F16K COOPERATIVE PATENT CLASSIFICATION

F MECHANICAL ENGINEERING; LIGHTING; HEATING; WEAPONS; BLASTING
(NOTE omitted)

ENGINEERING IN GENERAL

F16 ENGINEERING ELEMENTS AND UNITS; GENERAL MEASURES FOR PRODUCING AND MAINTAINING EFFECTIVE FUNCTIONING OF MACHINES OR INSTALLATIONS; THERMAL INSULATION IN GENERAL

F16K VALVES; TAPS; COCKS; ACTUATING-FLOATS; DEVICES FOR VENTING OR AERATING {{devices for emptying and evacuating the excess liquid in valves or conduits F16L 55/07}}

NOTE
Attention is drawn to the following places:
A47J 27/09 Safety devices for pressure cookers
A47J 31/46 Dispensing spouts, drain valves or like beverage-making apparatus
A61B 5/0235 Valves specially adapted for measuring pressure in heart or blood vessels
A61F 2/24 Heart valves
A61M 16/20 Valves specially adapted for medical respiratory devices
A61M 39/00 Tube connectors, tube couplings, valves or branch units specially adapted for medical use in general
A62B 9/02 Valves for respiratory apparatus
A62B 18/10 Valves for breathing masks or helmets
A62C Fire extinguishers
{B01D 35/04} {Plug, tap, or cock filters}
B05B Nozzles, spray heads or other discharge apparatus for spraying or atomising
B06C 29/00 Arrangements of tyre-inflating valves relative to tyres or wheel rims; Connection of valves to wheel rims, tyres or other inflatable elastic bodies
B60G 17/048 Valves specially adapted for adjusting vehicle fluid-spring characteristics
B60T Valves specially adapted for vehicle brake control systems
B62D 5/08 Vehicle power-assisted steering characterised by the type of valve used
B63B 7/00 B63C 9/00 Arrangement of inflating valves for floatable life-saving equipment
B65D 47/04 Container closures with discharging valves
B65D 90/32 Safety valves for large containers
B65D 90/54 Gates or closures on large containers
B67C 3/28 Flow control devices for bottling liquids
B67D Dispensing, delivering or transferring liquids
{C21B 9/12} {Hot-blast valves for blast furnaces}
E02B 8/00 Details, e.g. valves, of barrages or weirs
E02B 13/02 Closures for irrigation conduits
{E03C 1/04} {Water-basin installations specially adapted for wash-basins or baths}
{E03C 1/05} {Arrangements on wash-basins for the remote control of taps}
E03D Flushing valves for water-closets or urinals
{E03F 7/04} {Valves for preventing return flow in sewer systems}
E05F 3/12 Valve arrangements in door closers
E21B 21/10 Valve arrangements in drilling-fluid circulation systems
E21B 34/00 Valve arrangements for boreholes or wells
{E21D 15/51} {Arrangement of relief valves in hydraulic mine props}
F01B 25/10 Working-fluid valves for controlling machines or engines in general or of positive-displacement type
F01D 17/10 Final actuators for controlling non-positive displacement machines or engines
F01L Cyclically operated valves for machines or engines
F02D 9/08 Throttle valves for controlling combustion engines
F02K 9/58 Propellant feed valves for rocket-engines
F02M Carburettors, fuel injection
F02M 59/46 Valves for fuel injection pumps
F04 Pumps
F16F 9/34 Valves for shock absorbers
F16L 29/00, F16L 37/28 Pipe joints or quick-acting couplings with fluid cut-off means
F16L 55/00 Arrangement of valves in pipes
Construtional types

F16K (continued)

F16L  55/055  Valves specially adapted to prevent or minimise the effect of water hammer
F16L  55/46  Launching devices for pigs or moles
F16N  23/00  Check valves for lubrication systems
[ F16T ]  [Draining-off liquids from steam traps]
F17C  13/04  Arrangement of valves in pressure vessels
F22B  37/44  Arrangement of safety valves on steam boilers
F22D  5/34  Application of valves to automatic water-feed in boiler
F23L  13/00  Valves for air supply control to burners
[ F23Q  2/16]  [Valves for lighters with gaseous fuel and adjustable flame]
F24C  3/12, F24C  5/16  Arrangement of valves on stoves or ranges
F24F  1/002  Air conditioning; Ventilation
F25B  41/20  Disposition of fluid circulation valves in refrigeration machines
G05D  1/002  Controlling non-electric variables
G10B  3/06  Valves for organs
G10D  9/04  Valves for other wind-actuated musical instruments
[ G21C  9/06]  [Safety valves structurally associated with nuclear reactors]
[ H01M  50/30]  [Vent plugs in batteries or cells]

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

F16K  31/11  covered by F16K  31/06, F16K  31/08, F16K  31/10
F16K  31/64  covered by F16K  31/002, G05D  23/00
F16K  31/66  covered by F16K  31/06, G05D  23/00
F16K  31/68  covered by F16K  31/001, G05D  23/00
F16K  31/70  covered by F16K  31/002, G05D  23/08
F16K  31/72  covered by F16K  31/00

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

Construtional types (check valves F16K 15/00)

NOTE

In groups F16K 1/00 - F16K 13/00, an initial seal breaking or final sealing movement which is different from the opening or closing movement of the valve is not considered in determining the movement to be classified.

I/00  Lift valves (or globe valves), i.e. cut-off apparatus with closure members having at least a component of their opening and closing motion perpendicular to the closing faces  *(in combination with sliding valves F16K 3/246, F16K 3/267; diaphragm valves F16K 7/00)*

I/02  . . . with screw-spindle  *(F16K 1/12 - F16K 1/28)*

I/04  . . . with a cut-off member rigid with the spindle, e.g. main valves

I/06  . . . Special arrangements for improving the flow, e.g. special shape of passages or casings

I/08  . . . in which the spindle is perpendicular to the general direction of flow

I/10  . . . in which the spindle is inclined to the general direction of flow

I/12  . . . with streamlined valve member around which the fluid flows when the valve is opened

I/123 . . . { with stationary valve member and moving sleeve

I/126 . . . { actuated by fluid

I/14  . . . with ball-shaped valve member  *(check valves F16K 15/04)*

I/16  . . . with pivoted closure-members

I/165 . . . { with a plurality of closure members

1/18  . . . with pivoted discs or flaps

1/20  . . . with axis of rotation arranged externally of valve member

1/2007 . . . { specially adapted operating means therefor (operating means per se F16K 31/00)

1/2014 . . . { Shaping of the valve member

1/2021 . . . { with a plurality of valve members

1/2028 . . . { Details of bearings for the axis of rotation

1/2035 . . . { the axis of rotation having only one bearing

1/2042 . . . { Special features or arrangements of the sealing

1/205 . . . . { the sealing being arranged on the valve member

1/2057 . . . { the sealing being arranged on the valve seat

1/2064 . . . . { with a channel- or U-shaped seal covering a central body portion

1/2071 . . . . { and being forced into sealing contact with the valve member by a spring or a spring-like member

1/2078 . . . . { Sealing means for the axis of rotation

1/2085 . . . . { Movable sealing bodies

1/2092 . . . . { the movement being caused by the flowing medium

1/22  . . . . . with axis of rotation crossing the valve member, e.g. butterfly valves

1/221 . . . . . { specially adapted operating means therefor (operating means per se F16K 31/00)

1/222 . . . . . { Shaping of the valve member

1/223 . . . . . { with a plurality of valve members

1/224 . . . . . { Details of bearings for the axis of rotation
Constructional types

1/225 . . . . {the axis of rotation having only one bearing}
1/226 . . . . Shaping or arrangements of the sealing
1/2261 . . . . {the sealing being arranged on the valve member}
1/2263 . . . . {the sealing being arranged on the valve seat}
1/2265 . . . . {with a channel- or U-shaped seal covering a central body portion}
1/2266 . . . . {and being forced into sealing contact with the valve member by a spring or a spring-like member}
1/2268 . . . . {Sealing means for the axis of rotation}
1/228 . . . . Movable sealing bodies
1/2285 . . . . {the movement being caused by the flowing medium}
1/24 . . with valve members that, on opening of the valve, are initially lifted from the seat and next are turned around an axis parallel to the seat
1/26 . . Shape or arrangement of the sealing [Not used]
1/28 . . Movable sealing bodies [Not used]
1/30 . . specially adapted for pressure containers
1/301 . . {only shut-off valves, i.e. valves without additional means}
1/302 . . . {with valve member and actuator on the same side of the seat}
1/303 . . . {with a valve member, e.g. stem or shaft, passing through the seat}
1/304 . . . {Shut-off valves with additional means}
1/305 . . . . {with valve member and actuator on the same side of the seat}
1/306 . . . . {with a valve member, e.g. stem or shaft, passing through the seat}
1/307 . . . . {Additional means used in combination with the main valve}
1/308 . . . {Connecting means}
1/32 . . Details (details of more general applicability F16K 25/00 - F16K 51/00)
1/34 . . Cutting-off parts, e.g. valve members, seats (F16K 1/06, F16K 1/12, F16K 1/14, F16K 1/26 take precedence)
1/36 . . . . {Valve members (for double-seat valves F16K 1/44 ; for butterfly valves F16K 1/222, F16K 1/223)}
1/38 . . . . of conical shape
1/385 . . . . {contacting in the closed position, over a substantial axial length, a seat surface having the same inclination}
1/40 . . . . of helical shape
1/42 . . . . Valve seats (for double-seat valves F16K 1/44)
1/422 . . . . {attachable by a threaded connection to the housing}
1/425 . . . . {Attachment of the seat to the housing by plastic deformation, e.g. valve seat or housing being plastically deformed during mounting}
1/427 . . . . {Attachment of the seat to the housing by one or more additional fixing elements}
1/44 . . . . Details of seats or valve members of double-seat valves
1/443 . . . . {the seats being in series}
1/446 . . . . . {with additional cleaning or venting means between the two seats}
1/46 . . . . Attachment of sealing rings
1/465 . . . . . {to the valve seats}
1/48 . . Attaching valve members to screw-spindles
1/482 . . . . . {with a collar on the spindle or a groove in the spindle, by which a fixing element is supported, the spindle reaching into the valve member}
1/485 . . . . . {with a groove in the spindle}
1/487 . . . . . {by a fixing element extending in the axial direction of the spindle, e.g. a screw}
1/50 . . Preventing rotation of valve members
1/52 . . Means for additional adjustment of the rate of flow
1/523 . . . . . {for limiting the maximum flow rate, using a stop}
1/526 . . . . . {for limiting the maximum flow rate, using a second valve}
1/54 . . . . Arrangements for modifying the way in which the rate of flow varies during the actuation of the valve

F16K 25/00 - F16K 51/00

3/00 Gate valves or sliding valves, i.e. cut-off apparatus with closing members having a sliding movement along the seat for opening and closing (F16K 5/00 takes precedence; in barrages or weirs F02B 8/04)
3/02 . . with flat sealing faces; Packings thereof
3/0209 . . . {the valve having a particular passage, e.g. provided with a filter, throttle or safety device}
3/0218 . . . {with only one sealing face}
3/0227 . . . {Packings}
3/0236 . . . . {the packing being of a non-resilient material, e.g. ceramic, metal}
3/0245 . . . . . {Curtain gate valves}
3/0254 . . . . . {being operated by particular means}
3/0263 . . . {using particular material or covering means}
3/0272 . . . {permitting easy assembly or disassembly}
3/0281 . . . . . {Guillotine or blade-type valves, e.g. no passage through the valve member}
3/029 . . . . . {with two or more gates}
3/03 . . . with a closure member in the form of an iris-diaphragm
3/04 . . . with pivoted closure members
3/06 . . . in the form of closure plates arranged between supply and discharge passages (F16K 3/10 takes precedence)
3/08 . . . . . with circular plates rotatable around their centres
3/085 . . . . . . {the axis of supply passage and the axis of discharge passage being coaxial and parallel to the axis of rotation of the plates}
3/10 . . . . . with special arrangements for separating the sealing faces or for pressing them together
3/12 . . . . . with wedge-shaped arrangements of sealing faces
3/14 . . . . . with special arrangements for separating the sealing faces or for pressing them together
3/16 . . . . . with special arrangements for separating the sealing faces or for pressing them together (F16K 3/10, F16K 3/14 take precedence)
3/18 . . . by movement of the closure members
3/182 . . . . . {by means of toggle links}
3/184 . . . . . {by means of cams}
3/186 . . . . . {by means of cams of wedge from}
3/188 . . . . . {by means of hydraulic forces}
3/20 . . . . . by movement of the seats
3/202 . . . . . {by movement of toggle links}
Constructional types

5/00  [Plug valves:] Taps or cocks comprising only cut-off apparatus having at least one of the sealing faces shaped as a more or less complete surface of a solid of revolution, the opening and closing movement being predominantly rotary (taps of the lift-valve type F16K 1/00)

5/02 . . . with plugs having conical surfaces; Packings therefor

5/0207 . . . [with special plug arrangement, e.g. special shape or built in means]

5/0214 . . . [Plug channel at 90 degrees to the inlet]

5/0221 . . . [Fixed plug and turning sleeve]

5/0228 . . . [with a conical segment mounted around a supply pipe]

5/0235 . . . [with the angle the spindle makes housing being other than 90 degrees]

5/0242 . . . [Spindles and actuating means]

5/025 . . . [Particular coverings or materials]

5/0257 . . . [Packings]

5/0264 . . . [in the housing]

5/0271 . . . [between housing and plug]

5/0278 . . . [on the plug]

5/0285 . . . [spindle sealing]

8/0292 . . . [Easy mounting or dismounting means]

5/04 . . . with plugs having cylindrical surfaces; Packings therefor

5/0407 . . . [with particular plug arrangements, e.g. particular shape or built-in means]

5/0414 . . . [Plug channel at 90 degrees to the inlet]

5/0421 . . . [Fixed plug and turning sleeve]

5/0428 . . . [with a cylindrical segment mounted around a supply pipe]

5/0435 . . . [the angle the spindle makes with the housing being other than 90 degrees]

5/0442 . . . [Spindles and actuating means]

5/045 . . . [Particular coverings and materials]

5/0457 . . . [Packings]

5/0464 . . . [in the housing]

5/0471 . . . [between housing and plug]

5/0478 . . . [on the plug]

5/0485 . . . [Spindle sealing]

5/0492 . . . [Easy mounting or dismounting means]

5/06 . . . with plugs having spherical surfaces; Packings therefor

5/0605 . . . [with particular plug arrangements, e.g. particular shape or built-in means]

5/061 . . . [knee-joint]

5/0615 . . . [the angle the spindle makes with the housing being other than 90 degrees]

5/0621 . . . [with a spherical segment mounted around a supply pipe]

5/0626 . . . [Easy mounting or dismounting means]

5/0631 . . . [between two flanges]

5/0636 . . . [the spherical plug being insertable from the top of the housing]

5/0642 . . . [the spherical plug being insertable from one and only one side of the housing]

5/0647 . . . [Spindles or actuating means]

5/0652 . . . [for remote operation]

5/0657 . . . [Particular coverings or materials]

5/0663 . . . [Packings]

5/0668 . . . [Single packings]

5/0673 . . . [Composite packings]

5/0678 . . . [in which only one of the components of the composite packing is contacting the plug]

5/0684 . . . [on the plug]

5/0689 . . . [between housing and plug]

5/0694 . . . [Spindle sealings]

5/08 . . . Details

5/10 . . . Means for additional adjustment of the rate of flow

5/103 . . . [specially adapted for gas valves]

5/106 . . . [with pilot flame]

5/12 . . . Arrangements for modifying the way in which the rate of flow varies during the actuation of the valve

5/14 . . . Special arrangements for separating the sealing faces or for pressing them together

5/16 . . . for plugs with conical surfaces

5/161 . . . [with the housing or parts of the housing mechanically pressing the seal against the plug]

5/162 . . . [with the plugs or parts of the plugs mechanically pressing the seal against the housing]

5/163 . . . [adjustable in height]

5/165 . . . [Means pressing on the small diameter]

5/166 . . . [Means pressing on the large diameter]

5/167 . . . [Means pressing radially]

5/168 . . . [Sealing effected by the flowing medium]

5/18 . . . for plugs with cylindrical surfaces

5/181 . . . [with the housing or parts of the housing mechanically pressing the seals against the plugs]

5/182 . . . [by means of conical surfaces]
Constructional types

7/00 Diaphragm (valves or) cut-off apparatus, e.g. with a member deformed, but not moved bodily, to close the passage (container gates or closures operating by deformation of flexible walls B65D 9/056; means for plugging pipes or hoses F16L 55/10); (Pinch valves)

7/02 . . . with tubular diaphragm
7/04 . . . constrictible by external radial force
7/045 . . . . [by electric or magnetic means]
7/06 . . . . by means of a screw-spindle, cam, or other mechanical means ([F16K 7/045 takes precedence])

7/061 . . . . [Screw clamps]
7/063 . . . . [Lever clamps]
7/065 . . . . [Cam clamps]
7/066 . . . . [Wedge clamps]
7/068 . . . . [by bending the hose]
7/07 . . . . by means of fluid pressure
7/075 . . . . [a rigid body being located within the tubular diaphragm]
7/08 . . . constrictible by twisting
7/10 . . . with inflatable member
7/12 . . . with flat, dished, or bowl-shaped diaphragm
7/123 . . . . [the seat being formed on the bottom of the fluid line]
7/126 . . . . [the seat being formed on a rib perpendicular to the fluid line]
7/14 . . . arranged to be deformed against a flat seat
7/16 . . . the diaphragm being mechanically actuated, e.g. by screw-spindle or cam
7/17 . . . the diaphragm being actuated by fluid pressure
7/18 . . . with diaphragm secured at one side only, e.g. to be laid on the seat by rolling action
7/20 . . . with a compressible solid closure member

11/00 Multiple-way valves, e.g. mixing valves; Pipe fittings incorporating such valves

11/02 . . . with all movable sealing faces moving as one unit
11/022 . . . [comprising a deformable member]
11/025 . . . . [with an O-ring]
11/027 . . . . [the fluid flowing through a constrictible tubular diaphragm]
Constructional types

11/0873 . . . . [the plug being only rotatable around one spindle]
11/0876 . . . . [one connecting conduit having the same axis as the spindle]
11/10 . . . . with two or more closure members not moving as a unit
11/105 . . . [Three-way check or safety valves with two or more closure members]
11/12 . . . . with one plug turning in another
11/14 . . . . operated by one actuating member, e.g. a handle
       (with one plug turning in another F16K 11/12)
11/16 . . . . which only slides, or only turns, or only swings in one plane
11/161 . . . . [only slides]
11/163 . . . . [only turns]
11/165 . . . . [with the rotating spindles parallel to the closure members]
11/166 . . . . [with the rotating spindles at right angles to the closure members]
11/168 . . . . [only swings]
11/18 . . . . with separate operating movements for separate closure members
11/185 . . . . [with swinging shafts]
11/20 . . . . operated by separate actuating members (with one plug turning in another F16K 11/12)
11/202 . . . . [with concentric handles]
11/205 . . . . [with two handles at right angles to each other]
11/207 . . . . [with two handles or actuating mechanisms at opposite sides of the housing]
11/22 . . . . with an actuating member for each valve, e.g. interconnected to form multiple-way valves
11/24 . . . . with an electromagnetically-operated valve, e.g. for washing machines

13/00 Other constructional types of cut-off apparatus (means for plugging pipes or hoses F16L 55/10);
Arrangements for cutting-off
13/02 . . . . with both sealing faces shaped as small segments of a cylinder and the moving member pivotally mounted
13/04 . . . . [with a breakable closure member]
13/06 . . . . [constructed to be ruptured by an explosion]
13/08 . . . Arrangements for cutting-off [not used]
13/10 . . . . by means of liquid or granular medium

Functional types

NOTE
Attention is drawn to Note (2) following the title of subclass G05D and also the subdivisions of that subclass, according to which pressure regulators and flow regulators, e.g. flow regulating valves with pressure compensator, even with the whole regulating system contained in a valve, operating with or without auxiliary power, are covered by groups G05D 16/00 or G05D 7/00, respectively. However, details of the valve parts, per se, are classified in the appropriate groups of this subclass.

15/00 Check valves (valves specially adapted for inflatable balls A63B 41/00)

WARNING
Groups F16K 15/00, F16K 15/20, F16K 15/202 and F16K 15/205 are incomplete pending reclassification of documents from group F16K 15/03.

All groups listed in this Warning should be considered in order to perform a complete search.

15/02 . . . . with guided rigid valve members

WARNING
Groups F16K 15/02, F16K 15/21, F16K 15/23, F16K 15/04 and F16K 15/48 are incomplete pending reclassification of documents from group F16K 15/03.

All groups listed in this Warning should be considered in order to perform a complete search.

15/021 . . . [the valve member being a movable body around which the medium flows when the valve is open (F16K 15/025 - F16K 15/12 take precedence)]
15/023 . . . . [the valve member consisting only of a predominantly disc-shaped flat element]
15/025 . . . . [the valve being loaded by a spring (F16K 15/03 - F16K 15/12 take precedence)]

WARNING
Group F16K 15/025 is incomplete pending reclassification of documents from group F16K 15/03.

All groups listed in this Warning should be considered in order to perform a complete search.

15/026 . . . . [the valve member being a movable body around which the medium flows when the valve is open]

WARNING
Groups F16K 15/026 and F16K 15/028 are incomplete pending reclassification of documents from group F16K 15/03.

All groups listed in this Warning should be considered in order to perform a complete search.

15/028 . . . . [the valve member consisting only of a predominantly disc-shaped flat element]
15/03 . . . . with a hinged closure member [or with a pivoted closure member]

WARNING
Group F16K 15/03 is impacted by reclassification into groups F16K 15/031 - F16K 15/207 and F16K 17/00 - F16K 17/42.

All groups listed in this Warning should be considered in order to perform a complete search.
WARNING
Group F16K 15/031 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/035, F16K 15/036 and F16K 15/038.
Group F16K 15/031 is also impacted by reclassification into group F16K 15/034.
All groups listed in this Warning should be considered in order to perform a complete search.

15/033  . . . {spring-loaded}

WARNING
Group F16K 15/033 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/035, F16K 15/036 and F16K 15/038.
Group F16K 15/033 is also impacted by reclassification into group F16K 15/034.
All groups listed in this Warning should be considered in order to perform a complete search.

15/034  . . . {weight-loaded}

WARNING
Group F16K 15/034 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/031, F16K 15/033, F16K 15/035, F16K 15/036 and F16K 15/038.
All groups listed in this Warning should be considered in order to perform a complete search.

15/035  . . . {with a plurality of valve members}

WARNING
Group F16K 15/035 is incomplete pending reclassification of documents from group F16K 15/03.
Group F16K 15/035 is also impacted by reclassification into groups F16K 15/031, F16K 15/033 and F16K 15/034.
All groups listed in this Warning should be considered in order to perform a complete search.

15/036  . . . {Dual valve members with hinges crossing the flow line substantially diametrical}

WARNING
Group F16K 15/036 is incomplete pending reclassification of documents from group F16K 15/03.
Group F16K 15/036 is also impacted by reclassification into groups F16K 15/031, F16K 15/033 and F16K 15/034.
All groups listed in this Warning should be considered in order to perform a complete search.

15/038  . . . . {having a common hinge}

WARNING
Group F16K 15/038 is incomplete pending reclassification of documents from group F16K 15/03.
Group F16K 15/038 is also impacted by reclassification into groups F16K 15/031, F16K 15/033 and F16K 15/034.
All groups listed in this Warning should be considered in order to perform a complete search.

15/04  . . shaped as balls
15/042  . . . {with a plurality of balls}

WARNING
Group F16K 15/042 is incomplete pending reclassification of documents from group F16K 15/03.
Group F16K 15/042 is also impacted by reclassification into groups F16K 15/044 and F16K 15/046.
All groups listed in this Warning should be considered in order to perform a complete search.

15/044  . . . {spring-loaded}

WARNING
Groups F16K 15/044 and F16K 15/046 are incomplete pending reclassification of documents from groups F16K 15/03 and F16K 15/042.
All groups listed in this Warning should be considered in order to perform a complete search.

15/046  . . . . {by a spring other than a helicoidal spring}
15/048  . . {Ball features}
15/06  . . with guided stems

WARNING
Group F16K 15/06 is incomplete pending reclassification of documents from group F16K 15/03.
Group F16K 15/06 is also impacted by reclassification into groups F16K 15/063, F16K 15/065, F16K 15/066 and F16K 15/067.
All groups listed in this Warning should be considered in order to perform a complete search.
15/063 . . . (the valve being loaded by a spring)

**WARNING**

Group F16K 15/063 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/06 and F16K 15/066. Group F16K 15/063 is also impacted by reclassification into groups F16K 15/064, F16K 15/065, F16K 15/066 and F16K 15/067.

All groups listed in this Warning should be considered in order to perform a complete search.

15/064 . . . (with a spring other than a helicoidal spring)

**WARNING**

Group F16K 15/064 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/06, F16K 15/063 and F16K 15/066.

All groups listed in this Warning should be considered in order to perform a complete search.

15/065 . . . (spring pulling the closure member against the seat)

**WARNING**

Group F16K 15/065 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/06, F16K 15/063 and F16K 15/066.

All groups listed in this Warning should be considered in order to perform a complete search.

15/066 . . . (with a plurality of valve members)

**WARNING**

Group F16K 15/066 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/06 and F16K 15/063.

Group F16K 15/066 is also impacted by reclassification into groups F16K 15/063, F16K 15/064, F16K 15/065 and F16K 15/067.

All groups listed in this Warning should be considered in order to perform a complete search.

15/067 . . . (stem guided at two or more points)

**WARNING**

Group F16K 15/067 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/06, F16K 15/063 and F16K 15/066.

All groups listed in this Warning should be considered in order to perform a complete search.

15/08 . . . shaped as rings

**WARNING**

Groups F16K 15/08, F16K 15/10, and F16K 15/12 are incomplete pending reclassification of documents from group F16K 15/03.

All groups listed in this Warning should be considered in order to perform a complete search.

15/10 . . . integral with, or rigidly fixed to, a common valve plate

15/12 . . . Springs for ring valves

15/14 . . . with flexible valve members

**WARNING**

Group F16K 15/14 is incomplete pending reclassification of documents from group F16K 15/03.

Group F16K 15/14 is also impacted by reclassification into groups F16K 15/1401 and F16K 15/1402.

All groups listed in this Warning should be considered in order to perform a complete search.

15/1401 . . . (having a plurality of independent valve members)

**WARNING**

Group F16K 15/1401 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/14, F16K 15/144, F16K 15/147, F16K 15/148 and F16K 15/16.

All groups listed in this Warning should be considered in order to perform a complete search.

15/1402 . . . (having an integral flexible member cooperating with a plurality of seating surfaces)

**WARNING**

Group F16K 15/1402 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/14, F16K 15/144, F16K 15/147, F16K 15/148 and F16K 15/16.

All groups listed in this Warning should be considered in order to perform a complete search.

15/141 . . . (the closure elements not being fixed to the valve body)

**WARNING**

Groups F16K 15/141 and F16K 15/142 are incomplete pending reclassification of documents from group F16K 15/03.

All groups listed in this Warning should be considered in order to perform a complete search.

15/142 . . . (the closure elements being shaped as solids of revolution, e.g. toroidal or cylindrical rings)
**Functional types**

**F16K**

15/144 . . . [the closure elements being fixed along all or a part of their periphery]

**WARNING**

Group F16K 15/144 is incomplete pending reclassification of documents from group F16K 15/03. Group F16K 15/144 is also impacted by reclassification into groups F16K 15/1401, F16K 15/1402 and F16K 15/1441. All groups listed in this Warning should be considered in order to perform a complete search.

15/1441 . . . [with biasing means in addition to material resiliency, e.g. spring]

**WARNING**

Group F16K 15/1441 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/144 and F16K 15/147. All groups listed in this Warning should be considered in order to perform a complete search.

15/145 . . . [the closure elements being shaped as a solids of revolution, e.g. cylindrical or conical]

**WARNING**

Group F16K 15/145 is incomplete pending reclassification of documents from group F16K 15/03. All groups listed in this Warning should be considered in order to perform a complete search.

15/147 . . . [the closure elements having specially formed slits or being of an elongated easily collapsible form]

**WARNING**

Group F16K 15/147 is incomplete pending reclassification of documents from group F16K 15/03. Group F16K 15/147 is also impacted by reclassification into groups F16K 15/1401, F16K 15/1402, F16K 15/1441, F16K 15/1471 and F16K 15/1472. All groups listed in this Warning should be considered in order to perform a complete search.

15/1471 . . . [slits arranged along multiple axes]

**WARNING**

Group F16K 15/1471 is incomplete pending reclassification of documents from groups F16K 15/03 and F16K 15/147. All groups listed in this Warning should be considered in order to perform a complete search.

15/1472 . . . [the closure elements being fixed onto an internally extending mount]

**WARNING**

Group F16K 15/1472 is incomplete pending reclassification of documents from groups F16K 15/03 and F16K 15/147. All groups listed in this Warning should be considered in order to perform a complete search.

15/148 . . . [the closure elements being fixed in their centre]

**WARNING**

Group F16K 15/148 is incomplete pending reclassification of documents from group F16K 15/03. Group F16K 15/148 is also impacted by reclassification into groups F16K 15/1401, F16K 15/1402 and F16K 15/1481. All groups listed in this Warning should be considered in order to perform a complete search.

15/1481 . . . [with biasing means in addition to material resiliency, e.g. spring]

**WARNING**

Group F16K 15/1481 is incomplete pending reclassification of documents from groups F16K 15/03 and F16K 15/148. All groups listed in this Warning should be considered in order to perform a complete search.

15/16 . . . with tongue-shaped laminae

**WARNING**

Group F16K 15/16 is incomplete pending reclassification of documents from group F16K 15/03. Group F16K 15/16 is also impacted by reclassification into groups F16K 15/1401, F16K 15/1402, F16K 15/161 and F16K 15/162. All groups listed in this Warning should be considered in order to perform a complete search.

15/161 . . . [with biasing means in addition to material resiliency, e.g. spring]

**WARNING**

Group F16K 15/161 is incomplete pending reclassification of documents from groups F16K 15/03 and F16K 15/16. All groups listed in this Warning should be considered in order to perform a complete search.
15/162 . . . { with limit stop }

WARNING
Group F16K 15/162 is incomplete pending reclassification of documents from groups F16K 15/03 and F16K 15/16.
All groups listed in this Warning should be considered in order to perform a complete search.

15/18 . . . with actuating mechanism; Combined check valves and actuated valves

WARNING
Group F16K 15/18 is incomplete pending reclassification of documents from group F16K 15/03.
Group F16K 15/18 is also impacted by reclassification into groups F16K 15/182, F16K 15/184, F16K 15/1841, F16K 15/1843 and F16K 15/1845.
All groups listed in this Warning should be considered in order to perform a complete search.

15/182 . . . { with actuating mechanism }

WARNING
Group F16K 15/182 is incomplete pending reclassification of documents from groups F16K 15/03 and F16K 15/18.
All groups listed in this Warning should be considered in order to perform a complete search.

15/1821 . . . { for check valves with a hinged or pivoted closure member }

WARNING
Group F16K 15/1821 is incomplete pending reclassification of documents from group F16K 15/03.
Group F16K 15/1821 is also impacted by reclassification into group F16K 15/1841.
All groups listed in this Warning should be considered in order to perform a complete search.

15/1823 . . . { for ball check valves }

WARNING
Group F16K 15/1823 is incomplete pending reclassification of documents from group F16K 15/03.
Group F16K 15/1823 is also impacted by reclassification into group F16K 15/1843.
All groups listed in this Warning should be considered in order to perform a complete search.

15/1825 . . . { for check valves with flexible valve members }

WARNING
Group F16K 15/1825 is incomplete pending reclassification of documents from group F16K 15/03.
Group F16K 15/1825 is also impacted by reclassification into group F16K 15/1845.
All groups listed in this Warning should be considered in order to perform a complete search.

15/1826 . . . { Check valves which can be actuated by a pilot valve }

WARNING
Group F16K 15/1826 is incomplete pending reclassification of documents from group F16K 15/03.
All groups listed in this Warning should be considered in order to perform a complete search.

15/184 . . . { Combined check valves and actuated valves }

WARNING
Group F16K 15/184 is incomplete pending reclassification of documents from groups F16K 15/03 and F16K 15/18.
All groups listed in this Warning should be considered in order to perform a complete search.

15/1841 . . . { for check valves with a hinged closure member }

WARNING
Group F16K 15/1841 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/18 and F16K 15/1821.
All groups listed in this Warning should be considered in order to perform a complete search.

15/1843 . . . { for ball check valves }

WARNING
Group F16K 15/1843 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/18 and F16K 15/1823.
All groups listed in this Warning should be considered in order to perform a complete search.

15/1845 . . . { for check valves with flexible valve members }

WARNING
Group F16K 15/1845 is incomplete pending reclassification of documents from groups F16K 15/03, F16K 15/18 and F16K 15/1825.
All groups listed in this Warning should be considered in order to perform a complete search.
15/1848 . . . [Check valves combined with valves having a rotating tap or cock)

**WARNING**

Group F16K 15/1848 is incomplete pending reclassification of documents from group F16K 15/03.

All groups listed in this Warning should be considered in order to perform a complete search.

15/20 . . . specially designed for inflatable bodies, e.g. tyres (connecting valves to inflatable bodies B60C 29/00)
15/202 . . . [and with flexible valve member)
15/205 . . . [and with closure plug]
15/207 . . . [and combined with other valves, e.g. safety valves)

**WARNING**

Group F16K 15/207 is incomplete pending reclassification of documents from group F16K 15/03.

All groups listed in this Warning should be considered in order to perform a complete search.

17/00 Safety valves; Equalising valves, [e.g. pressure relief valves]

**WARNING**

Groups F16K 17/00 - F16K 17/42 are incomplete pending reclassification of documents from group F16K 15/03.

All groups listed in this Warning should be considered in order to perform a complete search.

17/003 . . . [reacting to pressure and temperature]
17/006 . . . [specially adapted for shelters]
17/02 . . . opening on surplus pressure on one side; closing on insufficient pressure on one side (check valves F16K 15/00)
17/025 . . . [and remaining open after return of the normal pressure]
17/04 . . . spring-loaded
17/0406 . . . [in the form of balls]
17/0413 . . . [in the form of closure plates]
17/042 . . . [with locking or disconnecting arrangements]
17/0426 . . . [with seat protecting means]
17/0433 . . . [with vibration preventing means]
17/044 . . . [with more than one spring]
17/0446 . . . [with an obturating member having at least a component of their opening and closing motion not perpendicular to the closing faces]
17/0453 . . . [the member being a diaphragm]
17/046 . . . [the valve being of the gate valve type or the sliding valve type]
17/0466 . . . [with a special seating surface]
17/0473 . . . [Multiple-way safety valves]
17/048 . . . [combined with other safety valves, or with pressure control devices]
17/0486 . . . [with mechanical actuating means]
17/0493 . . . [with a spring other than a helicoidal spring]
17/06 . . . [with special arrangements for adjusting the opening pressure]
17/065 . . . [with differential piston]
17/08 . . . with special arrangements for providing a large discharge passage
17/082 . . . [with piston]
17/085 . . . [with diaphragm]
17/087 . . . [with bellows]
17/10 . . . with auxiliary valve for fluid operation of the main valve
17/105 . . . [using choking or throttling means to control the fluid operation of the main valve]
17/12 . . . weight-loaded
17/14 . . . with fracturing member
17/16 . . . with fracturing diaphragm [ Rupture discs]
17/1606 . . . [of the reverse-buckling-type (F16K 17/1633 takes precedence)]
17/1613 . . . . [with additional cutting means]
17/162 . . . . [of the non reverse-buckling-type (F16K 17/1633 takes precedence)]
17/1626 . . . . [with additional cutting means]
17/1633 . . . . [made of graphite]
17/164 . . . . remaining closed after return of the normal pressure
17/168 . . . . combined with manually-controlled valves, e.g. a valve combined with a safety valve
17/18 . . . opening on surplus pressure on either side
17/19 . . . Equalising valves predominantly for tanks [ (when combined with safety valve by change of position F16K 17/36)]
17/192 . . . . with closure member in the form of a movable liquid column
17/194 . . . . weight-loaded
17/196 . . . . spring-loaded
17/20 . . . Excess-flow valves (actuated in consequence of shock or similar extraneous influence F16K 17/36)
17/205 . . . . [specially adapted for flexible gas lines]
17/22 . . . actuated by the difference of pressure between two places in the flow line
17/24 . . . . acting directly on the cutting-off member
17/26 . . . operating in either direction
17/28 . . . operating in one direction only
17/285 . . . . . . . . . (the cutting-off member being a ball (F16K 17/30 takes precedence))
17/30 . . . . . . . . . spring-loaded
17/32 . . . acting on a servo-mechanism or on a catch-releasing mechanism
17/34 . . . in which the flow-energy of the flowing medium acts the closing mechanism
17/36 . . . actuated in consequence of extraneous circumstances, e.g. shock, change of position
17/363 . . . [the closure members being rotatable or pivoting (F16K 17/386 takes precedence)]
17/366 . . . [the closure member being a movable ball (F16K 17/38 takes precedence)]
17/38 . . . of excessive temperature
17/383 . . . [the valve comprising fusible, softening or meltable elements, e.g. used as link, blocking element, seal, closure plug (F16K 17/386 takes precedence)]
17/386 . . . [the closure members being rotatable or pivoting]
17/40 . . . with a fracturing member, e.g. fracturing diaphragm, glass, fusible joint (valves opening on surplus pressure F16K 17/14)
17/403 . . . [with a fracturing valve member]
24/06  . .  (the fracturing member being a generally elongated member, e.g. rod or wire, which is directly connected to a movable valve member, the breaking or buckling of the elongated member allowing the valve member to move to a closed or open position)

24/42  .  Valves preventing penetration of air in the outlet of containers for liquids

24/00  (Arrangements of valves and flow lines specially adapted for mixing fluids (multiple-way valves F16K 11/000))

24/003  .  (Specially adapted for boilers)

24/006  .  (Specially adapted for faucets)

21/00  Fluid-delivery valves, e.g. self-closing valves](for liquid handling B67D; for flushing devices for water-closets or the like E03D)

21/02  .  providing a continuous small flow

21/04  .  Self-closing valves, i.e. closing automatically after operation  ((pneumatic tools B25B 9/000))

21/06  . .  in which the closing movement, either retarded or not, starts immediately after opening

21/08  . . .  with ball-shaped closing members

21/10  . . .  with hydraulic brake cylinder acting on the closure member

21/12  . . .  with hydraulically-operated opening means; with arrangements for pressure relief before opening

21/14  . . .  with special means for preventing the self-closing

21/16  . . .  closing after a predetermined quantity of fluid has been delivered (F16K 21/10 takes precedence)

21/165  . . .  (with means sensing the weight of said fluid quantity)

21/18  . . .  closed when a rising liquid reaches a predetermined level (float-actuated valves F16K 31/18)

21/185  . . .  (with electrical or magnetic means, e.g. with magnetic floats, for sensing the liquid level)

21/20  . . .  by means making use of air-suction through an opening closed by the rising liquid

23/00  Valves for preventing drip from nozzles

24/00  Devices, e.g. valves, for venting or aerating enclosures (equalising valves F16K 17/000; arrangement or mounting in pipes or pipe systems F16L 55/07; venting or aerating as an additional function of steam traps or like apparatus F16T; ventilation of rooms, vehicles, see the appropriate subclass, e.g. F24F)

24/02  .  the enclosure being itself a valve, tap, or cock

24/04  .  for venting only (F16K 24/02 takes precedence)

24/042  . .  [actuated by a float]

24/044  . . .  (the float being rigidly connected to the valve element, the assembly of float and valve element following a substantially translational movement when actuated, e.g. also for actuating a pilot valve)

24/046  . . .  (the assembly of float and valve element being a single spherical element)

24/048  . . .  (a transmission element, e.g. arm, being interposed between the float and the valve element, the transmission element following a non-translational, e.g. pivoting or rocking, movement when actuated)

24/06  .  for aerating only (F16K 24/02 takes precedence)

Details

NOTE

Details not provided for in the following groups are classified in the preceding groups.

25/00  Details relating to contact between valve members and seat (sealing constructions, see the appropriate groups according to the type of valve; movement of valve members other than for opening and closing F16K 29/000)

25/005  .  (Particular materials for seats or closure elements)

25/02  .  Arrangements using fluid issuing from valve members or seats

25/04  .  Arrangements for preventing erosion, not otherwise provided for

27/00  Construction of housing (methods for welding housings B23K); Use of materials therefor

27/003  .  (Housing formed from a plurality of the same valve elements)

27/006  .  (of hydrants)

27/012  .  of lift valves (for reducing the flow resistance of screw-spindle lift-valves F16K 1/06)

27/0209  . .  (Check valves or pivoted valves)

27/0218  . .  (Butterfly valves)

27/0227  . . .  (with the valve members swinging around an axis located at the edge of or outside the valve member)

WARNING

Group F16K 27/0227 is impacted by reclassification into group F16K 27/0232.

Groups F16K 27/0227 and F16K 27/0232 should be considered in order to perform a complete search.

27/0232  . . .  (the valve member retained by a removable closure)

WARNING

Group F16K 27/0232 is incomplete pending reclassification of documents from group F16K 27/0227.

Groups F16K 27/0227 and F16K 27/0232 should be considered in order to perform a complete search.

27/0236  . .  (Diaphragm cut-off apparatus)

27/0245  . .  (with ball-shaped valve members)

27/0254  . .  (with conical shaped valve members)

27/0263  . .  (multiple way valves)

27/0272  . .  (valves provided with a lining)

27/0281  . .  (Housings in two parts which can be orientated in different positions)

27/029  . .  (Electromagnetically actuated valves)

27/00  .  of sliding valves

27/041  . .  (cylindrical slide valves)

27/042  . .  (Hydraulic fluid leak traps)

27/044  . .  (slide valves with flat obturating members)

27/045  . .  . .  (with pivotal obturating members)

27/047  . .  . .  (with wedge-shaped obturating members)

27/048  . .  (Electromagnetically actuated valves)

27/006  .  of taps or cocks
Details

27/062 . . . [with conical plugs]
27/065 . . . [with cylindrical plugs]
27/067 . . . [with spherical plugs]
27/07 . . . of cutting-off parts of tanks, e.g. tank-cars
27/08 . Guiding yokes for spindles; Means for closing housings; Dust caps, e.g. for tyre valves
27/10 . Welded housings
27/12 . Covers for housings

29/00 Arrangements for movement of valve members other than for opening and closing the valve, e.g. for grinding-in, for preventing sticking
29/02 . providing for continuous motion

31/00 [Actuating devices:] Operating means; Releasing devices ([regulating means G05D])
31/001 . [actuated by volume variations caused by an element soluble in a fluid or swelling in contact with a fluid (life-boats B63C 9/024)]
31/002 . [actuated by temperature variation (thermo-electric F16K 31/025)]
31/003 . [operated without a stable intermediate position, e.g. with snap action (F16K 31/56 takes precedence)]
31/004 . [actuated by piezo-electric means]
31/005 . . . [Piezo-electric benders]
31/006 . . . [having a free end]
31/007 . . . [Piezo-electric stacks]
31/008 . . . [for sliding valves]
31/02 . electric ((F16K 31/004 takes precedence)); magnetic
31/025 . . . [actuated by thermo-electric means]
31/04 . . . using a motor
31/041 . . . [for rotating valves (F16K 31/055 takes precedence)]
31/042 . . . . . [with electric means, e.g. for controlling the motor or a clutch between the valve and the motor]
31/043 . . . . . [characterised by mechanical means between the motor and the valve, e.g. lost motion means reducing backlash, clutches, brakes or return means]
31/045 . . . . . . [with torque limiters]
31/046 . . . [with electric means, e.g. electric switches, to control the motor or to control a clutch between the valve and the motor (F16K 31/041 takes precedence)]
31/047 . . . . . . [characterised by mechanical means between the motor and the valve, e.g. lost motion means reducing backlash, clutches, brakes or return means (F16K 31/043 takes precedence)]
31/048 . . . . . . [with torque limiters (F16K 31/041 takes precedence)]
31/05 . . . specially adapted for operating hand-operated valves or for combined motor and hand operation
31/055 . . . . . [for rotating valves]
31/06 . . . using a magnet, e.g. diaphragm valves, cutting off by means of a liquid]
31/0603 . . . [Multiple-way valves]
31/0606 . . . [fluid passing through the solenoid coil]
31/061 . . . . . [Sliding valves]
31/0613 . . . . . [with cylindrical slides]
31/0617 . . . . . [with flat slides]
31/062 . . . . . [the valve element being at least partially ball-shaped]
31/0624 . . . . . [Lift valves]
31/0627 . . . . . [with movable valve member positioned between seats]
31/0631 . . . . . [with ball shaped valve members]
31/0634 . . . . . [with fixed seats positioned between movable valve members]
31/0637 . . . . . [with ball shaped valve members]
31/0641 . . . . . [the valve member being a diaphragm]
31/0644 . . . . . [One-way valve]
31/0648 . . . . . [the armature and the valve member forming one element (F16K 31/0651 takes precedence)]
31/0651 . . . . . [the fluid passing through the solenoid coil]
31/0655 . . . . . [Lift valves]
31/0658 . . . . . [Armature and valve member being one single element]
31/0662 . . . . . [with a ball-shaped valve member]
31/0665 . . . . . [with valve member being at least partially ball-shaped (F16K 31/0662 takes precedence)]
31/0668 . . . . . [Sliding valves]
31/0672 . . . . . [the valve member being a diaphragm]
31/0675 . . . . . [Electromagnet aspects, e.g. electric supply therefor]
31/0679 . . . . . [with more than one energising coil]
31/0682 . . . . . [with an articulated or pivot armature]
31/0686 . . . . . [Braking, pressure equilibration, shock absorbing]
31/0689 . . . . . [Braking of the valve element]
31/0693 . . . . . [Pressure equilibration of the armature]
31/0696 . . . . . [Shock absorbing, e.g. using a dash-pot]
31/08 . . . . . using a permanent magnet
31/082 . . . . . [using an electromagnet and a permanent magnet]
31/084 . . . . . [the magnet being used only as a holding element to maintain the valve in a specific position, e.g. check valves (F16K 31/082, F16K 31/086 take precedence)]
31/086 . . . . . [the magnet being movable and actuating a second magnet connected to the closing element]
31/088 . . . . . [the movement of the first magnet being a rotating or pivoting movement]
31/10 . . . . . with additional mechanism between armature and closure member
31/105 . . . . . [for rotating valves]
31/12 . . . . . actuated by fluid ([fluid-actuated lift valves F16K 1/126]; fluid-actuated check valves F16K 15/00; fluid-actuated safety valves F16K 17/00)
31/122 . . . . . [the fluid acting on a piston (F16K 31/143, F16K 31/163, F16K 31/363, F16K 31/383 take precedence)]
31/1221 . . . . . [one side of the piston being spring-loaded]
31/1223 . . . . . [one side of the piston being acted upon by the circulating fluid]
31/1225 . . . . . [with a plurality of pistons]
31/1226 . . . . . [the fluid circulating through the piston]
Details

31/1228 ... [with a stationary piston]
31/124 ... servo actuated
31/1245 ... [with more than one valve]
31/126 ... the fluid acting on a diaphragm, bellows, or the like (F16K 31/145, F16K 31/165, F16K 31/365, F16K 31/385 take precedence)
31/1262 ... [one side of the diaphragm being spring loaded]
31/1264 ... [with means to allow the side on which the springs are positioned to be altered]
31/1266 ... [one side of the diaphragm being actuated upon by the circulating fluid]
31/1268 ... [with a plurality of the diaphragms]
31/128 ... servo actuated
31/14 ... for mounting on, or in combination with, hand-actuated valves
31/143 ... the fluid acting on a piston
31/145 ... the fluid acting on a diaphragm
31/16 ... with a mechanism, other than pulling-or pushing-rod, between fluid motor and closure member (with float F16K 31/18)
31/163 ... the fluid acting on a piston
31/1635 ... [for rotating valves]
31/165 ... the fluid acting on a diaphragm
31/1655 ... [for rotating valves]
31/18 ... actuated by a float (floats F16K 33/00; float-actuated valves in steam-traps F16T 1/20, in boilers F22D 5/08)
31/20 ... actuating a lift valve
31/22 ... with the float rigidly connected to the valve
31/24 ... with a transmission with parts linked together from a single float to a single valve
31/26 ... with the valve guided for rectilinear movement and the float attached to a pivoted arm
31/265 ... ... [with a second lever or toggle between the pivoted arm and the valve]
31/28 ... with two or more floats actuating one valve
31/30 ... actuating a gate valve or sliding valve
31/32 ... actuating a tap or cock
31/34 ... acting on pilot valve controlling the cut-off apparatus
31/36 ... in which fluid from the circuit is constantly supplied to the fluid motor
31/363 ... the fluid acting on a piston (F16K 31/38 takes precedence)
31/365 ... the fluid acting on a diaphragm
31/38 ... in which the fluid works directly on both sides of the fluid motor, one side being connected by means of a restricted passage and the motor being actuated by operating a discharge from that side (F16K 31/40 takes precedence)
31/383 ... the fluid acting on a piston
31/3835 ... [the discharge being effected through the piston and being blockable by a mechanically-actuated member making contact with the piston]
31/385 ... the fluid acting on a diaphragm
31/3855 ... [the discharge being effected through the diaphragm and being blockable by a mechanically-actuated member making contact with the diaphragm]
31/40 ... with electrically-actuated member in the discharge of the motor
31/402 ... ... [acting on a diaphragm]
31/404 ... ... [the discharge being effected through the diaphragm and being blockable by an electrically-actuated member making contact with the diaphragm]
31/406 ... ... [acting on a piston]
31/408 ... ... [the discharge being effected through the piston and being blockable by an electrically-actuated member making contact with the piston]
31/42 ... by means of electrically-actuated members in the supply or discharge conduits of the fluid motor (F16K 31/40 takes precedence)
31/423 ... ... [the actuated members consisting of multiple way valves]
31/426 ... ... [the actuated valves being cylindrical sliding valves]
31/44 ... Mechanical actuating means
31/445 ... [with exterior sleeve]
31/46 ... for remote operation
31/465 ... ... [by flexible transmission means, e.g. cable, chain, bowden wire]
31/48 ... actuated by mechanical timing-device, e.g. with dash-pot (self-closing valves F16K 21/16)
31/485 ... ... [and specially adapted for gas valves]
31/50 ... with screw-spindle [or internally threaded actuating means]
31/502 ... ... [acting pivotable valve members]
31/504 ... ... [the actuating means being rotatable, rising, and having internal threads which co-operate with threads on the outside of the valve body]
31/506 ... ... [with plural sets of thread, e.g. with different pitch]
31/508 ... ... [the actuating element being rotatable, non-rising, and driving a non-rotatable axially-sliding element]
31/52 ... ... [with crank, eccentric, or cam]
31/521 ... ... [comprising a pivoted disc or flap]
31/522 ... ... [comprising a tap or cock]
31/523 ... ... [comprising a sliding valve]
31/524 ... ... [with a cam]
31/52408 ... ... [comprising a lift valve]
31/52416 ... ... [comprising a multiple-way lift valve]
31/52425 ... ... [with a ball-shaped valve member]
31/52433 ... ... [with a streamlined or helically shaped valve member, e.g. for reducing flow losses or guiding the fluid flow]
31/52441 ... ... [with a pivoted disc or flap]
31/5245 ... ... [with a valve member of conical shape]
31/52458 ... ... [comprising a tap or cock]
31/52466 ... ... [comprising a multiple-way tap or cock]
31/52475 ... ... [comprising a sliding valve]
31/52483 ... ... [comprising a multiple-way sliding valve]
31/52491 ... ... [comprising a diaphragm cut-off apparatus]
31/528 ... ... [with pin and slot]
31/5282 ... ... [comprising a pivoted disc or flap]
31/5284 ... ... [comprising a tap or cock]
31/5286 ... ... [comprising a sliding valve]
31/5288 ... ... [comprising a diaphragm cut-off apparatus]
31/53 ... ... [with toothed gearing]
31/535 ... ... [for rotating valves (F16K 31/54 takes precedence)]
31/54 ... ... [with pinion and rack]
thereof, or for enabling an alarm to be given

Special means in or on valves or other cut-off
apparatus for indicating or recording operation
thereof, or for enabling an alarm to be given

Devices for relieving the pressure on the sealing
faces

Valves for lift valves

Valves for balancing surfaces

Valves for an auxiliary valve on the main valve

Valves for an external auxiliary valve

Valves with pivoted closure members, e.g. butterfly
valves

for sliding valves

[Type of rotating or pivoting type]

taps or cocks

Spindle sealings

by fluid

establishing an under-pressure

with stuffing-box ; Sealing rings

for rotating valves

with at least one ring of rubber or like material
between spindle and housing

for non-rising spindles

for non-rising spindles

for rotating valves

with at least one ring attached to both spindle
and housing

for non-rising spindles

for rotating valves

with at least one ring provided with axially-
protruding peripheral closing-lip

for non-rising spindles

for rotating valves

with diaphragm, e.g. shaped as bellows or tube

the diaphragm and the closure member being
integrated in one member

for use with rotating spindles or valves

for rotating valves

with approximately flat diaphragm

the part of the spindle traversing the
diaphragm being rotatable or pivotable

with conical flange on the spindle which co-operates
with a conical surface in the housing

with a flange on the spindle which rests on a sealing
ring

sealing only when the closure member is in the
opened position

Auxiliary closure means in valves, which in case
of repair, e.g. rewashering, of the valve, can take over
the function of the normal closure means; Devices
for temporary replacement of parts of valves for
the same purpose

an auxiliary valve being actuated independently of
the main valve

the auxiliary valve being a rotary valve

an auxiliary valve closing automatically when the
main valve is being disassembled

the auxiliary valve being held open by the main
valve

Floats for actuation of valves or other apparatus

Means to prevent accidental or unauthorised
actuation

to be locked or disconnected by means of a pushing
or pulling action

the locking mechanism being actuated by a
separating actuating element

said actuating element being operated
manually (e.g. a push-button located in the
valve actuator)

the locking mechanism being actuated by
pushing or pulling the valve actuator, the valve
actuator being rotated subsequently to bring the
valve closure element in the desired position

yieldingly resisting the actuation

using a removable actuating or locking member, e.g.
a key (F16K 35/10, F16K 35/12 take precedence)

requiring setting according to a code, e.g.
permutation locks

with locking caps or locking bars

with sealing wire

interlocking two or more valves

with locking member actuated by magnet

Special means in or on valves or other cut-off
apparatus for indicating or recording operation
thereof, or for enabling an alarm to be given
Means in valves for absorbing fluid energy (for pipes F16L 55/00)

**WARNING**

Group F16K 47/00 is impacted by reclassification into groups F16K 47/01, F16K 47/011, F16K 47/0111, F16K 47/0112 and F16K 47/012. All groups listed in this Warning should be considered in order to perform a complete search.

[Damping of valve members]

**WARNING**

Groups F16K 47/01 and F16K 47/012 are incomplete pending reclassification of documents from groups F16K 47/00, F16K 47/011, and F16K 47/023. All groups listed in this Warning should be considered in order to perform a complete search.

[by means of a dashpot]

**WARNING**

Groups F16K 47/01, F16K 47/011, F16K 47/0111, and F16K 47/0112 are incomplete pending reclassification of documents from groups F16K 47/00, F16K 47/011, and F16K 47/023. All groups listed in this Warning should be considered in order to perform a complete search.

[the valve members comprising a plunger sliding within a fixed dashpot]

[the valve members comprising a dashpot sliding over a fixed plunger]

[by means of a resilient damping element]

[for preventing water-hammer or noise]

**WARNING**

Group F16K 47/02 is impacted by reclassification into groups F16K 47/01, F16K 47/011, F16K 47/0111, F16K 47/0112, and F16K 47/012. All groups listed in this Warning should be considered in order to perform a complete search.

[for preventing water-hammer, e.g. damping of the valve movement]

**WARNING**

Group F16K 47/023 is impacted by reclassification into groups F16K 47/01, F16K 47/011, F16K 47/0111, F16K 47/0112, and F16K 47/012. All groups listed in this Warning should be considered in order to perform a complete search.

[preventing noise in a single handle mixing valve]

[for decreasing pressure [or noise level], the throttle being incorporated in the closure member]

[and the closure member being rotatable]

[with a throttle in the form of a helical channel]

[for decreasing pressure [or noise level] and having a throttling member separate from the closure member, e.g. screens, slots, labyrinths]

[in which the medium in one direction must flow through the throttling channel, and in the other direction may flow through a much wider channel parallel to the throttling channel]

[the throttling channel being of helical form]

[the throttling member being a perforated membrane]

[the throttling member being a cone]
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