducts admitting air to pouches or small bellows that operate electric switches.
- 161 Note sheets:**
This subclass is indented under subclass 115. Improvements in the sheet, its material, construction, perforations, or attachments.
- 162 Ends and joints:**
This subclass is indented under subclass 161. Improvements at the free end of the sheet or in means for joining two ends together.

- 163 Overlapping holes:**
This subclass is indented under subclass 161. Perforations for two successive notes overlap to produce a legato effect or for accent, etc.
- 164 With expression and tempo marks:**
This subclass is indented under subclass 161. The sheet bears lines or other marks to indicate the proper expression or tempo.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
49, and 169, for cooperating parts.
- 165 With marks for voice:**
This subclass is indented under subclass 161. The sheet bears words or marks to indicate a vocal part.
- 166 With projections:**
This subclass is indented under subclass 161. The sheet or disk has projections, sometimes adjustable, instead of perforations.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
97 through 100, for disk type.
- 167 Key locks:**
Means to prevent the keys from moving as the piano is played.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
74, for devices to lock piano keys.
- 168 Couplers:**
Means, usually pneumatic, for sounding two notes together, especially octaves.
- 169 Indicators:**
Indicators of various kinds connected to automatic instruments.
- 170 Combined:**
This subclass is indented under subclass 1. Instruments having sounders belonging to two of the four groups, such as a piano or organ with bell, bar, or drum attachment.
- 171 Electric:**
This subclass is indented under subclass 170. Combined instruments employing electric circuits.
- 172 Piano and organ:**
This subclass is indented under subclass 170. Combination of a piano and reed (or pipe) organ, often with means for disconnecting one set of sounders from the keys.
- 173 Stringed:**
This subclass is indented under subclass 1. Miscellaneous stringed instruments and devices relating thereto not classifiable elsewhere.

(1) Note. Includes Aeolian harps.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
600 through 746, for electrical musical tone generation.
- 174 Pianos:**
This subclass is indented under subclass 173. Miscellaneous patents showing pianos of unusual shape or claiming several features or not elsewhere classifiable.

(1) Note. Many features of a piano are common to other instruments and should be searched for in appropriate subclasses of automatic, stringed, or wind instruments, rigid vibrators, or general features in this class.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
170 through 172, for pianos having bells or other sounding attachments.
- 175 Duplex:**
This subclass is indented under subclass 174. Two sets of strings and sometimes two keyboards.
- 176 Separable:**
This subclass is indented under subclass 174. The piano is conveniently separable into parts, especially for ease of transportation.

- 177 Cases:**
This subclass is indented under subclass 174. The improvements are in the case.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
75, and 80-82, for cases for pneumatic pianos.
430, and 431, for key-beds or key-bottoms.
- 178 Fall boards and desks:**
This subclass is indented under subclass 177. The improvements related to both the music-desk and the fall-board over the keys.
- 179 Fall boards:**
This subclass is indented under subclass 177. The improvements relate to the fall-board alone.
- (1) Note. Includes devices for equalizing the movements of the ends.
- 180 Music desks or racks:**
This subclass is indented under subclass 177. The improvements relate to the music desk or rack.
- 181 Music receptacles:**
This subclass is indented under subclass 177. The case has pockets or shelves for holding music or music-rolls.
- 182 Swells:**
This subclass is indented under subclass 177. The case has shutters or slides to control the escape of sound.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
189, 346 and 372, for resonance devices.
- 183 Protectors:**
This subclass is indented under subclass 177. Means to protect the case, especially around the pedals.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
177, for piano cases.
- 184 Frames, string plate and sounding boards:**
This subclass is indented under subclass 174. All three parts are modified.
- 185 Frames and string plates:**
This subclass is indented under subclass 174. Both parts are modified.
- 186.1 Frames:**
This subclass is indented under subclass 174. Subject matter having improvements in the frames or backs of wood or metal.
- 186.2 Wrest planks:**
This subclass is indented under subclass 186.1. Subject matter having improvements in the wrest planks.
- 187 String plates and sounding boards:**
This subclass is indented under subclass 174. Improvements in the two features.
- 188 String plates:**
This subclass is indented under subclass 174. Improvements in the metal plate.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
200, for tuning devices.
208, through 215, for bridges.
- 189 Resonance devices:**
This subclass is indented under subclass 174. Devices to communicate to the air vibrations due to the strings or to modify them in loudness or quality.
- (1) Note. These devices do not directly affect the movement of the strings.
- (2) Note. Some expression devices (subclass 216, etc.) might come under this broad definition, but most of them affect the amplitude or form of vibration of the strings and are under control of the player.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
182, for swells.
224, for auxiliary strikers.
234, for harmonic dampers.
294, for resonance devices.

- 295, for auxiliary strings.
- 190 Supports or platforms:**
This subclass is indented under subclass 189. Resonant supports on which the instrument may stand.
- 191 Insulators:**
This subclass is indented under subclass 189. Devices supposed to prevent the wasteful transmission of energy, such as to the floor.
- 192 Sounding boards:**
This subclass is indented under subclass 189. The principal means by which the energy of the vibrating string is communicated to the air.
- 193 Materials:**
This subclass is indented under subclass 192. Sounding-boards made of unusual material, especially metal.
- 194 Multiple:**
This subclass is indented under subclass 192. Boards additional to the main sounding board and hollow bodies analogous to a violin.
- 195 Ribbing:**
This subclass is indented under subclass 192. Modifications in the location, arrangement, or structure of the ribs.
- 196 Crowning devices:**
This subclass is indented under subclass 192. Means to maintain the board in an arched form.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
184, through 188, for frames, string plates, and sounding boards.
- 197 Stringing:**
This subclass is indented under subclass 174. Modifications in the location or arrangement of the strings.
- 198 Auxiliary strings:**
This subclass is indented under subclass 197. Extra strings or extensions furnishing unisons or harmonics that may be struck by the hammer or may vibrate sympathetically.
- 199 Strings:**
This subclass is indented under subclass 174. Special material or construction of the strings.
- SEE OR SEARCH CLASS:
57, Textiles: Spinning, Twisting, and Twining, subclasses 210 through 235 for spirally wrapped strands of general application.
- 200 Tuning devices:**
This subclass is indented under subclass 174. Miscellaneous devices for straining the strings.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
304, for tuning pegs.
305, for friction increasers.
306, for worm gear.
- 201 Simple pin:**
This subclass is indented under subclass 200. Integral pins.
- 202 Locking devices:**
This subclass is indented under subclass 200. Pins with means for locking them or for increasing the friction.
- 203 Involving two pins:**
This subclass is indented under subclass 202. Devices that involve two pins.
- 204 Worm gear:**
This subclass is indented under subclass 200. Devices that involve a worm-gear.
- 205 Direct pull:**
This subclass is indented under subclass 200. The string is pulled directly, not wound on a pin.
- 206 With push piece:**
This subclass is indented under subclass 200. The string is fastened to a movable block.
- 207 With lever:**
This subclass is indented under subclass 200. The string is fastened to a lever.

- 208 Transverse pressure:**
This subclass is indented under subclass 200. The tuning-pin deflects the string from a straight line.
- 209 Bridges:**
This subclass is indented under subclass 174. Patents for bridges not belonging in the subclasses below.
- (1) Note. The vibrating length of the string is determined by its bearing on the two bridges, one on the sounding-board and the other usually on the wrest-plank or on the string-plate. If on the plate, it is sometimes distinguished as the "scale rib". If the two bridges are not on the same side of the string, the one near the hammer-line may be called "inverted". Often the hammer-stroke tends to lift the string from the bridge on the plank, so in some early pianos a sort of screw-eye called an "a gaffe" was used, while in later times many sorts of clamps or holders have been devised to hold the strings on their bridges, and confusing names have been given them.
- 210 Inverted:**
This subclass is indented under subclass 209. See Note to subclass 209.
- 211 Agraffes:**
This subclass is indented under subclass 209. See Note to subclass 209.
- 212 On sounding board:**
This subclass is indented under subclass 209. The principal bridge, usually long, curved and near the hitch-pins.
- 213 With string holders:**
This subclass is indented under subclass 212. Means on the bridge for clamping or holding the strings in place.
- 214 String clamps or holders:**
This subclass is indented under subclass 209. Means for clamping or holding a string not on the main bridge.
- 215 Depressing bars:**
This subclass is indented under subclass 209. Bars for holding the strings firmly against the bridge on the string-plate; sometimes called "capo-tasto bars".
- 216 Expression devices:**
This subclass is indented under subclass 174. Various means for changing the quality of tone of a piano.
- (1) Note. See (2) Note to this class, subclass 189.
- 217 Dampers lifted:**
This subclass is indented under subclass 216. Many or all of the dampers are lifted, so that their strings may enter into sympathetic vibration.
- (1) Note. This is the ordinary "forte" arrangement controlled by the damper-pedal.
- 218 Dampers held:**
This subclass is indented under subclass 216. The sustaining or third pedal device to retain only those dampers which are raised by the keys at the time the damper is applied.
- 219 Pianissimo devices:**
This subclass is indented under subclass 216. Devices to soften the blow of the hammer or produce a softer sound.
- (1) Note. Such devices may render the piano silent.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
35 through 38, for shifted hammer rest-rails.
- 220 Curtain type:**
This subclass is indented under subclass 219. A curtain is interposed between the hammer and the strings.
- (1) Note. Called "celeste" in old patents.
- 221 Hammer stroke shortened:**
This subclass is indented under subclass 219. This is the common modern construction.

- 222 Lost-motion preventers:**
This subclass is indented under subclass 221. Devices to prevent a gap in the connections between the keys and hammer-butts.
- 223 In grand actions:**
This subclass is indented under subclass 222. Similar devices adapted to grand-actions.
- 224 Auxiliary strikers:**
This subclass is indented under subclass 216. Small weighted tongues in the path of the hammers to strike the strings.
- (1) Note. Sometimes called a “mandolin attachment”.
- 225 Pedal mechanism:**
This subclass is indented under subclass 216. Means to operate the expression devices and details thereof.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
216 through 233, for expression devices.
- 226 Locks:**
This subclass is indented under subclass 225. Means to hold the mechanism in operated position.
- 227 Spring fulcrum:**
This subclass is indented under subclass 225. One of the levers is carried on a spring instead of on bearings.
- 228 Bearings:**
This subclass is indented under subclass 225. Bearings specially adapted for use in this mechanism.
- 229 Pedals:**
This subclass is indented under subclass 225. The exposed levers of the mechanism.
- 230 Auxiliary:**
This subclass is indented under subclass 229. Pedals supplementary to the usual pedals, generally for children’s use.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
358, for similar devices.
- 231 Pedal carried:**
This subclass is indented under subclass 230. The supplementary part is clamped to the pedal.
- 232 With footrest:**
This subclass is indented under subclass 230. The supplementary part is carried on a foot-stool.
- 233 Mouse guards:**
This subclass is indented under subclass 225. Devices to prevent the entrance of mice through the pedal-openings.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
353, for modifications of the case around the pedals.
- 234 Harmonic dampers:**
This subclass is indented under subclass 174. Means to touch a string at the middle or other nodal point, so causing it to produce a harmonic tone.
- 235 Couplers:**
This subclass is indented under subclass 174. Devices to operate two hammers from a single key.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
373, for devices causing two notes.
424, for keyboards like those of a pipe organ and couplers therefore.
- 236 Hammers actions:**
This subclass is indented under subclass 174. Patents covering the parts between the key and the strings, usually called collectively, a “piano-action”.
- (1) Note. The keys are not treated as parts of the action.
- (2) Note. The title distinguishes from the pedal-actions of an ordinary piano.
- SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, subclasses 512 through 514 and 560-563 for similar devices.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
323, and 324, for simple actions.
423, for keyboards.
426, for pedals to operate the hammers.
- 237 Horizontal:**
This subclass is indented under subclass 236. These actions are mostly for the old type of square pianos.
- 238 Down striking:**
This subclass is indented under subclass 237. The hammers strike downward instead of upward.
- 239 Grand:**
This subclass is indented under subclass 237. The modern standard action of the Herz-Erard type, in which the jack and repetition-lever both engage the nose on the hammer.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
237, for other types of hammer action.
- 240 Upright:**
This subclass is indented under subclass 236. Miscellaneous types of action for pianos having strings in a nearly vertical plane.
- 241 Jack serving as retractor:**
This subclass is indented under subclass 240. The jack positively retracts the hammer, so that a bridle is not needed.
- 242 Standard type:**
This subclass is indented under subclass 240. The common action, each unit of it including a wippen carrying a jack, a damper-spoon, a back-check, and a bridle-wire.
- 243 Details:**
This subclass is indented under subclass 236. Patents for features not elsewhere classifiable.
- 244 Power-operated hammers:**
This subclass is indented under subclass 243. The hammer is driven by power controlled by the key.
- 245 Sostenuto:**
This subclass is indented under subclass 244. Devices for producing sustained tone instead of the ordinary evanescent one.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
105 through 114, for outside players.
- 246 Electric striker:**
This subclass is indented under subclass 244. The striker is moved by an electromagnet.
- 247 Jack constantly controlled:**
This subclass is indented under subclass 243. Actions designed to give the player constant control of the hammer, such as clavichord players had.
- 248 Inverted jack:**
This subclass is indented under subclass 243. The jack is pivoted at its top and escapes at the bottom.
- 249 Jointed jack:**
This subclass is indented under subclass 243. The jack is pivoted at top and bottom and jointed near the middle—a kind of reversed toggle.
- 250 Action frames:**
This subclass is indented under subclass 243. Frames carrying the parts of the action and the rails of the expression devices.
- 251 Flanges and joints:**
This subclass is indented under subclass 243. The hingelike parts by which the moving parts are attached to one another or to the rails.
- 252 Continuous:**
This subclass is indented under subclass 251. Several flange units are integrally connected together.
- 253 Checks:**
This subclass is indented under subclass 243. Devices for catching the hammer and holding it at rest after it has recoiled from the string.

- 254 Hammer heads:**
This subclass is indented under subclass 243. Improvements in the striking parts of the hammer and in hammer-felts.
- SEE OR SEARCH CLASS:
144, Woodworking, subclass 29 for piano-hammer felting.
- 255 Damper heads and stems:**
This subclass is indented under subclass 243. Improvements in damper-heads.
- (1) Note. Dampers are shown in numerous patents for pianos or piano-actions or automatic pianos or stringed instruments.
- 256 Bowed or violin pianos:**
This subclass is indented under subclass 174. Instruments having many strings excited by friction; "violin-pianos".
- SEE OR SEARCH THIS CLASS, SUBCLASS:
325, for bowing mechanisms.
326, for keys operating fretting or fingering means.
- 257 With belt bow:**
This subclass is indented under subclass 256. In these the exciting means is a belt.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
325, for bowing mechanisms.
326, for keys operating fretting or fingering means.
- 258 Plectrum:**
This subclass is indented under subclass 174. The strings are picked, somewhat as in the old harpsichords.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
320, for picking devices.
- 263 Combined:**
This subclass is indented under subclass 173. Instruments having two sets of strings, often on different necks or on opposite sides of the body.
- (1) Note. The following subclasses--264 to 289--are intended only for features specific to the instrument named. If the feature is applicable to instruments of two kinds, as a harp and violin, the patent is classified under this class, subclass 290, and indented subclasses.
- 264 Harps:**
This subclass is indented under subclass 173. These have many strings of graduated length stretched on a frame consisting of the body, neck, and pillar; the strings are exposed on both sides to the player's hands.
- 265 Bodies:**
This subclass is indented under subclass 264. Patents for harps where the improvement is in the body only.
- 266 Erard action:**
This subclass is indented under subclass 264. Patents for improvements in the mechanism by which the pitch of the strings is changed one or two semitones.
- 267 Guitars:**
This subclass is indented under subclass 173. Patents showing a few strings stretched along a fretted neck, unless clearly belonging to a subclass below.
- 268 Mandolins:**
This subclass is indented under subclass 173. The patents herein relate almost exclusively to the body.
- 269 Banjos:**
This subclass is indented under subclass 173. Instruments having a flexible head and a neck.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
193, for metal heads.
- 270 Resonance devices:**
This subclass is indented under subclass 269. Means to change the quality of the banjo-tones by an attachment or especially by partly-closed air-cavities.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
294, for resonance devices.
- 271 Closed back:**
This subclass is indented under subclass 270. Banjos having the back partly or wholly closed.
- 272 Two rings:**
This subclass is indented under subclass 270. Banjos in which the head is stretched over two concentric rings.
- 273 Mutes:**
This subclass is indented under subclass 270. A mute or damper for pressing on the head.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
310, for violin-mutes.
- 274 Violins:**
This subclass is indented under subclass 173. Improvements not likely to be applicable to any instruments other than those of the violin family and not belonging in subclasses below; also patents involving two specific features.
- 275 Bodies:**
This subclass is indented under subclass 274. Modifications in the body of a violin.
- 276 Bass bars:**
This subclass is indented under subclass 275. Changes in the bass-bar.
- 277 Sound posts:**
This subclass is indented under subclass 275. Changes in the sound-post.
- 278 Combined chin rest and support:**
This subclass is indented under subclass 274. Patents covering a combination of the two features.
- 279 Chin rests:**
This subclass is indented under subclass 274. Changes in chin-rests.
- 280 Supports:**
This subclass is indented under subclass 274. Changes in supports for a violin or violoncello.
- 281 Positioning devices:**
This subclass is indented under subclass 274. Means for holding the player's arm and the violin in proper position.
- 282 Bows:**
This subclass is indented under subclass 274. Modifications in the construction of violin-bows.
- 283 Bow guides:**
This subclass is indented under subclass 274. Devices for guiding the bow in proper relation to the strings.
- 284 Dulcimers:**
This subclass is indented under subclass 173. Strings stretched over a sounding-board to be struck by hammers in the player's hands.
- 285 Zithers:**
This subclass is indented under subclass 173. Strings stretched over a sounding-board in position to be picked; the strings are often divided into melody-strings and accompaniment-strings, the former sometimes lying over a finger-board.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
290 through 329, for other features associated with stringed instruments.
- 286 Chord selectors:**
This subclass is indented under subclass 285. Instruments, usually of the zither type, in which strings are sounded in chord groups, specifically by multiple picks or hammers fixed on a bar and operating simultaneously.
- 287 Damper-bar type:**
This subclass is indented under subclass 286. The dampers mute all strings except those needed for the desired chord.
- (1) Note. This subclass covers the original "auto-harp".
- 288 Dampers independent:**
This subclass is indented under subclass 287. These dampers may be operated by hand or by a tune-sheet.

- 289 Guard-plate type:**
This subclass is indented under subclass 286. The plate has holes through which a pick strikes strings that furnish a chord.
- 290 Details:**
This subclass is indented under subclass 173. Includes features not practically limited to a single one of the well-known types of stringed instruments in the subclasses above.
- 291 Bodies:**
This subclass is indented under subclass 290. Hollow resonance-bodies for instruments having a neck.
- (1) Note. For bodies special to any one type of instrument see the subclass relating to such instrument.
- 292 Metal:**
This subclass is indented under subclass 291. Bodies of metal.
- 293 Necks:**
This subclass is indented under subclass 290. Patents covering the construction of the neck or its connection or inclination to the body.
- 294 Resonance devices:**
This subclass is indented under subclass 290. Devices for changing the quality of tone of an instrument, as air-cavities, extra sounding-boards, sympathetically-vibrating parts, or small membranes.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
234, for harmonic dampers.
- 295 Auxiliary strings:**
This subclass is indented under subclass 294. Extra strings inside or outside of the body.
- 296 With diaphragm:**
This subclass is indented under subclass 294. The string sets a diaphragm in vibration.
- (1) Note. A horn is usually shown.
- 297 Strings and fastenings:**
This subclass is indented under subclass 290. Improvements in the string and the means for fastening it.
- (1) Note. In this and the next six subclasses, there are many devices for correcting the lengths of strings or tuning them or changing the pressure on the bridge.
- 298 Guitar bridges:**
This subclass is indented under subclass 297. These usually hold the end of the string and a separate tailpiece is not necessary.
- 299 Guitar bridges with tailpieces:**
This subclass is indented under subclass 297. Both a bridge and a tailpiece are used.
- 300 Banjo tailpieces:**
This subclass is indented under subclass 297. Tailpieces specially adapted to a banjo.
- 301 Mandolin tailpieces:**
This subclass is indented under subclass 297. Tailpieces specially adapted to a mandolin.
- 302 Violin tailpieces:**
This subclass is indented under subclass 297. Tailpieces specially adapted to a violin.
- 303 Spools:**
This subclass is indented under subclass 297. Devices for winding up the surplus length of string.
- 304 Tuning pegs:**
This subclass is indented under subclass 297. Patents mostly for simple tuning-pegs, sometimes with means for gripping the string.
- 305 Friction increasers:**
This subclass is indented under subclass 304. Means for holding the peg more tightly than usual.
- 306 Worm gear:**
This subclass is indented under subclass 297. Tuning devices having a worm-gear.
- (1) Note. Sometimes called "machine head" or "patent head".

- 307 Bridges:**
This subclass is indented under subclass 290. Bridges not limited to the following subclasses.
- 308 Banjo:**
This subclass is indented under subclass 307. Bridges specially adapted to a banjo-head.
- 309 Violin:**
This subclass is indented under subclass 307. Bridges specially adapted to a violin.
- 310 Violin mutes:**
This subclass is indented under subclass 307. Devices to be applied to violin-bridges; sordines.
- 311 Attached:**
This subclass is indented under subclass 310. The mute is attached to the violin and can be readily shifted into operative position.
- 312 Tunings:**
This subclass is indented under subclass 290. Unusual tunings or arrangement of chord groups, particularly in zithers.
- 313 Tremolo devices:**
This subclass is indented under subclass 290. Device for producing amplitude modulation.
- 314 Finger boards and frets:**
This subclass is indented under subclass 290. Includes the structure of the finger-board, markings on it, frets, and nuts.
- 315 Fingering devices:**
This subclass is indented under subclass 290. Devices to shorten or stop a string at proper points, as a guitar player does with his finger.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
326, for devices with keyboard.
- 316 For semitone:**
This subclass is indented under subclass 315. Devices to sharp or flat a note, so as to change the key.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
266, for mechanisms that change the pitch of strings.
- 317 For chords:**
This subclass is indented under subclass 315. Devices to finger several strings at once, so that a chord may be produced.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
443, for chord players.
- 318 Capo tastos:**
This subclass is indented under subclass 317. Clamps to shorten all the strings of a guitar or to perform an equivalent operation on other instruments.
- 319 Stopping fingers or blocks:**
This subclass is indented under subclass 315. Devices held by the player to stop one or more strings, such as on the Hawaiian guitar.
- 320 Picking devices:**
This subclass is indented under subclass 290. Miscellaneous devices for picking, plucking, or pulling strings.
- (1) Note. This subclass and the next two subclasses deal with devices for “playing” or exciting the strings.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
8, 258, 404, and 409, for similar devices.
- 321 Picks on reciprocating carriage:**
This subclass is indented under subclass 320. All the picks are reciprocated at once.
- 322 Hand or finger picks:**
This subclass is indented under subclass 320. Simple picks held by the player.
- 323 Hammer mechanism:**
This subclass is indented under subclass 290. Patents for simple actions adapted to a zither and usually downstriking.
- (1) Note. The instrument is often called a “keyed zither”.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
237, 238 and 240, for hammer actions.
246, for electrically operated hammers.
- 324 Spring-shank hammer:**
This subclass is indented under subclass 323. To produce a vibrato or tremolo effect.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
284, for hand-hammers.
- 325 Bowing mechanism:**
This subclass is indented under subclass 290. For violins or zithers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
10, and 11, for automatic violins.
282, for ordinary violin-bows.
- 326 With keyboard:**
This subclass is indented under subclass 325. The keys operate fretting or fingering means, so that only a few strings are needed.
- (1) Note. The complete instrument is usually called a "piano-violin".
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
256, and 257, for instruments having many open strings.
- 327 Instrument supports:**
This subclass is indented under subclass 290. Devices for supporting or positioning guitars, etc., during playing.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
278, and 280, for chin rests and supports.
- 328 Arm, hand, or finger rests:**
This subclass is indented under subclass 290. Means to support the player's hand in proper relation to the instrument.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
469, for armrest rail.
- 329 Article holders:**
This subclass is indented under subclass 290. Devices attached to an instrument to hold an article, such as a pick or a cake of rosin.
- 330 Wind:**
This subclass is indented under subclass 1. Miscellaneous wind instruments and some details not elsewhere classifiable; also combinations of pipes and reeds.
- (1) Note. The patents of this group may be classed as pipe organs, reed organs, minor reed instruments, orchestral wood winds, and brasses. The first two have many features in common; but they differ so much in size and consequently in details that a parallel classification has been made. Search should ordinarily be made in the proper subclasses of both types and sometimes in "Automatics". Wind-supply devices and pressure-regulators are mostly classed in Class 60, Power Plants, and Class 417, Pumps.
- 331 Pipe organs:**
This subclass is indented under subclass 330. Patents covering the whole organization or several details or features not elsewhere classifiable.
- 332 Actions:**
This subclass is indented under subclass 331. Pipe-organ actions not belonging to a specific subclass.
- (1) Note. The speaking of an organ-pipe is usually controlled by the joint operation of devices actuated or controlled, respectively, by a key and a stop. These devices (excluding the keys) are collectively known as the "action". These actions and the corresponding wind-chests are of three types: (1) the older, in which the top of the wind-chest has as many grooves with pallets to control them as there are keys and as many perforated slides crossing the grooves as there are speaking-stops; (2) the type in which there are as many stop-chambers as stops, each carrying a series or "register" of pipes and each controlled by a valve or "ventil", every pipe having its own

valve controlled by a key, and (3) the type in which all the pipes stand on a common or "universal" wind-chest and each pipe has its own valve, which is jointly controlled by a key and a draw-stop. In all three types the controlling means may be mechanical, electrical, pneumatic, or electropneumatic. For details of such means see this class, subclass 335, and following subclasses. Patents for combinations of the first type are in this subclass.

333 Stop chambers:

This subclass is indented under subclass 332. Combinations belonging to type 2 of the Note above.

334 Single chamber:

This subclass is indented under subclass 332. Combinations belonging to type 3 of the above Note.

335 Pneumatic details:

This subclass is indented under subclass 332. The invention is essentially embodied in one pneumatic and valve.

336 Membrane valve:

This subclass is indented under subclass 335. A diaphragm serves as a valve.

337 Electric:

This subclass is indented under subclass 332. Includes patents for complete organizations and for electric details; also inertia-controlled circuit-closers.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

341, for electric means for coupling parts of an organ.

338 Electropneumatic:

This subclass is indented under subclass 332. Includes organizations in which electromagnetic valves control pneumatics; also pneumato-electric actions in which pneumatics control switches in the circuits of electromagnets.

339 Details:

This subclass is indented under subclass 338. Includes units or details of such actions.

340 Pneumatic:

Pneumatic means for coupling parts of an organ.

341 Electric:

Electric means for coupling parts of an organ.

(1) Note. In pneumatic and electric organ-actions, there is no sharp line of distinction between couplers and stop-actions, and in some modern constructions the old nomenclature is inapt.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

235, for couplers.

337, for electric details of pipe organs; also inertia-controlled circuit closers.

338, for electro pneumatic pipe organs; also pneumo-electric actions.

351 through 374, particularly subclass 373 for a simple type of rock-shaft for octave-couplers common to reed organs.

424, for means for coupling two keyboards together.

342 Key valves:

This subclass is indented under subclass 332. Details of the pallet or other key-operated valve.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

368, for key-operated valves.

343 Stop actions:

This subclass is indented under subclass 332. Details of the draw-stops or stop-keys, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

331 through 334, for the complete stop-action.

344 Combination:

This subclass is indented under subclass 343. A single pedal or button brings on a plurality of stops selected by the organ builder.

- 345 Adjustable:**
This subclass is indented under subclass 344. A single pedal or button brings on a plurality of stops selected by the player.
- (1) Note. The last two subclasses include organs of all three types described above and actions of the several varieties, also crescendo and sforzando devices.
- 346 Swells:**
This subclass is indented under subclass 331. Patents relating to swell-shutters and means for operating them.
- 347 Electropneumatic:**
This subclass is indented under subclass 346. The shutters are operated or controlled by an electropneumatic action.
- 348 Valve tremolos:**
This subclass is indented under subclass 331. A vibrating valve produces an irregularity in the flow of air and so in loudness of the sound.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
374, for fan tremolos.
- 349 Pipes:**
This subclass is indented under subclass 331. The improvement is embodied in one individual pipe.
- 350 Reed:**
This subclass is indented under subclass 349. The improvement is embodied in one individual reed-pipe, which usually has a beating-reed.
- 351 Reed organs:**
This subclass is indented under subclass 330. Patents for the general construction of a reed-organ.
- (1) Note. Familiar trade-names are “harmonium, melodeon, cabinet-organ”. The reeds are usually free.
- (2) Note. While most of these constructions are obsolete, these patents should be searched for features or details not clearly found in the subclasses below.
- 352 Cases:**
This subclass is indented under subclass 351. Patents for features of the case.
- 353 Pedals:**
Patents wherein there is some modification of the case around the pedals.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
233, for mouse-guards.
357, for other organ-pedals.
- 354 Folding:**
This subclass is indented under subclass 351. Collapsible or “suitcase” organs.
- 355 Wind-supply devices:**
This subclass is indented under subclass 351. Includes pumpers and sometimes electric motors.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
70, for other wind supply-devices.
- 356 Pressure and exhaust:**
This subclass is indented under subclass 355. Instruments involving both exhaust and pressure mechanisms.
- 357 Pedals:**
This subclass is indented under subclass 355. Includes pedals and connections to the bellows.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
353, for case modification.
- 358 Auxiliary:**
This subclass is indented under subclass 357. For the use of children.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
230 through 232, for supplementary pedals for children.
- 359 Distribution:**
This subclass is indented under subclass 355. Includes parts between the pumpers and the actions.

- SEE OR SEARCH CLASS:
417, Pumps, subclasses 279+ for pumps having condition responsive control of the fluid handled by the pump.
- 360 Reed boards:**
This subclass is indented under subclass 351. Boards in which the reed-cells are formed.
- 361 With qualifying tubes:**
This subclass is indented under subclass 360. Tubes each communicating with one or a very few reed-cells.
- 362 With resonance chamber:**
This subclass is indented under subclass 360. Chambers each communicating with many cells.
- 363 Reeds:**
This subclass is indented under subclass 351. Patents where the improvement is in the reed alone.
- 364 With tuning means:**
This subclass is indented under subclass 363. Means for tuning the reed are included.
- 365 Key actions:**
This subclass is indented under subclass 351. Modifications in the parts of the action operated or controlled by the keys; devices to start the tongue in prompt vibration.
- 366 Pedal:**
This subclass is indented under subclass 365. Actions connected to a pedal-keyboard.
- 367 Pneumatic:**
This subclass is indented under subclass 365. Patents including a pneumatic in the key action.
- 368 Pallets:**
This subclass is indented under subclass 365. Key-operated valves.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
342, for other key-operated valves.
- 369 Stop actions:**
This subclass is indented under subclass 351. Patents relating to draw-stops and to the mutes and other parts of the action operated by the stops.
- 370 Combination:**
This subclass is indented under subclass 369. Means to operate several stops in combination.
- 371 Celeste:**
This subclass is indented under subclass 369. Devices to produce the “celeste” effect.
- 372 Swells:**
This subclass is indented under subclass 351. Mute, draw-stop, or shutters operated by knee or foot lever or bellows.
- 373 Couplers:**
This subclass is indented under subclass 351. Devices to cause two notes, usually an octave apart, to sound when one key is depressed.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
168, 235, and 340, for other couplers.
- 374 Fan tremolos:**
This subclass is indented under subclass 351. Devices to produce interruptions in the flow of sound, usually of the rotating-fan type.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
348, for valve tremolos.
- 375 Minor reed:**
This subclass is indented under subclass 330. Includes imitation trumpets, jews'-harp, and reed-horns of variable pitch.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
350, for accurate tuning means.

SEE OR SEARCH CLASS:
116, Signals and Indicators, subclasses 137+ and 140 for ordinary fish-horns or dinner-horns.

- 623, Prosthesis (i.e., Artificial Body Members) Parts Thereof or Aids and Accessories Therefor, subclass 9 for artificial larynxes.
- 376 Accordions:**
This subclass is indented under subclass 375. Wind is supplied by a hand-operated bellows and the reeds are controlled by valves and keys.
- (1) Note. Some forms are called “concertinas”.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
168, 255 and 340, for other couplers.
- 377 Harmonicas:**
This subclass is indented under subclass 375. Mouth-blown instruments usually sounding chords and rarely having keys.
- 378 With resonance chambers:**
This subclass is indented under subclass 377. A resonance tube or chamber is added.
- 379 Supports:**
This subclass is indented under subclass 377. Devices to support a harmonica on another instrument or on the player’s body.
- 380 Wood winds:**
This subclass is indented under subclass 330. Includes patents for features that are readily applicable to various instruments.
- 381 Duplex:**
This subclass is indented under subclass 380. Instruments having two tubes to be blown and fingered simultaneously.
- 382 Clarinets:**
This subclass is indented under subclass 380. Includes features specially applicable to clarinets.
- 383 Mouthpieces:**
This subclass is indented under subclass 382. Single-reed mouthpieces and elements thereof.
- 384 Flutes:**
This subclass is indented under subclass 380. Features pertaining to flutes and similar instruments that give the octave on overblowing.
- 385 Saxophones:**
This subclass is indented under subclass 380. Details not applicable to other instruments.
- 386 Pitch-changing devices:**
This subclass is indented under subclass 380. Devices for changing the key or the pitch; transposers.
- 387 Brasses:**
This subclass is indented under subclass 330. Band instruments commonly called “brasses”, whatever their specific names may be; this subclass includes combinations and features not classifiable below.
- 388 Valve type:**
This subclass is indented under subclass 387. Instruments, of which the cornet is typical, usually having three piston-valves.
- 389 With four valves:**
This subclass is indented under subclass 388. Cornets, etc., having four or more valves.
- 390 Rotary movement:**
This subclass is indented under subclass 388. The valves rotate.
- 391 Helical or sliding movement:**
This subclass is indented under subclass 388. The valves have a combined rotating and sliding movement or the engaging surfaces of the valve and its seat are planes.
- 392 Piston details:**
This subclass is indented under subclass 388. Details of the piston-valve.
- 393 With substitute tubes:**
This subclass is indented under subclass 388. Each valve controls two tubes of different length, often symmetrically placed, whereby the difference in timbre between open and valve tones is diminished.

- 394 Tuning devices:**
This subclass is indented under subclass 388. Means to change the key or pitch.
- 395 Trombones:**
This subclass is indented under subclass 387. Instruments in which the changes in length of the vibrating air column depend on a slide.
- 396 Tuning devices:**
This subclass is indented under subclass 395. Means to change the key or pitch specially adapted to a trombone.
- 397 Drainage:**
This subclass is indented under subclass 387. Water-keys and analogous devices.
- 398 Mouthpieces:**
This subclass is indented under subclass 387. Cornet and similar mouthpieces, usually cup-shaped.
- 399 Adjustable:**
This subclass is indented under subclass 398. Adjustable in length or internal shape or having interchangeable parts.
- 400 Mutes:**
This subclass is indented under subclass 387. Cornet-mutes to enable the player to produce a softer tone than usual.
- 401 Tremolos:**
This subclass is indented under subclass 387. Devices by which a tremolo effect may be produced.
- 402 Rigid vibrators:**
This subclass is indented under subclass 1. Miscellaneous constructions and features.
- (1) Note. This group is intended to take all solid sounding-bodies except strings. They are sometimes called “autophones” or “percussion instruments”.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
2, 3, 170, and 171, for attachments to a piano or organ.
- 403 Bars and supports:**
This subclass is indented under subclass 402. Bars supported at nodal points to vibrate transversely and means for supporting them; also some end-supported bars and some resonators; hand-strikers are used.
- 404 With strikers:**
This subclass is indented under subclass 403. Bars furnishing the notes of a scale and strikers therefor.
- (1) Note. Called “xylophones, toy pianos, pianos, pianos without strings, chimes,” etc.
- SEE OR SEARCH CLASS:
116, Signals and Indicators, appropriate subclasses for mechanically operated signals.
340, Communications: Electrical, subclasses 384.1-404.3 for electrically operated audible signals.
- 405 With electric action:**
This subclass is indented under subclass 403. The bars are vibrated by electromagnets.
- 406 Bells:**
This subclass is indented under subclass 402. A musical instrument usually including a plurality of bells and strikers or equivalents.
- SEE OR SEARCH CLASS:
116, Signals and Indicators, subclass 25 for single bells.
- 407 With electric action:**
This subclass is indented under subclass 406. The strikers are actuated or controlled by electromagnets.
- SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 392.1-396.1 for an electrically operated signal bell.
- 408 Tongues:**
This subclass is indented under subclass 402. Short bars fixed at one end like the teeth of a comb and vibrated by a pick.

- (1) Note. Most familiar in the Swiss music-box and indented subclasses.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
94.1 through 101, for combs.
- 409 Forks:**
This subclass is indented under subclass 402. A musical instrument comprising tuning-forks and their strikers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
457, for single forks.
- 410 Resonators:**
This subclass is indented under subclass 402. Hollow bodies serving as resonators for a bar, fork, etc.
- SEE OR SEARCH CLASS:
181, Acoustics, for pertinent subclass(es) as determined by schedule review.
- 411 Drums:**
This subclass is indented under subclass 1. Miscellaneous drums not classifiable in the subclasses indented hereunder.
- 412 Collapsible:**
This subclass is indented under subclass 411. Drums collapsible for convenience of transportation.
- 413 Cord tighteners:**
This subclass is indented under subclass 411. Means for tightening cords that stretch the heads.
- 414 Head material:**
This subclass is indented under subclass 411. Unusual materials for the head.
- 415 Snares:**
This subclass is indented under subclass 411. Miscellaneous features of construction.
- 416 Material:**
This subclass is indented under subclass 415. The invention is in the material used.
- 417 Inside:**
This subclass is indented under subclass 415. The snares are inside the head.
- 418 Tambourines:**
This subclass is indented under subclass 411. Shallow drums with a single head.
- 419 Tympani:**
This subclass is indented under subclass 411. Kettledrums and tuning means therefor.
- 420 Toy:**
This subclass is indented under subclass 411. Small cheap drums used as toys.
- 421 Supports:**
This subclass is indented under subclass 420. Devices for supporting drums.
- SEE OR SEARCH CLASS:
248, Supports, subclasses 200 through 316.8, for attachments to a drum for supporting bells, cymbals, etc.
- 422.1 Drum and cymbal beaters:**
This subclass is indented under subclass 1. Subject matter which are foot-operated bass drum beaters.
- 422.2 Combined:**
This subclass is indented under subclass 422.1. Subject matter combined with cymbal beaters.
- 422.3 Hi-hat:**
This subclass is indented under subclass 422.1. Subject matter which are cymbal beaters (e.g., Hi-Hat, etc.).
- 422.4 Drumsticks:**
This subclass is indented under subclass 422.1. Subject matter which are drumsticks.
- 423 Keyboards:**
Miscellaneous patents involving several features or features not specifically classified.
- 424 Plurality of manuals:**
This subclass is indented under subclass 423. Keyboards like those of a pipe-organ and couplers therefor.

- 425 Auxiliary:**
This subclass is indented under subclass 423. Keys of one set operate, respectively, keys of another set.
- 426 Pedal:**
This subclass is indented under subclass 425. The keys of the first set are foot-operated.
- 427 Plurality of touch plates:**
This subclass is indented under subclass 423. All or some of the keys have two places for fingering; stepped keys.
- 428 Whole-tone scale:**
This subclass is indented under subclass 427. Successive keys furnish notes a whole tone apart; Janko keyboards, etc.
- 429 Curved front:**
This subclass is indented under subclass 423. The front ends of the keys lie along a curved line.
- 430 Key bottoms:**
This subclass is indented under subclass 423. Changes in the part of the case which supports the key-frame.
- 431 Folding:**
This subclass is indented under subclass 430. The bottom and keys fold into the case.
- 432 Key frames adjustable:**
This subclass is indented under subclass 423. Means to vary the striking-point in a horizontal piano or to level the key-frame.
- 433 Keys:**
This subclass is indented under subclass 423. The improvement can be embodied in a single key.
- 434 Fulcrums and guides:**
This subclass is indented under subclass 433. Improvements in both fulcrum and guide.
- 435 Fulcrums:**
This subclass is indented under subclass 433. Improvements in the fulcrum.
- 436 Guides:**
This subclass is indented under subclass 433. Improvements in the guiding devices.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
438, for manufacturing processes.
- 437 Plating:**
This subclass is indented under subclass 433. Improvements in the ivory or other covering.
- 438 Manufacturing processes:**
This subclass is indented under subclass 423. Various processes of manufacture.
- 439 Touch regulators:**
This subclass is indented under subclass 423. Means to adjust the depth or other characteristics of the touch.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
435, for fulcrums.
467, for practice key boards.
- 440 Resistance:**
This subclass is indented under subclass 439. Means to adjust the resistance of the keys.
- 441 Key holders:**
This subclass is indented under subclass 423. Means to hold down a depressed key, so as to sustain the sound, generally in organs.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
167, for devices to hold all the keys.
- 442 Key selectors:**
Means for selecting out of the twelve keys of an octave those needed for any diatomic scale.
- 443 Chord players:**
Means whereby a single key or button sounds a chord.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
317, for devices to produce chords.

- 444 Pedal operated:**
This subclass is indented under subclass 443. Means whereby a single pedal sounds a chord.
- 445 Transposers:**
Devices whereby each sound produced is systematically different in pitch from that normally associated with the key struck.
- (1) Note. Includes pneumatic or electric devices.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
442, for key selectors.
- 446 Auxiliary keyboard:**
This subclass is indented under subclass 445. A shiftable keyboard superposed on the ordinary one.
- 447 Keyboard shifted:**
This subclass is indented under subclass 445. The keyboard is shifted relatively to the action.
- 448 Intermediate parts shifted:**
This subclass is indented under subclass 445. Parts between the keyboard and sounders are shifted.
- 449 Sounders shifted:**
This subclass is indented under subclass 445. The sounders are shifted.
- 450 Solo attachments:**
Devices for emphasizing the highest or lowest note of a chord; "melody attachment".
- 451 Special or enharmonic scales:**
Pianos or organs furnishing more than twelve notes to the octave or tuned to give a scale different from the equally-tempered scale of the piano; special keyboards and connections therefrom; quarter-tone instruments; enharmonic instruments.
- 452 Materials:**
Patents in which the novelty resides in a substitution of material.
- (1) Note. See this class, subclasses 193 and 291.
- 453 ACCESSORIES:**
This subclass is indented under the class definition. Devices used in connection with a musical instrument, but not necessary to the production of music.
- (1) Note. Includes testing devices.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
169, for indicators related to a self-playing instrument.
- SEE OR SEARCH CLASS:
248, Supports, subclasses 396 and 397 for a piano stool or bench having a tiltable support surface which may remain horizontal while the occupant is playing a piano manually, but which may be tilted forwardly to support the occupant in a position to facilitate pumping an organ bellows or player piano mechanism with his feet, and subclasses 441.1-465.1 for an easel, book, or music score holder.
- 454 Tuning devices:**
This subclass is indented under subclass 453. Miscellaneous devices.
- (1) Note. This subclass and the subclasses indented under it include devices temporarily used in tuning, usually not connected to the instrument to be tuned. Some of them furnish a note of standard pitch, others are merely tools.
- 455 Strings:**
This subclass is indented under subclass 454. Strings, usually on a graduated bar; monochord; sonometer.
- 456 Pipes and reeds:**
This subclass is indented under subclass 454. Pitch-pipes, reeds, etc., furnishing one or more notes of definite pitch.
- 457 Forks:**
This subclass is indented under subclass 454. Tuning-forks.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
409, for forks mounted to form a musical instrument.
- 458 Tools and machines:**
This subclass is indented under subclass 454. Machines for both shaping and blowing reeds; also some hand tools.
- 459 Tuning hammers:**
This subclass is indented under subclass 458. Piano-tuners' wrenches.
- 460 Felt pickers:**
This subclass is indented under subclass 458. Needles and carriers for picking felt hammer-heads.
- 461 Recording devices:**
This subclass is indented under subclass 453. Devices for recording the movement of keys of a keyboard.
- SEE OR SEARCH CLASS:
234, Selective Cutting (e.g., Punching), subclasses 49-50, if the record is made by selectively perforating a moving sheet; subclasses 109-119 and 123-125 for a keyboard controlled selective cutting device in general.
- 462 Electric:**
This subclass is indented under subclass 461. These devices involve electric circuits.
- 463 Applying expression lines:**
This subclass is indented under subclass 461. Means for applying expression lines or marks to a record-sheet.
- 464 Producing color or light effects:**
This subclass is indented under subclass 453. Devices for producing light or color effects combined with an instrument for producing music.
- SEE OR SEARCH CLASS:
239, Fluid Sprinkling, Spraying, and Diffusing, subclass 18 for ornamental fountains having means to light or illuminate the fountain.
- 315, Electric Lamp and Discharge Devices: Systems, pertinent subclasses as determined by schedule review, for electric systems for supplying electric energy to electric lamps.
- 446, Amusement Devices: Toys, subclass 200 for a figure toy which moves in time with a musical instrument; and subclasses 202-209 for other mouth-piece-actuated toys.
- 465 Exercising devices:**
Devices to aid students in learning to play an instrument.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
281, for positioning devices.
- 466 For singers:**
This subclass is indented under subclass 465. Devices to aid in voice-training.
- 467 For pianists:**
This subclass is indented under subclass 465. Includes practice-keyboards; "claviers".
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
440, for key resistance devices.
- SEE OR SEARCH CLASS:
434, Education and Demonstration, subclasses 176, 202, and 227-233 for other teaching devices having keyboards.
- 482, Exercise Devices, particularly subclasses 44-50 for hand, wrist, or finger exercise apparatus in general.
- 601, Surgery: Kinesitherapy, subclass 40 for hand and finger exercise devices.
- 468 Attached to performer:**
This subclass is indented under subclass 467. Devices attached to the player's hand or body.
- 469 Armrest rail:**
This subclass is indented under subclass 467. A rail fixed to the piano-case to position the player's arm.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
328, for arm, hand, or finger rests.
- 470 Teaching devices:**
This subclass is indented under subclass 453. Devices for use in teaching music, some with sounders; charts; indicators.
- SEE OR SEARCH CLASS:
434, Education and Demonstration, for pertinent subclasses as determined by schedule review for other teaching devices.
- 471 Charts or boards:**
This subclass is indented under subclass 470. Various kinds of charts.
- 472 Easel type:**
This subclass is indented under subclass 471. Devices adapted to stand vertically and others of analogous construction and use.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
477, for devices in which a note, etc., is caused to appear on the staff upon pressing a key.
- 473 With transposing slide:**
This subclass is indented under subclass 471. Devices having a slide for illustrating change of key.
- 474 With transposing dial:**
This subclass is indented under subclass 471. Similar devices having a dial.
- 475 For transcribing:**
This subclass is indented under subclass 471. Various devices useful in writing music, such as from a record or for a transposing instrument.
- 476 Blocks:**
This subclass is indented under subclass 470. Blocks or cards having musical characters.
- SEE OR SEARCH CLASS:
273, Amusement Devices: Games, subclasses 292-308 for card or tile games which may have an educational bene-
fit, and see especially subclass 301 thereof for musical indicia.
- 434, Education and Demonstration, subclasses 208 and 403 for other educational blocks or cards.
- 446, Amusement Devices: Toys, subclasses 85-128 for toy blocks; and subclass 147 for toy cards.
- 477 Indicators:**
This subclass is indented under subclass 470. Miscellaneous visual devices responding to movements of keys or directing their movement or showing note relationships.
- 478 For keyboard:**
This subclass is indented under subclass 477. To be used on a keyboard.
- 479 Single position:**
This subclass is indented under subclass 478. A card or board bearing indicia to register with the keys of the instrument-keyboard.
- 480 With transposing slide:**
This subclass is indented under subclass 479. The card has a slide to indicate various major or minor keys.
- 481 Plurality of cards:**
This subclass is indented under subclass 479. A plurality of cards, each for a single key.
- 482 Shiftable:**
This subclass is indented under subclass 478. The card is shifted along the keyboard for transposition.
- 483.1 Tune sheets:**
This subclass is indented under subclass 477. Subject matter having sheets bearing the music and located with special reference to the keys or sounders.
- 483.2 Notation systems:**
This subclass is indented under subclass 483.1. Subject matter including notation systems.
- 484 For tempo:**
This subclass is indented under subclass 477. Devices for indicating the tempo or rhythm.

- 485 For fingering:**
This subclass is indented under subclass 477. The music-sheet has marks showing what finger is to be used in producing a note.
- 486 Leaf turners:**
This subclass is indented under subclass 453. Patents showing constructions not clearly belonging in one of the following subclasses or showing features applicable to various types of leaf-turners.
- (1) Note. Leaf-turners are devices to be attached to a music-stand or to the music-desk of a piano to enable a player to turn one or more leaves of music from right to left. In some cases the player releases a source of power, in others he furnishes the power. In either case he may use his hand, knee, or foot, and the terms “releaser” and “finger-piece” are used generically herein to include also knee-levers and foot-levers. Often a pedal is connected to operate a finger-key. Usually each leaf is attached by clips to one or two arms extending from a solid or tubular shaft pivoted near the line of fold of the music-sheets or the line of the back of a bound book, said arms extending along the top or bottom edge of the leaf or along both. This classification is based, first, on the immediate source of the power that turns the leaf-motor, gravity, spring, or hand--and, second, on whether there is a plurality of parts or a single one of each kind. The parts considered are only those of turning a leaf from right to left. In many instances there are keys or pedals to return the leaves from left to right. These are disregarded in the classification.
- (2) Note. Patents for some features of construction that are not suggested by these titles are cross-referenced into this subclass.
- SEE OR SEARCH CLASS:**
40, Card, Picture, or Sign Exhibiting, subclasses 524-528, 529 for means to feed a continuous sheet of music and 530-537 for means to turn the leaves of a book.
- 248, Supports, subclasses 441.1-465.1 for an easel, book, or music score holder.
- 487 Motor operated:**
This subclass is indented under subclass 486. In these generally a spring-motor is released repeatedly to turn leaf-holding arms forward and back; the motor must be rewound from time to time.
- (1) Note. Some patents show an electric motor.
- 488 Gravity operated:**
This subclass is indented under subclass 486. The leaves are moved by the weight of some part.
- 489 Hand and spring operated arms:**
This subclass is indented under subclass 486. The arms are started by hand and their movement continued by springs.
- (1) Note. Each arm has a spring tending to carry it from right to left. The arm is held by a latch, catch, detent, or dog. This may be liberated by a releaser, trigger, key, or finger-piece.
- 490 Plurality of latches:**
There is a latch for each arm.
- 491 Fixed latches:**
This subclass is indented under subclass 490. The latches are fixed and the arms are moved slightly to release them.
- 492 Plurality of releasers:**
This subclass is indented under subclass 490. There is a releaser, key, or pedal for each arm.
- 493 Latches and releasers pivoted:**
This subclass is indented under subclass 492. Both latches and releasers are pivoted.
- 494 Integral:**
This subclass is indented under subclass 493. Each latch is integral with its releaser and is pivoted.
- 495 Single latch:**
One latch holds all the arms, so only one releaser is needed.

- 496 Fixed latch:**
This subclass is indented under subclass 495. The latch is fixed and commonly it holds directly the outermost arm.
- 497 Sliding latch:**
This subclass is indented under subclass 495. The latch slides to release the arms successively.
- 498 Escapement:**
This subclass is indented under subclass 495. The latch has means to catch the following arm before or as it releases the front one.
- 499 Air operated:**
This subclass is indented under subclass 498. The latch is operated by a puff of air.
- 500 Single spring arm:**
This subclass is indented under subclass 486. There is only one arm, and this is spring-operated.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
516, for single arm devices.
517, for single transfer bar devices.
- 501 Latch and releaser integral:**
This subclass is indented under subclass 500. The two functions are served by one integral piece.
- 502 Player-operated arms:**
This subclass is indented under subclass 486. The player supplies the power to turn the arms through finger-pieces and connections called "actuators".
- 503 Plurality of actuators:**
This subclass is indented under subclass 502. One for each arm.
- 504 Plurality of finger pieces:**
This subclass is indented under subclass 503. One for each arm.
- 505 Actuators pivoted:**
This subclass is indented under subclass 504. The actuator is pivoted; often it is a gear or segmental gear.
- 506 Actuators and finger pieces integral:**
This subclass is indented under subclass 504. Each finger-piece is integral with its actuator. The latter is often toothed.
- 507 Single finger piece:**
This subclass is indented under subclass 503. One finger-piece operates successively all the actuators and arms; single actuator operates all the arms.
- 508 Progressive action:**
The actuator moves on step by step to shift the successive arms.
- 509 Arms and actuator on different axes:**
This subclass is indented under subclass 508. The arms and actuator are pivoted on different axes.
- 510 With segmental gear:**
This subclass is indented under subclass 509. The actuator has a segmental gear.
- 511 Sliding actuator:**
The actuator slides.
- 512 With segmental rack:**
This subclass is indented under subclass 511. It includes a segmental rack.
- 513 Repeating action:**
The actuator after shifting one arm returns for the next one.
- 514 Arms and actuator on different axes:**
This subclass is indented under subclass 513. The arms and actuator are pivoted on different axes.
- 515 Sliding actuator:**
This subclass is indented under subclass 513. The actuator slides.
- 516 Single arm:**
This subclass is indented under subclass 486. Devices for turning a single leaf or sometimes a sheet around its center.

517 Single transfer bar:

This subclass is indented under subclass 486. There are no arms with clips, but a single actuator engages successively leaves or attachments on them.

518 With buckling devices:

This subclass is indented under subclass 517. Devices for partly raising a leaf, so that the bar or finger may pass under it.

519 With suction devices:

This subclass is indented under subclass 517. The leaf is lifted by a suction-head.

520 Leaves prepared:

This subclass is indented under subclass 517. The leaves are notched or otherwise modified to cooperate with the mechanism.

521 With magnetic disks:

This subclass is indented under subclass 520. The leaves carry iron disks to be attracted by magnets on the transfer-bar.

600 Electrical musical tone generation:

This subclass is indented under subclass 1. Subject matter including means for generating or modifying electric currents or potentials to produce varying electric currents or potentials in combination with, or intended for converting the varying electric currents or potentials into sound vibrations for the production of musical tones.

- (1) Note. For devices which generate or modify an electric current or potential so as to produce a particular waveform, see the search notes below.

SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnection Systems, subclasses 106-108 for waveform or waveshape determinative circuits.
- 310, Electrical Generator or Motor Structure, appropriate subclasses for electrical generators, particularly subclass 111 for generated wave modifications; subclass 160 for rotary frequency converters, and subclasses 166-172 for induction and variable reluctance type A. C. generators.

322, Electricity: Single Generator Systems, appropriate subclasses for miscellaneous generator systems for generating electric currents and potentials.

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous nonlinear circuits using active devices such as tubes or transistors.

331, Oscillators, appropriate subclasses for electrical oscillator systems, per se.

333, Wave Transmission Lines and Networks, subclass 20 for electric wave-shaping networks of the passive type and subclass 167 for electric wave filters.

336, Inductor Devices, appropriate subclasses for inductive reactors and transformers which are provided with fixed or movable elements (e.g., having a moving armature to modify the impedance of an inductive reactor).

338, Electrical Resistors, subclass 69 for mechanically variable resistors actuated by musical instrument playing keys.

363, Electric Power Conversion Systems, appropriate subclasses for electric power conversion systems; particularly subclasses 13-147 for rectifying and inverting systems, and subclasses 157-177 for frequency conversion systems.

704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 258-269 for speech synthesis.

601 Data storage:

This subclass is indented under subclass 600. Subject matter wherein tone characteristic informations such as timbre, envelope, harmonic contents, pitch or etc., are retained and retrievable to produce musical tone.

SEE OR SEARCH CLASS:

- 324, Electricity: Measuring and Testing, subclasses 111 and 113 for storing or recording voltage or current.
- 360, Dynamic Magnetic Information Storage and Retrieval, subclass 32 for prior analog to digital conversion; subclasses 55-68 for magnetic record-

- ing and producing; subclass 131 for recording medium, per se.
- 365, Static Information Storage and Retrieval, appropriate subclasses for memory, per se, and subclass 48 for magnetic analog storage.
- 369, Dynamic Information Storage and Retrieval, subclass 63 for sound reproduction for toy or novelty; subclass 86 for acoustic signal storage and retrieval; subclasses 272.1-291.1 for storage medium, per se.
- 704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 206-210 for storage of pitch and formats.
- 720, Dynamic Optical Information Storage or Retrieval, subclasses 718 through 746 for optical storage medium structure.
- 602 Digital memory circuit (e.g., RAM, ROM, etc.):**
This subclass is indented under subclass 601. Subject matter wherein the tone characteristic information is stored by digital memory circuit in a discrete format (e.g., RAM, ROM, etc.) to produce musical tone.
- (1) Note. This subclass does not provide for generating musical tone based on digital combinational circuit (see this class subclass 647 for digital combinational circuit).
- SEE OR SEARCH CLASS:
- 360, Dynamic Magnetic Information Storage and Retrieval, subclass 32 for prior analog to digital conversion before storage; subclass 39 for digital storage; subclasses 55-68 for magnetic recording and retrieval; subclasses 131-136 for storage medium, per se.
- 365, Static Information Storage and Retrieval, appropriate subclasses for specific memory systems, per se.
- 711, Electrical Computers and Digital Processing Systems: Memory, subclasses 100-173 for generic storage accessing and control in digital data processing systems.
- 603 Sampling (e.g., with A/D conversion):**
This subclass is indented under subclass 602. Subject matter wherein an analog sound is digitized and stored for future retrieval.
- SEE OR SEARCH CLASS:
- 341, Coded Data Generation and Conversion, subclasses 122-125 for generic A/D conversion with sampling.
- 360, Dynamic Magnetic Information Storage or Retrieval, subclass 32 for analog to digital conversion prior to storage.
- 700, Data Processing: Generic Control Systems or Specific Applications, subclass 73 for sampled data control systems, per se.
- 604 Waveform memory:**
This subclass is indented under subclass 602. Subject matter wherein a waveform is digitally stored.
- 605 Read out at different rates:**
This subclass is indented under subclass 604. Subject matter wherein the waveforms are read out from memory at various rates that correspond to desired pitches.
- SEE OR SEARCH CLASS:
- 365, Static Information and Retrieval, subclass 230.01 for addressing a waveform memory, per se.
- 606 Read out at fixed rate:**
This subclass is indented under subclass 604. Subject matter wherein the waveforms are read out from memory at a constant rate.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
605, for read out at different rates.
- 607 Recursive algorithm:**
This subclass is indented under subclass 604. Subject matter wherein a plural period waveform is achieved by rereading the same waveform from the same memory location.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
605, for read out at different rates.

- SEE OR SEARCH CLASS:
700, Data Processing: Generic Control Systems or Specific Applications, subclass 89 for data processing control system with specific algorithm
- 608 Fourier coefficient memory:**
This subclass is indented under subclass 602. Subject matter wherein storage locations are provided for the Fourier coefficients.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
602, for digital memory circuit.
- SEE OR SEARCH CLASS:
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 403-409 and 821 for digital and analog Fourier transforms.
- 609 Note sequence:**
This subclass is indented under subclass 602. Subject matter wherein a succession of musical notes is sequentially processed by digital memory circuit for performance or comparison.
- SEE OR SEARCH CLASS:
446, Amusement Devices: Toys, subclass 408 for simulated musical instruments.
- 610 Accompaniment:**
This subclass is indented under subclass 609. Subject matter wherein the stored sequence is used as a musical support for a voice or melody.
- 611 Rhythm:**
This subclass is indented under subclass 610. Subject matter wherein the information represents the timing intervals of the musical piece.
- 612 Tempo control:**
This subclass is indented under subclass 611. Subject matter wherein the rate or speed of rhythm is variable.
- 613 Chords:**
This subclass is indented under subclass 610. Subject matter wherein the note sequence contains a plurality of notes played simultaneously.
- 614 Reiteration:**
This subclass is indented under subclass 610. Subject matter wherein the plural tones are repetitively played in sequence.
- 615 Selecting circuits:**
This subclass is indented under subclass 602. Subject matter comprising a circuit which selects any musical parameter, e.g., pitch, timbre, etc.
- 616 Fundamental tone detection or extraction:**
This subclass is indented under subclass 615. Subject matter wherein the fundamental or pitch is detected and used to activate or modify a musical system.
- 617 Multiplexing or scanning:**
This subclass is indented under subclass 615. Subject matter wherein the selecting circuits are assigned by time division multiplexing or scanning.
- SEE OR SEARCH CLASS:
340, Communications: Electrical, subclasses 825-825.98 for selective scanning devices.
370, Multiplex Communications, appropriate subclasses for time division multiplexing, per se.
- 618 Priority or preference circuits:**
This subclass is indented under subclass 615. Subject matter wherein a plurality of musical notes or keys are selected with a certain note or notes having precedence over others selected e.g., highest or lowest notes having priority over any other selected, etc.
- SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 1-99 for signal discriminating, comparing, or selecting.
- 619 Transposition:**
This subclass is indented under subclass 615. Subject matter wherein a musical piece is written or performed in a key other than the original or given key.

- SEE OR SEARCH CLASS:
363, Electric Power Conversion Systems, subclasses 157-177 for converting a first frequency into a second frequency.
- 620 Stops:**
This subclass is indented under subclass 615. Subject matter wherein a circuit or system selects a musical voice, tone color, timbre or electrically simulated organ pipe sound.
- 621 Noise reduction (e.g., error prevention, etc.):**
This subclass is indented under subclass 602. Subject matter wherein circuitry is provided to reduce electrical noises, transients or unwanted disturbances.
- SEE OR SEARCH CLASS:
381, Electrical Audio Signal Processing Systems and Devices, subclasses 71.1-71.14 for acoustical noise or sound cancellation; subclasses 94.1-94.9 for noise or distortion suppression.
702, Data Processing: Measuring, Calibrating, or Testing, subclasses 191-195 for noise removal or suppression in a measured signal of a data processing measuring system
- 622 Tone synthesis or timbre control:**
This subclass is indented under subclass 602. Subject matter wherein the harmonic content of a note is controlled or modified.
- SEE OR SEARCH CLASS:
307, Electrical Transmission or Interconnection Systems, subclasses 106-108 for waveform or waveshape determinative systems.
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 100-333 for miscellaneous converting, shaping, or generating.
333, Wave Transmission Lines and Networks, subclass 28 for audio tone controls; subclasses 167-185 for lumped parameter filters, per se.
381, Electrical Audio Signal Processing Systems and Devices, subclasses 101 through 103 for automatic tone control or equalization of an audio signal;
- subclass 118 for signal processing of musical instruments, per se.
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 300-323 for digital filtering by a calculating computer.
- 623 Time varying or dynamic Fourier components:**
This subclass is indented under subclass 622. Subject matter wherein the Fourier components are time varying or dynamic.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
608, for a constant stored Fourier component.
- 624 Modulation:**
This subclass is indented under subclass 622. Subject matter wherein tones are synthesized or modified by varying a carrier wave in accordance with a modulation wave.
- SEE OR SEARCH CLASS:
332, Modulators, subclasses 117-143 for phase or frequency modulation; subclasses 149-182 for amplitude modulation.
360, Dynamic Magnetic Information Storage or Retrieval, subclasses 29 through 30 for the frequency modulation of stored data.
- 625 Mixing:**
This subclass is indented under subclass 622. Subject matter wherein two or more signals are combined to form a composite waveform.
- SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113-123 for a miscellaneous frequency mixing circuit.
369, Dynamic Information Storage or Retrieval, subclass 4 for mixing signals that originate from storage.
381, Electrical Audio Signal Processing Systems and Devices, subclass 119 for audio system mixers, per se.

626 Expression or special effects (e.g., force or velocity responsive, etc.):

This subclass is indented under subclass 602. Subject matter for providing an indication of feeling or artistic execution to the musical tones.

SEE OR SEARCH CLASS:

- 73, Measuring and Testing, subclasses 488-551 for velocity measuring, per se.
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 261-290 for miscellaneous delay circuits.
- 356, Optics: Measuring and Testing, subclass 28 for measuring key switch velocity optically.
- 361, Electricity: Electrical Systems and Devices, subclasses 283.1-283.4 for pressure (force) responsive capacitors.

627 Envelope shaping (i.e., attack, decay, sustain or release):

This subclass is indented under subclass 626. Subject matter for providing or modifying an amplitude contour of an activated tone.

SEE OR SEARCH CLASS:

- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 306-333 for signal shaping by amplitude control.
- 333, Wave Transmission Lines and Networks, appropriate subclasses for networks delay.

628 Portamento or glissando:

This subclass is indented under subclass 626. Subject matter for producing an audible continuous glide from one tone to a second tone.

629 Vibrato or tremolo:

This subclass is indented under subclass 626. Subject matter wherein an audio tone is frequency or amplitude modulated with a subaudio frequency.

SEE OR SEARCH CLASS:

- 331, Oscillators, subclass 178 for producing vibrato in the oscillator output frequency.

332, Modulators, subclasses 117-143 for frequency modulation which produces vibrato; subclasses 149-182 for amplitude modulation which produces tremolo.

381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for tremolo or vibrato effects.

630 Reverberation:

This subclass is indented under subclass 626. Subject matter for providing time delays that simulate a plurality of acoustic reflections of a given tone; e.g., echo, etc.

SEE OR SEARCH CLASS:

- 367, Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 87-116 for echo systems, per se.
- 381, Electrical Audio Signal Processing Systems and Devices, subclasses 63-65 for reverberation.

631 Chorus, ensemble, or celeste:

This subclass is indented under subclass 626. Subject matter providing for the combining of a slightly detuned tone with the original tone.

SEE OR SEARCH CLASS:

- 381, Electrical Audio Signal Processing Systems and Devices, subclasses 89 through 336 for rotating speakers that produce a chorus or "Leslie" effect.

632 Chiff or percussive transients:

This subclass is indented under subclass 626. Subject matter wherein transients are introduced into the initial sounding portion of the envelope to simulate the hiss or noise of an organ pipe.

633 Loudness control:

This subclass is indented under subclass 626. Subject matter wherein the amplitude or volume of the musical tones may be regulated.

SEE OR SEARCH CLASS:

- 381, Electrical Audio Signal Processing Systems and Devices, subclasses 104-109 for amplitude or volume control of an audio signal.

- 634 Accompaniment:**
This subclass is indented under subclass 602. Subject matter wherein digital data represents a musical support or background.
- 635 Rhythm:**
This subclass is indented under subclass 634. Subject matter wherein the information represents timing intervals of a musical piece.
- 636 Tempo control:**
This subclass is indented under subclass 635. Subject matter wherein the rate or speed of rhythm is variable.
- 637 Chords:**
This subclass is indented under subclass 634. Subject matter wherein the data represents a plurality of musical tones to be played simultaneously.
- 638 Arpeggio:**
This subclass is indented under subclass 634. Subject matter wherein the data represents chord tones to be played in sequence one at a time.
- 639 Photoelectric:**
This subclass is indented under subclass 601. Subject matter including optical and electrical means for storing data representative of the musical tones.
- SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 200-239 for photocell systems.
361, Electricity: Electrical Systems and Devices, subclasses 173-177 for the activation of solenoids from a condition responsive photosensor.
362, Illumination, subclass 295 for a switch which acts in response to a light source or modifier which ultimately controls, for example, an oscillator; subclass 802 for light activated switches, per se.
365, Static Information Storage and Retrieval, subclass 112 for generic photoelectric memory systems.
- 640 Variable speed:**
This subclass is indented under subclass 639. Subject matter wherein different pitches are obtained by varying the rotational speed of a diffraction or grating disk.
- SEE OR SEARCH CLASS:
250, Radiant Energy, subclass 237 for photocell grating systems.
359, Optical: Systems and Elements, subclasses 558-576 for optical diffraction devices.
- 641 Magnetic:**
This subclass is indented under subclass 601. Subject matter including magnetic and electrical means for storing data representative of the musical tones.
- SEE OR SEARCH CLASS:
360, Dynamic Magnetic Information Storage or Retrieval, subclasses 55-68 for general features pertaining to magnetic storage of information; subclasses 131-136 for the storage medium, per se.
365, Static Information Storage and Retrieval, subclass 48 for analog storage on magnetic medium.
- 642 Tape:**
This subclass is indented under subclass 641. Subject matter wherein the magnetic storage medium is in a tape form.
- 643 Capacitive:**
This subclass is indented under subclass 601. Subject matter including capacitive means for storing data representative of the musical tones.
- SEE OR SEARCH CLASS:
361, Electricity: Electrical Systems and Devices, subclasses 271-330 for capacitors, per se.
365, Static Information Storage and Retrieval, subclass 102 for capacitive type read only memories.
- 644 Constructional details:**
This subclass is indented under subclass 601. Subject matter including mechanical features of the musical instrument.

645 MIDI (musical instrument digital interface):
This subclass is indented under subclass 601. Subject matter including an interface between an instrument and a digital processing system.

SEE OR SEARCH CLASS:

700, Data Processing: Generic Control Systems or Specific Applications, subclasses 83 through 85 for generic data processing with operator control interface.

646 Fret control:
This subclass is indented under subclass 600. Subject matter wherein the stored data is controlled via a stringed musical instrument fingerboard, e.g., switches on a guitar fingerboard, etc.

647 Digital combinational circuit:
This subclass is indented under subclass 600. Subject matter wherein binary inputs are provided to digital combinational circuit to produce musical tone.

- (1) Note. Digital combinational circuit performs some unique logic function such as decoding, encoding, multiplexing, comparison or an arithmetic operation with binary numbers.
- (2) Note. This subclass does not provide for stored tone characteristic information to produce musical tone (See this class, subclass 602 for digital memory circuit).

SEE OR SEARCH CLASS:

331, Oscillators, appropriate subclasses for oscillators used to provided a digital signal.

648 With frequency multiplication or division:
This subclass is indented under subclass 647. Subject matter wherein the discrete notes of a complete musical scale are obtained by varying the oscillator output frequency.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113-123 for miscellaneous frequency multiplication or division.

331, Oscillators, appropriate subclasses for oscillators used to provide a digital signal.

363, Electric Power Conversion Systems, subclass 157 for converting frequencies.

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclasses 118-128 for pulse frequency dividing chains; subclass 47 for pulse multiplication or division.

649 Note sequence:
This subclass is indented under subclass 647. Subject matter wherein a succession of musical notes is sequentially processed by digital combinational circuit for performance or comparison.

SEE OR SEARCH THIS CLASS, SUBCLASS:

609 through 614, for note sequence with digital data storage.

SEE OR SEARCH CLASS:

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 26 for applications of pulse dividers utilizing memory.

650 Accompaniment (e.g., chords, etc.):
This subclass is indented under subclass 649. Subject matter wherein the stored sequence is used as a musical support for a voice or melody.

651 Rhythm:
This subclass is indented under subclass 650. Subject matter wherein the information represents timing intervals of the musical piece.

652 Tempo control:
This subclass is indented under subclass 651. Subject matter wherein the rate or speed of rhythm is variable.

653 Selecting circuits:
This subclass is indented under subclass 647. Subject matter comprising a circuit which selects musical parameter, e.g., pitch, timbre, etc.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
615 through 620, for selective circuit with digital storage.
- SEE OR SEARCH CLASS:
200, Electricity: Circuit Makers and Breakers, appropriate subclasses for selecting circuits in conjunction with musical instruments.
307, Electrical Transmission or Interconnection Systems, subclasses 112-144 for switching systems.
- 654 Fundamental tone detection or extraction:**
This subclass is indented under subclass 653. Subject matter wherein the fundamental or pitch is detected and used to activate or modify a musical system.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
616, for fundamental tone detection or extraction with digital storage.
- 655 Multiplexing or scanning:**
This subclass is indented under subclass 653. Subject matter wherein the selecting circuits are assigned by time division multiplexing or scanning.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
617, for multiplexing or scanning with digital storage.
- 656 Priority or preference circuits:**
This subclass is indented under subclass 653. Subject matter wherein a plurality of musical notes or keys are selected with a certain note or notes having precedence over others, e.g., highest or lowest notes having priority, etc.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
618, for priority or preference circuits with digital storage.
- 657 Transposition:**
This subclass is indented under subclass 653. Subject matter wherein a musical piece is written or performed in a key other than the original or given key.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
445, for transposition structure.
619, for transposition with digital storage.
- 658 Force or velocity responsive:**
This subclass is indented under subclass 653. Subject matter wherein the selecting circuit is responsive to the applied pressure force or velocity.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
626 through 633, for force or velocity responsive with digital storage.
- 659 Tone synthesis or timbre control:**
This subclass is indented under subclass 647. Subject matter wherein harmonic content of a note is controlled or modified.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
622 through 625, for tone synthesis or timbre control with digital storage.
- 660 Mixing:**
This subclass is indented under subclass 659. Subject matter wherein two or more signals are combined to form a composite waveform.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
625, for mixing with digital storage.
- 661 Filtering:**
This subclass is indented under subclass 659. Subject matter wherein a desired waveform is obtained by removing one or more partials or harmonics.
- SEE OR SEARCH CLASS:
307, Electrical Transmission or Interconnection Systems, subclass 105 for harmonic filter or neutralizer.
333, Wave Transmission Lines and Networks, subclass 186 for electromechanical filters using lumped parameters.
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 300-323 for digital filtering by a calculating computer.

- 662 Expression or special effects:**
This subclass is indented under subclass 647. Subject matter for providing an indication of feeling or artistic execution to the musical tones.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
626, for expression or special effects with digital storage.
- SEE OR SEARCH CLASS:
331, Oscillators, subclass 182 for specific amplitude control to produce tremolo.
381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for vibrato or tremolo.
- 663 Envelope shaping (i.e., attack, decay, sustain or release):**
This subclass is indented under subclass 662. Subject matter for providing or modifying an amplitude contour of an activated tone.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
627, for envelope shaping with digital storage.
- SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 306-333 for signal shaping by amplitude control.
333, Wave Transmission Lines and Networks, appropriate subclasses for network delay.
- 664 Chorus, ensemble, or celeste:**
This subclass is indented under subclass 662. Subject matter providing for the combining of a slightly detuned tone with the original tone.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
631, for chorus, ensemble, or celeste with digital storage.
- 665 Loudness control:**
This subclass is indented under subclass 662. Subject matter wherein the amplitude or volume of the musical tones may be regulated.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
633, for loudness control with digital storage.
- 666 Accompaniment:**
This subclass is indented under subclass 647. Subject matter wherein digital data represents a musical support or background.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
610 through 614, for accompaniment with note sequence.
634 through 638, for accompaniment with digital memory circuit.
650 through 652, for accompaniment with note sequence of digital combinational circuit.
- 667 Rhythm:**
This subclass is indented under subclass 666. Subject matter wherein the information represents timing intervals of a musical piece.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
611 through 612, for rhythm with note sequence of digital storage.
635 through 636, for rhythm with accompaniment of digital storage.
651 through 652, for rhythm with accompaniment of digital combinational circuit.
- 668 Tempo control:**
This subclass is indented under subclass 667. Subject matter wherein the rate or speed of rhythm is variable.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
612, for tempo control with note sequence of digital storage.
636, for tempo control with accompaniment of digital storage.
652, for tempo control of digital combinational circuit.

- 669 Chords:**
This subclass is indented under subclass 666. Subject matter wherein the data represents a plurality of musical tones to be played simultaneously.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
613, for chords with digital memory circuit.
637, for chords with accompaniment.
- 670 Constructional details:**
This subclass is indented under subclass 647. Subject matter including mechanical features of the musical instrument.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
644, for construction details with digital storage.
- 671 Electric analog oscillators:**
This subclass is indented under subclass 600. Subject matter wherein the varying electric currents or potentials originate from an analog oscillator.
- SEE OR SEARCH CLASS:
331, Oscillators, appropriate subclasses for oscillator circuits, per se.
- 672 Variable frequency:**
This subclass is indented under subclass 671. Subject matter wherein the oscillator is changed so that the discrete notes of a complete musical scale are obtained.
- 673 With variable filtering:**
This subclass is indented under subclass 672. Subject matter wherein the output of the oscillator is applied to a filter wherein partials or harmonics to be removed can be varied.
- 674 With space discharging means:**
This subclass is indented under subclass 672. Subject matter wherein the oscillator includes one or more devices in which conduction of electrons takes place through a vacuum or gaseous medium.
- 675 With frequency multiplication or division:**
This subclass is indented under subclass 671. Subject matter wherein the discrete notes of a musical scale are derived through frequency multipliers or dividers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
648, for frequency multiplication or division with digital combinational circuit.
- 676 With transistor:**
This subclass is indented under subclass 675. Subject matter wherein the oscillator, frequency multipliers or frequency dividers include a semiconductor device with three or more electrodes.
- SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113-123 for frequency conversion or control.
- 677 With space discharging means:**
This subclass is indented under subclass 675. Subject matter wherein the oscillators, frequency multipliers or frequency dividers include one or more devices in which conduction of electrons takes place through a vacuum or gaseous medium.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
674, for space discharging mean with variable frequency.
- 678 Selecting circuits:**
This subclass is indented under subclass 671. Subject matter including a circuit which selects a musical parameter, e.g., pitch or timbre, etc.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
615, for selecting circuit with digital storage.
653, for selecting circuits with digital combinational circuit.

679 With transistor:

This subclass is indented under subclass 678. Subject matter wherein the oscillator, frequency multipliers or frequency dividers include a semiconductor device with three or more electrodes.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

676, for transistor with frequency multiplication or division.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113-123 for frequency conversion or control.

680 With space discharging means:

This subclass is indented under subclass 678. Subject matter wherein the selecting circuit includes a device in which conduction of electrons takes place through a vacuum or gaseous medium.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

674, for space discharging means with variable frequency.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113-123 for frequency conversion or control.

681 Fundamental tone detection or extraction:

This subclass is indented under subclass 678. Subject matter wherein the fundamental or pitch is detected and used to activate or modify a musical system.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

616, for fundamental tone detection or extraction with digital storage.

654, for fundamental tone detection or extraction with digital combinational circuit.

682 Multiplexing or scanning:

This subclass is indented under subclass 678. Subject matter wherein the selecting circuits are assigned by time-division multiplexing or scanning.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

616, for multiplexing or scanning with digital storage.

655, for multiplexing or scanning with digital combinational circuit.

683 Noise reduction (e.g., error prevention, etc.):

This subclass is indented under subclass 678. Subject matter wherein circuitry is provided to reduce electrical noise, transients or unwanted disturbances.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

621, for noise reduction (e.g., error prevention, etc.) with digital storage.

SEE OR SEARCH CLASS:

330, Amplifiers, subclass 149 for noise, hum or distortion bucking introduced into signal channel.

381, Electrical Audio Signal Processing Systems and Devices, subclasses 71.1-71.14 for acoustical noise or sound cancellation; subclasses 94.1-94.9 for noise or distortion suppression.

684 Priority or preference circuits:

This subclass is indented under subclass 678. Subject matter wherein a plurality of musical notes or keys are selected with a certain note or notes having precedence over others e.g., highest or lowest notes having priority, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

618, for priority or preference circuits with digital storage.

656, for priority or preference circuits with digital combinational circuit.

- 685 Transposition:**
This subclass is indented under subclass 678. Subject matter wherein a musical piece is written or performed in a key other than the original or given key.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
619, for transposition with digital storage.
657, for transposition with digital combinational circuit.
- 686 Stops:**
This subclass is indented under subclass 678. Subject matter wherein the circuit selects a musical voice, tone color, timbre or electrically simulated organ pipe sounds.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
620, for stops with digital storage.
- 687 Force or velocity responsive:**
This subclass is indented under subclass 678. Subject matter wherein the selecting circuit is responsive to the applied pressure, force or velocity.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
626, for force or velocity responsive with digital storage.
658, for force or velocity responsive with digital combinational circuit.
- SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 488-551 for speed or acceleration testing.
200, Electricity: Circuit Makers and Breakers, Dig. 32 for speed responsive switching.
324, Electricity: Measuring and Testing, subclass 160 for speed or velocity measuring.
338, Electrical Resistors, subclass 69 for variable resistance key activation devices.
356, Optics: Measuring and Testing, subclass 28 for velocity measuring utilizing a light detector.
362, Illumination, subclass 802 for a position or condition responsive switch.
- 688 With magnetic selector:**
This subclass is indented under subclass 687. Subject matter wherein the selecting circuit includes a magnetic selector or selectors.
- 689 With capacitive selector:**
This subclass is indented under subclass 687. Subject matter wherein the selecting circuit includes a capacitive selector or selectors.
- SEE OR SEARCH CLASS:
200, Electricity: Circuit Makers and Breakers, Dig. 1 for capacitive switching.
- 690 With variable resistance selector:**
This subclass is indented under subclass 687. Subject matter wherein the selecting circuit includes a variable resistor or resistors.
- SEE OR SEARCH CLASS:
338, Electrical Resistors, subclasses 69+ for musical instrument playing key actuated variable resistance.
- 691 Noise reduction (e.g., error prevention, etc.):**
This subclass is indented under subclass 671. Subject matter wherein circuitry is provided to reduce electrical noises, transients or unwanted disturbances.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
621, for noise reduction (e.g., error prevention, etc.) with digital storage.
683, for noise reduction (e.g., error prevention, etc.) with electric analog oscillators.
- SEE OR SEARCH CLASS:
341, Coded Data Generation and Conversion, subclass 94 for error detection or correction.
- 692 Tone synthesis or timbre control:**
This subclass is indented under subclass 671. Subject matter wherein the harmonic content of a note is controlled or modified.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
622, for tone synthesis or timbre control with digital storage.

- 659, for tone synthesis or timbre control with digital combinational circuit.
- SEE OR SEARCH CLASS:
- 307, Electrical Transmission or Interconnection Systems, subclasses 106-108 for waveform or waveshape determinative systems.
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 100-333 for miscellaneous signal converting, shaping, or generating.
- 333, Wave Transmission Lines and Networks, subclass 28 for audio tone control.
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 101 for automatic tone control; subclass 118 for signal processing of musical instruments; subclasses 101 through 103 for automatic tone or equalization of an audio signal.
- 693 Time varying or dynamic Fourier components:**
This subclass is indented under subclass 692. Subject matter wherein the Fourier components are variable with respect to time.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 623, for time varying or dynamic Fourier components with digital storage.
- 694 Modulation:**
This subclass is indented under subclass 692. Subject matter wherein tones are synthesized or modified by varying a carrier wave in accordance with a modulation wave.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 624, for modulation with digital storage.
- 695 Amplitude:**
This subclass is indented under subclass 694. Subject matter wherein the carrier wave is amplitude modulated.
- SEE OR SEARCH CLASS:
- 332, Modulators, subclasses 149-182 for amplitude modulation.
- 375, Pulse or Digital Communications, subclass 268 for amplitude modulation.
- 696 Angle (i.e., frequency or phase):**
This subclass is indented under subclass 694. Subject matter wherein the carrier wave is angle (i.e., frequency or phase) modulated.
- SEE OR SEARCH CLASS:
- 332, Modulators, appropriate subclass for phase or frequency modulation.
- 375, Pulse or Digital Communications, subclass 271 for angle modulation in systems using alternating or pulsating current.
- 697 Mixing:**
This subclass is indented under subclass 692. Subject matter wherein two or more tones are combined to form a composite waveform.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 625, for mixing with digital storage.
- 660, for mixing with digital combinational circuit.
- SEE OR SEARCH CLASS:
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 113-123 for a miscellaneous frequency mixing circuit.
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 119 for audio system mixers, per se.
- 698 Partials (i.e., harmonics):**
This subclass is indented under subclass 697. Subject matter wherein two or more partials or harmonics are combined to form a composite waveform.
- 699 Filtering:**
This subclass is indented under subclass 692. Subject matter wherein a desired waveform is obtained by removing one or more partials or harmonics.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 661, for filtering with digital combinational circuit.

- SEE OR SEARCH CLASS:
 307, Electrical Transmission or Interconnecting Systems, subclass 105 for harmonic filter or neutralizer.
 333, Wave Transmission Lines and Networks, subclass 167 for frequency domain filters using lumped parameters; subclass 186 for electromechanical type filters.
- 700 Variable:**
 This subclass is indented under subclass 699. Subject matter wherein the partials or harmonics to be removed can be varied in accordance with a desired timbre or color.
- 701 Expression or special effects:**
 This subclass is indented under subclass 671. Subject matter for providing an indication of feeling or artistic execution to the musical tones.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
 626, for expression or special effects with digital storage.
 662, for expression or special effects with digital combinational circuit.
- 702 Envelope shaping (e.g., attack, decay, sustain or release, etc.):**
 This subclass is indented under subclass 701. Subject matter for providing or modifying an amplitude contour of an activated tone.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
 627, for envelope shaping, e.g., attack, decay, sustain or release, etc., with digital storage.
 663, for envelope shaping, e.g., attack, decay, sustain or release, etc., with digital combinational circuit.
- SEE OR SEARCH CLASS:
 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 306-333 for signal shaping by controlling the amplitude thereof.
 331, Oscillators, subclass 182 for amplitude control of an oscillator.
- 703 Attack and decay:**
 This subclass is indented under subclass 702. Subject matter for producing or modifying only the attack and decay of an activated tone.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
 627, for envelope shaping with digital storage.
 663, for envelope shaping with digital combinational circuit.
- 704 Portamento or glissando:**
 This subclass is indented under subclass 701. Subject matter for producing an audible glide from one tone to a second tone.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
 628, for portamento or glissando with digital storage.
- 705 Tremolo:**
 This subclass is indented under subclass 701. Subject matter providing for rapid iteration of or a modulation in the amplitude of a note at subaudio frequencies.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
 629, for tremolo with digital storage.
- SEE OR SEARCH CLASS:
 381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for tremolo or vibrato.
- 706 Vibrato:**
 This subclass is indented under subclass 701. Subject matter providing a modulation in the frequency or phase of a note at subaudio frequencies.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
 629, for vibrato with digital storage.
- SEE OR SEARCH CLASS:
 381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for tremolo or vibrato.

707 Reverberation:

This subclass is indented under subclass 701. Subject matter providing for time delays that simulate a plurality of reflections of a given tone, e.g., echo, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

630, for reverberation with digital storage.

SEE OR SEARCH CLASS:

381, Electrical Audio Signal Processing Systems and Devices, subclass 63 for reverberators, per se.

708 Chorus, ensemble, or celeste:

This subclass is indented under subclass 701. Subject matter providing for the combining of a slightly detuned tone with the original tone.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

631, for chorus, ensemble, or celeste with digital storage.

664, for chorus, ensemble, or celeste with digital combinational circuit.

SEE OR SEARCH CLASS:

381, Electrical Audio Signal Processing Systems and Devices, subclass 89 for driven speaker systems to produce vibrato or chorus effects.

709 Trill:

This subclass is indented under subclass 701. Subject matter wherein the rapid alternation of two tones either a whole or a half tone apart.

710 Chiff or percussive transients:

This subclass is indented under subclass 701. Subject matter wherein transients are introduced into the initial sounding of the tone during the initial portion of the envelope to simulate the hiss or noise of an organ pipe.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

632, for chiff or percussive transients with digital storage.

711 Loudness control:

This subclass is indented under subclass 701. Subject matter wherein amplitude or volume of the musical tones may be regulated.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

633, for loudness control with digital storage.

665, for loudness control with digital combinational circuit.

712 Accompaniment:

This subclass is indented under subclass 671. Subject matter for providing a musical support or background.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

610, for accompaniment with note sequence of digital memory circuit.

634, for accompaniment with digital memory circuit.

650, for accompaniment with note sequence of digital combinational circuit.

666, for accompaniment with digital combinational circuit.

713 Rhythm:

This subclass is indented under subclass 712. Subject matter for creating or modifying the timing intervals of a music piece.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

611, for rhythm with note sequence of digital memory circuit.

635, for rhythm with digital memory circuit.

651, for rhythm with note sequence of digital combinational circuit.

667, for rhythm with digital combinational circuit.

714 Tempo control:

This subclass is indented under subclass 713. Subject matter wherein the rate or speed of rhythm is variable.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 612, for tempo control with note sequence of digital memory circuit.
 636, for tempo control with digital memory circuit.
 652, for tempo control with note sequence of digital combinational circuit.
 668, for tempo control with digital combinational circuit.
- 715 Chords:**
 This subclass is indented under subclass 712. Subject matter wherein a plurality of notes are played simultaneously.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 613, for chords with note sequence of digital memory circuit.
 637, for chords with digital memory circuit.
 669, for chords with digital combinational circuit.
- 716 Arpeggio:**
 This subclass is indented under subclass 712. Subject matter wherein the notes of a chord are played in sequence.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 638, for arpeggio with digital storage.
- 717 Reiteration:**
 This subclass is indented under subclass 712. Subject matter wherein plural tones are repetitively played in sequence one at a time.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 614, for reiteration with digital storage.
- 718 Constructional details:**
 This subclass is indented under subclass 671. Subject matter including mechanical features of the musical instrument.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 2, for dealing with specifics of musical instrument construction.
- 644, for construction details with digital storage.
 670, for construction details with digital combinational circuit.
- 719 Keyboard:**
 This subclass is indented under subclass 718. Subject matter wherein the mechanical feature is a keyboard or a fret-board.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 691, for noise reduction with electric analog oscillators.
- SEE OR SEARCH CLASS:
 341, Coded Data Generation and Conversion, subclasses 22-34 for code selecting devices, e.g., keyboards or keypads, etc.
- 720 Keyswitch structure:**
 This subclass is indented under subclass 718. Subject matter wherein the mechanical feature is a keyswitch.
- SEE OR SEARCH CLASS:
 200, Electricity: Circuit Makers or Breakers, appropriate subclasses for specific switch construction details.
- 721 Foot control:**
 This subclass is indented under subclass 718. Subject matter wherein the mechanical feature is a foot controlled device.
- SEE OR SEARCH CLASS:
 200, Electricity: Circuit Makers or Breakers, subclass 86.5 for foot controlled switches, per se.
- 722 Fret control:**
 This subclass is indented under subclass 671. Subject matter wherein oscillators are controlled via a stringed musical instrument fingerboard, e.g., switches on the guitar fingerboard, etc.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
 646, for fret control with digital storage.

723 Transducers:

This subclass is indented under subclass 600. Subject matter including means which converts energy other than electrical into electrical energy.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclass 594 for methods of making an acoustic transducer.
- 178, Telegraphy, subclasses 47 and 48 for electrical signaling systems in which vibrating means such as reeds, tuning forks, and diaphragms are utilized in transmitting or receiving messages or signals.
- 310, Electrical Generator or Motor Structure, appropriate subclasses for general application of converting mechanical motion to electrical currents or potentials.
- 322, Electricity: Single Generator Systems, appropriate subclasses for general application of converting mechanical motion to electrical currents or potential, particularly subclass 3 for reciprocating or oscillating generator systems.
- 704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 200 through 504 for speech signal processing, or bandwidth, or time compression, or expansion of an audio signal.

724 Photoelectric:

This subclass is indented under subclass 723. Subject matter including means which converts varying light intensity into varying electric currents or potential.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 639, for photoelectric with digital storage.

SEE OR SEARCH CLASS:

- 250, Radiant Energy, subclasses 200-239 for photocell electric circuits and photocell apparatus; subclasses 206-214.1 for photocell with coded record; sub-

classes 232-233 for photocells with light chopper type.

- 330, Amplifiers, subclass 59 for amplifiers including light controlled or light activated means.
- 369, Dynamic Information Storage or Retrieval, subclasses 86-92 for storage or retrieval of audio signals.

725 Electromagnetic:

This subclass is indented under subclass 723. Subject matter including means which converts varying magnetic flux into varying electric currents or potentials.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 641, for magnetic with digital storage.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclasses 602.1-609.1 for methods of manufacturing an electromagnet, transformer, or inductor.
- 336, Inductor Devices, appropriate subclasses for inductive reactors and transformers which are provided with fixed or movable elements, e.g., having a moving armature to modify the impedance of an inductive reactor, etc.
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 115 for magnetic microphone.

726 String:

This subclass is indented under subclass 725. Subject matter wherein the varying magnetic flux is caused by a moving string.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 7 through 82, 172, 173-329, for miscellaneous stringed instruments.

727 With adjustable means:

This subclass is indented under subclass 726. Subject matter wherein the transducer or a component thereof is adjustable relative to a string.

728 Noise reduction (e.g., error prevention, etc.):
This subclass is indented under subclass 726. Subject matter wherein circuitry is provided to reduce electrical noises, transients, or unwanted disturbances.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 621, for noise reduction with digital storage.
- 683, for noise reduction with selecting circuit of analog oscillators.
- 691, noise reduction with analog oscillators.

SEE OR SEARCH CLASS:

- 375, Pulse or Digital Communications, subclasses 284 and 285 for antinoise or distortion systems using alternating or pulsating current.
- 381, Electrical Audio Signal Processing Systems and Devices, appropriate subclass acoustical noise or sound cancellation; subclasses 94.1-94.9 for noise or distortion suppression.

729 Reed:
This subclass is indented under subclass 725. Subject matter wherein the varying magnetic flux is caused by a moving elongated flexural strip or bar with a relatively large length to width ratio.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 402 through 410, and 411-421, for miscellaneous musical instruments employing rigid vibrators.

730 Piezoelectric:
This subclass is indented under subclass 723. Subject matter wherein a varying mechanically stressed crystal causes a varying current or voltage.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclass 25.35 for methods of making a piezoelectric device.
- 310, Electrical Generator or Motor Structure, subclasses 311-371 for piezoelectric elements and devices.

- 381, Electrical Audio Signal Processing Systems and Devices, subclass 114 for piezoelectric microphone.

731 String:
This subclass is indented under subclass 730. Subject matter wherein the varying mechanical stress is caused by a string.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 7 through 82, 172 and 173-329, for miscellaneous stringed instruments.
- 726, for string with electromagnetic transducer.

732 Reed:
This subclass is indented under subclass 730. Subject matter wherein the varying mechanical stress is caused by an elongated flexural strip or bar with a relatively large length to width ratio.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 402 through 410, and 411-421, for miscellaneous musical instruments employing rigid vibrators.
- 729, for reed with electromagnetic transducer.

733 Capacitive:
This subclass is indented under subclass 723. Subject matter wherein a varying capacitance produces a varying electric current or potential.

SEE OR SEARCH CLASS:

- 200, Electricity: Circuit Makers and Breakers, subclass 181 for electrostatic switches.
- 361, Electricity: Electrical Systems and Devices, subclasses 271-330 for electrostatic capacitors.
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 113 for electrostatic microphone.

734 Strain gauge:
This subclass is indented under subclass 723. Subject matter wherein a varying force, tension or pressure is converted into a varying electrical current or potential.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclass 621.1 for methods of making strain gauges.
- 338, Electrical Resistors, subclasses 2-6 for strain gauges; subclass 69 for variable resistors controlled by musical instrument playing keys.

735 Tone synthesis or timbre control:

This subclass is indented under subclass 723. Subject matter wherein the harmonic content of a note is controlled or modified.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 622, for tone synthesis or timbre control with digital storage.
- 659, for tone synthesis or timbre control with digital combinational circuit.
- 692, for tone synthesis or timbre control with electric analog oscillators.

SEE OR SEARCH CLASS:

- 307, Electrical Transmission or Interconnection Systems, subclass 3 for circuits in which different frequencies are superimposed; subclasses 106-108 for waveform or waveshape determinative systems.
- 310, Electrical Generator or Motor Structure, appropriate subclasses for dynamoelectric frequency changers.
- 327, Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 100-333 for miscellaneous signal converting, shaping, or generating, and particularly subclasses 113-123 for miscellaneous harmonic generators.
- 331, Oscillators, appropriate subclasses for general harmonic generators.
- 333, Wave Transmission Lines and Networks, subclass 28 for audio tone controls.
- 363, Electric Power Conversion Systems, subclasses 157-177 for electric power frequency conversion systems.
- 381, Electrical Audio Signal Processing Systems and Devices, subclass 101 for automatic tone control; subclass 118 for signal processing of musical instruments, per se; subclasses 101

through 103 for automatic tone control or equalization of audio signals.

736 Filtering:

This subclass is indented under subclass 735. Subject matter wherein a desired waveform is obtained by removing one or more partials or harmonics.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 661, for filtering with digital combinational circuit.
- 699 through 700, for filtering with electric analog oscillators.

SEE OR SEARCH CLASS:

- 327, Miscellaneous Active Electrical on linear Devices, Circuits, and Systems, subclass 311 for transient limiting utilizing a filter and subclasses 552-559 for unwanted signal suppression with an active filter.
- 330, Amplifiers, subclass 303 for filters included or in conjunction with an amplifier.
- 333, Wave Transmission Lines and Networks, subclasses 167-185 for lumped parameter filters; subclass 165 for frequency or time domain filters and delay lines; subclass 166 for time domain filters.
- 708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 300-323 for digital filters.

737 Expression or special effects:

This subclass is indented under subclass 723. Subject matter for providing "feeling" or artistic execution to the musical tones.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 33 through 64, for expression mechanism.
- 157, for modified expression.
- 164, for expression and tempo marks.
- 216 through 233, for expression devices.
- 313, for tremolo devices.
- 374, for fan tremolo devices.
- 626, for expression or special effects with digital storage.
- 662, for expression or special effects with digital combinational circuit.

- 701, for expression or special effects with electric analog oscillators.
- 738 Envelope shaping (e.g., attack, decay, sustain or release, etc.):**
This subclass is indented under subclass 737. Subject matter for providing or modifying the contour of an activated tone.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
627, for envelope shaping with digital storage.
663, for envelope shaping with digital combinational circuit.
702, for envelope shaping with electric analog oscillators.
- 739 Tremolo:**
This subclass is indented under subclass 737. Subject matter providing for rapid iteration of or a modulation in the amplitude of a note at sub-audio frequencies.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
629, for tremolo with digital storage.
705, for tremolo with electric analog oscillators.
- SEE OR SEARCH CLASS:
332, Modulators, subclasses 149 through 182 for amplitude modulation.
375, Pulse or Digital Communications, subclasses 268-270 for amplitude modulation.
381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for general purpose tremolo.
- 740 Vibrato:**
This subclass is indented under subclass 737. Subject matter providing a modulation in the frequency or phase of a note at sub-audio frequencies.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
629, for vibrato with digital storage.
706, for vibrato with electric analog oscillators.
- SEE OR SEARCH CLASS:
331, Oscillators, subclass 178 for providing vibrato in the oscillator output frequency.
332, Modulators, subclasses 117-143 for frequency modulation.
375, Pulse or Digital Communications, subclasses 271-284 for angle modulation.
381, Electrical Audio Signal Processing Systems and Devices, subclass 62 for general purpose vibrato.
- 741 Loudness control:**
This subclass is indented under subclass 737. Subject matter wherein amplitude or volume of the musical tone may be regulated.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
633, for loudness control with digital storage.
665, for loudness control with digital combinational circuit.
711, for loudness control with electric analog oscillators.
- 742 Selecting circuits:**
This subclass is indented under subclass 723. Subject matter including a circuit which selects a musical parameter, e.g., pitch or timbre, etc.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
615, for selecting circuits with digital storage.
653, for selecting circuits with digital combinational circuit.
678, for selecting circuits with electric analog oscillators.
- 743 Constructional details:**
This subclass is indented under subclass 723. Subject matter including mechanical features of the musical instrument.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
2, for dealing with musical instrument construction.
644, for construction details with digital storage.

670, for construction details with digital combinational circuit.

718, for construction details with electric analog oscillators.

744 Keyboard:

This subclass is indented under subclass 743. Subject matter wherein mechanical feature is a keyboard or a fretboard.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

423, for keyboard structure.

719, for keyboard with electric analog oscillators.

745 Keyswitch structure:

This subclass is indented under subclass 743. Subject matter wherein the mechanical feature is a keyswitch.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

720, for keyswitch structure with electric analog oscillators.

746 Foot control:

This subclass is indented under subclass 743. Subject matter wherein the mechanical feature is a foot controlled device.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

721, for foot control with electric analog oscillators.

END