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DISCHARGE CONTROLLING MEANS FOR FLUID MEDIUM UNDER PRESSURE

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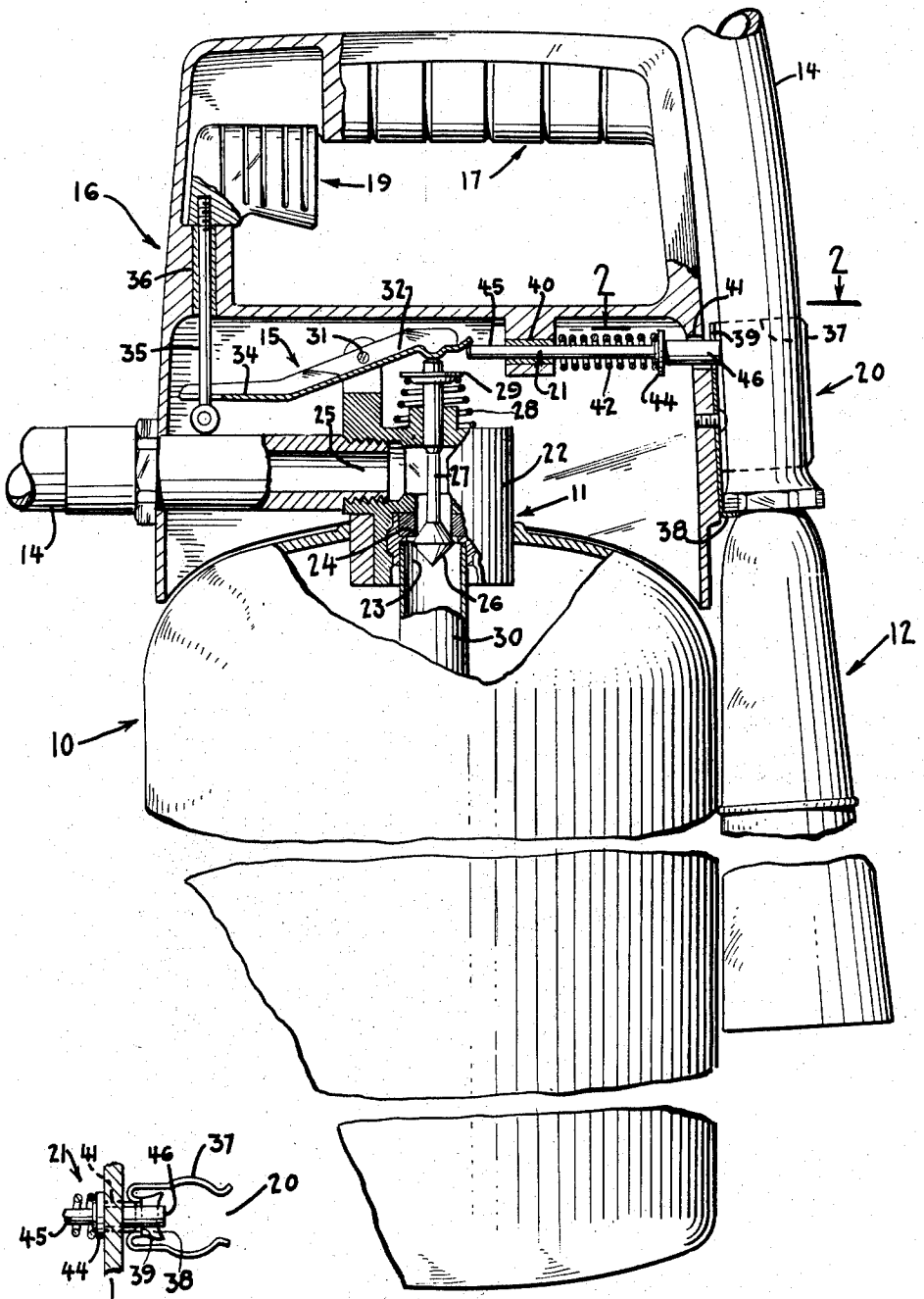


Fig. 1

Fig. 2

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DISCHARGE CONTROLLING MEANS FOR FLUID MEDIUM UNDER PRESSURE

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7 Claims. (Cl. 169—31)

The present invention relates to discharge controlling means for fluid medium under pressure confined in the receptacle of a fire extinguisher and like apparatus including discharge directing means such as a horn, nozzle or shield mounted on the apparatus, and, more particularly, an improved arrangement for preventing the opening of the discharge valve unless the horn or the like is first removed from the apparatus.

In United States Patent No. 2,489,339, an arrangement of this kind is disclosed wherein the horn is provided with structure for locking the valve operating handle against movement unless the horn is first removed from its supporting bracket. Such an arrangement is feasible where the valve operating handle is a lever or includes a lever system which is exposed at a point adjacent the horn bracket to enable the horn to physically engage a part thereof to lock the same against operation.

The present invention, however, is concerned with providing a valve locking arrangement where the lever or lever system is located remotely to the horn bracket or is so shrouded that no part thereof is accessible for engagement by the horn or the like.

Accordingly, an object of the present invention is to provide an improved valve locking arrangement for apparatus where the lever or lever system is of the last mentioned type.

Another object is to provide such an arrangement which does not require special structure on the horn or the like.

Another object is to provide such an arrangement which is concealed and is inaccessible while the horn is on its bracket, whereby tampering is prevented.

Another object is to provide a rugged lock for the valve operating lever which positively resists operation of the lever even when a great force is applied to the lever.

Another object is to provide such an arrangement which is automatic in operation.

Another object is to provide such an arrangement which enables the valve to be locked in an open position.

A further object is to accomplish the foregoing in a simple, practical and economical manner.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description, and is shown in the accompanying drawing, forming a part of the specification, wherein:

Fig. 1 is a fragmentary view of a fire extinguisher, partly in elevation and partly in section, equipped with a valve locking arrangement in accordance with the present invention.

Fig. 2 is an enlarged sectional view taken along the line 2—2 on Fig. 1 illustrating the position of the locking member when the horn is removed from its bracket.

Referring to the drawing in detail, there is shown a fire extinguisher by way of example which generally comprises a receptacle **10** adapted to confine fluid medium under pressure, a valve **11** at the upper end of the receptacle, a discharge directing horn **12** connected to the outlet of the valve by a hose **14**, a valve operating lever **15**, a shroud or housing **16** mounted at the upper end of the receptacle and provided with a carrying handle **17** and serving to enclose the valve and its lever and to mount a lever operating trigger **19**, a supporting bracket **20** for the horn, and a member **21** for locking the lever in the manner described hereinafter.

The valve **11**, as shown herein, comprises a body **22** having an inlet **23** provided with a valve seat **24** and an outlet **25**, a valve member **26** for the seat having a stem **27** extending upwardly through the valve body, and a spring **28** biased between the valve body and a flange **29** secured to the stem adjacent its upper end. A syphon tube **30** is connected to the inlet of the valve and extended to the bottom of the receptacle.

The valve operating lever **15** is pivotally mounted on the valve body at **31**, and has a short arm **32** which extends across the valve stem to engage the upper end thereof and has a long arm **34** which extends outwardly to a position beneath the trigger **19**.

The trigger is mounted for vertical movement at one side of the shroud by a rod **35** extending through a bearing **36** and having its lower end connected to the outer end of the arm **34**, whereby upward movement of the trigger will cause the arm **34** to be raised and the arm **32** to depress the valve stem and effect unseating of the valve member.

The bracket **20** is secured to the shroud at the side opposite the trigger, and as shown is a U-shaped clip **37** adapted to grip the handle of the horn having a lip or projection **38** at its lower end on which the nut of the handle is adapted to rest. The clip has a slot or recess **39** at its upper end for receiving the outer end of the member **21** in the manner about to be described (Fig. 2).

The member **21** is slidably mounted in a bearing **40** on the shroud above the side of the valve body facing the bracket. The outer end of this member extends through the opening **41** in the shroud adjacent the slot **39** and the inner end extends under the free end of the arm **32** to prevent downward movement thereof when the horn is in its bracket and the handle of the horn urges the member **21** inwardly. In order to move the member outwardly to release the lever arm **32** when the horn is removed from its bracket, a spring **42** is biased between the outer side of the bearing **40** and a flange **44** on the member **21** spaced inwardly from the inner wall of the shroud where the opening **41** is provided. This flange, in addition to biasing the spring **42**, acts as a stop to limit the extent of outward movement of the member **21** when the horn is removed from its bracket.

The assembly of the member **21** and the spring **42** is facilitated by making the member in two pieces, namely, a rod or shaft **45** and a cap **46** secured to the outer end of the rod which carries the flange **44**.

In operation, with the fire extinguisher in stand-by condition as shown in Fig. 1, the horn handle holds the member **21** inwardly so that the inner end extends under the lever arm **32** and the spring **42** is compressed. When the horn is removed from its bracket, the spring **42** moves the member **21** outwardly, as shown in Fig. 2, to release the lever arm. Now, as the trigger is pulled upwardly, the lever arm **32** is free to depress the valve stem and unseat the valve whereby the contents of the receptacle are discharged through the horn.

If desired, the valve can be locked in its open position

by manually engaging the outer end of the member 21 and pushing it inwardly to extend over the arm 32 and hold it down in opposition to the force of the valve spring 28. By making the spring 28 sufficiently strong to effect a good friction grip between the inner end of the member 21 and the arm 32, the force of the spring 42 tending to retract the member is overcome. After the extinguisher has been discharged, the trigger is squeezed hard to move the arm down a short distance whereby the friction grip is destroyed and the member 21 is freed for outward movement under the influence of its spring 42.

From the foregoing description, it will be seen that the present invention provides a simple, practical and economical locking arrangement for the valve of fire extinguishers and the like which is controlled by positioning and removal of the discharge directing means. The locking elements are compactly arranged, are light in weight and yet are sufficiently rugged to withstand such rough usage to which they may normally be subjected.

As various changes may be made in the form, construction and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in any limiting sense.

We claim:

1. Discharge controlling means for a receptacle adapted to contain fluid medium under pressure comprising a valve, manually engageable means operable to open said valve including a lever having an arm for unseating said valve upon downward movement thereof, fluid medium directing means connected to the outlet of said valve, a casing secured to said valve, bracket means on said casing for supporting said fluid medium directing means, a member movably mounted within said casing having one end positioned for engagement and movement by said fluid medium directing means when supported by said bracket means whereby its other end is positioned to extend under said arm and restrict said valve operating means against downward movement to prevent operation thereof, and means arranged for moving said member towards said directing means and from beneath said arm to render the same ineffective to prevent operation of said valve opening means when said fluid medium directing means is removed from said bracket means.

2. Discharge controlling means for a receptacle adapted to contain fluid medium under pressure comprising a valve, a lever having an arm operable to open said valve upon downward movement thereof, a fluid medium directing horn having a hose connected to the outlet of said valve, a casing secured to said valve, a bracket on said casing for supporting said horn, a slidably mounted rod within said casing having one end positioned for engagement by said horn when supported by said bracket and having its other end positioned to engage under said arm and restricting said arm against downward movement to prevent operation thereof when said horn is supported by said bracket, and a spring for moving said rod towards said horn and from beneath said arm to render the same ineffective to prevent operation of said valve opening arm when said horn is removed from said bracket.

3. Discharge controlling means for a receptacle adapted to contain fluid medium under pressure comprising a valve, a shroud for enclosing said valve including a carrying handle and having a side opening and a bearing in alignment with said opening, a lever having an arm operable to open said valve upon downward movement thereof, a fluid medium directing horn having a hose connected to the outlet of said valve, a bracket on said shroud for supporting said horn adjacent said opening, a rod member slidably mounted in said bearing having one end extending through said opening for engagement by said horn when supported by said bracket and having its other end positioned under said arm and restricting said arm against downward movement to prevent operation of said arm when said horn is supported by said bracket, and a spring for moving said member outwardly with respect to said opening and from beneath said arm to render the same ineffective to prevent operation of said valve opening arm when said horn is removed from said bracket.

4. Discharge controlling means for a receptacle adapted to contain fluid medium under pressure comprising a valve, a shroud for enclosing said valve including a carrying handle and having a side opening and a bearing in alignment with said opening, a lever having an arm operable to open said valve upon downward movement thereof, a fluid medium directing horn having a hose connected to the outlet of said valve, a bracket on said shroud for supporting said horn adjacent said opening, a rod member slidably mounted in said bearing having one end extending through said opening for engagement by said horn when supported by said bracket and having its other end positioned under said arm and restricting said arm against downward movement to prevent operation of said arm when said horn is supported by said bracket, and a compression spring for moving said member outwardly with respect to said opening and from beneath said arm to render the same ineffective to prevent operation of said valve opening arm when said horn is removed from said bracket, said member having a flange thereon to limit the outward movement thereof and said spring being biased between said flange and said bearing.

5. Discharge controlling means for a receptacle adapted to contain fluid medium under pressure comprising a valve, means operable to open said valve including a lever having an arm for unseating said valve upon downward movement thereof, fluid medium directing means connected to the outlet of said valve, a casing secured to said valve, bracket means on said casing for supporting said fluid medium directing means having an aperture adjacent thereto, a slidably mounted rod member, a bearing for said member in alignment with said aperture, said rod member having one end extending through said aperture for engagement by said fluid medium directing means when supported by said bracket means and having its other end positioned to extend under said arm and restrict said valve operating means against downward movement to prevent operation thereof when said horn is supported by said bracket, and having a flange thereon for limiting its outward movement with respect to said aperture and a compression spring biased between said flange and said bearing for moving said member from beneath said arm to render the same ineffective to prevent operation of said valve opening means when said fluid medium directing means is removed from said bracket means.

6. Discharge controlling means for a receptacle adapted to contain fluid medium under pressure comprising a valve including a valve member having a stem for unseating the same, means operable to open said valve including a lever having an arm for engaging and depressing said stem to unseat said valve member, fluid medium directing means connected to the outlet of said valve, bracket means for supporting said fluid medium directing means, a slidably mounted member having one end positioned for engagement by said fluid medium directing means when supported by said bracket means and having its other end extending under said arm to prevent the same from depressing said valve member stem whereby opening of the valve is prevented, and means for moving said member to release said arm when said directing means is removed from said bracket means, the end of said member engaged by said directing means being accessible when said directing means is so removed to permit manual operation thereof to cause the

other end of said member to extend above said arm when said valve member is unseated and thereby lock said valve member in its unseated position.

7. Discharge controlling means for a receptacle adapted to contain fluid medium under pressure comprising a valve including a valve member having a stem for unseating the same and a spring for resisting unseating of said valve member, means operable to open said valve including a lever having an arm for engaging and depressing said stem to unseat said valve member, fluid medium directing means connected to the outlet of said valve, bracket means for supporting said fluid medium directing means, a slidably mounted member having one end positioned for engagement by said fluid medium directing means when supported by said bracket means and having its other end extending under said arm to prevent the same from depressing said valve member stem whereby opening of the valve is prevented, and spring means for moving said member to release said arm when said directing means is removed from said bracket means, the end of said member engaged by said directing means being accessible when said directing means is so removed to permit manual operation thereof to cause the other end of said member to extend above said arm when said valve member is unseated and thereby lock said valve member in its unseated position, said spring exerting a sufficient force on said arm when said valve member is unseated to cause said arm to engage said member with sufficient force to overcome the force exerted by said spring means.

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