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W. E. HUFFMAN ET AL

2,255,774

QUICK RELEASE VALVE

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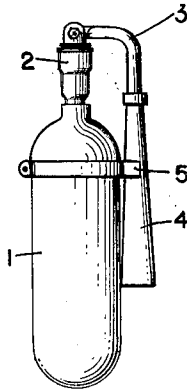


Figure 1

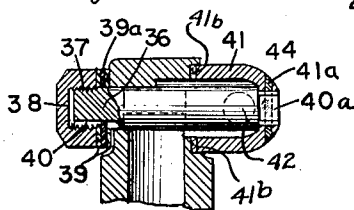


Figure 3

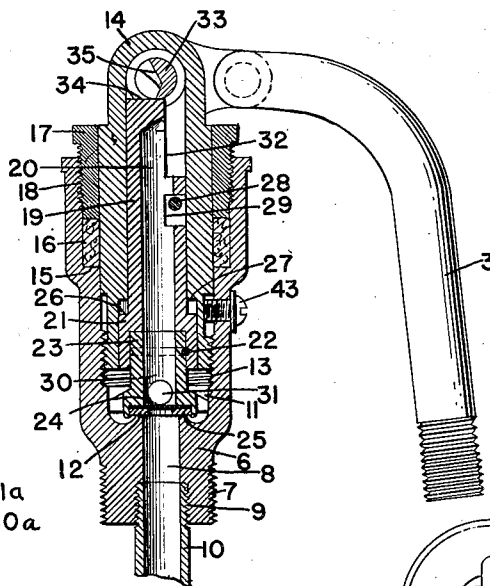


Figure 2

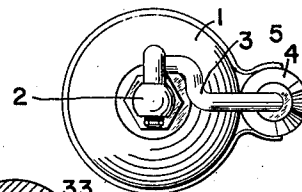


Figure 4

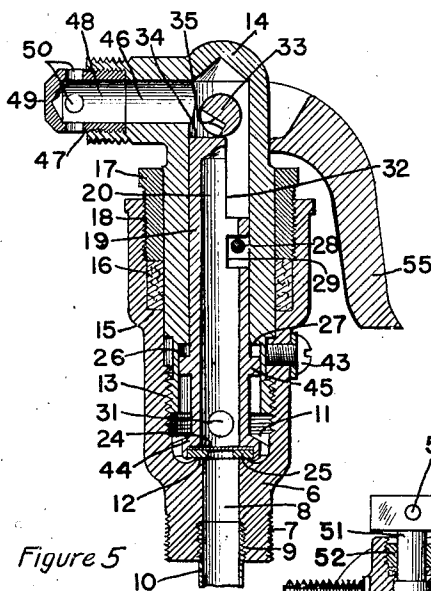


Figure 5

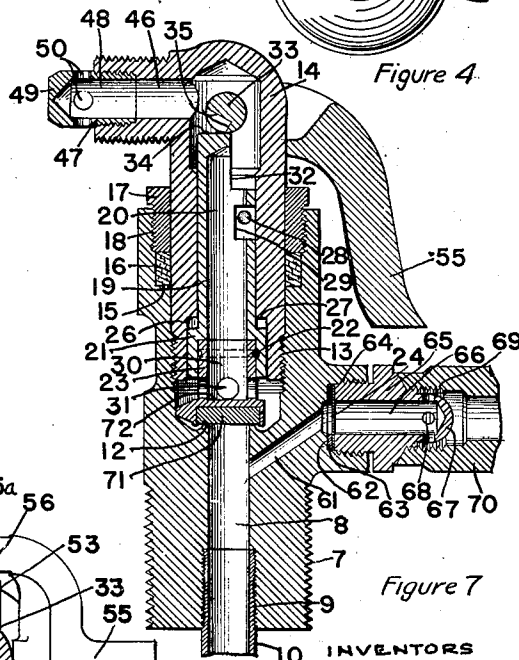


Figure 7

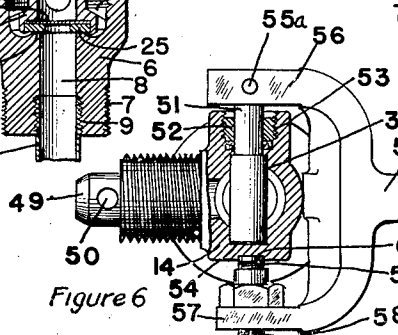


Figure 6

INVENTORS
WILLIAM E. HUFFMAN
GEORGE W. REPLOGLE
BY *Robert V. Loughlin*
Clade County
ATTORNEYS

UNITED STATES PATENT OFFICE

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QUICK RELEASE VALVE

William E. Huffman and George W. Replogle,
Dayton, Ohio

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18 Claims. (Cl. 251—131)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

The present invention relates to a valve for use with a container for fluid medium under pressure. It relates particularly to a valve which may be employed both as a filling and discharge fixture for a container of a medium, such as carbon dioxide.

The invention is particularly adapted for use with a fire extinguisher of the type which employs carbon dioxide as the extinguishing medium. The carbon dioxide is retained in the container under a very high pressure until it is desired to discharge the gas. When the gas is released it is forced from the container by its own pressure.

It is an object of the present invention to provide a novel valve which serves to retain the fluid medium pressure in the container without leakage.

It is a further object to provide a valve which may be used as a filling fixture without necessitating the use of a separate filling fixture when the container is to be charged with gas.

A still further object is to provide a valve which may be opened by the positive pressure of the gas.

Still another object is to provide a valve in which the valve releasing means may be incorporated in the valve discharge means.

A further object is to provide a valve wherein the gas may be safely discharged or vented when the gas pressure is excessive due to high temperatures.

Another object is to provide a valve in which the discharge passage for the gas may be used to vent the gas when the pressure is excessive due to high temperatures.

These and other objects will be apparent from the following description and drawing, wherein:

Figure 1 is an elevational view of a fire extinguisher employing one embodiment of the invention.

Figure 2 is a view in cross-section of the valve of Figure 1.

Figure 3 is a view in section of the upper part of the valve of Figure 1 illustrating the discharge and release means.

Figure 4 is an enlarged top plan view of Figure 1.

Figure 5 is a view in section of another embodiment of the invention.

Figure 6 is a cross-sectional view illustrating certain details of the valve of Figure 5.

Figure 7 is a view in section of another valve constructed in accordance with the present invention.

In all of the figures the same numbers designate corresponding parts.

With reference to Figure 1, the fire extinguisher there illustrated consists of a container of carbon dioxide 1 to which is attached a valve 2. The valve 2 has connected thereto, by means of a discharge conduit 3, a discharge shield, or horn, 4. The conduit 3 and the discharge shield 4 are rotatable with respect to the valve 2 and accordingly a clip 5 is provided on the container 1 to hold the conduit and horn securely against rotation. The clip is so constructed that the horn may readily be removed from the clip when it is desired to employ the extinguisher.

The details of the valve are shown in Figure 2, which will now be referred to. The valve consists of a valve body 6 provided with external threads 7 at its lower end adapted to engage with corresponding threads in the neck of the container 1 to secure the valve to the container. In the valve body 6 is a passage 8 provided with internal threads 9 to permit attachment of a syphon, or dip tube, 10 at one end. The syphon, or dip tube, only a portion of which is illustrated, extends to a point in close proximity to the bottom of the container and thus serves to allow communication between the valve and the interior of the container. In the valve body 6, at the opposite end of the passage 8 and in direct communication therewith, is a chamber 11. An annular valve seat 12 in the chamber surrounds this end of the passage.

The wall of the chamber 11 is provided with threads 13 adapted to coact with similar threads on the closure member or bonnet 14 which closes the chamber 11 of the valve body. The bonnet 14 is made so that it will fit closely within the chamber 11 in order to aid in preventing leakage around the bonnet of any carbon dioxide while the gas is being discharged through the valve. However, to prevent all leakage, the wall of the valve body has an annular shoulder 15 on which rests a packing material 16. The packing material is pressed against the shoulder 15, the walls of the valve body 6, and the bonnet 14 by a packing bushing 17. The packing bushing is held in place on the valve body by the threads 18. This manner of fastening permits the amount of compression under which the packing material is held to be varied at will and the

compression is determined by the extent to which the bushing is turned into the valve body.

Movable within the bore of the bonnet 14 is a valve carrier sleeve or stem 19 having a passage 20. The outer diameter of the carrier sleeve 19 is made almost equal to the diameter of the bore of the closure member 14 so as to permit a close sliding fit therebetween. At the lower end of the stem 19 is an enlarged portion 21 within which is, secured by a pin 22, a valve plug 23. The bore of the bonnet 14 is also enlarged to receive the enlarged portion 21 in a close working fit.

The flow of gas from the container through the passage 8 is regulated and controlled by a valve proper which in the closed position of the valve covers the valve seat 12 and prevents any passage of gas by this seat. The valve proper consists of a rupturable safety disc 24 of a thin frangible material designed to rupture at a predetermined pressure, and an annular gasket 25 of a phenol composition, or of some other suitable material. The gasket and the disc are mounted in a recess in the lower end of the valve plug 23. The disc is placed in the recess first and the gasket is then placed on the disc and the recess wall of the plug is rolled over on the gasket to securely hold these parts in the recess.

Where the enlarged portion 21 begins on the stem 19 is a shoulder 26. The bore of the bonnet 14 is also enlarged to receive the enlarged portion 21 and a shoulder 27 is thus formed in the bore of the bonnet 14. It will thus be seen that the upward movement of the valve stem 19 is governed by these coacting shoulders and all upward movement of the stem 19 is prevented when the shoulders are bearing on each other.

A pin 28 is secured in the wall of the bonnet 14 and passes transversely across the bore of the bonnet. A slot 29 is cut in the wall of the stem 19 into the bore 20 and it is through this slot that the pin passes. The pin 28 has two distinct functions. It prevents turning of the stem 19 in the bonnet 14 since the wall of the stem 19 strikes the pin when the stem is turned. Turning of the stem might be very detrimental since the valve might be prevented from operating as will be explained hereinafter. The other function of the pin is to raise the stem 19 when the bonnet 14 is raised in order that the valve proper may be raised from the valve seat. If the pin were not provided there would be no positive way of raising the valve from its seat when there was no gas pressure in the container.

In order to conduct the gas from the chamber 11 through the bore 20 of the carrier sleeve 19 the plug 23 has a passage 30 which corresponds in size to and communicates with the bore 20 of the closure member 19. Any gas in the chamber 11 may enter the bore 30 through the diametrically opposed ports 31 in the wall of the plug. The gas having entered the bore 30 passes through the bore 20 of the stem and escapes from the upper end of the stem through the discharge slot 32 cut in the upper end of the stem, to the interior of the bonnet 14.

A cam shaft 33 passes diametrically through and at right angles to the bore of the bonnet 14 near its closed end. In the central portion of the shaft so as to be adapted to coact with the upper surface 34 of the stem is a valve controlling member consisting of a cut-out cam surface 35. The manner in which the cam shaft 33 is secured at the upper end of the bonnet is best illustrated by reference to Figure 3.

The shaft extends through the walls of the bonnet and one end 36 is journaled by the wall of the bonnet 14. The portion of this end of the shaft which is exterior of the bonnet is provided with threads 37. A cap 38 is secured by means of these threads to this end of the cam shaft. Between the cap 38 and the wall of the bonnet are placed two packing gaskets 39 having interposed between them a metal key washer 39^a. A keyway 40 is milled in the shaft to receive the tongue on the key washer 39^a. The purpose of the key is to prevent the nut 38 from loosening when the cam shaft is rotated due to binding between the packing gaskets 39 and the bonnet 14 of the valve. With the interposition of the key between the gaskets the key will rotate with the shaft and the nut being secured against the gasket will rotate with the shaft instead of loosening. The nut will thus hold the shaft securely at all times.

The opposite end of the cam shaft has flat surfaces 40^a milled at the outermost point. A journal 41 rests in a recess formed in the wall of the bonnet 14 and has a hole in the closed end thereof adapted to receive the milled surfaces 40^a. The journal is secured to the shaft by the pin 41^a which extends through the journal and the shaft. The coacting surfaces cause rotation of the cam shaft when the journal is rotated while the pin maintains the journal on the shaft. The journal rests on a sealing gasket 41^b which lies in the recess against the journal. A port 42 is provided in the wall of the journal. This is shown dotted in Figure 3. The conduit 3 is attached to the journal, in order that the conduit may communicate with the interior of the journal through the port 42.

The top view of the extinguisher in Figure 4 illustrates the attachment of the conduit and horn 4 to the valve itself. As is there illustrated the conduit is bent so as to center the horn with the container.

In order to secure the bonnet 14 in the valve body so that it cannot be removed from the valve body a set screw 43 is provided in the wall of the valve body 6. The set screw will act as a stop for the bonnet 14 but will not prevent rotation of the bonnet which is desired under certain circumstances.

The operation of the valve is very simple. When it is necessary to charge the container after the container has been emptied, the horn is removed from the conduit. The bonnet 14 is then rotated and raised in the valve body until the stem 19 is in such a position that the cam shaft may be rotated to the closed position of the valve bearing on the upper surface of the stem. The conduit is then in such a position that when the horn is attached it will fit snugly against the side of the container as is illustrated in Figure 1. The bonnet 14 is then rotated until it has raised the valve proper from the seat, by means of the pin 28, so that any gas entering through the bore 20 of the bonnet may pass the seat and enter the container.

The gas supply for charging the container is then connected to the conduit and gas is introduced into the container. When the container has been fully charged the bonnet 14 is again lowered in the valve body until the valve proper rests securely on the valve seat. The position of the stem 19 with respect to the cam surface is always such that the cam surface will coact with the top 34 of the stem 19 in the same position because of the pin 28. Of course, it may

not be convenient to rotate the bonnet and in that event it may be more desirable to rotate the valve body and the container while the bonnet 14 is held in a fixed position. The gas supply is then disconnected from the conduit and the discharge horn is reconnected thereto and fastened in the clip 5. The extinguisher is now ready for use.

When the extinguisher is to be operated it is only necessary to remove the horn from the clip and raise it and the conduit from the normally inoperative position to a position from which the gas may be discharged most efficiently. The rotation of the horn and conduit will of course rotate the cam shaft. The rotation of the cam shaft will move the cut-out portion of the shaft over the stem and permit it to rise due to the pressure of the gas in the container on the valve proper. When the valve proper has been raised from its seat the gas escapes past the valve seat into the chamber 11, through the port 31, into the bore 30 of the plug, through the bore 20 of the stem, through the slot 32, to the space surrounding the cam shaft, through the port 42 into the conduit 3, and out through the horn 4 to the atmosphere.

If the container is subjected to high temperatures when it has been charged the pressure of the gas will rise in proportion to the rise in temperature. If this pressure becomes excessive so that there would be a tendency of the container to burst it is necessary for the sake of safety to provide a means to relieve the pressure in the container. In the present invention this is accomplished by the frangible disc 24 which is adapted to rupture when the pressure reaches a predetermined maximum. When this occurs the gas can then escape through the conduit and horn to the atmosphere as previously described.

It is obvious that if it is desired to stop the flow of gas from the container while it is being discharged after having released the stem 19 by rotating the cam, the horn and conduit need only be rotated toward the side of the container opposite to the side on which the horn is ordinarily clipped when the extinguisher is not in use. By referring to Figure 2, it will be seen that the upper edge of the cam surface 35 will then bear on the top surface 34 of the stem 19 and push it down upon further rotation of the conduit, thus reseating the valve on its seat. Of course, if it is desired, the cam surface may be designed in such a manner that it will be possible to push the valve down on its seat by merely rotating the horn and conduit back to the position where the horn is held by the clip.

The valve illustrated in Figure 5 is very similar to the valve illustrated in Figure 2 and accordingly the valve will not be described in detail. It should be noted that an alternate stem 19 and valve proper has been shown. In this valve instead of providing a valve plug 23 to carry the gasket 25 and the frangible disc 24 the stem has been extended and is provided with an enlarged portion 44 in which the gasket and disc are secured. A flange 45 is formed on the stem in order to provide the shoulder 26 which is used as a stop, bearing against the shoulder 27. The only other difference in the valves being the means of discharging the gas from the valve.

In the valve of Figure 5 a discharge passage 46 is provided at the top of the bonnet 14. The wall surrounding the passage is threaded externally to receive a discharge conduit or hose and is threaded internally to receive a bushing 47. The

bushing has a passage 48 leading to a closed end 49. Diametrically opposed ports 50 are drilled in the bushing and serve to permit communication of the passage 46 with the conduit when it is attached or the external atmosphere when the conduit is disassembled from the valve.

The cam shaft 33 is mounted in a slightly different manner from that illustrated in Figure 3 and may be best understood by reference to Figure 6. The cam shaft has one end which extends through one wall of the bonnet 14, and is secured to the handle by means of a pin 55^a. Part 51 of the cam shaft is made of a smaller diameter than the remainder. This portion of the shaft is journaled in a bushing 52 which is secured to the bonnet 14 by the threads 53. The other end 54 of the shaft is directly journaled in a recess in the wall of the bonnet 14.

The valve releasing handle 55 has one arm 56 securely attached to the cam shaft and the other arm 57 is supported by a screw member 58. This member has threads 59 which coact with similar threads on the handle. The end 60 of this member is journaled in a recess formed in the wall of the bonnet. By turning the screw member in toward the bonnet the arm 57 will be moved away from the bonnet 14 and cause the other arm 56 to secure the cam shaft 33 in the bonnet 14. This means also keeps the handle 55 securely on the shaft.

The operation of this valve is very similar to the operation of the previously described valve. The only difference lies in the method of rotating the cam shaft so that the pressure of the gas in the container may raise the valve from the valve seat. In this instance the handle 55 is raised which will rotate the cam shaft and release the gas so that it may flow out through the passage 46.

The valve which is illustrated in Figure 7 is a valve that is particularly adapted for use on aeroplanes. It may be employed, for example, with an aeroplane fire extinguishing apparatus, or with an aeroplane flotation system which is employed when a plane lands on a body of water to float the aeroplane on the water and facilitate rescue. In fact this valve is employed wherever it is necessary to lead the gas away from the immediate vicinity of the gas container when the gas is discharged from the container due to the pressure of the gas in the container being greater than the container can safely withstand. This condition arises most frequently on aeroplanes where it is important that the gas be discharged at a point outside the fuselage to obviate the possibility of smothering the occupants of the aeroplane when the container is so discharged.

The method of relieving the pressure in the container when the temperature rises is accomplished in this valve by means of the passage 61 which is placed below the seat 12 and extends into the passage 3. Accordingly the safety disc 24 is removed from the plug 23 and placed in a recess formed in the valve body at one end of the passage 61. This recess has a shoulder 62 on which rests an annular gasket 63 which in turn supports the disc 24. Threads 64 are provided in the valve body adapted to secure the bushing 65 thereto. The bushing maintains the disc 24 on the annular gasket 63 in a manner that prevents passage of any gas from the container until the disc 24 has been ruptured. The bushing 65 is similar to the bushing 47 and is accordingly provided with a passage 66 leading to a closed end 67. Near the closed end the wall of the bushing

has holes 68 diametrically opposed and leading to the passage 66.

Threads 69 are provided on the bushing to permit a coupling 70 to be mounted thereon. This coupling is necessary in order to allow the connection of a conduit thereto in order to lead the escaped gas from the container to a point outside the plane or to an indicator whereby the escape of the gas can be noted. These connections are not shown since they form no part of the present invention.

The valve plug 23 used on the valve of Figure 7 is slightly different from that employed on the other two valves which are shown. Since the safety relief passage 61 is provided the valve seating material 71 may be made of a solid piece and mounted directly on the valve plug without the interposition of a safety disc. The plug has a wall 72 which closes off the passage 30 and on which the valve seating material rests.

The remainder of the valve is substantially the same as the valve of Figure 5 and accordingly it is unnecessary to describe it in further detail. The operation of the valve is also similar to the operation of the valve of Figure 5. There is one difference, however, that must be noted. If the pressure in the container rises over a safe pressure and the container should be emptied the pressure in the passage 8 cannot escape through the passages 20 and 30 of the bonnet 14 and the valve plug 23, respectively. It therefore can only enter the passage 61 and rupture the frangible disc 24 and escape through whatever means are provided at the end of the passage. It will thus be seen that a different form of a safety relief has been provided.

Although the invention has been described with reference to several specific embodiments thereof, the invention is not to be limited to those particular embodiments since various modifications in details and arrangements of the parts may be made by those skilled in the art without departing from the scope of the invention as defined in the appended claims.

We claim:

1. A valve assembly comprising a body having a chamber, a seat in the chamber, closure means for the chamber movably secured to the body, a stem adapted for movement in the closure means, a valve proper on the stem adapted to coact with the seat, valve controlling means mounted on said closure means having a releasing and a non-releasing position associated with said stem, whereby the valve proper may engage the valve seat when said valve controlling means is in its non-releasing position and the closure means is moved toward the seat and whereby the valve proper may disengage the seat when said valve controlling means is in its releasing position, a passage in the stem communicating with the chamber, and a discharge outlet associated with the closure means and communicating with said passage, whereby upon release of the stem the fluid controlled by the valve may escape through the passage to the discharge outlet.

2. A valve assembly comprising a body having a chamber and a seat therein, a bonnet movably secured to the body, a stem in the bonnet adapted for movement toward and away from said seat, a valve proper on the stem adapted to engage the seat, a valve controlling means mounted on the bonnet having a releasing and a non-releasing position, a handle operatively controlling said valve controlling means, whereby the valve proper may engage the valve seat when said valve

controlling means is in its non-releasing position and the bonnet is moved toward the seat and whereby the valve proper may disengage the seat when said valve controlling means is in its releasing position, and means to effect discharge of the fluid controlled by the valve proper comprising a passage through the stem in communication with the chamber, and a discharge outlet on the bonnet in communication with said passage.

3. A valve assembly comprising a body having a seat therein, a bonnet on the body above the seat adapted for movement with respect to the body, a stem adapted for movement within the bonnet toward and away from the seat having a valve proper, a valve control member mounted on the bonnet adapted to engage and disengage the valve stem, whereby the valve proper may engage the seat when the valve control member is in its engaging position and the bonnet is moved toward the seat and whereby the valve proper may disengage the seat when the valve control member is in its disengaging position; and means to effect discharge of the fluid controlled by the valve proper upon development of a predetermined pressure in the fluid comprising a passage extending through the valve stem and the valve proper and communicating with a discharge outlet, and a frangible disc normally closing said passage and adapted to rupture at a predetermined pressure.

4. A valve assembly comprising a body having a seat therein, a chambered valve controlling member movable with respect to the body, a valve stem adapted for movement within the chambered valve controlling member toward and away from said seat, a valve proper on the stem adapted to coact with the seat, a second valve controlling member mounted on the chambered valve controlling member and adapted to engage and disengage the valve stem; the valve proper being adapted to be seated by movement of the chambered valve controlling member in a direction toward the valve seat when the second valve controlling member engages the valve stem, and the valve being adapted to open upon movement of the second valve controlling member to its disengaged position; and means to effect discharge of the fluid controlled by the valve comprising a passage in said valve stem in communication with a chambered portion of the chambered valve controlling member and extending adjacent the valve proper, a passage establishing communication between the first named passage and the space adjacent the valve seat, and a discharge outlet in communication with said chambered portion of the chambered valve controlling member.

5. A valve assembly comprising a body having a seat therein, a chambered valve controlling member movable with respect to the body, a valve stem adapted for movement within the chambered valve controlling member toward and away from said seat, a valve proper on the stem adapted to coact with the seat, a second valve controlling member mounted on the chambered valve controlling member and adapted to engage and disengage the valve stem, an operating member operatively connected with the second valve controlling member; the valve proper being adapted to be seated by movement of the chambered valve controlling member in a direction toward the valve seat when the second valve controlling member engages the valve stem, and the valve being adapted to open upon movement

of the second valve controlling member to its disengaged position; and means to effect discharge of the fluid controlled by the valve comprising a passage in said valve stem in communication with a chambered portion of the chambered valve controlling member and extending adjacent the valve proper, a passage establishing communication between the first named passage and the space adjacent the valve seat, a passage in said operating member, and a passage establishing communication between the last named passage and said chambered portion of the chambered valve controlling member.

6. A valve assembly comprising a body having a seat therein, a chambered valve controlling member movable with respect to the body, a valve stem adapted for movement within the chambered valve controlling member toward and away from said seat, a valve proper on the stem adapted to coact with the seat, a second valve controlling member mounted on the chambered valve controlling member and adapted to engage and disengage the valve stem; the valve proper being adapted to be seated by movement of the chambered valve controlling member in a direction toward the valve seat when the second valve controlling member engages the valve stem, and the valve being adapted to open upon movement of the second valve controlling member to its disengaged position; and means to effect discharge of the fluid controlled by the valve upon the development of an excessive pressure in the fluid comprising a passage in said valve stem in communication with a chambered portion of the chambered valve controlling member and extending through the valve proper, a frangible disc adapted to give way at a predetermined excessive pressure in the fluid arranged to normally close off said passage, and a discharge outlet in communication with said chambered portion of the chambered valve controlling member.

7. A valve assembly comprising a body having a seat therein, a valve proper, a valve stem, a valve controlling member having releasing and non-releasing positions adapted to hold the valve on its seat in its non-releasing position and to permit the valve to rise in its releasing position, an operating member operatively connected with the valve controlling member, and means to effect discharge of the fluid controlled by the valve comprising a passage in said valve stem extending adjacent the valve proper, a passage establishing communication between the first named passage and the space adjacent the valve seat, a passage in said operating member, and a passage establishing communication between the first and last named passages.

8. In a valve assembly comprising a body having a seat, means movable toward and away from the seat, movable valve means in the first named means adapted to coact with the seat, rotatable means on the first named means having an engaging and disengaging position with respect to said movable valve means, said movable valve means being held on the seat by the first named means and said rotatable means in its said engaging position, means to effect passage of a fluid medium through the movable valve means into the first means, and discharge means on the first named means secured to said rotatable engaging and disengaging means to move it from one position to the other.

9. In a valve assembly comprising a body hav-

ing a chamber therein, a seat in the chamber, a bonnet closing the chamber adapted to move toward and away from the seat, a stem movable in the bonnet toward and away from the seat and having a head adapted to coact with the seat, a cam on the bonnet having engaging and disengaging positions with respect to the stem, said stem having a passage communicating with the chamber and the bonnet, a discharge conduit in communication with the bonnet and associated with the cam to move it to engaging and disengaging positions, whereby the head may be held on the seat by the bonnet and the cam when in its said engaging position, and upon movement of the cam to a disengaging position a medium controlled by the valve may escape through the stem passage to the discharge conduit.

10. In a valve assembly comprising a body having a chamber and a seat therein, a bonnet movable toward and away from the seat, a stem in the bonnet movable with respect thereto and having a head adapted to coact with the seat, a cam on the bonnet having engaging and disengaging positions with the stem, said bonnet and said cam when in its said engaging position serving to hold the head on the seat, said stem having a passage communicating with the chamber and the bonnet, and a discharge conduit adapted to communicate with the bonnet and secured to the cam to move it from engaging and disengaging positions.

11. A valve assembly comprising a body having a seat therein, a valve proper, means adjustable with respect to the valve body, valve controlling means carried by said adjustable means and having releasing and non-releasing positions and adapted to hold the valve proper on its seat in its non-releasing position and to permit the valve proper to rise from the seat in its releasing position, said adjustable member having a range of adjustment such that movement thereof in a direction toward the valve seat when the valve controlling means is in its non-releasing position will cause the valve proper to engage the seat, and means for maintaining a fluid tight relationship between the valve body and the adjustable means throughout the range of adjustment.

12. In a valve assembly comprising a body having a chamber and a seat therein, a bonnet movable toward and away from the seat, a valve stem in the bonnet movable with respect thereto and adapted to coact with the seat, a controlling member on the bonnet having engaging and disengaging positions with the stem, said bonnet and said controlling member when in its said engaging position serving to hold the valve head on the seat, said stem having a passage communicating with the chamber and the bonnet, an operating member for said controlling member having a passage constituting a discharge passage, and means to secure said operating member to said controlling member including means to establish communication between said bonnet and said discharge passage.

13. A release device for a fluid medium under pressure comprising a valve body formed with a seat, a bonnet cooperating with the valve body and formed with an outlet, a valve stem mounted for longitudinal movement in the bonnet and formed with a head adapted to coact with the seat, means normally engaging the valve stem to hold the valve head on the seat and adapted to be moved to a non-engaging position to per-

mit the valve to be opened by the pressure of the fluid medium, and means establishing communication between the space adjacent the seat and the outlet including a passage through the valve stem.

14. A release device for a fluid medium under pressure comprising a valve body formed with a seat, a bonnet cooperating with the valve body and formed with an outlet, a valve stem mounted for longitudinal movement in the bonnet and formed with a head adapted to coast with the seat, means normally engaging the valve stem to hold the valve head on the seat and adapted to be moved to a non-engaging position to permit the valve to be opened by the pressure of the fluid medium, means establishing communication between the space adjacent the seat and the outlet including a passage through the valve stem, said valve head having a passage therethrough communicating with the passage in the valve stem, and a frangible disc normally closing the second named passage and adapted to rupture upon the development of a predetermined excess pressure of the fluid medium.

15. A release device for a fluid medium under pressure comprising a chambered body member, a seat in said chamber, closure means for said chambered body member having a fluid discharge outlet adapted for connection to a discharge conduit, a fluid controlling member disposed within said closure means and adapted for movement toward and away from the seat and having a portion arranged to engage said seat, means establishing communication between the chambered body member and the discharge outlet including a passage in the fluid controlling member, the passage in said fluid controlling member being extended for communication through the seat engaging portion of said fluid controlling member, and frangible means normally closing said passage and adapted to rupture upon the development of a predetermined excess pressure of the fluid medium.

16. A release device for a fluid medium under pressure comprising a body member having a chamber and a seat therein, closure means for said body member movable with respect thereto, a fluid controlling member disposed within said closure means and adapted for movement toward and away from the seat, said fluid con-

trolling member being provided with a passage communicating with the chamber and the closure means, releasable means having engaging and non-engaging positions with respect to said fluid controlling member, an operating member for said releasable means having a passage constituting a discharge passage, and means to secure said operating member to said releasable means including means to establish communication between said closure means and said discharge passage.

17. A release device for a fluid medium under pressure comprising a body provided with a chamber having a seat therein, closure means for said body movable with respect thereto, a fluid controlling member disposed within said closure means and adapted to move toward and away from the seat, said fluid controlling member being provided with a passage communicating with the chamber and the closure means, rotatable means bearing over a portion of its length in the closure means and formed over another portion of its length with a surface having engaging and non-engaging positions with respect to said fluid controlling member, an operating member for said rotatable means having a passage constituting a discharge passage, and means to connect said operating member to said rotatable means including means to establish communication between said closure means and said discharge passage.

18. A release device for a fluid medium under pressure comprising a body provided with a chamber having a seat therein, closure means for said body movable with respect thereto, a fluid controlling member disposed within said closure means and adapted to move toward and away from the seat, said fluid controlling member being provided with a passage communicating with the chamber and the closure means, rotatable means mounted in said closure means and formed with a surface having engaging and non-engaging positions with respect to said fluid controlling member, and means to prevent rotation of the fluid controlling member with respect to the closure means, said closure means being provided with a discharge outlet.

WILLIAM E. HUFFMAN.
GEORGE W. REFLOGLÉ.