

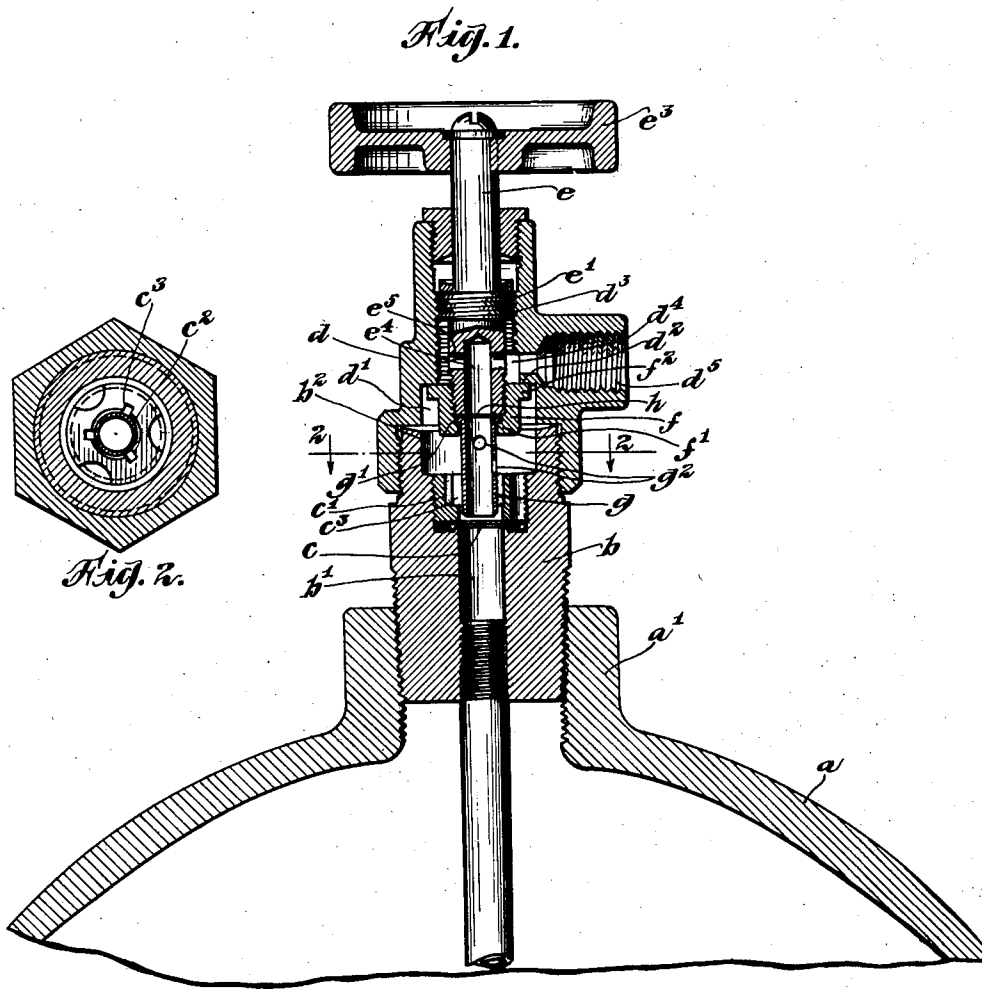
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RELEASE MECHANISM FOR FIRE EXTINGUISHING SYSTEMS

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RELEASE MECHANISM FOR FIRE-EXTINGUISHING SYSTEMS

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The present invention relates to devices for releasing a fire extinguishing medium which is normally preserved under an extreme pressure within a suitable container and, more specifically, embodies an improved releasing mechanism which permits a frangible disc to be ruptured at will to release the medium, in addition providing a valve which may be operated by the foregoing releasing mechanism to shut off the flow of the medium after the frangible disc has been ruptured. In using fire extinguishers, particularly of the portable, or hand operated type, it frequently is desirable to move the extinguisher from one location to another to apply the fire extinguishing medium more effectively at the most dangerous points of the fire. The extinguisher can be handled with greater facility if it is not discharging the fire extinguishing medium and to provide an extinguisher of the above character, the present device has been designed.

More specifically, the invention embodies a manually operated cutter mechanism in which the cutter is mounted upon a valve stem which is advanced manually to cause the cutter to rupture the frangible disc which confines the medium within the container. A chamber is formed in the valve body through which the cutter and a portion of the valve stem move. At the discharging end of the chamber, and about the valve stem, is formed an annular valve seat which is somewhat larger than the diameter of the valve stem and is adapted to be engaged by a flanged portion of a nut which secures the cutter to the valve stem. In this manner, when the valve stem is fully retracted and the cutter out of engagement with the frangible disc, the flanged extension of the nut will engage the valve seat formed in the chamber to prevent the chamber from communicating with the outlet. As the valve stem and cutter are advanced toward the frangible disc, the flanged portion of the nut is moved away from the valve seat to open the valve and permit the medium, which escapes after the frangible disc has been ruptured, to be discharged from the outlet. If the valve stem is retracted sufficiently, the

discharge of the medium is cut off and the fire extinguisher rendered temporarily inactive.

As a further improved feature, the valve stem is provided with an axial passage and ports communicating with the outlet of the container. Between this passage and the cutter which is coaxial therewith, is mounted a second frangible disc. When the first frangible disc has been ruptured, and the valve stem retracted to shut off the discharge of the medium temporarily, the medium within the container is confined by the second frangible disc, thus providing a safety mechanism which functions subsequently to the rupturing of the first frangible disc. If, for any reason, the pressure within the container should rise to a predetermined excess value, the second frangible disc will rupture and permit the medium to be discharged through the passage and port within the valve.

In order that the foregoing mechanism may be understood more fully, reference will now be had to the accompanying drawings wherein:

Figure 1 is a view in section, taken in a plane passing through the axis of the valve mechanism and showing the cutter and valve construction.

Figure 2 is a view in section, taken on line 2-2 of Figure 1, and looking in the direction of the arrows.

Referring to the above drawings, *a* designates a container for a fire extinguishing medium, the container being provided with a neck *a'* which is threaded to receive a valve body *b*. This valve body is formed with an axial passage *b'*, at the upper extremity of which a frangible disc *c* is mounted. This frangible disc is maintained gas tight by means of a threaded nut *c'* which is threaded into the valve body to engage the frangible disc tightly and prevent the escape of the medium within the container. The nut *c'* is formed with an axial passage *c''* having radial grooves *c'''* which receive a wrench to permit the nut to be seated and removed.

Formed in the upper portion of the valve body, is a chamber *b''* into which the medium

is discharged from the passage in the cutter. A valve bonnet d is formed with a cooperating portion d' to provide a chamber of the desired size, the upper portion of the chamber being constructed, as at d^2 , to form a valve seat. A valve stem e is formed with an enlarged threaded portion e' to engage internal threads d^3 in the valve bonnet d whereby rotation of the valve stem by hand-wheel e^3 in either direction causes a corresponding axial movement of the valve stem with respect to the valve bonnet and body. At its lower extremity the valve stem is formed with a passage e^4 and ports e^5 which communicate with a discharge passage d^4 and outlet d^5 . Threaded upon the lower extremity of the valve stem is a nut f having an inwardly extending flange f' . A cylindrical cutter g is provided with a radial flange g' which is engaged by the flange f' of the nut f to secure the cutter to the valve stem. Between the flange g' and the valve stem, a second frangible disc h is secured and apertures g^2 are formed in the cutter to permit the medium to flow through the cutter and into the chamber b^2 .

The nut f is formed with an outwardly extending radial flange f^2 to engage the valve seat d^2 formed in the chamber. In its normal retracted position, the valve stem forces the flange f^2 against the valve seat d^2 to cut off the communication between chamber b^2 and outlet d^5 . As the valve stem is advanced, the cutter g engages the frangible disc c and causes the latter to rupture, thus permitting the fire extinguishing medium to be discharged through the cutter g into the chamber b^2 . As the flange f^2 of the nut f is out of engagement with the valve seat d^2 , the medium flows through the chamber and to the outlet d^5 . If, for any reason, it is desired to shut off the flow of the medium, the valve stem is retracted until the flange f^2 which forms a valve, engages the valve seat d^2 thus cutting off the flow of the medium.

It will be apparent that, when the valve stem is retracted to prevent the further discharge of the fire extinguishing medium, the remaining medium within the container is confined by the second frangible disc h . Should the pressure within the container become too great, this second disc will rupture and permit the discharge of the medium through passage e^4 and ports e^5 into the outlet d^5 .

Although the invention has been described with reference to the specific construction shown in the accompanying drawings, it is not to be limited save as defined in the appended claims.

I claim as my invention:

1. A valve for containers of a medium under pressure comprising a valve body secured to the container, a frangible disc carried by the valve body and confining the medium within

the container, a valve bonnet, a chamber formed in the valve body and bonnet, an outlet formed in the bonnet, a cutter for rupturing the disc, a valve stem upon which the cutter is mounted to move with respect to the disc, a passage in the valve stem, ports in the stem between the passage and outlet, a nut threaded on the stem, a second frangible disc secured between the cutter and stem, and a flange on the nut forming a valve between the chamber and outlet.

2. A valve for containers of a medium under pressure comprising a valve body secured to the container, a frangible disc carried by the valve body and confining the medium within the container, a cutter for rupturing the disc, means to move the cutter with respect to the disc, an outlet for the medium, a valve carried by the valve stem between the frangible disc and the outlet, means to close the valve by movement of the cutter away from the disc, and means interposed between said disc and the outlet and normally preventing the escape of the medium through the outlet when the valve is closed and adapted to relieve the pressure within the container upon the rupturing of the frangible disc due to an excess pressure within the container.

3. A valve for containers of a medium under pressure comprising a valve body secured to the container, a frangible disc carried by the valve body and confining the medium within the container, a cutter for rupturing the disc, means to move the cutter with respect to the disc, an outlet for the medium, a valve carried by the valve stem between the frangible disc and the outlet, means to close the valve by movement of the cutter away from the disc, and means interposed between said disc and the outlet and normally preventing the escape of the medium through the outlet when the valve is closed and adapted to relieve the pressure within the container upon the rupturing of the frangible disc due to a predetermined excess pressure within the container, said means including a second frangible disc designed to rupture at a predetermined excess pressure.

4. A valve for containers of a medium under pressure comprising a valve body secured to the container, a frangible disc carried by the valve body and confining the medium within the container, a cutter for rupturing the disc, a valve stem upon which the cutter is mounted to move with respect to the disc, and outlet for the medium, a chamber formed between, and communicating with the outlet and the disc, a valve between the chamber and outlet and mounted upon the valve stem, whereby movement of the cutter away from the disc will close the valve, and a second frangible disc interposed between the first disc and the outlet and normally preventing the escape of the medium through the outlet when the valve is closed and designed to rupture

ture at a predetermined excess pressure upon the rupturing of the first frangible disc at a predetermined excess pressure within the container.

5 5. A valve for containers of a medium under pressure comprising a valve body secured to the container, a frangible disc carried by the valve body and confining the medium within the container, a valve bonnet, a chamber formed in the valve body and bonnet, an outlet formed in the bonnet, a hollow tubular cutter for rupturing the disc and having ports in its wall in communication with the chamber, a valve stem upon which the cutter is mounted to move with respect to the disc, a passage in the valve stem, ports in the stem between the passage and outlet, a nut threaded on the stem, a second frangible disc secured between the cutter and stem, and a flange on the nut forming a valve between the chamber and outlet.

10 6. A valve for containers of a medium under pressure comprising a valve body secured to the container, a frangible disc carried by the valve body and confining the medium within the container, a cutter for rupturing the disc, means to move the cutter with respect to the disc, an outlet for the medium, a valve carried by the valve stem between the frangible disc and the outlet, means to close the valve by movement of the cutter away from the disc, and means normally preventing the escape of the medium when the valve is closed and adapted to relieve the pressure within the container upon the rupturing of the frangible disc due to an excess pressure within the container.

15 7. A valve for containers of a medium under pressure comprising a valve body secured to the container, a frangible disc carried by the valve body and confining the medium within the container, a cutter for rupturing the disc, means to move the cutter with respect to the disc, an outlet for the medium, a valve carried by the valve stem between the frangible disc and the outlet, means to close the valve by movement of the cutter away from the disc, and means normally preventing the escape of the medium when the valve is closed and adapted to relieve the pressure within the container upon the rupturing of the frangible disc due to a predetermined excess pressure within the container, said means including a second frangible disc designed to rupture at a predetermined excess pressure.

20 8. A valve for containers of a medium under pressure comprising a valve body secured to the container, a frangible disc carried by the valve body and confining the medium within the container, a cutter for rupturing the disc, a valve stem upon which the cutter is mounted to move with respect to the disc, an outlet for the medium, a chamber formed between and communicating with the outlet and the disc, a valve between the chamber and

outlet and mounted upon the valve stem, whereby movement of the cutter away from the disc will close the valve, and a second frangible disc normally preventing the escape of the medium when the valve is closed and designed to rupture at a predetermined excess pressure upon the rupturing of the first frangible disc.

9. A valve for containers of a medium under pressure comprising a valve body secured to the container, a frangible disc carried by the valve body and confining the medium within the container, a chamber formed in the valve body, an outlet for the medium, a cutter for rupturing the disc, a valve stem upon which the cutter is mounted to move with respect to the disc, a passage in the valve stem, ports in the stem between the passage and outlet, a nut threaded on the stem, a second frangible disc secured between the cutter and stem, and a flange on the nut forming a valve between the chamber and outlet.

This specification signed this 17th day of Sept., A. D. 1928.

DANIEL MAPES.