

1	PROCESSES	15.18	..Valve or valve element
2	.With control of flow by a		assembling, disassembling, or
	condition or characteristic of		replacing
	a fluid	15.19	...Fluid actuated or retarded
3	..Mixing of plural fluids of	15.21	...Multi way valve
	diverse characteristics or	15.22	...Ball valve or rotary ball
	conditions		valve
4	...Controlled by consistency of	15.23	...Gate valve
	mixture	15.24	...Plug valve
5	...Controlled by conductivity of	15.25	...Butterfly valve
	mixture	15.26	...Float valve
6	...Controlled by heat of	15.1	HIGHSPEED FLUID INTAKE MEANS
	combustion of mixture		(E.G., JET ENGINE INTAKE)
7	...Controlled by pressure	15.2	.With condition responsive
8	..For producing uniform flow		control means
9	..For producing proportionate	38	CONTROL BY CHANGE OF POSITION OR
	flow		INERTIA OF SYSTEM
10	..By speed of fluid	39	.With second control
11	..For regulating boiler feed	40	.Position relative body of water
	water level		(e.g., marine governors)
12	..By fluid pressure	41	..Float controlled
12.5	..Carbonated beverage handling	42	..Pressure or head controlled
	processes	43	.Vent opening or closing on
13	..Affecting flow by the addition		tipping container
	of material or energy	44	.By shifting of liquid level
14	..Involving pressure control	45	.By pendulum or swinging member
15.01	..Cleaning, repairing, or	46	..With servo connection to valve
	assembling	47	SPEED RESPONSIVE VALVE CONTROL
15.02	..Repairing or assembling hydrant	48	.Acceleration responsive valve
	(e.g., fireplug, etc.)		control
15.03	..Gas or water meter repairing or	49	.With manual valve control
	assembling	50	.Speed change and excess speed
15.04	..Fluid cleaning or flushing		valve control
15.05	...Liquid cleaning or flushing	51	.With other condition responsive
15.06	...Valve or valve seat cleaning		valve control
15.07	..Mechanical cleaning (e.g., pig,	52	..Governor drive failure
	etc.)		responsive
15.08	..Repairing, securing, replacing,	53	.Centrifugal mass type (exclusive
	or servicing pipe joint,		of liquid)
	valve, or tank	54	..With multiple valves
15.09	...Including joint or coupling	55	..Periodically actuated valve
15.11	...Detecting or repairing leak	56	..Rotating valve and rotating
15.12	...Tapping pipe, keg, or tank		governor
15.13	....Particular aperture forming	57	..Excess speed responsive
	means	58	..With fluid servo-motor
15.14	.....Cutter or cutting tool	59	FREEZE CONDITION RESPONSIVE
15.15	.....Having deformable or		SAFETY SYSTEMS
	inflatable means	60	.With freeze waste
15.16	...With content loading or	61	.Stop and waste
	unloading (e.g., dispensing,	62	.Low temperature responsive
	discharge assistant, etc.)		drains
15.17	...Specific valve or valve		
	element mounting or repairing		

65	COMBUSTION FAILURE RESPONSIVE FUEL SAFETY CUT-OFF FOR BURNERS	81.1 81.2 803	..Pressure ..Underwater
66	..Thermo-electric		
67	DESTRUCTIBLE OR DEFORMABLE ELEMENT CONTROLLED		FLOW AFFECTED BY FLUID CONTACT, ENERGY FIELD OR COANDA EFFECT (E.G., PURE FLUID DEVICE OR SYSTEM)
68.11	..Destructible element	804	..Responsive to condition external of system
68.12	..Combined destructible and fusible element	805	..And causing change or correction of sensed condition
68.13	..Explosive actuation		
68.14	..Separable valve coupling or conduit	806 807	..Utilizing diverse fluids ..Utilizing particular fluid
68.15	...Tensile or sheer pin or bolt	808	..Means to cause rotational flow of fluid (e.g., vortex generator)
68.16	..Tensile or sheer pin or bolt		
68.17	...Pressure causes pin or bolt to destruct	809	..Plural vortex generators
68.18	..With alarm or indicator	810	..Vortex generator as control for system
68.19	..Rupture disc		
68.21	...Means for holding entire disc after rupture	811	..Vortex generator in interaction chamber of device
68.22	...Disc burst after destruction of additional element	812	..By tangential input to axial output (e.g., vortex amplifier)
68.23	...Direct pressure causes disc to burst	813	...With means to vary input or output of device
68.24	....Two-way rupture disc		
68.25	....Dome shape	814	..System comprising plural fluidic devices or stages
68.26	.....Reverse buckling		
68.27	...Specific weakening point	815	..Plural power inputs (e.g., parallel inputs)
68.28	...Integral disc assembly		
68.29	...Knife or cutter causes disc to break	816	...Variable or different-value power inputs
68.3	....Movable knife or cutter	817	...Pulsating power input and continuous-flow power input
69	..With counterbalancing element	818	...With variable or selectable source of control-input signal
70	..Frangible element returns pressure responsive valve	819	...To cascaded plural devices
71	..Having pressure responsive valve	820	...With feedback passage(s) between devices of cascade
72	..Heat destructible or fusible		
73	..With second sensing means	821	...With pulsed control-input signal
74	..In fluid flow path		
75	..Safety cut-off	822	..Plural power inputs to single device
76	...With heater for destructible or fusible element	823	..Intersecting at interaction region (e.g., comparator)
77	..With external closing means	824	...Co-lineal, oppositely-directed power inputs (e.g., impact modulator)
78.1	AMBIENT CONDITION CHANGE RESPONSIVE		
78.2	..For controlling soil irrigation		
78.3	..Soil moisture sensing	825	..Means to regulate or vary operation of device
78.4	..Burner gas cutoff		
78.5	..Atmospheric	826	..To vary frequency of pulses or oscillations
79	..Temperature		
80	...With additional diverse control	827	..By non-fluid energy field affecting input (e.g., transducer)

828	...Acoustical or thermal energy	101.11	...Main line flow displaces or entrains material from reservoir
829	..By movable element		
830	...Operating at timed intervals (e.g., to produce pulses)	101.19	...With electrical controller
831	...Electrically-actuated element (e.g., electro-mechanical transducer)	101.21	..Flow displacement element actuates electrical controller
832	..Means (e.g., valve) in control input	101.25	..Liquid level response
833	.Structure of body of device	101.27	...Float controlled weir or valve
834	.Device including passages having V over T configuration	101.29	...Swinging outlet pipe controller
835	..And feedback passage(s) or path(s)	101.31	..With measuring type discharge assistant
836	..With particular characteristics of control input	102	.Supply and exhaust type
837	...Multiple control-input passages	103	..Vacuum or suction pulsator type (e.g., milking machine)
838	..And multiple or joined power-outlet passages	104	...With trip linkage or snap action
839	..And enlarged interaction chamber	105	...With pulsation responsive pilot valve
840	..And vent passage(s)	106	..Reversing or 4-way valve systems
841	.Device including passages having V over gamma configuration	107	..Waste responsive to flow stoppage
842	.Device including linearly-aligned power stream emitter and power stream collector	109	.Self-controlled branched flow systems
82	PRESSURE MODULATING RELAYS OR FOLLOWERS	110	..Dividing and recombining
83	.Jet control type	111	..Plural inflows
84	.Plural series units	112	...Alternate or successive inflows
85	.With counter-balancing pressure feedback to the modulating device	113	...Control by depletion of source
86	..With counter-counter balancing pressure feedback	114	...One inflow supplements another
87.01	SELF-PROPORTIONING OR CORRELATING SYSTEMS	115.01	..Bypass or relief controlled by main line fluid condition
88	.Mixture condition maintaining or sensing	115.02	...Liquid level responsive
89	..Dividing and recombining flow	115.03	...Flow rate responsive
91	..By specific gravity	115.04	...Including controlling main line flow
92	..By viscosity or consistency	115.05	....Relief or bypass closes as main opens
93	..By optical or chemical property	115.06	....Bypass or relief valve biased open
94	.Fuel controlled by boiler or water system condition	115.07	....Pilot valve operated
98	.Self-proportioning flow systems	115.08	....Carried choke
99	..Interconnected flow displacement elements	115.09	....Choke
99.5	..Movable trap chamber	115.1	....Variable choke resistance
100	..Flow comparison or differential response	115.11	....Venturi
101	...Flow dividers (e.g., reversely acting controls)	115.12	....Flapper
		115.13	...Pressure responsive
		116.3	...With pressure reducing inlet valve
		116.5	....Relief port through common sensing means

115.14	....Common sensor for both bypass or relief valve and other branch valve	119.07	.....Flow sensing turbine
115.15	.....Bypass or relief valve opens as other branch valve closes	119.08	....Pressure responsive
115.16	....Bypass or relief valve biased open	119.09	.....Responsive to outlet pressure
115.17	.....Increasing pressure progressively closes then reopens by-pass or relief valve	119.1	....Electrical control
115.18	....Bypass or relief valve responsive to pressure downstream of outlet valve	87.02	.Liquid level responsive
115.19	.....Pilot valve	87.03	.Flow rate responsive
115.2	.....Outlet valve carried by bypass or relief valve	87.04	..Pressure differential
115.21	....Plural sensors for single bypass or relief valve	87.05	.Plural sensors
115.22	.....Sensors interconnected by timing or restrictive orifice	87.06	..For single valve
115.23	....Pilot valve operated	123	SIPHONS
115.24	....Mechanical movement between sensor and valve	124	.Plural
115.25	....Electrical control	125	..Tank truck mounted
115.26	....Sensor rigid with valve	126	..Sequentially discharging in parallel
115.27	.....Flexible sensor	127	...From plural tanks
115.28	.....Pressure responsive outlet valve	128	..Main siphon with auxiliary starting, stopping or resetting siphon
118.01	..Plural outflows	129	...Sinking or bucket-type float operated main siphon, float emptying auxiliary siphon
118.02	...Single actuator operates plural outlets simultaneously	130	.With discharge-controlling receiver
118.03	...Biased open isolation valve	131	..With float
118.04	...Flow rate responsive	132	.Periodic or accumulation responsive discharge
118.05	....Primer valve	133	..With manual control
118.06	...Pressure responsive	134	..Control by filling auxiliary tank
118.07	....With external control for correlating valve (e.g., manual)	135	..Float-operated inlet to siphon
119.01	...Alternately or successively substituted outflow	136	..Release of trapped air
120	....Control by filling auxiliary gravitating or float operating tank	137	...Through float-operated vent
121	....Control by filling outlet tank or receiver	138	...Through liquid trap seal
122	.....Float controlled	139	....Auxiliary liquid trap seal
119.02	....Four port reversing valve	140	.With strainer, filter, separator or sediment trap
119.03	....Responsive to pressure or flow interruption	141	.With recorder, register, signal, indicator or inspection window
119.04	.....Plural outlets control with automatic reset	142	.With flow starting, stopping or maintaining means
119.05	.....Manually set to a single outflow position	143	..Siphon venting or breaking
119.06	....Flow rate responsive	144	..With leakage or entrained air removal
		145	..Pressure applied to liquid in supply chamber
		146	..Plunge or immersion starting
		147	..Pump or liquid displacement device for flow passage
		148	...Piston
		149	....Co-axial within flow passage
		150	...Collapsible bulb
		150.5	..Siphon inlet movable to and from seat

151	..With valve or closure in-flow passage	178	...With alternately operated inlet and outlet valves
152	..With means for mounting and/or positioning relative to siphon chamber	179	...With non-discriminating gas vent or liquid discharge
153	.Elements	180	....Abnormal pressure responsive liquid blow-off or drain
154	DIVERSE FLUID CONTAINING PRESSURE SYSTEMS	181	....Manual control
155	.Gas lift valves for wells	182	...With auxiliary inlet or by-pass valve
156	.Gas pressure discharge of liquids feed traps (e.g., to boiler)	183	...With fluid responsive valve
157	..Gas pressure controlled by amount of liquids in boiler or discharge receiver	184	....Successively opened valves
158	...Pressure connection at liquid level in boiler or discharge receiver	185	....Gas collecting float (e.g., inverted bucket)
159	..Gas pressure controlled by amount of liquid in trap	186	.....Downstream from valve
160	...Plural trap chambers	187	.....Level responsive
161	....Gravitating	188	.....Weight or pressure
162	..Gravitating vessel	189	.....Gravitating vessel
163	....Sinking or bucket type float	190	.....Sinking or bucket type float
164	....Pivoted vessel with fluid passage through pivot	191	.....Servo-control
165	...Float responsive	192	.....Float
166	....Liquid control valve positively actuated	193	.....With main line gas outlet from trap chamber
167	....Gas condensing type	194	.....With outlet extending above liquid in trap
168	....Gas inlet and outlet valves unitary	195	.....Servo-control
169	..Gas pressure controlled by manual or cyclic means	196	.....With pressure balanced outlet valve
170	...Movable trap chamber	197	..Discriminating outlet for gas
170.1	..Foam control in gas charged liquids	198	...With reverse flow stop or pressure regulating valve
170.2	..Level or pressure responsive	199	...Fluid sensing valve
170.3	..Separate handling of foam	200	....With vaporized liquid stop
170.4	..With conditioning trap or chamber	201	.....With separate return for condensate
170.5	...Recarbonation	202	....Float responsive
170.6	...With trap or chamber by-pass	203	..With liquid emptying means
171	.Fluid separating traps or vents	204	...Self-emptying
172	..Liquids separated from liquid	205	.Liquid filling by evacuating container
173	..Plural discriminating outlets for diverse fluids	205.5	.Main line flow displaces additive from shunt reservoir
174	...Common actuator for control valves	206	.Gas pressure storage over or displacement of liquid
175	...Choke or restricted passage gas bleed	207	..Surge suppression
176	....From above liquid level	207.5	..With return of liquid to supply
177	..Discriminating outlet for liquid	208	..Plural units
		209	..With gas maintenance or application
		210	...Gas carried by or evolved from liquid
		211	....Gas injectors
		211.5	...Gas injected by liquid pressure or flow

212	...Unitary mounting for gas pressure inlet and liquid outlet	241	..Steam sterilizing
213	..With liquid level responsive gas vent or whistle	242	..Mechanical cleaning
214	...Combined high and low level responsive	243	...Valve grinding motion of valve on seat
215	BACK FLOW PREVENTION BY VACUUM BREAKING (E.G., ANTI-SIPHON DEVICES)	243.1	....Concentric stem
216	.Air vent in liquid flow line	243.2	....Spring pressed
216.1	..With liquid seal in liquid flow line	243.3	....Lost motion permits grinding
216.2	..Automatic valve in vent line	243.4	....With swivel-preventing means
217	..Valved	243.5	....Nut releasable from body and/or stem
218	...With co-acting valve in liquid flow path	243.6	...With independent grinding actuator
219	LARNER-JOHNSON TYPE VALVES; I.E., TELESCOPING INTERNAL VALVE IN EXPANDED FLOW LINE SECTION	243.7	....Separable
220	.Line condition change responsive	244	...Cleaning member reciprocates in passage
221	.Internal servo-motor with internal pilot valve	245	....By-pass cleaning
222	..Pilot controlled passage in nose or needle	245.5	....Independent actuation
223	INFLATABLE ARTICLE (E.G., TIRE FILLING CHUCK AND/OR STEM)	246	.Liquid supplied at valve interface
224	..With pressure-responsive pressure-control means	246.11	..Plural feed
224.5	..Pulsating	246.12	..Line pressure feed
225	..Diaphragm, bellows or expansible tube	246.13	..Feed by or with actuation
226	..Co-axial inflation and relief valves	246.14	..Loss control
227	..With gauge or indicator	246.15	..Screw feed
228	..With deflating means	246.16	...With check valve
229	..Selectively connected	246.17	....Excess relief
230	.Stem attached relief valve	246.18	....Jacking
231	..With coupling means	246.19	...Jacking
232	..With cap	246.2	...Seating
233	..Valve actuating, assembling or locking means on cap	246.21	..Spring biased piston feed
234	...Valve manually seated	246.22	..External pressure
234.5	.Removable valve head and seat unit (valve insides)	246.23	..Gravity or capillary feed
234.6	WITH VEHICLE GUIDE OR SUPPORT, E.G., SERVICE STATION	247	WITH LIQUID VALVES OR LIQUID TRAP SEALS
236.1	DISTRIBUTION SYSTEMS INVOLVING GEOGRAPHIC FEATURES	247.11	.Liquid seal in liquid flow line; flow liquid forms seal
237	WITH CLEANER, LUBRICATION ADDED TO FLUID OR LIQUID SEALING AT VALVE INTERFACE	247.13	..Valves
238	.Cleaning or steam sterilizing	247.15	...Line condition change responsive
239	..Reverse fluid flow	247.17	....Plural valves or valve seats
240	..With separate material addition	247.19	....Pivoted valve
		247.21	....Ball valve
		247.23	....Seats vertically up
		247.25	..Seal replenishers
		247.27	..Plural inlet
		247.29	..Divided and recombined passages
		247.31	..Tangential inlet flow
		247.33	..Downward partition encircles projecting outlet
		247.35	..Submerged inlet pipe end
		247.37	...Hinged seal bowl
		247.39	...Distinct seal bowl in flow line connected casing
		247.41	..U-seals

247.43	...Topside access beneath cover plate closed floor opening	278	..Extensible spout
		279	..Spout articulated to riser
247.45	...Enlarged upflow leg	280	.Plural riser
247.47	...Topside access opening	281	.Expansible chamber operated by valve actuator for draining riser
247.49	...Even diameter legs		
247.51	...Access opening		
248	..Seal for relatively movable valving parts	282	..With pump or ejector
		283	..Removable valve and valve seat
249	..Horizontally moving valve	284	..With extension to facilitate removal
250	...Rotary		
251.1	..Liquid valves	285	..Removable valve with supplemental check valve
252	..Branched passage for sealing liquid	286	..Movable riser actuated valve
253	..With auxiliary means for varying liquid level	287	..Reciprocating riser
		288	...Piston type valve
254	..With baffle	289	..Balanced valve
255	PLURAL TANKS OR COMPARTMENTS WITH PARALLEL FLOW	290	..Valve actuator extends laterally from bottom of riser
256	..Sequentially filled and emptied (e.g., holding type)	291	..Valve actuator outside riser
		292	..Lever actuator
257	..With relative rotation of tank group and filling head	293	..With casing, flush with ground or pavement surface
258	...With rotary filling and emptying head	294	..With casing
		295	..Flush with ground or pavement surface
259	..With housings, supports or stacking arrangements	296	..Cap, cover or hood
260	..Battery or electrolytic cell replenishment	297	..With heater
		298	..With actuator lubricating means
261	..Barometric supply	299	..With valve at outlet
262	..Flow dividing compartments	300	..With supplemental valve
263	..Tank type manifold (i.e., one tank supplies or receives from at least two others)	301	..Protection against freezing
		302	..Stop and waste
		303	...With disabling means
264	..Tank within tank	304	...Separate relatively movable valves with single actuator
265	..With cross connecting passage		
266	..With manifold or grouped outlets	305	...Unidirectional abutting connection between main valve or actuator and waste valve
267	..Tank truck type		
268	WITH HOLDER FOR SOLID, FLAKY OR PULVERIZED MATERIAL TO BE DISSOLVED OR ENTRAINED	306	...With screw or gear in actuating mechanism
269	CONVERTIBLE	307	...Reciprocating relatively fixed valves
269.5	..Reversible check		
270	..Unit orientable in a single location between plural positions	308	...Waste through lower valve guide
		309	REVERSING VALVES - REGENERATIVE FURNACE TYPE
270.5	..Reversible stop and vent or waste	310	..With cooling
271	..Units interchangeable between alternate locations	311	..Rotary reversing valve
		312	WITH LEAKAGE OR DRIP COLLECTING
272	HYDRANT TYPE	313	..Relatively movable receptacle or drain pipe and outlet
273	..Water crane type		
274	..Spout operated valve	314	..Collector for waste liquid derived from solid, gas or vapor
275	..Rotating riser		
276	...Spout articulated to riser		
277	...Vertically movable riser		

315.01	WITH REPAIR, TAPPING, ASSEMBLY, OR DISASSEMBLY MEANS	315.33	.Assembling or disassembling check valve
315.02	.Blow out preventer or choke valve device (e.g., oil well flow controlling device, etc.)	315.35	.With mechanical movement between actuator and valve
315.03	.Solenoid or electromagnetically operated valve	315.36	..Plural motions of valve
315.04	.Pressure regulating type valve	315.37	..Lever type
315.05	..Diaphragm type	315.38	..Gear type
315.06	.Gas or water meter replacing	315.39	..Cam type
315.07	.Assembling or disassembling flexible tube or sleeve type valve	315.4	..Screw type
315.08	.Assembling or disassembling float or float valve	315.41	.Tool for applying or removing valve or valve member
315.09	.Assembling or disassembling multi way valve	315.42	..Including sealing feature
315.11	.Assembling, disassembling, or removing cartridge type valve (e.g., insertable and removable as a unit, etc.)	316	.With holding means functioning only during transportation assembly or disassembly
315.12	..Faucet type (e.g., domestic water use, etc.)	317	.Tapping a pipe, keg, or apertured tank under pressure
315.13	...Including removable valve head and seat unit	318	..With aperture forming means
315.14	...Including mechanical movement actuator	319	..Imperforate closure removing and holding tap
315.15	...Particular handle or handle fastening means	320	..With valved closure or bung
315.16	.Assembling or disassembling pivoted valve	321	...Combined rotary and longitudinal movement of valve
315.17	.Assembling or disassembling rotary valve	322	...Longitudinal movement of valve
315.18	..Rotary ball valve	323	...Rotary movement of valve
315.19	...Particular valve seat or interface seal	324	..With core ejectors
315.2	....Replaceable	325	...Impact operated
315.21	.....With top entry valve	326	.Foot valve extraction from top of enclosure
315.22	..Butterfly valve	327	.With disassembly tool engaging feature
315.23	...Having valve head or seat packing	328	..Wrench engaging lugs
315.24	...With head and stem collections	329	.With provision of alternate wear parts
315.25	..Plug valve	329.01	..Valve heads and/or seats
315.26	...Having retainer at actuator end	329.02	...Opposite duplicate surfaces of unitary structure
315.27	.Assembling or disassembling reciprocating valve	329.03	...Homogeneous material
315.28	..Having particularly packed or sealed mechanical movement actuator	329.04	....Valve heads
315.29	..Gate valve	329.05	...Different portions of continuous surfaces
315.3	...Bifaced	329.06	...Successively used adjacent independent elements
315.31	...Having particular valve seat	329.1	.Removable valve with normally disabled supplemental check valve
315.32	....Including seal	329.2	..Check valve disabled by normally movable main valve part
		329.3	...Ball check
		329.4	...Spring bias
		330	NON-VALVING MOTION OF THE VALVE OR VALVE SEAT
		331	.Rotary motion of a reciprocating valve

332	..Turbine on valve	355.24	....Boom type
333	..Manual rotating means	355.25	....Weighted
334	WITH HEATING OR COOLING OF THE SYSTEM	355.26	..Reel with support therefor
335	..With burner	355.27	...Ground supported
336	..Flue extending through fluid	355.28	..Basket or holder for folded coiled hose
337	..Hot and cold water system having a connection from the hot to the cold channel	356	..Static constructional installations
338	..Air heated or cooled (fan, fins, or channels)	357	..Buildings
339	..With diversion of part of fluid to heat or cool the device or its contents	358	...Outside access to portions of the system
340	..Circulating fluid in heat exchange relationship	359	...Escutcheon type support
341	..With electric heating element	360	...Wall
342	WITH FLUID SYSTEM SUPPORT FOR WORKMAN OR NON-SYSTEM MATERIAL	361	....Recessed gas outlet box
343	WITH CASING, SUPPORT, PROTECTOR OR STATIC CONSTRUCTIONAL INSTALLATIONS	362	...Floor installation
899	..Vehicle	363	..Ground supporting enclosure
345	..Locomotive	364	...Valve and meter wells
346	...Boiler or steam dome	365	....With means to center well on valve
347	..Railway car	366	....Detachable base plate
348	...Car frame	367	....Vertical casing aligned by valve casing
349	...End of car	368	....Combined with actuator
350	...Roof, wall or floor	369	....Telescopic well casing
351	..Automotive	370	....Telescopic well casing
352	...Steering post or wheel	371	....Covers
353	...Dash	372	...Pipe line transport
354	...Floor or frame	373	..Tapering or tower type
355	...Fender or running board	374	..Furniture and housing furnishings
355.12	..With hose reel storage means	375	..Jacketed
899.1	..Guided by means of track or guideway	376	..Tank supports
899.2	..Aerial or water-supported (e.g., airplane or ship, etc.)	377	..Guards and shields
899.3	..With retractable or nonuse-positionable support wheel	378	..Resilient abutment for preventing breakage
899.4	..Vehicle supports fluid compressor and compressed fluid storage tank	379	..Nozzle abutment for scratch or damage prevention
355.16	..With hose storage or retrieval means	380	..Cover for beer cooler aperture for faucet
355.17	..With means for plural hoses	381	..Sanitary covers or shields
355.18	..With flow regulation responsive to hose movement	382	..Valve guards
355.19	...Reel type	382.5	...With means for accommodating a detachable actuator
355.2	..With retrieval means	383	WITH LOCK OR SEAL
355.21	...Power stop or brake	384	..With seal
355.22	....Responsive to position of hose in casing	384.2	..Common lock and valve actuator
355.23	...Biased to retracted position	384.4	..Combination lock
		384.6	..Biased valve
		384.8	..Mechanical movement between lock and valve
		385	..Locks against rotary motion
		386	LIQUID LEVEL RESPONSIVE OR MAINTAINING SYSTEMS
		387	..Washing machine cycle control

388	.Liquid excluding devices for gas inlet or outlets	430	...Float co-axial with valve or port
389	.With second diverse control	431	....Float is spreader or anti-splash means
390	..Manual control		
391	.Control of both inflow and outflow of tank	432	....Float surrounds inlet pipe
		433	....Float rigid with valve
392	.Electrical characteristic sensing	434	..Float arm operated valve
		435	...With valve retarder or cushion means
393	.With control fluid connection at desired liquid level	436	...With flow guide or restrictor
395	.Control of outflow from tank	437	....External hood or deflector or annular outlet surrounding the inlet pipe
396	..Self-emptying tanks		
397	...By float		
398	..By float	438	...Movable nozzle or inlet terminal
399	...Low level safety cut-off		
400	.With supplemental or safety closing means or bias	439	...Valve removable from outside container
401	..Sinking or bucket type float	440	...With U-shaped inlet pipe having terminal valve
402	..Gravitating tank		
403	..By weight of accumulated fluid	441	...With refill pipe
404	..In sinking or bucket type float	442	...Assembly mounted on and having reciprocating valve element coaxial with inlet pipe
405	..Oil burner fuel overflow preventing safety cut-offs		
		443	....Horizontal or side entering pipe
406	..In communicating measuring vessel		
		444	....Vertical inlet riser
407	...Top and bottom connections	445	...With toggle or second lever connected to valve
408	..In gravitating tank		
409	..By float controlled valve		
410	..Valve opened by external means, closing or closing control by float	446	...With interposed cam, gear or threaded connection
		447	...Rotary valve element
411	..Single float controls plural valves	448	...Pivoted valve
		449	...Ball valves
412	..Servo relay operation of control	450	...Balanced valves
		451	...Flexible valve
413	...Fluid pressure	453	.Barometric
414	....Flexible diaphragm valve	454	..With shut-off between supply tank and receiver
415	....From tank		
416	..Quick acting	454.2	REMOVABLE VALVE HEAD AND SEAT UNIT
417	...Pilot float released		
418	...Over center mechanism	454.4	.Pump type
419	....Shifting weight	454.5	.Threaded into valve casing
420	...Trip mechanism	454.6	.Retained by bonnet or closure
421	....Weight or spring bias	455	LINE CONDITION CHANGE RESPONSIVE VALVES
422	...Lost motion mechanism		
423	..Plural floats	456	.Safety cut-off requiring reset
424	..With counter-balance	457	..Thermal
425	...Within tank	458	..Responsive to both high and low pressure or velocity
426	..Level adjustment or selection means	459	..Responsive to change in rate of flow
427	..With float leakage disposal	460	...Excessive flow cut-off
428	..In separate communicating float chamber	461	..High pressure cut-off
429	..Rectilinearly traveling float	462	..Reset by pressure equalization valve or by-pass

463	..Fluid released trip	492	...Single acting fluid servo
464	..Fluid counter-biased or unseated valve	492.5	....Spring biased
465	...With mechanical stop against reopening	493	.Bi-directional flow valves
466	...With fluid pressure seating of valve	493.1	..One head and seat carried by head of another
467	.Fluid opened valve requiring reset	493.2	...Supporting valve only spring biased
467.5	.Consistency responsive	493.3	...Supporting valve spring carried by supporting valve
468	.Thermal responsive	493.4	....Spring stop on supported valve stem
469	.Pop valves	493.5	....Spring abuts guide for supported valve stem
470	..Pop closing valves	493.6	...Both valves spring biased
471	..Pop pressure reactor in inflow to valve	493.7	..Axes of ports perpendicular
472	..Pop pressure reactor in branched released path	493.8	..Axes of ports parallel
473	...Separate relief valves or valves for each branch	493.9	..Axes of ports co-axial
474	..Lost motion between pop pressure reactor and valve	494	.With separate connected fluid reactor surface
475	..Adjustable choke	495	..With manual or external control for line valve
476	...Annular lip or baffle	496	..Valve closes in responses to reverse flow
477	....On movable valve part	497	..Responsive to change in rate of fluid flow
478	....Screw threaded	498	...Valve closes in response to excessive flow
479	.Combustion engine induction type	499	...Turbine or swinging vane type reactor
480	..Valve in auxiliary inlet to induction line	500	...Expansible chamber subject to differential pressures
481	..With manual modifier	501	....Pressures across fixed choke
482	..With suction compensator	502	....With Venturi tube having a connection to throat
483	..With separate reactor surface	503	....Pressures across flow line valve
484	..Unbalanced pivoted valve (e.g., unbalanced butterfly type)	504	..Movable deflector or choke
484.2	.Line flow effect assisted	505	..With opening bias (e.g., pressure regulator)
484.4	..Reactor surface normal to flow	505.11	...With relief valve
484.6	..Reactor surface separated from flow by apertured partition	505.12	...Multi-stage
484.8	...Through separate aperture	505.13	...Senses inlet pressure
485	.Pilot or servo controlled	505.14	...Bias variable during operation
486	..Responsive to change in rate of fluid flow	505.15	....Ancillary reactor surface responds to inlet pressure
487	...Control by pressures across flow line valve	505.16	....Liquid transfer
487.5	..Electrically actuated valve	505.17	....Weight
488	..Fluid pressure type	505.18	...Balanced valve
489	...Choked or throttled pressure type	505.19	...Liquid level responsive gas flow control
490	....Pilot valve within main valve head	505.2	...With protective separator
491	....Choked passage through main valve head	505.21	...Main flow through isolated reactor chamber
489.3	....Loose fitting piston	505.22	...Through external pipe
489.5	....Pilot controls supply to pressure chamber		

505.23	....Modified valve casing	512.4	...Integral resilient member forms plural valves
505.24	....Adjustable external lever	512.5	...With common biasing means
505.25	...Apertured reactor surface surrounds flow line	513	...Mechanically interconnected
505.26	...Reactor surface separated by apertured partition	513.3	..With leak passage
505.27	....In valve stem	513.5	...Permits flow at valve interface
505.28	.....Also through reactor surface	513.7	...Bypass in valve casing
505.29	....Valve stem passes through the aperture	514	..With retarder or dashpot
505.3	.....Plural reactor surfaces	514.3	...End of valve forms dashpot chamber
505.31	.....Reactor is an inverted cup having liquid seal	514.5	...End of valve moves inside dashpot chamber
505.32	.....With movement dampener	514.7	...Enlarged piston on end of valve stem
505.33	.....Valve head in inlet chamber	515	..In couplings for coaxial conduits, e.g., drill pipe check valves
505.34	.....Valve head in inlet chamber	515.3	...Valve seat threaded into a coupling element
505.35	.....Rectilinear valve stem rigid with reactor surface	515.5	...Valve seat formed on or carried by a coupling element
505.36	...Reactor surface is diaphragm	515.7	...Valve seat clamped between coupling elements
505.37	....With valve closing bias	516	..With means for selecting area of valve or seat
505.38	...Reactor surface closes chamber	516.11	..Single head, plural ports in parallel
505.39	...Valve head in inlet chamber	516.13	...Concentric ports
505.4	....Reactor surface is inverted cup (float)	516.15	...Annular head
505.41	....Rectilinear valve stem rigid with reactor surface	516.17	...Central post on seat
505.42	....With valve closing bias	516.19	.....Stop
505.43	.....In reactor chamber	516.21	.....With guide
505.44	...Valve head on yoke	516.23	....Guide
505.45	.....Yoke has valve closing bias	516.25	..Plural seating
505.46	...Reactor operatively connected to valve by mechanical movement	516.27	...Sequential
505.47	...With mechanical movement between actuator and valve	516.29	...Resilient gasket
506	..Plural valves biased closed	517	..Biased open
507	..With means for mounting or connecting to system	518	...Oppositely swinging vanes
508	..Valve seat or external sleeve moves to open valve	519	...Weight biased
509	..Valve seating in direction of flow	519.5	....Ball valves
510	...Flexible diaphragm or bellows reactor	520	....Edge pivoted valve
511	..Direct response valves (i.e., check valve type)	521	...Pivoted valves
512	..Plural	522	..With external means for opposing bias
512.1	...Dividing and recombining in a single flow path	523	..With means for retaining external means in bias opposing position
512.15	....Integral resilient member forms plural valves	524	..With bias adjustment indicator
512.2	...One valve carries head and seat for second valve	843	..Resilient material valve
512.3	...Diverse types	844	...Having expansible port
		845	....Apertured plate
		846	....Having exit lip
		847	....With biasing means

- 848Side vent
- 849Multiple slit
- 850Internally extending mount
- 851 ...Center flexing strip
- 852 ...With valve member flexing
about securement
- 853Sleeve
- 854Central mount
- 855Flap or reed
- 856With stop
- 857With spring
- 858With weight
- 859 ...Peripherally secured
diaphragm
- 860 ...Annulus
- 526 ..Vacuum relief type
- 527 ..Pivoted valves
- 527.2 ...Head retained by removable
closure
- 527.4 ...Valve head movably connected
for accommodation to seat
- 527.6 ...Valve mounted on end of pipe
- 527.8 ...Weight biased
- 528 ..Reciprocating valves
- 529 ...Plural biasing means
- 530 ...Cam means for adjusting and
fixing bias
- 531 ...Varying effective lever arm
- 532 ...Weight biased
- 533Valve body is the weight
- 533.11Ball valves
- 533.13Removable cage
- 533.15Separable seat
- 533.17Guided head
- 533.19Cage
- 533.21Guide stem
- 533.23With closing stop
- 533.25Oppositely disposed
- 533.27Head slidable on guide rod
- 533.29Guide and seat integral
unit
- 533.31Guide and closure integral
unit
- 534Weight coaxial with valve
- 535 ...Spring biased
- 536 ...With means to protect spring
from fluid
- 537Spring under tension
- 538Piston-type valves
- 539Ball valves
- 539.5With follower
- 540Spring coaxial with valve
- 540.11Broken valve parts retainer
- 541Spring in inlet
- 542Valve stem extends through
fixed spring abutment
- 543Yoke or cage-type support
for valve stem
- 543.13Spring abuts removable valve
stem guide
- 543.15Head slides on guide-rod
concentric with spring
- 543.17Spring guides valve head
- 543.19Cage-type guide for stemless
valves
- 543.21Guide means integral and
coplanar with valve disk
- 543.23Head between spring and
guide
- 544 **WITH MEANS FOR SEPARATING SOLID
MATERIAL FROM THE FLUID**
- 545 .Plural separating elements
- 546 .Sediment chamber
- 547 .Movable strainer
- 549 .Hollow strainer, fluid inlet and
outlet perpendicular to each
other
- 550 .Planar strainer normal to flow
path
- 551 **WITH INDICATOR, REGISTER,
RECORDER, ALARM OR INSPECTION
MEANS**
- 552 .Plural
- 552.5 ..Unobvious - "combination lock"
type
- 552.7 .Time
- 553 .Position or extent of motion
indicator
- 554 ..Electrical
- 555 ..Selection from plural branches
- 556 ..Indicator element rigidly
carried by the movable element
whose position is indicated
- 556.3 ...Movable indicator element is a
pointer
- 556.6Pointer integral with handle
- 557 .Fluid pressure responsive
indicator, recorder or alarm
- 558 .Liquid level responsive
indicator, recorder or alarm
- 559 .Inspection means
- 560 **COMBINED**
- 561 R **SYSTEMS**
- 561 A .Non-valved flow dividers
- 562 .Faucet connected, sink drained
- 563 .Closed circulating system
- 564 ..With thermal circulating means
(thermo-siphons)

564.5	.Main line as motive fluid for follower-type feeder	583	.System with plural openings, one a gas vent or access opening
565.01	.With pump	584	..Access and outlet
565.11	..Pumped fluid control	585	...Tank access opening and bottom outlet
565.12	...Manual	586	....Access opening interlock or telltale on outlet valve actuator
565.13	...Fluid pressure responsive	587	..Tank with gas vent and inlet or outlet
565.14	....And pilot valve	588	...Vent and inlet or outlet in unitary mounting
565.15	....Direct response valve	589	..With vented outlet
565.16	...Electric	590	.Tank with internally extending flow guide, pipe or conduit
565.17	..Combined with fluid receiver	590.5	..Nondraining overflow type
565.34	...Reserve or surge receiver	591	..Inverted "U" passage
565.18	...Compressed air supply unit	592	..Inlet internally extending
565.19	...Hydraulic power unit	593	.Head-establishing standpipe or expansion chamber (e.g., surge tanks)
565.37	...Fluid sump	624.11	.Programmer or timer
565.22	..And jet-aspiration type pump	624.12	..With independent valve controller
565.23	..Vacuum pump	624.13	..Repeating cycle
565.24	..Resiliently mounted pump	624.14	...Self-cycling
565.25	..Hand pump	624.15	...Variable
565.26	..Multiple inlet with multiple outlet	624.16	....Attachable and removable element
565.27	..Downstream cyclic distributor	624.17	....Adjustable cam
565.28	...Distributor part unitary with movable pump part	624.18	..Plural, sequential, valve actuations
565.29	..Plural	624.19	...Plural trips or trip actuations
565.3	...Serial	624.2	...Variable cycle
565.31	....With single motive input	624.21	..Clock alarm mechanism controlled
565.32	.....One pump driven by motive fluid from the other	624.22	..Biased latch, cam operated
565.33	...Parallel	624.27	.Line condition change responsive release of valve
565.35	..With pump bypass	625	.Multi-way valve unit
565.36	..Drain valve actuator mounted on pump	625.11	..Sequential distributor or collector type
571	.Plural tanks or compartments connected for serial flow	625.12	..Sequentially progressive opening or closing of plural ports
572	..Separable with valved-connecting passage	625.13	...With subsequent closing of first port
573	..Fluid progresses by zigzag flow	625.14	....Flow combining with flow dividing
574	..Plural compartments formed by baffles	625.15	....Rotary
575	..Plural top-to-bottom connected tanks	625.16	.....Plug
576	..With communicating opening in common walls of tanks or compartments	625.17	..Selective reciprocation or rotation
577	.Tank with movable or adjustable outlet or overflow pipe		
577.5	..Horizontally traversing outlet		
578	..Float-supported outlet		
579	..Swinging outlet pipe or spout		
580	.With running joint between movable parts of system		
581	.Movable tank		
582	.With antisplash means not in flow passage		

625.18	..Plural noncommunicating flow paths	625.5	...Plural disk or plug
625.19	..Rotary plug	626	.Plural petcocks
625.2	..Supply and exhaust	627	.Sequential distributor or collector type
625.6	...Pilot-actuated	627.5	.Sequentially closing and opening alternately seating flow controllers
625.61	....Variable orifice-type modulator	628	.Sequentially progressive opening or closing of plural valves
625.62	.....Opposed orifices; interposed modulator	629	..Pressure equalizing or auxiliary shunt flow
625.63	....Common to plural valve motor chambers	630	...One valve seats against other valve (e.g., concentric valves)
625.64	....Electric	630.11	....Locomotive throttle
625.65	..Motor-operated	630.12	....Gate
625.66	....Fluid motor	630.13	....With balancing chamber
625.21	...Rotary valve	630.14	....First valve moves second valve
625.22	....Plug type	630.15	....Actuator moves both valves
625.23	.....For plural lines	630.16	..With subsequent closing of first opened port
625.24	.....Axial and radial flow	630.17	...Simultaneously moved port controllers
625.25	..Reciprocating valve	630.18	..Screw-actuated differential valves
625.26	....Combined disk or plug and gate or piston	630.19	..Lost motion
625.27	....Plural disk or plug	630.2	...Cam determines sequence
625.67	....Piston valve	630.21	...Rotary concentric valves
625.68	.....With internal flow passage	630.22	...First valve actuates second valve
625.69	.....With annular passage (e.g., spool)	635	.With preselecting means for plural valve actuator
625.28	..Dividing into parallel flow paths with recombining	636	.With selective motion for plural valve actuator
625.29	...Valve with bypass connections	636.1	..Oppositely movable cam surfaces
625.3	...With metering feature	636.2	..Rotation about either of two pivotal axes
625.31	..Rotary	636.3	..Rotation of actuator arm about its pivot and its axis
625.32	....Plug	636.4	..Reciprocation along and rotation about same axis
625.33	..Reciprocating	637	.Valves with separate, correlated, actuators
625.34	....Spool	637.05	..Correlated across separable flow path joint
625.35	.....With internal passage	637.1	..Interlocked
625.36	.....Unequal heads	637.2	..Coaxial stems
625.37	....Piston	637.3	...Rotary
625.38	.....With internal flow passage	637.4	....And reciprocating
625.39	.....Sequential opening or closing of serial ports in single flow line	637.5	....Concentric, central valve removable
625.4	..Multiple inlet with single outlet	594	.Plural noncommunicating flow paths
625.41	...Rotary valve	595	..With common valve operator
625.42	..Selective opening of plural ports		
625.43	..Four port reversing valves		
625.44	..Pivoted valve unit		
625.45	...Gate		
625.46	..Rotary valve unit		
625.47	...Plug		
625.48	..Reciprocating valve unit		
625.49	...Combined disk or plug and gate or piston		

596	.Supply and exhaust	601.03	...Single resilient member actuates or forms plural passages
596.12	..With bypass	601.04	...Valves deform to close passage
596.13	...Controlled by supply or exhaust valve	601.05	...Rotary valve
596.14	..Pilot-actuated	601.06	...Including rigid plate with flexible or resilient seal
596.15	...Common to plural valve motor chambers	601.07	...Axes of rotation of valves intersect at point
596.16	...Electric	601.08	...Axes of rotation parallel
596.17	..Motor	601.09	....Adjacent plate valves always parallel
596.18	...Fluid motor	601.11	....Adjacent plate valves counter rotate
596.1	..Biased exhaust valve	601.12	..Mechanical movement between actuator and non-rotary valve
596.2	...Biased closed	601.13	..Fluid actuated or retarded
597	.Multiple inlet with multiple outlet	601.14	..Electrical actuator
598	.Hydraulic brake line (e.g., hill holders)	601.15	..Mechanical movement between actuator and valve
599.01	.Dividing into parallel flow paths with recombining	601.16	..Rotary valve
599.02	..With fluid coupling (e.g., railway car hose coupling, truck-trailer oil system coupling, etc.)	601.17	..Butterfly valve
599.03	..System having plural inlets	601.18	..Having guide or restrictor
599.04	...Having digital flow controller	601.19	..Manually variable
599.05	..Having digital flow controller	601.2	..Having direct response valve (e.g., check valve, etc.)
599.06	...Having plural branches under common control for separate valve actuators	601.21	...With reverse flow direction
599.07	....Electromagnetic or electric control (e.g., digital control, bistable electro control, etc.)	602	.Multiple inlet with single outlet
599.08	..With multi way valve having serial valve in at least one branch	603	..Faucet attachment
599.09	..Fluid pressure regulator in at least one branch	888	..Combining by aspiration
599.11	..Flow passage with bypass	889	...Combining of three or more diverse fluids
599.12	...Including mixing feature	890	...Plural motivating fluid jets
599.13	...Including flowmeter	891	...Flow control by varying position of a fluid inlet relative to entrainment chamber
599.14	...Including cleaning, treating, or heat transfer feature	892	...With selectively operated flow control means in inlet
599.15	....Water treatment feature	893	...Flow control means is located in aspirated fluid inlet
599.16	..Second valve assembly carried by first valve head	894	....Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets
599.17	..With rotary plug having variable restrictor	895	...With condition responsive valve
599.18	...Carried valve is direct response valve (e.g., check valve, etc.)	896	..With means to promote mixing or combining of plural fluids
600	..With foam controlling means (e.g., beer, soda faucets)	897	...With selectively operated flow control means
601.01	..With common operator	898Single actuator operates plural flow control means
601.02	...Balanced valve	605	..With flow control

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|--------|---|--------|--|
| 606 | ...Valve in each inlet | 614.12 | ...Delivery cock with terminal valve |
| 607 | ...With common valve operator | 614.13 | ...Alternately seating |
| 861 | ..With flow control means for branched passages | 614.14 | ...Biased valve |
| 862 | ..With common valve operator | 614.15 | ...Opposed screw |
| 863 | ...For valve having a flexible diaphragm valving member | 614.16 | ..One valve head provides seat for other head |
| 864 | ...For valve having a ball head | 614.17 | ...Also carries head of other valve |
| 865 | ...With gearing | 614.18 | ..One valve head carries other valve head |
| 866 | ...Threaded actuator | 614.19 | ..Biased valve with external operator |
| 867 | ...Pivoted or rotary motion converted to reciprocating valve head motion | 614.2 | ..Direct response normally closed valve limits direction of flow |
| 868 |Spring biased | 614.21 | ..Coaxial oppositely directed seats |
| 869 | ...Having fluid actuator | 615 | ..Articulated or swinging flow conduit |
| 870 | ..With electrical actuation | 616 | ..Actuates valve |
| 871 | ...Spring biased | 616.3 | ...Plural motions of valve |
| 872 | ..With valve or movable deflector at junction | 616.5 | ...Reciprocating valve |
| 873 | ...Movable deflector spout in lateral port | 616.7 | ...Rotary valve |
| 874 | ...Valve or deflector is tubular passageway | 797 | FRANGIBLE |
| 875 | ...Pivoted valve or deflector | 798 | WITH COUPLING |
| 876 | ...Rotary valve or deflector | 799 | ..Flexible |
| 877 | ..Biased valve | 800 | WITH CLOSURE |
| 878 | ...Spring bias | 801 | FAUCETS AND SPOUTS |
| 879 |For valve having a ball head | 802 | MISCELLANEOUS |
| 880 |With threaded actuator | | |
| 881 |Spring coaxial with valve | | |
| 882 |Biased open | | |
| 883 | ..Single inlet with multiple distinctly valved outlets | | |
| 884 | ..Sectional block structure | | |
| 885 | ..With fluid actuator | | |
| 886 | ..With threaded actuator | | |
| 887 | ..Containing rotary valve | | |
| 613 | ..Flow path with serial valves and/or closures | | |
| 614 | ..Separable flow path section, valve or closure in each | | |
| 614.01 | ...Common joint and valve seat faces, or sections joined by closing members | | |
| 614.02 | ...Each valve and/or closure operated by coupling motion | | |
| 614.03 |Linear motion of flow path sections operates both | | |
| 614.04 |Valves actuate each other | | |
| 614.05 | ...Valve- or closure-operated by coupling motion | | |
| 614.06 | ...Coupling interlocked with valve, or closure or actuator | | |
| 614.11 | ..Common actuator | | |

CROSS-REFERENCE ART COLLECTIONS

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|-----|--|
| 900 | BUMPLESS MANUAL TO AUTOMATIC RELAYS |
| 901 | BIASED BALL VALVES WITH OPERATORS |
| 902 | SLUSH PUMP CHECK VALVES |
| 903 | RUBBER VALVE SPRINGS |
| 904 | CUSHION CHECK VALVES |
| 905 | ROTARY VALVES FOR MULTIPLE GAS BURNERS |
| 906 | VALVES BIASED BY FLUID "SPRINGS" |
| 907 | VACUUM-ACTUATED VALVES |
| 908 | RESPIRATOR CONTROL |
| 909 | MAGNETIC FLUID VALVE |
| 910 | DESTRUCTIBLE OR DEFORMABLE ELEMENT CONSTRUCTED OF SPECIFIC MATERIAL |

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CLASS 137 FLUID HANDLING

FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**

May 2008