1 PROCESSES
2 With control of flow by a
condition or characteristic of
a fluid
3 ...Mixing of plural fluids of
diverse characteristics or
conditions
4 ...Controlled by consistency of
mixture
5 ...Controlled by conductivity of
mixture
6 ...Controlled by heat of
combustion of mixture
7 ...Controlled by pressure
8 ...For producing uniform flow
9 ...For producing proportionate
flow
10 ...By speed of fluid
11 ...For regulating boiler feed
water level
12 ...By fluid pressure
12.5 ...Carbonated beverage handling
processes
13 ...Affecting flow by the addition
of material or energy
14 ...Involving pressure control
15.01 ...Cleaning, repairing, or
assembling
15.02 ...Repairing or assembling hydrant
(e.g., fireplug, etc.)
15.03 ...Gas or water meter repairing or
assembling
15.04 ...Fluid cleaning or flushing
15.05 ...Liquid cleaning or flushing
15.06 ...Valve or valve seat cleaning
15.07 ...Mechanical cleaning (e.g., pig,
etc.)
15.08 ...Repairing, securing, replacing,
or servicing pipe joint,
valve, or tank
15.09 ...Including joint or coupling
15.11 ...Detecting or repairing leak
15.12 ...Tapping pipe, keg, or tank
15.13 ...Particular aperture forming
means
15.14 .....Cutter or cutting tool
15.15 .....Having deformable or
inflatable means
15.16 .....With content loading or
unloading (e.g., dispensing,
discharge assistant, etc.)
15.17 .....Specific valve or valve
element mounting or repairing
15.18 .....Valve or valve element
assembling, disassembling, or
replacing
15.19 .....Fluid actuated or retarded
15.21 .....Multi way valve
15.22 .....Ball valve or rotary ball
valve
15.23 .....Gate valve
15.24 .....Plug valve
15.25 .....Butterfly valve
15.26 .....Float valve
15.1 HIGHSPEED FLUID INTAKE MEANS
(E.G., JET ENGINE INTAKE)
15.2 With condition responsive
control means
CONTROL BY CHANGE OF POSITION OR
INERTIA OF SYSTEM
15.3 With second control
15.4 Position relative body of water
(e.g., marine governors)
15.5 ...Float controlled
15.6 ...Pressure or head controlled
15.7 ...Vent opening or closing on
tipping container
15.8 ...By shifting of liquid level
15.9 ...With servo connection to valve
SPEED RESPONSIVE VALVE CONTROL
15.10 ...Acceleration responsive valve
control
15.11 ...With manual valve control
15.12 ...Speed change and excess speed
valve control
15.13 ...With other condition responsive
valve control
15.14 ...Governor drive failure
responsive
15.15 ...Centrifugal mass type (exclusive
of liquid)
15.16 ...With multiple valves
15.17 ...Periodically actuated valve
15.18 ...Rotating valve and rotating
governor
15.19 ...Excess speed responsive
15.20 ...With fluid servo-motor
FREEZE CONDITION RESPONSIVE
SAFETY SYSTEMS
15.21 ...With freeze waste
15.22 ...Stop and waste
15.23 ...Low temperature responsive
drains
May 2008
COMBUSTION FAILURE RESPONSIVE
FUEL SAFETY CUT-OFF FOR
BURNERS

THERMO-ELECTRIC

DESTRUCTIBLE OR DEFORMABLE
ELEMENT CONTROLLED

DESTRUCTIBLE ELEMENT

EXPOSIVE ACTUATION

SEPARABLE VALVE COUPLING OR CONDUIT

TENSILE OR SHEER PIN OR BOLT

PRESSURE CAUSES PIN OR BOLT TO DESTRUCT

WITH ALARM OR INDICATOR

Rupture disc

MEANS FOR HOLDING ENTIRE DISC AFTER RUPTURE

DISC BURST AFTER DESTRUCTION OF ADDITIONAL ELEMENT

DIRECT PRESSURE CAUSES DISC TO BURST

TWO-WAY RUPTURE DISC

DOME SHAPE

REVERSE BUCKLING

SPECIFIC WEAKENING POINT

INTEGRAL DISC ASSEMBLY

KNIFE OR CUTTER CAUSES DISC TO BREAK

MOVABLE KNIFE OR CUTTER

WITH COUNTERBALANCING ELEMENT

FRANGIBLE ELEMENT RETURNS PRESSURE RESPONSIVE VALVE

HEAT DESTRUCTIBLE OR FUSIBLE

WITH SECOND SENSING MEANS

IN FLUID FLOW PATH

SAFETY CUT-OFF

WITH HEATER FOR DESTRUCTIBLE OR FUSIBLE ELEMENT

WITH EXTERNAL CLOSING MEANS

AMBIENT CONDITION CHANGE RESPONSIVE

FOR CONTROLLING SOIL IRRIGATION

SOIL MOISTURE SENSING

BURNER GAS CUTOFF

ATMOSPHERIC

TEMPERATURE

WITH ADDITIONAL DIVERSE CONTROL

PRESSURE

UNDERWATER

RESPONSIVE TO CONDITION EXTERNAL OF SYSTEM

... AND CAUSING CHANGE OR CORRECTION OF SENSED CONDITION

... UTILIZING DIVERSE FLUIDS

... UTILIZING PARTICULAR FLUID

... MEANS TO CAUSE ROTATIONAL FLOW OF FLUID (E.G., VORTEX GENERATOR)

... PLURAL VORTEX GENERATORS

... VORTEX GENERATOR AS CONTROL FOR SYSTEM

... VORTEX GENERATOR IN INTERACTION CHAMBER OF DEVICE

... BY TANGENTIAL INPUT TO AXIAL OUTPUT (E.G., VORTEX AMPLIFIER)

... WITH MEANS TO VARY INPUT OR OUTPUT OF DEVICE

... SYSTEM COMPRISING PLURAL FLUIDIC DEVICES OR STAGES

... PLURAL POWER INPUTS (E.G., PARALLEL INPUTS)

... VARIABLE OR DIFFERENT-VALUE POWER INPUTS

... PULSATING POWER INPUT AND CONTINUOUS-FLOW POWER INPUT

... WITH VARIABLE OR SELECTABLE SOURCE OF CONTROL-INPUT SIGNAL

... TO CASCaded PLURAL DEVICES

... WITH FEEDBACK PASSAGE(S) BETWEEN DEVICES OF CASCADE

... WITH PULSED CONTROL-INPUT SIGNAL

... PLURAL POWER INPUTS TO SINGLE DEVICE

... INTERSECTING AT INTERACTION REGION (E.G., COMPARATOR)

... CO-LINEAL, OPPOSITELY-DIRECTED POWER INPUTS (E.G., IMPACT MODULATOR)

... MEANS TO REGULATE OR VARY OPERATION OF DEVICE

... TO VARY FREQUENCY OF PULSES OR OSCILLATIONS

... BY NON-FLUID ENERGY FIELD AFFECTING INPUT (E.G., TRANSDUCER)
...Acoustical or thermal energy
...By movable element
...Operating at timed intervals
  (e.g., to produce pulses)
...Electrically-actuated element
  (e.g., electro-mechanical
  transducer)
...Means (e.g., valve) in control
  input
...Structure of body of device
.Device including passages having
  V over T configuration
  ...And feedback passage(s) or
  path(s)
...With particular characteristics
  of control input
...Multiple control-input
  passages
...And multiple or joined power-
  outlet passages
...And enlarged interaction
  chamber
...And vent passage(s)
.Device including passages having
  V over gamma configuration
.Device including linearly-
  aligned power stream emitter
  and power stream collector

PRESSURE MODULATING RELAYS OR
FOLLOWERS
.Jet control type
.Plural series units
...With counter-balancing pressure
  feedback to the modulating
  device
...With counter-counter balancing
  pressure feedback

SELF-PROPORTIONING OR CORRELATING
SYSTEMS
.Mixture condition maintaining or
  sensing
...Dividing and recombing flow
...By specific gravity
...By viscosity or consistency
...By optical or chemical property
.Fuel controlled by boiler or
  water system condition
.Self-proportioning flow systems
...Interconnected flow
  displacement elements
...Movable trap chamber
.Flow comparison or differential
  response
.Flow dividers (e.g., reversely
  acting controls)

101.11 ...Main line flow displaces or
  entrains material from
  reservoir
101.19 ...With electrical controller
101.21 ...Flow displacement element
  actuates electrical controller
101.25 ...Liquid level response
101.27 ...Float controlled weir or valve
101.29 ...Swinging outlet pipe
  controller
101.31 ...With measuring type discharge
  assistant
102 ...Supply and exhaust type
103 ...Vacuum or suction pulsator type
  (e.g., milking machine)
104 ...With trip linkage or snap
  action
105 ...With pulsation responsive
  pilot valve
106 ...Reversing or 4-way valve
  systems
107 ...Waste responsive to flow
  stoppage
109 ...Self-controlled branched flow
  systems
110 ...Dividing and recombing
111 ...Plural inflows
112 ...Alternate or successive
  inflows
113 ....Control by depletion of
  source
114 ...One inflow supplements another
115.01 ...Bypass or relief controlled by
  main line fluid condition
115.02 ...Liquid level responsive
115.03 ...Flow rate responsive
115.04 ...Including controlling main
  line flow
115.05 ...Relief or bypass closes as
  main opens
115.06 ...Bypass or relief valve biased
  open
115.07 ...Pilot valve operated
115.08 ...Carried choke
115.09 ...Choke
115.1 ...Variable choke resistance
115.11 ...Venturi
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
115.15 .....Bypass or relief valve opens as other branch valve closes open
115.16 .....Bypass or relief valve biased open
115.17 .....Increasing pressure progressively closes then reopens by-pass or relief valve
115.18 .....Bypass or relief valve responsive to pressure downstream of outlet valve
115.19 .....Pilot valve
115.2 .....Outlet valve carried by bypass or relief valve
115.21 .....Plural sensors for single bypass or relief valve
115.22 .....Sensors interconnected by timing or restrictive orifice
115.23 .....Pilot valve operated
115.24 .....Mechanical movement between sensor and valve
115.25 .....Electrical control
115.26 .....Sensor rigid with valve
115.27 .....Flexible sensor
115.28 .....Pressure responsive outlet valve
118.01 .....Plural outflows
118.02 .....Single actuator operates plural outlets simultaneously
118.03 .....Biased open isolation valve
118.04 .....Flow rate responsive
118.05 .....Primer valve
118.06 .....Pressure responsive
118.07 .....With external control for correlating valve (e.g., manual)
119.01 .....Alternately or successively substituted outflow
120 .....Control by filling auxiliary gravitating or float operating tank
121 .....Control by filling outlet tank or receiver
122 .....Float controlled
119.02 .....Four port reversing valve
119.03 .....Responsive to pressure or flow interruption
119.04 .....Plural outlets control with automatic reset
119.05 .....Manually set to a single outflow position
119.06 .....Flow rate responsive
119.07 .....Flow sensing turbine
119.08 .....Pressure responsive
119.09 .....Responsive to outlet pressure
119.1 .....Electrical control
87.02 .....Liquid level responsive
87.03 .....Flow rate responsive
87.04 .....Pressure differential
87.05 .....Plural sensors
87.06 .....For single valve
123 .....Plural
124 .....Tank truck mounted
125 .....Sequentially discharging in parallel
126 .....From plural tanks
127 .....Main siphon with auxiliary starting, stopping or resetting siphon
128 .....Sinking or bucket-type float operated main siphon, float emptying auxiliary siphon
129 .....Siphons
130 .....With discharge-controlling receiver
131 .....With float
132 .....Periodic or accumulation responsive discharge
133 .....With manual control
134 .....Control by filling auxiliary tank
135 .....Float-operated inlet to siphon
136 .....Release of trapped air
137 .....Through float-operated vent
138 .....Through liquid trap seal
139 .....Auxiliary liquid trap seal
140 .....With strainer, filter, separator or sediment trap
141 .....With recorder, register, signal, indicator or inspection window
142 .....With flow starting, stopping or maintaining means
143 .....Siphon venting or breaking
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
152. With means for mounting and/or positioning relative to siphon chamber
153. Elements
154. DIVERSE FLUID CONTAINING PRESSURE SYSTEMS
155. Gas lift valves for wells
156. Gas pressure discharge of liquids feed traps (e.g., to boiler)
157. Gas pressure controlled by amount of liquids in boiler or discharge receiver
158. Pressure connection at liquid level in boiler or discharge receiver
159. Gas pressure controlled by amount of liquid in trap
160. Plural trap chambers
161. Gravitating
162. Gravitating vessel
163. Sinking or bucket type float
164. Pivoted vessel with fluid passage through pivot
165. Float responsive
166. Liquid control valve positively actuated
167. Gas condensing type
168. Gas inlet and outlet valves unitary
169. Gas pressure controlled by manual or cyclic means
170. Movable trap chamber
170.1 Foam control in gas charged liquids
170.2 Level or pressure responsive
170.3 Separate handling of foam
170.4 With conditioning trap or chamber
170.5 Recarbonation
170.6 With trap or chamber by-pass
171. Fluid separating traps or vents
172. Liquids separated from liquid
173. Plural discriminating outlets for diverse fluids
174. Common actuator for control valves
175. Choke or restricted passage gas bleed
176. From above liquid level
177. Discriminating outlet for liquid
178. With alternately operated inlet and outlet valves
179. With non-discriminating gas vent or liquid discharge
180. Abnormal pressure responsive liquid blow-off or drain
181. Manual control
182. With auxiliary inlet or by-pass valve
183. With fluid responsive valve
184. Successively opened valves
185. Gas collecting float (e.g., inverted bucket)
186. Downstream from valve
187. Level responsive
188. Weight or pressure
189. Gravitating vessel
190. Sinking or bucket type float
191. Servo-control
192. Float
193. With main line gas outlet from trap chamber
194. With outlet extending above liquid in trap
195. Servo-control
196. With pressure balanced outlet valve
197. Discriminating outlet for gas
198. With reverse flow stop or pressure regulating valve
199. Fluid sensing valve
200. With vaporized liquid stop
201. With separate return for condensate
202. Float responsive
203. With liquid emptying means
204. Self-emptying
205. Liquid filling by evacuating container
205.5 Main line flow displaces additive from shunt reservoir
206. Gas pressure storage over or displacement of liquid
207. Surge suppression
207.5 With return of liquid to supply
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

May 2008
...Unitary mounting for gas pressure inlet and liquid outlet

With liquid level responsive gas vent or whistle

Combined high and low level responsive

BACK FLOW PREVENTION BY VACUUM BREAKING (E.G., ANTI-SIPHON DEVICES)

Unitary mounting for gas pressure inlet and liquid outlet

With liquid level responsive gas vent or whistle

Combined high and low level responsive

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Unitary mounting for gas pressure inlet and liquid outlet

With liquid level responsive gas vent or whistle

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AIR VENT IN LIQUID FLOW LINE

Air vent in liquid flow line

Automatic valve in vent line

With co-acting valve in liquid flow path

LARNER-JOHNSON TYPE VALVES; I.E., TELESCOPING INTERNAL VALVE IN EXPANDED FLOW LINE SECTION

Air vent in liquid flow line

Automatic valve in vent line

Valved

...With co-acting valve in liquid flow path

INFLATABLE ARTICLE (E.G., TIRE FILLING CHUCK AND/OR STEM)

With pressure-responsive pressure-control means

Pulsating

Diaphragm, bellows or expansible tube

Co-axial inflation and relief valves

With gauge or indicator

With deflating means

Selectively connected

Stem attached relief valve

With coupling means

With cap

Valve actuating, assembling or locking means on cap

Valve manually seated

Removable valve head and seat unit (valve insides)

WITH VEHICLE GUIDE OR SUPPORT, E.G., SERVICE STATION

DISTRIBUTION SYSTEMS INVOLVING GEOGRAPHIC FEATURES

WITH CLEANER, LUBRICATION ADDED TO FLUID OR LIQUID SEALING AT VALVE INTERFACE

Cleaning or steam sterilizing

Reverse fluid flow

With separate material addition

Steam sterilizing

Mechanical cleaning

Valve grinding motion of valve on seat

Concentric stem

Spring pressed

Lost motion permits grinding

With swivel-preventing means

Nut releasable from body and/or stem

With independent grinding actuator

Separable

Cleaning member reciprocates in passage

By-pass cleaning

Independent actuation

Liquid supplied at valve interface

Plural feed

Line pressure feed

Feed by or with actuation

Loss control

Screw feed

With check valve

Excess relief

Jacking

Jacking

Seating

Spring biased piston feed

External pressure

Gravity or capillary feed

WITH LIQUID VALVES OR LIQUID TRAP SEALS

Liquid seal in liquid flow line; flow liquid forms seal

Valves

Line condition change responsive

Plural valves or valve seats

Pivoted valve

Ball valve

Seats vertically up

Seal vertically up

Plural inlet

Divided and recombined passages

Tangential inlet flow

Downward partition encircles projecting outlet

Submerged inlet pipe end

Hinged seal bowl

Distinct seal bowl in flow line connected casing

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

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315.01  **WITH REPAIR, TAPPING, ASSEMBLY, OR DISASSEMBLY MEANS**

315.02  Blow out preventer or choke valve device (e.g., oil well flow controlling device, etc.)

315.03  Solenoid or electromagnetically operated valve

315.04  Pressure regulating type valve

315.05  Diaphragm type

315.06  Gas or water meter replacing flexible tube or sleeve type valve

315.07  Assembling or disassembling flexible tube or sleeve type valve

315.08  Assembling or disassembling float or float valve

315.09  Assembling or disassembling multi way valve

315.11  Assembling, disassembling, or removing cartridge type valve (e.g., insertable and removable as a unit, etc.)

315.12  Faucet type (e.g., domestic water use, etc.)

315.13  Including removable valve head and seat unit

315.14  Including mechanical movement actuator

315.15  Particular handle or handle fastening means

315.16  Assembling or disassembling pivoted valve

315.17  Assembling or disassembling rotary valve

315.18  Rotary ball valve

315.19  Particular valve seat or interface seal

315.21  Replaceable

315.22  Butterfly valve

315.23  Having valve head or seat packing

315.24  With head and stem collections

315.25  Plug valve

315.26  Having retainer at actuator end

315.27  Assembling or disassembling reciprocating valve

315.28  Having particularly packed or sealed mechanical movement actuator

315.29  Gate valve

315.31  Bifaced

315.32  Including seal

315.33  Assembling or disassembling check valve

315.35  With mechanical movement between actuator and valve

315.36  Plural motions of valve

315.37  Lever type

315.38  Gear type

315.39  Cam type

315.4  Screw type

315.41  Tool for applying or removing valve or valve member

315.42  Including sealing feature

316  With holding means functioning only during transportation assembly or disassembly

317  Tapping a pipe, keg, or apertured tank under pressure

318  With aperture forming means

319  Imperorate closure removing and holding tap

320  With valved closure or bung

321  Combined rotary and longitudinal movement of valve

322  Longitudinal movement of valve

323  Rotary movement of valve

324  With core ejectors

325  Impact operated

326  Foot valve extraction from top of enclosure

327  With disassembly tool engaging feature

328  Wrench engaging lugs

329  With provision of alternate wear parts

329.01  Valve heads and/or seats

329.02  Opposite duplicate surfaces of unitary structure

329.03  Homogeneous material

329.04  Valve heads

329.05  Different portions of continuous surfaces

329.06  Successively used adjacent independent elements

329.1  Removable valve with normally disabled supplemental check valve

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
CLASS 137 FLUID HANDLING

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

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

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463 ..Fluid released trip
464 ..Fluid counter-biased or unseated valve
465 ..With mechanical stop against reopening
466 ..With fluid pressure seating of valve
467 .Fluid opened valve requiring reset
467.5 .Consistency responsive
468 .Thermal responsive
469 .Pop valves
470 ..Pop closing valves
471 ..Pop pressure reactor in inflow to valve
472 ..Pop pressure reactor in branched released path
473 ..Separate relief valves or valves for each branch
474 ..Lost motion between pop pressure reactor and valve
475 ..Adjustable choke
476 ..Annular lip or baffle
477 ....On movable valve part
478 ....Screw threaded
479 ..Combustion engine induction type
480 ..Valve in auxiliary inlet to induction line
481 ..With manual modifier
482 ..With suction compensator
483 ..With separate reactor surface
484 ..Unbalanced pivoted valve (e.g., unbalanced butterfly type)
484.2 .Line flow effect assisted
484.4 ..Reactor surface normal to flow
484.6 ..Reactor surface separated from flow by apertured partition
484.8 ...Through separate aperture
485 ..Pilot or servo controlled
486 ..Responsive to change in rate of fluid flow
487 ..Control by pressures across flow line valve
487.5 ..Electrically actuated valve
488 ..Fluid pressure type
489 ....Choked or throttled pressure type
490 ....Pilot valve within main valve head
491 ....Choked passage through main valve head
491.3 ....Loose fitting piston
491.5 ....Pilot controls supply to pressure chamber
492 ...Single acting fluid servo
492.5 ....Spring biased
493 ..Bi-directional flow valves
493.1 ..One head and seat carried by head of another
493.2 ...Supporting valve only spring biased
493.3 ...Supporting valve spring carried by supporting valve stem
493.4 ....Spring stop on supported valve stem
493.5 ....Spring abuts guide for supported valve stem
493.6 ...Both valves spring biased
493.7 ..Axes of ports perpendicular
493.8 ..Axes of ports parallel
493.9 ..Axes of ports co-axial
494 ..With separate connected fluid reactor surface
495 ..With manual or external control for line valve
496 ..Valve closes in responses to reverse flow
497 ..Responsive to change in rate of fluid flow
498 ...Valve closes in response to excessive flow
499 ...Turbine or swinging vane type reactor
500 ...Expansible chamber subject to differential pressures
501 ....Pressures across fixed choke
502 ....With Venturi tube having a connection to throat
503 ....Pressures across flow line valve
504 ...Movable deflector or choke
505 ..With opening bias (e.g., pressure regulator)
505.11 ...With relief valve
505.12 ...Multi-stage
505.13 ...Senses inlet pressure
505.14 ...Bias variable during operation
505.15 ....Ancillary reactor surface responds to inlet pressure
505.16 ....Liquid transfer
505.17 ....Weight
505.18 ...Balanced valve
505.19 ...Liquid level responsive gas flow control
505.2 ...With protective separator
505.21 ...Main flow through isolated reactor chamber
505.22 ...Through external pipe
505.23 ....Modified valve casing
505.24 ....Adjustable external lever
505.25 ...Apertured reactor surface
surrounds flow line
505.26 ...Reactor surface separated by
apertured partition
505.27 ....In valve stem
505.28 .....Also through reactor surface
505.29 ....Valve stem passes through the
aperture
505.3 .....Plural reactor surfaces
505.31 .....Reactor is an inverted cup
having liquid seal
505.32 ......With movement dampener
505.33 ......Valve head in inlet chamber
505.34 ......Valve head in inlet chamber
505.35 ......Rectilinear valve stem
rigid with reactor surface
505.36 .......Reactor surface is diaphragm
505.37 ......With valve closing bias
505.38 .......Reactor surface closes chamber
505.39 ......Valve head in inlet chamber
505.4 ......Reactor surface is inverted
  cup (float)
505.41 ......Rectilinear valve stem rigid
with reactor surface
505.42 ......With valve closing bias
505.43 ......In reactor chamber
505.44 ......Valve head on yoke
505.45 ......Yoke has valve closing bias
505.46 ......Reactor operatively connected
to valve by mechanical
  movement
505.47 ......With mechanical movement
between actuator and valve
506 ..Plural valves biased closed
507 ..With means for mounting or
connecting to system
508 ..Valve seat or external sleeve
  moves to open valve
509 ..Valve seating in direction of
  flow
510 ..Flexible diaphragm or bellows
  reactor
511 ..Direct response valves (i.e.,
  check valve type)
512 ..Plural
512.1 ..Dividing and recombining in a
  single flow path
512.15 ....Integral resilient member
forms plural valves
512.2 ....One valve carries head and
  seat for second valve
512.3 ....Diverse types
512.4 ...Integral resilient member
forms plural valves
512.5 ...With common biasing means
513 ..Mechanically interconnected
513.3 ..With leak passage
513.5 ...Permits flow at valve
  interface
513.7 ...Bypass in valve casing
514 ..With retarder or dashpot
514.3 ...End of valve forms dashpot
  chamber
514.5 ...End of valve moves inside
dashpot chamber
514.7 ...Enlarged piston on end of
  valve stem
515 ..In couplings for coaxial
  conduits, e.g., drill pipe
  check valves
515.3 ...Valve seat threaded into a
  coupling element
515.4 ...Valve seat formed on or
carried by a coupling element
515.7 ...Valve seat clamped between
coupling elements
516 ...With means for selecting area
  of valve or seat
516.11 ..Single head, plural ports in
  parallel
516.13 ...Concentric ports
516.15 ...Annular head
516.17 ...Central post on seat
516.19 ......Stop
516.21 ......With guide
516.23 ......Guide
516.25 ..Plural seating
516.27 ...Sequential
516.29 ...Resilient gasket
517 ..Biased open
518 ...Oppositely swinging vanes
519 ...Weight biased
519.5 ...Ball valves
519.7 ...Peripheral valve
520 ....Edge pivoted valve
521 ...Pivoted valves
522 ...With external means for
  opposing bias
523 ...With means for retaining
  external means in bias
  opposing position
524 ...With bias adjustment indicator
525 ...Resilient material valve
526 ...Having expansible port
527 ....Apertured plate
528 ....Having exit lip
529 ...With biasing means

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/accounting/...Side vent
849 ......Multiple slit
850 ......Internally extending mount
851 ...Center flexing strip
852 ...With valve member flexing about securement
853 ......Sleeve
854 ......Central mount
855 ......Flap or reed
856 ......With stop
857 ......With spring
858 ......With 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
533 ......Valve body is the weight
533.11 ......Ball valves
533.13 ......Removable cage
533.15 ......Separable seat
533.17 ......Guided head
533.19 ......Cage
533.21 ......Guide stem
533.23 ......With closing stop
533.25 ......Oppositely disposed
533.27 ......Head slidable on guide rod
533.29 ......Guide and seat integral unit
533.31 ......Guide and closure integral unit
534 ......Weight coaxial with valve
535 ......Spring biased
536 ......With means to protect spring from fluid
537 ......Spring under tension
538 ......Piston-type valves
539 ......Ball valves
539.5 ......With follower
540 ......Spring coaxial with valve
540.11 ......Broken valve parts retainer
541 ......Spring in inlet
542 ......Valve stem extends through fixed spring abutment
543 ......Yoke or cage-type support for valve stem
543.13 ......Spring abuts removable valve stem guide
543.15 ......Head slides on guide-rod concentric with spring
543.17 ......Spring guides valve head
543.19 ......Cage-type guide for stemless valves
543.21 ......Guide means integral and coplanar with valve disk
543.23 ......Head 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
556.6 ....Pointer integral with handle
557 ..Fluid pressure responsive indicator, recorder or alarm
558 ..Liquid level responsive indicator, recorder or alarm
559 ..Inspection means
560 COMBINED SYSTEMS
561 R ..Non-valved flow dividers
562 ..Faucet connected, sink drained
563 ..Closed circulating system
564 ..With thermal circulating means (thermo-siphons)
CLASS 137 FLUID HANDLING

564.5 .Main line as motive fluid for follower-type feeder
565.01 .With pump
565.11 ..Pumped fluid control
565.12 ...Manual
565.13 ...Fluid pressure responsive
565.14 ....And pilot valve
565.15 ....Direct response valve
565.16 ...Electric
565.17 ..Combined with fluid receiver
565.18 ..Compressed air supply unit
565.19 ...Hydraulic power unit
565.22 ..And jet-aspiration type pump
565.23 ..Vacuum pump
565.24 ..Resiliently mounted pump
565.25 ..Hand pump
565.26 ..Multiple inlet with multiple outlet
565.27 ..Downstream cyclic distributor
565.28 ...Distributor part unitary with movable pump part
565.29 ..Plural
565.3 ...Serial
565.31 ....With single motive input
565.32 .....One pump driven by motive fluid from the other
565.33 ...Parallel
565.35 ..With pump bypass
565.36 ..Drain valve actuator mounted on pump
571 .Plural tanks or compartments connected for serial flow
572 ...Separable with valved-connecting passage
573 ...Fluid progresses by zigzag flow
574 ...Plural compartments formed by baffles
575 ...Plural top-to-bottom connected tanks
576 ...With communicating opening in common walls of tanks or compartments
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
583 .System with plural openings, one a gas vent or access opening
584 ..Access and outlet
585 ...Tank access opening and bottom outlet
586 ....Access opening interlock or telltale on outlet valve actuator
587 ..Tank with gas vent and inlet or outlet
588 ...Vent and inlet or outlet in unitary mounting
589 ..With vented outlet
590 .Tank with internally extending flow guide, pipe or conduit
590.5 ..Nondraining overflow type
591 ..Inverted "U" passage
592 ..Inlet internally extending
593 ..Head-establishing standpipe or expansion chamber (e.g., surge tanks)
624.11 .Programmer or timer
624.12 ..With independent valve controller
624.13 ..Repeating cycle
624.14 ...Self-cycling
624.15 ...Variable
624.16 ....Attachable and removable element
624.17 ....Adjustable cam
624.18 ..Plural, sequential, valve actuations
624.19 ...Plural trips or trip actuations
624.2 ...Variable cycle
624.21 ..Clock alarm mechanism controlled
624.22 ..Biased latch, cam operated
624.27 .Line condition change responsive release of valve
625 .Multi-way valve unit
625.11 ..Sequential distributor or collector type
625.12 ..Sequentially progressive opening or closing of plural ports
625.13 ...With subsequent closing of first port
625.14 ....Flow combining with flow dividing
625.15 ....Rotary
625.16 .....Plug
625.17 ..Selective reciprocation or rotation
625.18 .. Plural noncommunicating flow paths
625.19 ... Rotary plug
625.2 ... Supply and exhaust
625.6 ... Pilot-actuated
625.61 .... Variable orifice-type modulator
625.62 ..... Opposed orifices; interposed modulator
625.63 .... Common to plural valve motor chambers
625.64 .... Electric
625.65 ... Motor-operated
625.66 .... Fluid motor
625.21 ... Rotary valve
625.22 .... Plug type
625.23 ..... For plural lines
625.24 ..... Axial and radial flow
625.25 .... Reciprocating valve
625.26 .... Combined disk or plug and gate or piston
625.27 .... Plural disk or plug
625.67 .... Piston valve
625.68 ..... With internal flow passage
625.69 ..... With annular passage (e.g., spool)
625.28 ... Dividing into parallel flow paths with recombining
625.29 ... Valve with bypass connections
625.3 ... With metering feature
625.31 ... Rotary
625.32 .... Plug
625.33 ... Reciprocating
625.34 ... Spool
625.35 ..... With internal passage
625.36 ..... Unequal heads
625.37 .... Piston
625.38 ..... With internal flow passage
625.39 ...... Sequential opening or closing of serial ports in single flow line
625.4 ... Multiple inlet with single outlet
625.41 ... Rotary valve
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
625.5 ... Plural disk or plug
625.51 ... Pilot-actuated
625.52 ... Supply and exhaust
625.53 ... Reciprocating
625.54 ... Plural noncommunicating flow paths
625.55 ... With preselecting means for plural valve actuator
625.56 ... With selective motion for plural valve actuator
625.57 ... Oppositely movable cam surfaces
625.58 ... Rotation about either of two pivotal axes
625.59 ... Rotation of actuator arm about its pivot and its axis
625.60 ... Reciprocation along and rotation about same axis
625.61 ... Correlated across separable flow path joint
625.62 ... Interlocked
625.63 ... Coaxial stems
625.64 ... Rotary
625.65 ... And reciprocating
625.66 ... Concentric, central valve removable
625.67 ... Plural noncommunicating flow paths
625.68 ... With common valve operator
596 .Supply and exhaust
596.12 .With bypass
596.13 .Controlled by supply or exhaust valve
596.14 .Pilot-actuated
596.15 .Common to plural valve motor chambers
596.16 .Electric
596.17 .Motor
596.18 .Fluid motor
596.1 .Biased exhaust valve
596.2 .Biased closed
597 .Multiple inlet with multiple outlet
598 .Hydraulic brake line (e.g., hill holders)
599.01 .Dividing into parallel flow paths with recombining
599.02 .With fluid coupling (e.g., railway car hose coupling, truck-trailer oil system coupling, etc.)
599.03 .System having plural inlets
599.04 .Having digital flow controller
599.05 .Having digital flow controller
599.06 .Having plural branches under common control for separate valve actuators
599.07 .Electromagnetic or electric control (e.g., digital control, bistable electro control, etc.)
599.08 .With multi way valve having serial valve in at least one branch
599.09 .Fluid pressure regulator in at least one branch
599.11 .Flow passage with bypass
599.12 .Including mixing feature
599.13 .Including flowmeter
599.14 .Including cleaning, treating, or heat transfer feature
599.15 .Water treatment feature
599.16 .Second valve assembly carried by first valve head
599.17 .With rotary plug having variable restrictor
599.18 .Carried valve is direct response valve (e.g., check valve, etc.)
600 .With foam controlling means (e.g., beer, soda faucets)
601.01 .With common operator
601.02 .Balanced valve
601.03 .Single resilient member actuates or forms plural passages
601.04 .Valves deform to close passage
601.05 .Rotary valve
601.06 .Including rigid plate with flexible or resilient seal
601.07 .Axes of rotation of valves intersect at point
601.08 .Axes of rotation parallel
601.09 .Adjacent plate valves always parallel
601.11 .Adjacent plate valves counter rotate
601.12 .Mechanical movement between actuator and non-rotary valve
601.13 .Fluid actuated or retarded
601.14 .Electrical actuator
601.15 .Mechanical movement between actuator and valve
601.16 .Rotary valve
601.17 .Butterfly valve
601.18 .Having guide or restrictor
601.19 .Manually variable
601.2 .Having direct response valve (e.g., check valve, etc.)
601.21 .With reverse flow direction
602 .Multiple inlet with single outlet
603 .Faucet attachment
888 .Combining by aspiration
889 .Combining of three or more diverse fluids
890 .Plural motivating fluid jets
891 .Flow control by varying position of a fluid inlet relative to entrainment chamber
892 .With selectively operated flow control means in inlet
893 .Flow control means is located in aspirated fluid inlet
894 .Single actuator operates flow control means located in both motivating fluid and aspirated fluid inlets
895 .With condition responsive valve
896 .With means to promote mixing or combining of plural fluids
897 .With selectively operated flow control means
898 .Single actuator operates plural flow control means
605 .With flow control
...Valve in each inlet
...With common valve operator
With flow control means for branched passages
...With common valve operator
...For valve having a flexible diaphragm valving member
...For valve having a ball head
...With gearing
...Threaded actuator
...Pivoted or rotary motion converted to reciprocating valve head motion
...Spring biased
...Having fluid actuator
...With electrical actuation
...Spring biased
...With valve or movable deflector at junction
...Movable deflector spout in lateral port
...Valve or deflector is tubular passageway
...Pivoted valve or deflector
...Rotary valve or deflector
...Biased valve
...Spring bias
...For valve having a ball head
...With threaded actuator
...Spring coaxial with valve
...Biased open
...Single inlet with multiple distinctly valved outlets
...Sectional block structure
...With fluid actuator
...With threaded actuator
...Containing rotary valve
Flow path with serial valves and/or closures
...Separable flow path section, valve or closure in each
...Common joint and valve seat faces, or sections joined by closing members
...Each valve and/or closure operated by coupling motion
...Linear motion of flow path sections operates both
...Valves actuate each other
...Valve- or closure-operated by coupling motion
...Coupling interlocked with valve, or closure or actuator
...Common actuator
...Delivery cock with terminal valve
...Alternately seating
...Biased valve
...Opposed screw
...One valve head provides seat for other head
...Also carries head of other valve
...One valve head carries other valve head
...Biased valve with external operator
...Direct response normally closed valve limits direction of flow seats
...Coaxial oppositely directed seats
...Actuates valve
...Plural motions of valve
...Reciprocating valve
...Rotary valve
FRANGIBLE
WITH COUPLING
Flexible
WITH CLOSURE
FAUCETS AND SPOUTS
MISCELLANEOUS

CROSS-REFERENCE ART COLLECTIONS

BUMPLESS MANUAL TO AUTOMATIC RELAYS
BIASED BALL VALVES WITH OPERATORS
SLUSH PUMP CHECK VALVES
RUBBER VALVE SPRINGS
CUSHION CHECK VALVES
ROTARY VALVES FOR MULTIPLE GAS BURNERS
VALVES BIASED BY FLUID "SPRINGS"
VACUUM-ACTUATED VALVES
RESPIRATOR CONTROL
MAGNETIC FLUID VALVE
DESTRUCTIBLE OR DEFORMABLE ELEMENT CONSTRUCTED OF SPECIFIC MATERIAL

FOREIGN ART COLLECTIONS