

200.1	REACTION MOTOR (E.G., MOTIVE FLUID GENERATOR AND REACTION NOZZLE, ETC.)	229	..With plural selectively usable motive fluid ejecting means
201	.Rotating or cyclic movement during axial thrust	230	..Jet stream deflecting means
202	.Ion motor	231	...By secondary fluid injection
203.1	.Electric, nuclear, or radiated energy fluid heating means	232	..Motive fluid outlet movable relative to motor part
204	.Method of operation	233	.Condition responsive thrust varying means
205	..By chemical reaction	234	..Solid propellant depletion control
206	...Utilizing indirect heat exchange	235	..Motive fluid outlet area and fuel flow control
207	...Utilizing plural reaction zones within a system	236	...Plural spool motor-compressors
208	...Injecting air into the reaction zone	237	...Outlet area sensed to control fuel or oxidizer flow
209	....Including using additive material	238	...Motive fluid temperature sensed to control fuel flow or outlet area
210	....Injected separately	239	...Compressor or turbine speed sensed to control fuel flow or outlet area
211	...Injecting separate streams of fuel and oxidizer (e.g., hypergole, etc.) into the reaction zone	240	..Oxidizer and fuel flow control
212	....Using igniter aid	241	..Plural burners in series
213	....Injected separately	242	..Outlet area control
214	....Oxidizer in the form of a mixture	243	..Fuel flow control
215	....Fuel in the form of a mixture	244	.Motive fluid from diverse generators alternatively ejected through outlet
216	....One component free metal	245	..Propellant supply used in one operation reduced before starting another
217	...Injecting mixture of fuel and oxidizer into the reaction zone	246	.Turborocket
218	...Decomposing a compound in the reaction zone	247	.Intermittent combustion
219	...Using solid material in reaction zone	248	..Air bypass passage
220	....Including injecting modifying fluid	249	..Aerodynamic valve
221	.Motive fluid principally liquid	250	.Plural propellants to burn sequentially
222	..Plural discharge outlets	251	.Solid and fluid propellant
223	..With destruction sensing and preventing means	252	.Gel propellant
224	.Interrelated reaction motors	253	.Solid propellant
225	..Sequentially operated	254	..Including means to terminate or regulate motive fluid production
226.1	..Air and diverse fluid discharge from separate discharge outlets (e.g., fan jet, etc.)	255	..Including propellant support means
226.2	...Having thrust reverser	256	..Including ignition means
226.3	...Having means to effect a variable bypass ratio	257	.Liquid oxidizer
227	.Motive fluid principally steam	258	..Including injector means
228	..With thrust direction modifying means	259	..Including pressurizing means
		260	..Including heating means
		761	.Having afterburner
		762	..Having oxidizer bypassed to afterburner feature

763	..Movable flame holder	604	..With heat exchanger to transfer energy from engine exhaust to motive fluid for motor
764	..Fuel flow control		
765	..Particular flame holder structure	605.1	..Supercharging means driven by engine exhaust actuated motor
766	..Particular liner or casing structure	605.2	...With exhaust gas recirculation
262	.Air passage bypasses combustion chamber	605.3	...With motor bearing lubrication or cooling
263	.Plural motive fluid generating means or plural outlets	606	...With means to provide additional motive fluid for motor
264	.Including motive fluid treating means	607	...With additional drive means for supercharging means
265	.Means to flow film on surface	608	...With condition responsive drive means control
266	.Including heat exchange means	609	...Fluid motor and engine each drive at least one means to supercharge the engine
267	..For a liquid	610	...Supercharging means convertible from series to parallel
268	.Including counter rotating rotors	611	...Having condition responsive means to control supercharged flow to engine
269	.Including mechanical air compressor or air flow inducing means	612	...Plural superchargers
767	.Air supplied by ram effect (e.g., ramjet, etc.)	613	.With means to store combustion products prior to entry into fluid motor means
768	..Supersonic speed therethrough (e.g., scramjet, etc.)	614	.Having fluid motor motive fluid treating, controlling or conditioning means
769	..Solid fuel	615	..Having condition responsive control of motive fluid
770	.Particular exhaust nozzle feature	616	..Having means to transfer heat energy between engine exhaust and motive fluid for fluid motor
771	..Having variable area	617	...And having means to add fluid to motive fluid
595	INTERNAL COMBUSTION TYPE FREE PISTON DEVICE SUPPLIES MOTIVE FLUID TO MOTOR	618	...Motive fluid is vaporized liquid
596	INTERNAL COMBUSTION TYPE FREE PISTON DEVICE WITH PRESSURE FLUID STARTING MEANS	619	..Having means to add a diverse fluid to combustion products
597	FLUID MOTOR MEANS DRIVEN BY WASTE HEAT OR BY EXHAUST ENERGY FROM INTERNAL COMBUSTION ENGINE	620	.Fluid motor means is expansible chamber type with movable parts of motor and engine being interconnected
598	.With supercharging means for engine	621	..Movable wall portions are rigidly interconnected
599	..With means to change temperature of supercharged flow	622	..Expansible chamber of fluid motor means receives exhaust alternately from two or more expansible chambers of engine means
600	..With condition responsive valve means to control supercharged flow and exhaust products		
601	..With coordinated engine fuel control		
602	..Having condition responsive valve controlling engine exhaust flow		
603	...With coordinated fuel control means for engine		

623	..Fluid motor is rotary type	292	....Valve at reactor outlet controlled
624	..Fluid motor means is a turbine with output means mechanically interconnected with internal combustion engine output	293	....Check valve feeds air to exhaust system
272	INTERNAL COMBUSTION ENGINE WITH TREATMENT OR HANDLING OF EXHAUST GAS	294	..Reactor control correlated with cyclic or external engine control
273	.Methods	295	..Having means for regenerating, replacing, or feeding liquid or solid reagent or catalyst
274	..Anti-pollution	296	...Flow reversing structure
275	..By electrolysis, electrical discharge, electrical field, or vibration generator	297	..Reactor plus a washer, sorber or mechanical separator
276	..Having means analyzing composition of exhaust gas	298	..With means cooling reactor or reactor feed
277	..Having sensor or indicator of malfunction, unsafeness, or disarray of treater (e.g., fusible link, etc.)	299	..Using a catalyst
278	..Material from exhaust structure fed to engine intake	300	...Having a means for heating the catalyst
279	..Separated reactive constituent of exhaust fed to engine	301	...Reducing type catalyst
280	..Having auxiliary device mechanically driven by exhaust gas	302	...Catalyst in engine manifold or at exhaust port
281	..Having exhaust gas collection and storage, or use as a pressure fluid source	303	..Having heater, igniter, or fuel supply for reactor
282	..By means producing a chemical reaction of a component of the exhaust gas	304	..Oxidizer feed passage at engine exhaust valve, manifold or port
283	..With means handling crankcase, carburetor, or gas tank vapor	305	...Distributed to plural individual ports or valves
284	..Automatic or timed reactor purge or heat-up in engine starting operation	306	...To port zone and downstream of port
285	..Engine fuel, air, or ignition controlled by sensor of reactor condition	307	..Pressurizing means feeds reactive air to reactor
286	..Condition responsive control of heater, cooler, igniter, or fuel supply of reactor	308	...Exhaust actuated air aspirator
287	..Condition responsive control of reactor feed, pressure, or by-pass	309	..Having retainer or flow director for exhaust gas condensate
288	...Exhaust gas diverted from reactor or treating agent mixer	310	..Treated by washing, or having liquid contact structure
289	...Air feed to reactor modulated or diverted by control	311	..By sorber or mechanical separator
290	....Responsive to engine speed or intake manifold pressure	312	..Pulsed, timed, tuned or resonating exhaust
291	...Of or by pressure in reactor or of engine exhaust	313	..Correlated exhausts from plural cylinders
		314	..Two-cycle engine
		315	..Pump draws exhaust gas from engine
		316	..Fluid jet or stream aspirates exhaust gas
		317	..Exhaust and external fluid mingling structure
		318	..External fluid is steam
		319	..Exhaust aspirates external fluid

320	.Exhaust gas or exhaust system element heated, cooled, or used as a heat source	773	..Having power output control
		774	..Multiple expansion
321	..Cooled manifold	775	..Introducing water or steam
322	.Having vibration attenuating, or expansion and contraction relieving structure	776	..Ignition or fuel injection after starting
		777	...Catalyst
323	.Common receiver having inlets from plural cylinder (i.e., exhaust manifold)	778	..Having particular starting
		779	..Having particular safety
324	.Divider, collector, valve means, or boundary layer device controlling exhaust gas flow	780	..Having fuel conversion (e.g., reforming, etc.)
625	INTERNAL COMBUSTION ENGINE WITH STRUCTURE ROTATING OR STARTING IT BY PRESSURE FLUID	781	...Solid fuel
		782	..Having bleed air to cool or heat motor or component thereof (e.g., active clearance control, etc.)
626	.Having means for compressing, generating or storing pressure fluid	783	..Combined with diverse nominal process
		784	.For nominal other than power plant output feature
627	..Having condition responsive control of means	785	..Air bleed
628	..Storage vessel charged by internal combustion engine acting as a pump	39.08	.With lubricators
		39.091	.With safety device
629	..Pressure fluid motor convertible to pressure fluid pump	39.092	..Debris anti-ingestion preventer
		39.093	..Ice preventer or de-icer
630	.Having manual selector of engine valve settings or of fluid flow branches	39.094	..Fuel flusher or drainer
		39.1	..Excess pressure relief
631	..Including means selecting direction of engine rotation	39.11	..Flame screen
		39.12	.With combustible gas generator
632	ONE SHOT EXPLOSION ACTUATED EXPANSIBLE CHAMBER TYPE MOTOR	39.13	.Automatic starting and stopping of combustion products generator
		786	.Combined with starting feature
633	.Having means for feeding fluid fuel	787	..Separate device or motive fluid source
634	.Having plural charge holding means	788	...Starter motor mechanically coupled to power plant
		789	...Solid propellant charge initiates starting (e.g., cartridge starter, etc.)
635	.Having mechanical means securing working member in fired position	790	..Having condition responsive fuel control
636	.Having latch, rupture or safety means resisting movement of working member or firing means from unfired position	39.15	.Multiple fluid-operated motors
		791	..Re-expansion
		792	...Multi-spool turbocompressor
637	.Having orifice or conduit restricting flow of combustion products from combustion zone to motor chamber	39.162	...Counter - rotatable
		39.163	...Selectively connectable
		39.17	...With treatment between stages
638	.Having shock absorbing, damping or slow down means for working member	39.181	..Different fluids
		39.182	...Steam and combustion products
		39.183	...Air and combustion products
39.01	COMBUSTION PRODUCTS USED AS MOTIVE FLUID	39.19	.Different fluids
		39.23	.With variable oxidizer control
772	.Process	793	.Combined with regulation of power output feature

39.21	..Plural generators, selectively operable	39.49	.With air injection by fuel or steam jet
39.22	..Varying cycle frequency relative to prime mover speed	39.5	.With exhaust treatment
39.24	..Automatic	39.511	..Regenerator
39.25	...Motive fluid to prime mover	39.512	...Rotary heat exchanger
39.26	...Oxidizer, fuel and water or steam	39.52	..Exhaust gas recycling
39.27	...Oxidizer and fuel	39.53	.With addition of steam and/or water
39.281	...Fuel	39.54	..Added in prime mover
39.282	...Torque sensor	39.55	..Added in combustion products generator
794	...Oxidizer	39.56	..Mixed in space above water
795	...Bleed	39.57	...Combustion products pass through water
39.3	..Water or steam	39.58	..Added in mixing nozzle or in turbine nozzle
796	.Having mounting or supporting structure	39.59	..Added in separate mixing chamber
797	..For motor	39.6	.External-combustion engine type
798	..Having ease of assembly or disassembly feature	39.62	..With plurality of combustion products generator per cylinder
799	.Having expansible connection	39.63	..Continuous combustion
800	..Combustor or fuel system	39.64	.Alternate cycle
801	.Convertible or combined with feature other than combustion products generator or motor	722	.Combustion products generator
802	..Motor driven accessory	723	..Having catalyst in combustion zone
803	..Motor condition sensing feature	724	..Plural with intercyclng by pressure fluctuations
39.34	.Rotating combustion products generator and turbine	725	..Having noise reduction means
39.35	..Continuous combustion type	726	..With means to pressurize oxidizer for combustion or other purposes
804	.Coaxial combustion products generator and turbine	727	...With oxidizer accumulator
39.37	.Plural combustion products generators in ring coaxial with turbine	728	...Having oxidizer cooling means
39.38	..Intermittent combustion type	729	...Reciprocating positive displacement type
39.39	...Common rotary distributing valve	730	..With liquid heat exchanger
39.4	...Common cam member	731	..With combuston products accumulator
39.41	.With exhaust pump for combustion products generator	732	..Having initial fuel-rich combustion zone
39.42	.With reversible turbine	733	...Separate fuel injectors for plural zones
39.43	.With dual function turbine	734	..Having fuel supply system
39.44	.With closed pocket turbine	735	...Fuel injected into turbine
39.45	.With gear, pressure exchanger, or screw-type compressor	736	...Fuel preheated upstream of injector
39.461	.Using special fuel or oxidizer	737	...Fuel and air premixed prior to combustion
39.462	..Monofuel type	738	...Premix tube within combustion zone
39.463	..Plural distinct fuels	739	...With fuel supply manifold for separate injectors
39.464	..Solid, slurry, emulsive, or suspensive type fuel	740	...With fuel injector
39.465	..Gaseous fuel at standard temperature and pressure		
39.47	..Solid fuel containing oxidizer		
39.48	.With fluid pressure feeding of oxidizer, fuel or water		

741	....Fuel control valve integral with injector	639	MOTOR ACTUATED BY ACCUMULATING AND DUMPING LIQUID OR FLUENT MATERIAL
742	....Unitary injector having plural fuel flow paths	640	.Rocking member having opposite accumulating means
743	....Surface film injector	641.1	UTILIZING NATURAL HEAT
744	....Rotary fuel injector	641.2	.Geothermal
745	.....Slinger type	641.3	..With direct fluid contact
746	....Plural distinct injectors	641.4	..With deep well turbopump
747	.....Injectors in distinct radially spaced parallel flow combustion products generators arranged to combine discharges	641.5	..With fluid flashing
748	....With attendant coaxial air swirler	641.6	.With natural temperature differential
749	..Having bluff flame stabilization means	641.7	..Ocean thermal energy conversion (OTEC)
750	..Having means to recycle combustion products internally of combustion zone	641.8	.Solar
751	..Having diffuser for air inlet	641.9	..With distillation
752	..Combustor liner	641.11	..With elevated structure
753	..Ceramic	641.12	...Air is working fluid
754	..Porous	641.13	..With single state working substance
755	..Having means to direct flow along inner surface of liner	641.14	...Gaseous
756	....Air directed to flow along inner surface of liner dome	641.15	..With solar concentration
757	....In an axial direction	516	MOTOR OPERATED BY EXPANSION AND/OR CONTRACTION OF A UNIT OF MASS OF MOTIVATING MEDIUM
758	..Air introduced within liner counter to flow of combustion products	517	.Unit of mass is a gas which is heated or cooled in one of a plurality of constantly communicating expansible chambers and freely transferable therebetween
759	..Air scoop extends into air flowing outside liner	518	..Having means to change operational phase relationship of working member and displacer
760	..Air outside liner flows counter to combustion products flow within liner	519	..Expansible chamber having rotatable or oscillatory displacer
805	..Having turbine	520	..Having free floating displacer or transfer piston
806	..And cooling	521	..Having means to increase or diminish quantity of motivating mass
39.76	..Intermittent combustion type	522	..Having means to control rate of flow of mass between chambers
39.77	...Resonating	523	..Having electrical heating means for mass
39.78	...Rotating, oscillating, or reciprocating	524	..Having means to control temperature of heating or cooling chamber
39.79	...With fluid actuated valve	525	..Motor having plural working members
39.8	...With pressure actuated valve	526	..Motor having regenerator for mass
39.81	...With fuel metering valve	527	.Mass is a solid
39.821	..With ignition device		
39.822	..Catalytic type		
39.823	..Pyrotechnic squib or charge type		
39.824	...Hypergolic type		
39.825	...Single shot liquid type		
39.826	...Pilot or torch type		
39.827	...Spark type		
39.828	...Incandescent type		
39.83	.Cooling of auxiliary components		

- 528 ..Mass heated because of resistance to flow of electric current
- 529 ..Mass is bimetallic
- 530 ..Mass is a liquid
- 531 ..Liquid is vaporized
- 508 **FLUID WITHIN EXPANSIBLE CHAMBER HEATED OR COOLED**
- 509 ..Special motive fluid
- 510 ..Air rarefied by combustion
- 511 ..Fluid mingling (e.g., condensation)
- 512 ..Having means within the working chamber to effect the pressure of fluid therein
- 513 ..Electric heating means
- 514 ..Concurrent fluid supply and vaporization
- 515 ..Having control means for heating or cooling means
- 642 **MOTIVE STEAM GENERATED FROM HOT WATER CHARGE BY REDUCING PRESSURE ABOVE CHARGE**
- 643 **MOTIVE FLUID ENERGIZED BY EXTERNALLY APPLIED HEAT**
- 644.1 ..Heating motive fluid by nuclear energy
- 645 ..Process of power production or system operation
- 646 ..Including start up, shut down, cleaning, protective or maintenance procedure
- 647 ..Including operating at or above critical pressure
- 648 ..Including production of withdrawable product or steam for external use
- 649 ..Including mixing or separating materials of different chemical compositions in a motive fluid flow path
- 650 ..Producing power by heating and cooling a single phase fluid
- 651 ..Including vaporizing a motive fluid other than water
- 652 ..Of accommodating, fluctuating or peak loads
- 653 ..Including superheating, desuperheating, or reheating
- 654 ..Including mingling motor exhaust steam with boiler feed water
- 655 ..Noncommunicating heat transferring motive fluid system (e.g., cascade, etc.)
- 656 ..Having ancillary structure for starting
- 657 ..Having apparatus cleaning, sealing, lubricating, purging, standby, or protecting feature
- 658 ..Damage to heat receiving element prevented by automatic means maintaining minimum flow
- 659 ..Including heat, steam, or compressed gas storage means
- 660 ..Having condition responsive control
- 661 ..Of or by heat rejecting means or its bypass
- 662 ..Involving feed from source means to separate motor stages or utilizing means
- 663 ..Of branched feed to, condition of, or heating means for motive fluid between motor stages
- 664 ..Of or by heat source material or element
- 665 ...And of or by boiler liquid level or feed
- 666 ..Of bypass of superheater or desuperheater
- 667 ..Of means controlling boiler or its feed
- 668 ..Power system physically related to vehicle structure
- 669 ..Motor mounted in or on boiler
- 670 ..Power system involving change of state
- 671 ..Motive fluid comprises a material other than steam or water
- 672 ...Motor exhaust used in combustion zone
- 673 ...One fluid absorbs or reacts with another
- 674 ...Air and steam supplied to motor
- 675 ..Gravity motor actuated by weight of condensed vapor
- 676 ..Including plural distinct boilers, heat supplies or external sources of vapor
- 677 ..Serially connected motor with intermotor supply or withdrawal of motive fluid
- 678 ...Withdrawn fluid heats boiler feed indirectly

679	..Having motive fluid reheater between serially connected motors	547.2	...By pressure responsive valve dividing flow between motor and an auxiliary load
680	...Motive fluid bypassing upstream motor heats reheater	547.3	...By manually operated valve dividing flow between motor and an auxiliary load
681	..Motor exhaust mixes with combustion products of boiler heater	548	...Flow in recirculating circuit controlled
682	..Single state motive fluid energized by indirect heat transfer	549	...Master structure provides non-overlapping periods of pressurization of diverse pressure ranges in distinct pulsator circuits
683	..Motor exhaust fed into combustion device		
684	..Including interstage reheat means	550	...Master driven by manual power control lever on power failure and having means adjusting lever throw or master resistance responsive to failure of power fluid supply
325	PRESSURE FLUID SOURCE AND MOTOR		
532	..Shock or resonant wave type of energy transmission		
533	..Pulsator		
534	..Having signal, indicator or recorder of apparatus condition	551	...Manual master and controller of motor driven master actuated by separate linkages to a common operating lever
535	...Responsive to leakage of pulse fluid	552	...Mechanical feedback to manual control controls power fluid to establish position of working member of master
536	..Plural correlated pulsators transmitting unlimited rotary input to unlimited rotary output	553	...With distinct piston or diaphragm exposed to pulsator pressure imparting feel to manual control
537	..Programmed, self-cycled or self-pulsed		
538	...Including electrical control or actuation	554	...Having load deformable means between master working member and motor thrust means adjusting bias of manual control
539	...Cam drive of plural masters		
540	...Including timer or time delay means the cycle		
541	...Having means terminating cycle at parking or holding position	555	...Master movement of master produces a pressure that controls the power fluid
542	...Pneumatic device having pulse air bleed or supply means	556	...Power fluid input controller operated by piston or diaphragm acted on one side by pressure of a manual master and on the other by pressure of a power driven master
543	...Self-operated pulse fluid purge or quantity adjustment structure		
544	...Continuously acting self-pulsing master with manually settable slave release or output control valve	557	...Pressurized fluid from manual master charges slave and controls power fluid to separate master
545	..Having electricity or magnetically operated structure	558	....Fluid from the manual master fed to slave through a passage in the working member of the power master
546	..Pulsator synchronizes movement of plural outputs		
547.1	..With control of or by a separate power fluid, etc.	559	.....Passage extends across the expansible chamber of the motor of the power master

- 560 ...Power fluid also fed into a separate expansible chamber directly driving output means
- 561 ..Pressure balancing free piston or diaphragm between parallel pulsators
- 562 ..Master piston of one pulsator circuit drives master piston of a parallel circuit through a resilient, fluid or lost motion connection
- 563 ..Expansible chamber of output pressurized directly by motive fluid and indirectly by a master driven by the motive fluid
- 564 ...Delivery pressure of master lower than pressure driving master
- 565 ..Master and diverse non-pulsator drive of output member or members
- 566 ..Manual master and alternate nonmanual pressure fluid source feed output motor
- 567 ..Including plural separately operable master actuators or master units driving a common slave
- 568 ..Having distinct means for holding a pulsator element in set position
- 569 ...Distinct externally operable valve sealing pulse fluid in slave
- 570 ..Mechanical latch, brake or detent
- 571 ..Double-acting slave unit or opposed slaves having a single output
- 572 ..Having pulse fluid pressure or quantity compensating or adjusting means
- 573 ...Self-acting phase balancing means acting at midpoint or end of stroke
- 574 ..Automatic control of plural stage pressure generation or utilization
- 575 ...Automatic trapping of fluid back of delivery piston forms temporary pulsator driving piston during one stage
- 576 ...Of separate movement of plural delivery pistons
- 577 ...Central externally driven piston drives surrounding piston means through a load responsive connector
- 578 ...Unitarily movable displacer delivers fluid from two delivery chambers, one chamber being ineffective under high pressure delivery
- 579 ..Slave of first master drives master of another slave
- 580 ...Parallel masters driven by first pulsator
- 581 ..Plural structurally related master pistons, cylinders or pulsator circuits
- 582 ..Having safety standby structure becoming operative upon apparatus malfunction
- 583 ..Pulse fluid vessel embracing output piston and fluid displacing element
- 584 ..Having separately and manually operated structure for charging, discharging bleeding, or adjusting pulsator volume
- 585 ..Holder for reserve liquid feeds master
- 586 ...Having means to establish holding pressure in pulse liquid
- 587 ...Pressure maintained through inlet or piston cylinder of master
- 588 ...Master piston traps liquid on advance across a feed port in cylinder wall
- 589 ...Master piston or its actuator mechanically operates valve between holder and master cylinder
- 590 ..Condition responsive device limits return flow from biased slave
- 591 ..Having valve, director, or restrictor in pulse fluid flow path
- 592 ..Having, surge chamber, fluid supply means, or means compensating for fluid expansion, contraction or leakage
- 593 ..Having fluid motor driving piston of master unit

594	..Having cam, or lever system driving master	346	...Plural movable guides, one having a one-way clutch to frame
326	.Utilizing a mixture, suspension, semisolid or electro-conductive liquid as motive fluid	347	..Having condition responsive or manually settable control means to regulate unit output
327	.Methods of operation	348	...Distributes motive fluid between plural units, stages or guides
328	..Having a signal, indicator or inspection means	349	...Adjusts impeller or turbine axially
329	.Condition responsive control means responsive to, or compensating for, motive fluid compressibility, temperature variation or viscosity variation driven master	350	...Variable face clearance
330	.Coaxial impeller and turbine unit	351	...Controls scoop operation for removing liquid from rotating casing
331	..Reversible turbine or turbine system	352	...Of means within an impulse, reaction or energy transfer flow path being adjustable to modify flow of motive fluid
332	...Having pitch control or motive fluid flow guide or reaction blade means	353	...Motive fluid guide vane transferable axially into or out of motive fluid flow path
333	...Having means to brake or free flow guide means	354	...Pitch or orientation of flow directing guide or blade controlled
334	..Having means to remove or insert flow guide means from or into motive fluid flow path	355	....Speed responsive
335	..Having plural individually actuatable units	356	....Motive fluid pressure responsive
336	..Having filtering, de-aerating, cleaning or bleeding structure	357	...Of means adjusting the mass of level of motive fluid at the impeller energy transfer zone
337	..Having heating or cooling means	358	...Including continuously driven auxiliary pump
338	..Having shock, vibration or surge control structure	359	...Exhaust valve
339	..Having lubricating means	360	....Motive fluid pressure responsive
340	..Plural turbines drive relatively movable output members	361	..Having separate guide or reaction means in circuit including impeller and turbine
341	..Having brake or clutch controlling movement of a flow guide located in the impeller-turbine flow path	362	...Rotatable guide or reaction means coaxial with the impeller
342	...With means adjusting blade orientation or blade exposure in flow path	363	..Plural impeller-turbine units
343	...Speed or fluid condition responsive brake or manually adjustable brake	364	..Impeller or turbine integral with unit housing
344	....Braked casing	365	...Fluid deflecting means
345	..One-way clutch between the movable guide, an impeller, turbine or a second movable guide	366	...Toroidal impeller and turbine
		367	...Having core or ring member at interface
		368	.Control by independently operated punch card, tape, digital computer, counter, template, or programmer cyclic control

- 369 .Cyclically operable
reciprocating or oscillating
motor or output stroke device
- 370 ..Pneumatic motor
- 371 ..Having means to store and
release energy usable to
energize motor work output
means
- 372 ...Pneumatic counter-balance of
gravity load on motor (e.g.,
deep well pump rod, etc.)
- 373 ..Progressive change of stroke
length in successive strokes
- 374 ..Correlated independently
movable output members
- 375 ..Correlated power input pumps
and/or pressurized fluid
sources
- 376 ..Motor control means having
timer or time delay means
- 377 ...Provides dwell or press period
at end of stroke
- 378 ..Having purging, surge
accommodating, or leaking
handling or replenishing
structure
- 379 ..Having condition responsive
cycle abort means or means for
manual control of motor output
- 380 ..With means to shut down system
after a complete to and fro
cycle of the motor means
- 381 ..Having condition responsive
control of variable
displacement pump
- 382 ...Cam or gear carried by stroke
device varies displacement
pump
- 383 ..Automatic or cyclic means
provided plural distinct motor
speeds in cycle
- 384 ..Expansible chamber type
volumetric responsive
measuring device in series
with or driven by output motor
operates the motor controller
- 385 ..Manual pump pressurizes fluid to
position output motor motive
fluid control valve
- 386 ..Manual pump supplies motive
fluid to output motor when
power motive fluid pump is
inactive
- 387 .Distinct structure metering and
dispensing a stroke length
determining volume of motive
fluid to the motor
- 388 .Full range correspondence of
position of external
manipulator and motor
positioned member effected by
feedback linkage
- 389 ..Positioned member is
displacement controller of
second motor pump
- 390 ..Electrical feedback means
- 391 ..Feedback linkage controls
variable displacement pump
- 392 ..Feedback includes plural
movable valve parts
- 393 .Manipulator for motive fluid
control valve having load feel
or motor pressure feedback
- 394 .Having apparatus control by
timer or delay means
- 395 .Control relative to
independently driven
oscillator, speed standard or
pacer device
- 396 .Utilizing lubricant, starter
motor, cooling fluid, or fluid
used for combustion in an
internal combustion engine
- 397 ..Vacuum generated by internal
combustion engine intake
manifold powers motor
- 398 .Utilizing natural energy or
having a geographic feature
- 399 .Unsafeness, unreadiness or
disarray prevent manual change
or operative state
- 400 .Selective or simultaneous power
and manual energy inputs
- 401 ..Fluid motor and directs manual
drive of output device
- 402 ..Separate manual and motor
driven pumps supply motive
fluid to output motor
- 403 .Apparatus having means
responsive to or ameliorating
the effects of breakage,
plugging, mechanical failure
or power failure
- 404 ..Stand-by stored energy means
activated responsive to
malfunction or power failure
- 405 ..Second motive fluid supply
means takes load responsive to
failure of first

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| 406 | ..Output means locked, positioned or released on failure of motive fluid supply means | 425 | ..Condition responsive means establishes number of motor sections driving a common output |
| 407 | ..Pneumatic motor with gas supply or removal device | 426 | ..Speed of, pressure in, or position of one output motor or motor section controls another |
| 408 | ..Convertible motor-pump device selectively charges and is driven by gas from storage vessel | 427 | ..With manual control or selection of motor, motor speed or motor load |
| 409 | ..Having automatic control | 428 | .Having condition responsive control in a system of separately operable power input pumps, pump motors, pump cylinders or pressure fluid sources |
| 410 | ..Responsive to condition in gas storage vessel | 429 | ..With externally operated multiway valve changing the relationships of the motive fluid pressurizing or supplying means |
| 411 | ..Suction pressure on motor regulated | 430 | ..Pressure or volume responsive means shifts the relationship |
| 412 | ..Having pump device | 431 | .Condition responsive control of or by input to input pump drive means |
| 413 | ..With control means for structure storing work driving energy (e.g., accumulator, etc.) | 432 | ..Pump drive means deactivated responsive to position of output stroke device |
| 414 | ..Energy of braking or of reversed load on motor stored | 433 | .Having correlated or joint actuation of controller of input to motive fluid pressurizer and of controller of motive fluid flow |
| 415 | ..Accumulator pressurized by gas pump or external gas supply | 434 | ..Interlinked pump drive controller and manipulator of stroke device |
| 416 | ..Plural accumulators | 435 | .Having a mechanical clutch or brake device in the power train |
| 417 | ..Stroke device driven by successively operated energy input structure and stored energy structure | 436 | ..Correlated control of device and motive fluid flow controller |
| 418 | ..Control by sensor of accumulator condition | 437 | ..Selective fluid and mechanical drive of output from input |
| 419 | ..Motor driven by motive fluid of system drives pump pressurizing motive fluid of system | 438 | ...Condition responsive selection |
| 420 | ..Having condition responsive control in a system of distinct or separately operable outputs or output drive units | 439 | ..Device acts on intermediate reactive rotor to modify speed ratio or direction |
| 421 | ..With plural pump or motive fluid source relationships selected by multiway valve | 440 | ...Condition or direction responsive device |
| 422 | ..Independently actuatable outputs with condition responsive means insuring sufficiency of feed of motive fluid | 441 | ..Condition or direction responsive device |
| 423 | ..Including means for controlling or for reversing input pump drive | 442 | ..Device holds output in adjusted position |
| 424 | ..Serially connected motors controlled to establish parallel operation or to bypass a motor means of the series | | |

- 443 .Servo-motor having externally operated control valve sets motor or pump displacement
- 444 ..Having auxiliary pump or external source of motive fluid supplying servo motor
- 445 .Condition responsive control of pump or motor displacement
- 446 ..Pump displacement varied responsive to position of motor or output device
- 447 ..Control actuated by a servo-motor fed by a speed indicating auxiliary pump
- 448 ..By means sensing rotational speed of output motor
- 449 ..By means sensing rotational speed of prime mover or pump
- 450 ..Choke in motor feed or discharge line establishes displacement control pressure (e.g., rate of flow responsive, etc.)
- 451 ..Controlled by torque of motor or motor discharge pressure
- 452 ..Pump displacement controlled by pump discharge or motor feed pressure
- 453 .With means purging, cleaning or separating undesirables from motive fluid
- 454 ..Solids from liquid separator
- 455 .Having leakage collecting structure
- 456 .Having distinct cooling or lubricating structure
- 457 .Collapsible joined device having fluid trapping valve in joint
- 458 .Having assembly or repair structure
- 459 .Condition responsive control of motive fluid flow
- 460 ..Holding or braking valve in motor exhaust line controlled by pressure in motorfeed line
- 461 ..Discharge from contracting cylinder of double-acting motor controlled
- 462 ..With externally operable multiway valve means directing flow to a stroke device
- 463 ...Sensor of external condition controls valve
- 464 ..Of motive fluid transfer between a reservoir and a recirculating path of a pump motor loop
- 465 ..Having externally operable means for setting motor or pump displacement or direction of rotation
- 466 ..Of braking or holding valve in motor discharge line
- 467 ..Stroke cylinder open to exhaust responsive to position of output member
- 468 ..Of by-pass of motor, pump or flow control element
- 469 .Having means controlling or attenuating shock vibration, sticking or chattering
- 470 .Externally operated multiway valve or interconnected control elements control motive fluid for a limited stroke to-and-fro device
- 471 ..Having plural distinct or separately operable output means
- 472 ..Flow to opposed expansible chambers having a common output reversed
- 473 .Pump means moves motive fluid from one chamber to an opposite chamber of opposed expansible chambers having a common output
- 474 ..Valve or restriction controls gravity or spring return of output
- 475 ..With means compensating for charge leakage or volume difference between discharging and receiving chambers
- 476 ..Reversible delivery from pump means
- 477 .Ram driven by fluid pumped from reservoir
- 478 ..Having means pressurizing, vacuumizing or venting reservoir
- 479 ..Having selective or variable pump displacement or pump drive leverage
- 480 ..Telescopic ram
- 481 ..Having fluid trapping means with a manual release or by-pass holding ram

- 482 ...Release valve and pump actuated by a common handle
- 483 .Having selecting means distributing motive fluid between plural motors or cylinders rotatating a common output shaft
- 484 .Having plural energy outputs (e.g., plural motors, etc.)
- 485 ..Unit having coaxial rotary output shafts and pump means in a common housing (e.g., automobile differential, etc.)
- 486 .Having plural energy input means, pumps or diverse pump outlets
- 487 .Input pump and rotary output motor system having displacement varying type of direction or speed selector
- 488 ..Including auxiliary system feed pump
- 489 ..Having valve means controlling flow between pump and motor
- 490 ..Both motor and pump have displacement adjustment means
- 491 ...Having common or intercontrolled adjuster actuating means
- 492 ...Motor swash plate and pump swash plate intercontrolled
- 493 .Valve means reverses flow from pump to reversible rotary motor
- 494 .Including by-pass or restrictor controlling flow circuit
- 495 **MOTOR HAVING A BUOYANT WORKING MEMBER**
- 496 .With means to vary buoyancy of working member
- 497 .Working member actuated by the rise and fall of a surface of a body of fluid
- 498 ..Having tide responsive working member positioning means
- 499 ..Having means responsive to lateral impulse of fluid
- 500 ..Having articulated buoyant members
- 501 ..Motor is free floating unit
- 502 ..Having fluid flow or wave controlling, confining or directing means
- 503 ...In which the control means is variable
- 504 ..Having flexible strand working member motion transmitting means
- 505 ..Having relatively movable working members
- 506 ..Working member pivotally supported
- 507 ..Having one-way clutch power transmission means, e.g., ratchet, etc.
- 685 **MOTOR HAVING EXHAUST FLUID TREATING OR HANDLING MEANS**
- 686 .Having condition responsive control of exhaust structure or by exhaust condition
- 687 .Motor-exhaust assembly with stress relieving or absorbing structure
- 688 .Water mingled with exhaust steam
- 689 .Exhaust fluid mingled with non-exhaust fluid
- 690 .Motor and indirect heat exchanger
- 691 ..Boiler feed water heated by exhaust
- 692 ..Having condensate pump
- 693 ..Plural heat exchangers
- 694 .Including exhaust flow directing or dividing device
- 695 ..Device directs exhaust of air motor into atmosphere
- 696 ..Device is draft structure of hydraulic motor
- 697 ..Turbine discharge directed to flow line
- 698 **SYSTEM HAVING PLURAL MOTORS OR HAVING DIVERSE TYPES OF ENERGY INPUT**
- 699 .Spring type motor and internal combustion engine motor
- 700 .Motors intercontrolled responsive to angular speed differential of rotatable output shafts
- 701 ..Hydraulic or pneumatic intercontrol system
- 702 ..Electrical intercontrol system
- 703 .Control including pacer, oscillator, punch card, template or tape
- 704 .Control including clock, retarder or programmer
- 705 .Signal, indicator or inspection means

- 706 .Having condition responsive control
- 707 ..Of branched flow of motive fluid through serially connected motors
- 708 ..Of or by motor cooling, ventilation, or brake system
- 709 ..Of or by disconnect or load release means to output means or between motors
- 710 ..Intercontrol of internal combustion engines responsive to relative fuel or manifold conditions
- 711 ..First motor load share adjusted relative to the load share of a second motor driving a common load, responsive to a condition of the second motor or of the load
- 712 .Engine apparatus or system actuatable selectively or simultaneously by internal combustion of fuel and by expansion of motive fluid
- 713 .Plural motors having brake means for motor or output means
- 714 .Plural motors having supply or control of cooling, lubricating, or scavenging fluid
- 715 .Plural motors, connected for serial flow of motive fluid
- 716 .System of plural motors having a common output structure
- 717 ..And another output
- 718 ..Having disconnect means between a motor and the output
- 719 .Interrelated or group control operating means for plural motors or outputs
- 720 .Unitary support for plural motors
- 721 **MISCELLANEOUS**

- 902 **ROTARY REACTOR, SEPARATOR OR TREATER OF EXHAUST OF AN INTERNAL COMBUSTION ENGINE**
- 903 **CLOSURES OPERATORS**
- 904 **PROPELLER OR AIR PLANE SYSTEM**
- 905 **WINDING AND REELING**
- 906 **ENGINE SPEED RESPONSIVE THROTTLE CONTROL SYSTEM**
- 907 **WORKING MEMBER POSITIONED AGAINST COUNTERFORCE BY CONSTANTLY APPLIED MOTIVE FLUID**
- 908 **WASHING MACHINE SYSTEM**
- 909 **REACTION MOTOR OR COMPONENT COMPOSED OF SPECIFIC MATERIAL**
- 910 **FREE PISTON**
- 911 **FLUID MOTOR SYSTEM INCORPORATING ELECTRICAL SYSTEM**
- 912 **COOLING MEANS**
- 913 **COLLECTION OF REGGIO PATENTS**
- 914 **EXPLOSIVE**
- 915 **COLLECTION OF GODDARD PATENTS**
- 916 **UNITARY CONSTRUCTION**
- 917 **SOLID FUEL RAMJET USING PULVERIZED FUEL**

FOREIGN ART COLLECTIONS

FOR 000 CLASS-RELATED FOREIGN DOCUMENTS

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collections listed below. These Collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

REACTION MOTOR (E.G., MOTIVE FLUID GENERATOR AND REACTION NOZZLE, ETC.) (60/200.1)

- FOR 100 .Including afterburner (60/261)
- FOR 101 .Air supplied by ram effect (60/270.1)
- FOR 102 .Motive fluid outlet means (60/271)
- FOR 103 .Processes (60/39.02)
- FOR 104 ..Regulation of power output (60/39.03)
- FOR 105 ..Multiple expansion (60/39.04)

CROSS-REFERENCE ART COLLECTIONS

- 900 **EXCESS AIR TO INTERNAL COMBUSTION ENGINE TO ASSIST EXHAUST TREATMENT**
- 901 **EXHAUST TREATMENT SPECIAL TO ROTARY INTERNAL COMBUSTION ENGINES**

- FOR 106 ..Addition of steam and/or water
(60/39.05)
- FOR 107 ..Ignition and/or fuel injection
(60/39.06)
- FOR 108 ..With nonmotor output (60/39.07)
- FOR 109 ..With starting device (60/39.141)
- FOR 110 ..Separate starting device or
motive fluid source (60/
39.142)
- FOR 111 ..Re-expansion (60/39.161)
- FOR 112 ..With regulation of power output
(60/39.2)
- COMBUSTION PRODUCTS USED AS
MOTIVE FLUID (60/39.01)**
- ..With variable oxidizer control
(60/39.23)
- ..Automatic (60/39.24)
- FOR 113 ...Oxidizer (60/39.29)
- FOR 114 ..With mounting or supporting
structure (60/39.31)
- FOR 115 ..With expansible connections (60/
39.32)
- FOR 116 ..Convertible and combined (60/
39.33)
- FOR 117 ..Coaxial combustion products
generator and combined (60/
39.36)
- FOR 118 ..With turbine (60/39.75)