Feb. 25, 1958 H. D. BOWMAN 2,824,614

FIRE EXTINGUISHERS

Filed Nov. 23, 1956

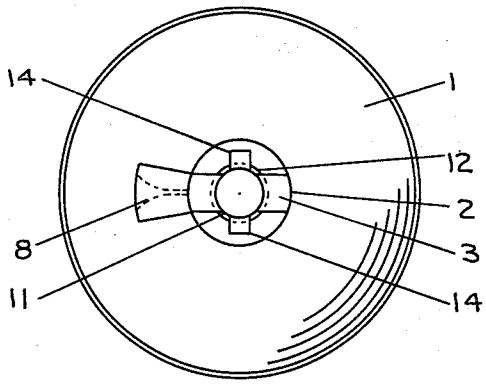


FIG. 2

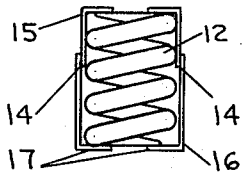


FIG. 4

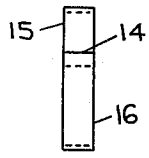


FIG. 5

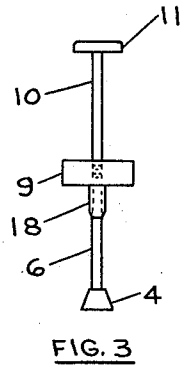


FIG. 3

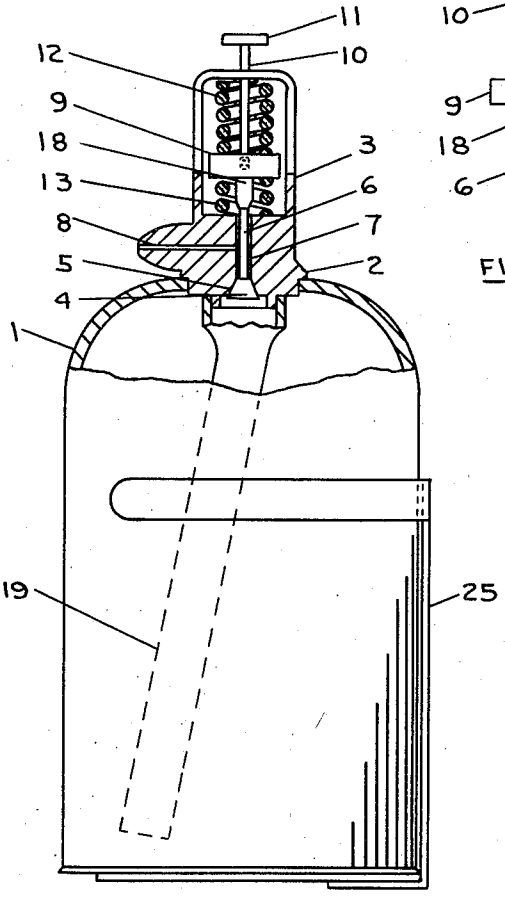


FIG. 1

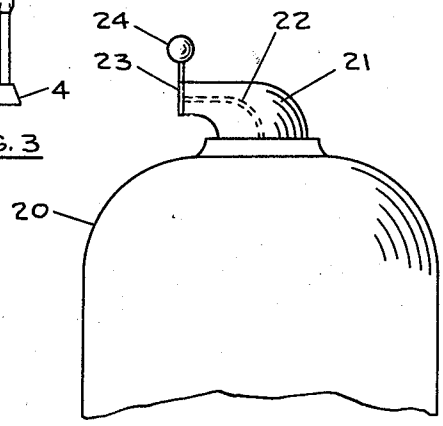


FIG. 6

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FIRE EXTINGUISHERS

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3 Claims. (Cl. 169—26)

This invention relates to an improved pressure packaging device, and while primarily designed and intended for use as a fire extinguisher, it will be obvious that the principle of the invention may be incorporated in self-emptying pressure devices wherein it is found to be applicable.

Important objects and advantages of the invention are to provide a fire extinguisher of the character described, which includes improved means whereby its discharge is automatically started and continued when the extinguisher is subjected to a predetermined degree of heat, which may be manually started and controlled, which is simple in its construction and arrangement, durable and efficient in its use, and comparatively economical in its manufacture.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the novel construction, combination, and arrangement of parts herein specifically described and illustrated in the accompanying drawing, but it is to be understood that changes in the form, proportions and details of construction may be resorted to that come within the scope of the claims hereunto appended.

In the drawing wherein like numerals of reference designate corresponding parts throughout the several views:

Figure 1 is a side elevational view, partly in section, of a fire extinguisher constructed in accordance with the invention, and showing the wall bracket for supporting the extinguisher.

Figure 2 is a top plan view of the fire extinguisher.

Figure 3 is a side elevational view of the valve mechanism.

Figure 4 is a side elevational view of the operating spring in the compressed position.

Figure 5 is a side view of the clamping elements.

Figure 6 is a fragmentary side view of a modified form of fire extinguisher.

Referring in detail to the drawing, the improved fire extinguisher comprises a pressure-resistant container **1**, which may be constructed of any suitable material and be of any suitable contour. The container is intended to contain the compressed fire extinguishing fluid, including the propellant agent, so that the container is self-emptying when discharged in the conventional manner well known in the art to which the invention appertains.

A valve base **2** is fixed in the top of the container 1 and carries an integrally formed housing **3**. The housing is preferably inverted U-shaped, and projects vertically above the valve base. A valve **4** is engaged in a valve seat **5**, which is formed in the bottom of the base within the container. The valve **4** is carried at the lower end of a valve stem **6**, which extends loosely through a vertically extending stem passage **7** in the valve base **2**. A horizontally extending discharge passage **8**, having a flared outer end, has its inner end opening into the stem passage **7**.

A supporting disk **9** is fixed to the upper end of the valve stem **6** and is disposed within the housing **3**. A connecting rod **10** extends shiftably through and projects from the top of the housing **3**, and carries an operating knob **11** at the projecting end thereof. The connecting rod extends in alignment with the valve stem **6** and the lower end thereof has a screw thread attachment in the top of the disk **9**.

A comparatively strong operating spring **12** is mounted on the connecting rod **10** within the housing **3** and is disposed between the top of the latter and the top of the disk **9**. A relatively weaker closing spring **13** is mounted on the valve stem **6** and is disposed between the top of the base **2** and the underside of the disk **9**.

When the device is in the normal inoperative position, as shown in Figure 1, the opening spring **12** is compressed, and is held in such compressed condition by a pair of clamps **14**.

Each of the clamps **14** comprise a pair of strip sections **15** and **16**, which are formed with end lips **17** that overlap the respective ends of the spring **12** and which are disposed in opposed relation to each other. The adjacent end portions of each of the pair of clam sections overlap each other and are welded together by a fusible agent, which will melt when subjected to a predetermined degree of heat to thereby release the clamp sections from each other and allow the expansion of the opening spring **12** to act against the disk **9** and force the valve **4** to the open position and cause the discharge of the compressed fluid from the container until the latter is completely emptied.

A plug **18** is fixed on the valve stem **6** beneath the disk **9** and seats against the upper end of the stem passage **7** to prevent the escape of the discharging fluid through the upper end of the stem passage during the discharging operation of the device.

By depressing the knob **11** the discharge operation may be manually started and controlled when the opening spring **12** remains in its compressed clamped condition. When the pressure on the knob is removed the action of the weaker spring **13** in conjunction with the pressure of the fluid still remaining within the container will draw the valve **4** upwardly to engage in the valve seat **5**, and thereby discontinue the discharge of the fluid.

The force of the opening spring **12** is sufficient to both compress the closing spring **13** and to shift the valve **4** to the open discharging position.

The device is intended to be removably mounted in a suitable supporting bracket **25**, which is secured against a supporting surface to position the device to function most effectively when discharging the extinguisher fluid.

The modified form of the device, shown in Figure 6, comprises a container **20** provided with a spout **21** having a discharge passage **22** extending therethrough. A plate **23** is secured against the free end of the spout by a fusible agent to close the outer end of the passage **22**. A knob **24** is carried by the plate **23** to facilitate the manual removal of the plate **23** when desired. The operation of this device is automatic when the device is subjected to enough heat to melt the fusible agent and thereby release the closing plate **23**. The plate **23** itself may be made from fusible material that will melt when subjected to a predetermined degree of heat.

The automatic operation of the device may also be effected by suitable bi-metal elements having different co-efficients of expansion, and functioning to opening the discharge valve when subjected to a predetermined degree of heat.

The present invention provides an efficient device of its kind, which may be economically constructed and successfully employed for the purposes and in the manner herein set forth.

What I claim is:

1. In combination: a container for liquid under pressure having an opening through a wall thereof, a valve head seated against the walls of said container and extending over and about said opening, a first compression spring located exterior to said chamber and connected between said valve head and the walls of said container so as to cause said valve head to press against the said walls about said opening, a second compression spring connected to said valve head so as to tend to force said valve head away from said opening, said second spring having a greater strength than said first spring, locking means connected to said second spring so as to hold said second spring in a compressed condition, said locking means comprising two parts each of which is oriented so as to exert pressure on opposite end of said second spring, said two parts being held together by a material having a low melting point, so that said second spring is released when said two parts separate.

2. In combination: a container for liquid under pressure having an opening through a wall thereof, a valve head seated against the walls of said container and extending over and about said opening, a first compression spring connected between said valve and the walls of said container causing said valve head to press against the said walls about said opening, a second compression spring connected to said valve head so as to tend to force said valve head away from said opening, said second spring having a greater strength than said first spring, locking means connected to said second spring so as to hold said second in a compressed condition, said locking means comprising two parts held together by a material having a low melting point and being so oriented that said second spring is released when said two parts separate.

3. In combination: a container for liquid under pressure having an opening through a wall thereof, a valve head seated against the walls of said container and extending over and about said opening, a first compression spring connected between said valve and the walls of said container causing said valve head to press against the said walls about said opening, a second compression spring connected to said valve head so as to tend to force said valve head away from said opening, said second spring having a greater strength than said first spring, locking means responsive to temperatures so as to unlock at a temperature slightly above room temperature holding said second spring in a compressed condition.

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