

[54] **ATTACHMENT FOR AUTOMATIC
OVERRIDE OF MANUALLY
OPERATED COMPRESSED GAS FIRE
EXTINGUISHERS AND ALARMS**

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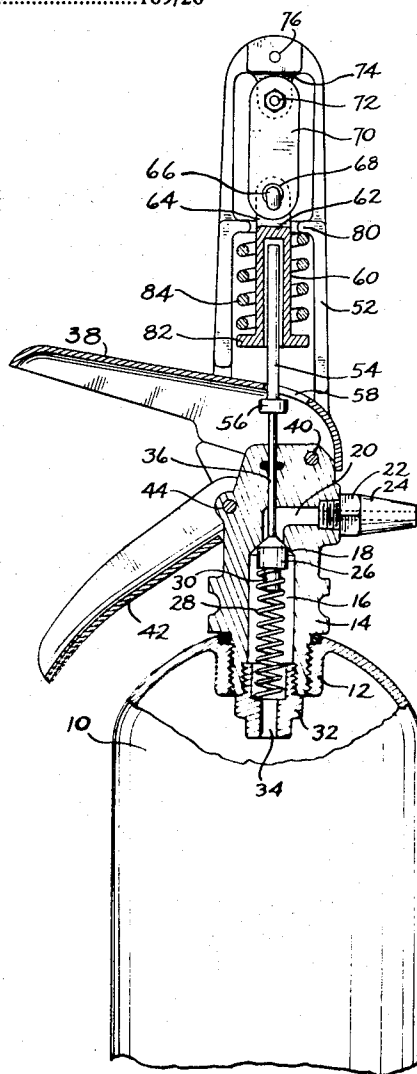
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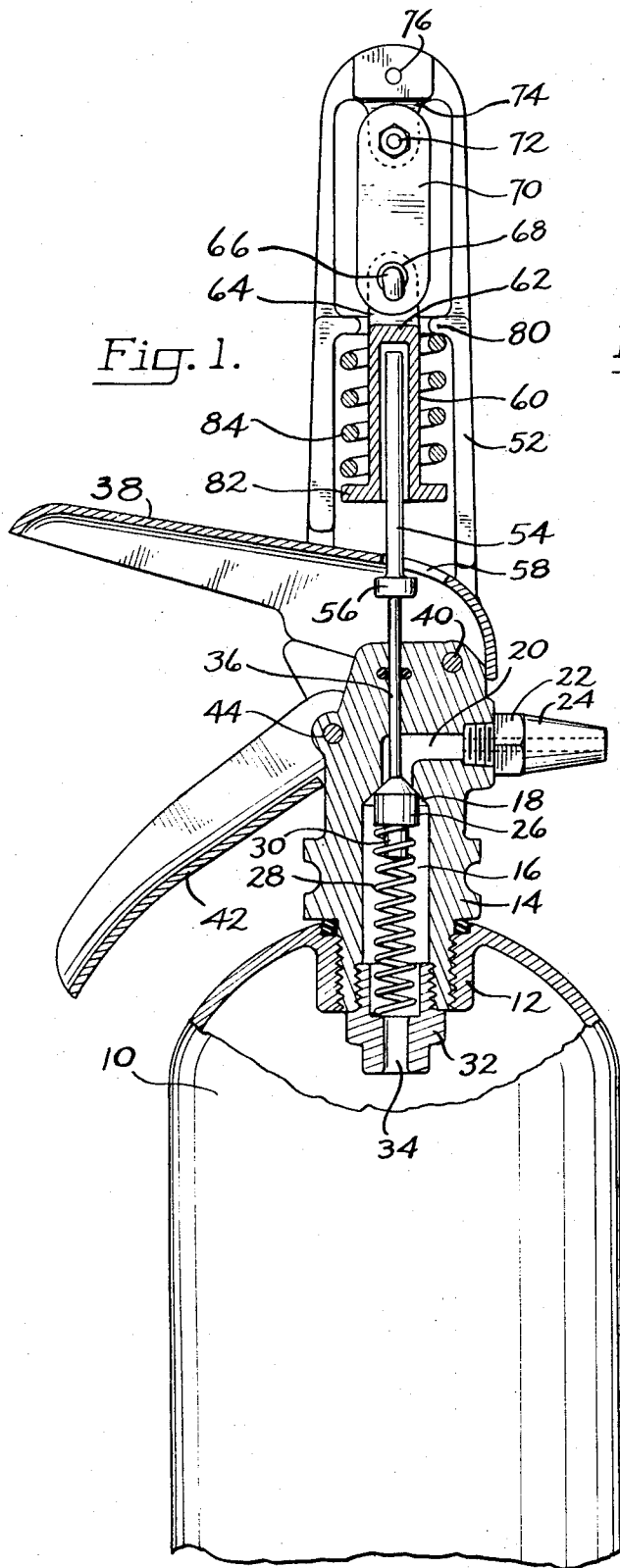
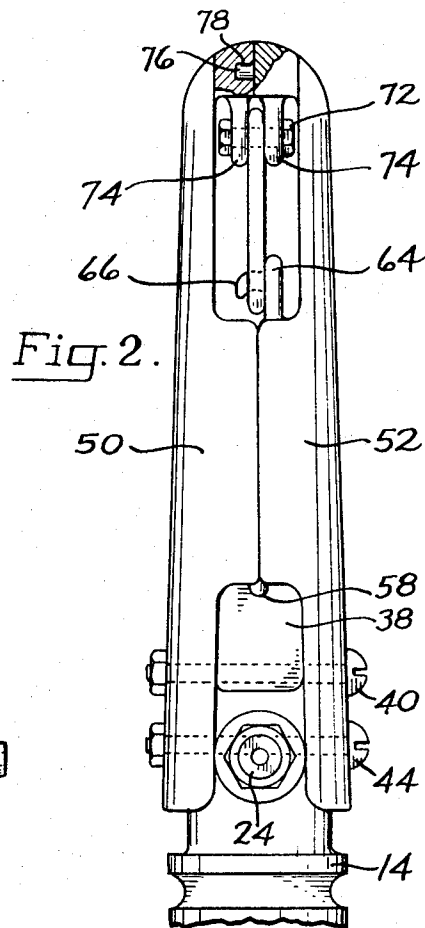
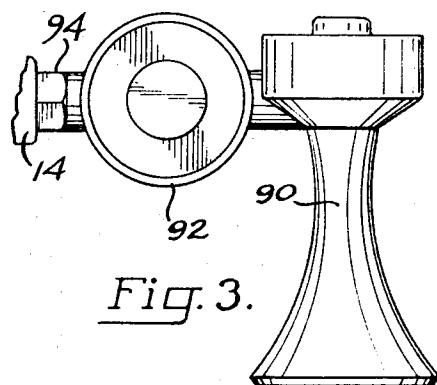
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ABSTRACT

An attachment for a manually operated, valve controlled compressed gas fire extinguisher or alarm device includes a housing attachable to the device by means of pins which also pivotally mount the conventional valve operating hand levers of the device. A plunger, guided freely by a spring loaded plunger operator, extends through an opening made in the upper hand lever and is aligned with the valve. The plunger operator normally is held in retracted position by a heat responsive fuse link which interconnects the housing and operator. Upon melting of the fuse link the operator and plunger extend, under the influence of the spring loading, the plunger thus engaging and operating the valve to release the compressed gas. The attachment permits normal manual operation of the device.

12 Claims, 3 Drawing Figures





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ATTACHMENT FOR AUTOMATIC OVERRIDE OF MANUALLY OPERATED COMPRESSED GAS FIRE EXTINGUISHERS AND ALARMS

BACKGROUND OF THE INVENTION

This invention relates to manually operated, compressed gas fire extinguishers and alarms, and more particularly to an attachment by which to achieve automatic override of such manual operation.

Automatically operated fire extinguishers and alarms, utilizing a source of compressed gas, heretofore have involved complex and costly components and require extensive and costly installation procedures including modifications to structures in which they are installed. Moreover, many of the lesser expensive automatic systems do not identify with particularity of the specific area of a structure in which a fire is in progress, and the extinguishers generally function to cover a much larger area than is necessary to extinguish a localized fire, thereby causing unnecessarily extensive damage and waste of fire extinguishing chemical.

SUMMARY OF THE INVENTION

In its basic concept this invention provides an attachment by which to effect automatic operation of conventional manually operable compressed gas fire extinguishers and alarms.

It is by virtue of the foregoing basic concept that the principal objective of this invention is achieved; namely, to overcome the aforementioned disadvantages of prior automatic fire extinguishing and alarm systems.

Another important object of this invention is the provision of an automatic override attachment for manually operated compressed gas fire extinguishers and alarms, whereby to render the latter easily portable for temporary or permanent use in isolated areas most subject to potential fire hazard, such as automobile and boat engine compartments, campers and trailers, furnace and boiler rooms, and the like.

Another important object of this invention is to provide means by which inexpensive manually operable compressed gas fire extinguishers and alarms may be rendered automatically operable at minimum cost and with minimum modification of the conventional structure.

The foregoing and other objects and advantages of this invention will appear from the following detailed description, taken in connection with the accompanying drawing of preferred embodiments.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a fragmentary view in side elevation of a conventional manually operated compressed gas fire extinguisher having incorporated therewith an automatic override attachment embodying the features of this invention, parts being broken away to disclose details of internal construction.

FIG. 2 is a fragmentary view in front elevation as viewed from the right in FIG. 1.

FIG. 3 is a fragmentary side elevation illustrating a manner in which the fire extinguisher of FIG. 1 may be modified to function as a fire alarm.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

For purposes merely of illustration, FIG. 1 illustrates a conventional manually operable compressed gas fire extinguisher. It includes an elongated hollow bottle 10 adapted to contain fire extinguishing gas under pressure. The upper end of the bottle is provided with an internal annular collar 12 threaded internally for the removable mounting of a valve body 14. A longitudinal bore 16 in the body is reduced in diameter intermediate its ends, providing an annular valve seat 18. A lateral extension 20 of the inner end of the bore communicates through a removable, threaded fitting 22 with a nozzle 24.

A valve member 26 is mounted freely in the enlarged portion of the longitudinal bore for cooperative association with the valve seat. The valve member normally is held in closed position against the seat, as illustrated, by an elongated coil spring 28. One end of the spring bears against the valve member, being retained in properly centered position by means of a centering post 30 extending downward from the valve member. The opposite end of the spring bears against the bottom of a retaining socket formed in a removable plug 32 threaded to the inner end of the valve body. An opening 34 through the plug communicates the interior of the bottle with the valve bore.

Extending upward from the valve member and through an opening in the upper portion of the valve body is an elongated valve actuating pin 36. Normally, the projecting end of this pin abuts the underside of an upper, valve operating hand lever 38 which is mounted pivotally on the valve body by means of a transverse pin 40. This upper hand lever is associated with a lower locking lever 42 which also is mounted pivotally on the valve body by means of a pivot pin 44. Thus, by pivoting the lower locking lever clockwise about its pivot pin, to release the upper lever, the latter then may be pivoted counterclockwise about its pivot pin. This counterclockwise pivoting of the upper hand lever causes the valve member 26 to be moved downward, against the resistance of the spring 28, to open the valve and allow the compressed gas in the bottle to be ejected through the nozzle.

In accordance with this invention, means is provided for accommodating automatic override of the manual operation described. In the embodiment illustrated this means is in the form of an attachment which includes a hollow housing, preferably made in two longitudinal halves 50 and 52. The lower portions of the two halves extend downward along the opposite sides of the valve body 14 and are secured thereto by means of the pivot pins 40 and 44 which mount the hand levers, as previously described. However, since the original pins usually are in the form of rivets, they require replacement with slightly longer pins, such as the bolts illustrated, in order to accommodate attachment of the housing halves.

An elongated valve actuating plunger 54 is provided at its lower end with an enlarged head 56 adapted to rest upon the upper projecting end of the valve actuating pin 36, with the plunger extending upward into the housing. For this purpose it is necessary merely to cut an elongated slot 58 in the upper hand lever 38 to receive the plunger freely therethrough. The width of

the slot is narrower than the plunger head, in order to permit manual operation of the hand lever, as described hereinafter.

The plunger extends upward freely into the central guide bore of a plunger operator 60. The upper end of the operator is closed by an end wall 62, and projecting upward from this end wall is a tab 64 which supports a laterally projecting pin 66. This pin is received removably in an opening 68 adjacent one end of an elongated heat responsive fuse link 70. An opening adjacent the opposite end of the fusible link removably receives therethrough an anchor bolt 72 which also extends removably through aligned openings in a pair of laterally spaced tabs 74 projecting downward from the upper end of each housing half. The anchor bolt thus serves the dual function of securing the upper end of the fuse link between the tabs, and also of securing the upper ends of the housing halves together.

If desired, one of the housing halves, e.g., 52, may be provided with a centering pin 76 which projects from the inner surface thereof into a centering socket 78 provided in the facing surface of the other housing half 50, as illustrated.

The plunger operator 60 extends upward freely through a constricted opening provided by an annular shoulder 80 formed within the housing halves. The lower end of the plunger operator is provided with an outwardly extending annular shoulder 82 which forms a seat for the lower end of a coil spring 84 which encircles the retainer. The upper end of the coil spring abuts the annular shoulder 80 of the housing.

In the cocked position of the assembly illustrated in FIG. 1, the plunger operator 60 is held in its upward position by the fuse link 70, with the coil spring 84 compressed between the shoulders 80 and 82. The assembly thus is in readiness for use, either by manual or automatic operation, in the event of fire, as follows:

Since the plunger 54 is movable downward independently of the operator 60, manual operation of the extinguisher is effected in the usual way, simply by squeezing the two hand levers 38 and 42 together, as previously explained. As the valve control lever 38 pivots counterclockwise about its pivot pin 40 it engages the enlarged head 56 of the plunger, pushing the latter downward to effect opening of the valve member 26.

In the automatic operation of the assembly, the presence of fire in the vicinity in which the assembly is located, causes melting of the fusible link 70. The coil spring 84 thereupon extends, forcing the plunger operator 60 downward. The closed end wall 62 of the operator engages the upper end of the plunger 60 and forces the latter downward with it, effecting opening of the valve member and automatic ejection of fire extinguishing gas from the bottle. In this regard it will be understood that valve spring 28 is weaker than operator spring 84.

The foregoing assembly also may be employed to provide a fire alarm. Referring to FIG. 3 of the drawing, there is illustrated a conventional pneumatic horn 90 operated by compressed air or other gas to provide a loud audible alarm. The inlet of the horn is connected to the outlet of a conventional pressure regulator 92, and the inlet of the pressure regulator is provided with a fitting 94 of the same type as the fitting 22 for nozzle

24. Thus, the latter fitting may be removed from the valve body 14 for replacement by the pressure regulator fitting 94.

The operation of the alarm of FIG. 3 is apparent. Upon the incidence of a fire in the proximity of the assembly, resulting in melting of the fuse link 70, compressed gas from the bottle 10 is expelled through the pneumatic horn, under regulation by the pressure regulator, to provide a loud audible tone.

From the foregoing it will be appreciated that the present invention provides simplified and economical means by which to utilize inexpensive conventional manually operated compressed gas fire extinguishers or alarms for the automatic detection of fire. The inexpensive assemblies thus may be utilized for the protection of a number of potentially hazardous areas at minimum cost and with maximum convenience.

It will be apparent to those skilled in the art that various changes may be made in the size, shape, type, number and arrangement of parts described hereinbefore without departing from the spirit of this invention.

Having now described my invention and the manner in which it may be used, I claim:

1. For use with a manual compressed gas dispenser including a valve body having an outlet passageway and an inlet passageway communicating with a source of compressed gas, a valve member in the valve body movable between extended and retracted positions opening and closing the inlet passageway to and from the outlet passageway, and a valve actuator associated with the valve member and extending from the valve body for manual operation, automatic valve operator means comprising

- a. a housing adapted to be secured to the valve body,
- b. a plunger member disposed for engaging the extending valve actuator and extending into the housing,
- c. a plunger operator member in the housing freely engaging the plunger member,
- d. resilient means interengaging the plunger operator member and housing for urging the operator member and plunger member toward extended position, and
- e. fusible link means interengaging the operator member and housing for securing the operator member in retracted position.

2. The automatic valve operator means of claim 1 wherein the compressed gas dispenser includes hand lever valve operator means mounted pivotally on the valve body and engageable with the valve actuator for effecting movement of the valve member, and the plunger member of the automatic valve operator means includes abutment means arranged to engage the hand lever valve operator means for movement with the latter.

3. The automatic valve operator means of claim 1 wherein the compressed gas dispenser includes hand lever valve operator means mounted pivotally on the valve body and engageable with the valve actuator for effecting movement of the valve member, and hand lever locking means mounted pivotally on the valve body and releasable engageable with the hand lever valve operator means, and the automatic valve operator means includes securing means on the valve body pivotally mounting the hand lever valve operator

means and the hand lever locking means and securing the housing to the valve body.

4. The automatic valve operator means of claim 1 wherein the plunger operator member has a central socket freely receiving the plunger therein and an outwardly extending shoulder on the socket end thereof, and the resilient means comprises a coil spring surrounding the operator member and abutting the shoulder thereof, the opposite end of the spring engaging the housing.

5. The automatic valve operator means of claim 1 wherein the housing comprises a pair of longitudinal halves, and connecting means releasably secures said halves together at their ends opposite the valve body, the connecting means also securing one end of the fusible link means to the housing.

6. The combination of

a) a manual compressed gas dispenser including

1. a valve body having an outlet passageway and an inlet passageway communicating with the source of compressed gas,
2. a valve member in the valve body movable between extended and retracted positions opening and closing the inlet passageway to and from the outlet passageway, and
3. a valve actuator associated with the valve member and extending from the valve body for manual operation,

b) and an automatic valve operator means comprising

1. a housing secured to the valve body,
2. a plunger member engaging the extending valve actuator and extending into the housing,
3. a plunger operator member in the housing freely engaging the plunger member,
4. resilient means interengaging the plunger operator member and housing for urging the operator member and plunger member toward extended position, and
5. fusible link means interengaging the operator member and housing for securing the operator member in retracted position.

7. The combination of claim 6 wherein

- a. the compressed gas dispenser includes hand lever valve operator means mounted pivotally on the valve body and engageable with the valve actuator for effecting movement of the valve member,

- b. and the plunger member of the automatic valve operator means includes abutment means arranged to engage the hand lever valve operator means for movement with the latter.

8. The combination of claim 6 wherein

- a. the compressed gas dispenser includes hand lever valve operator means mounted pivotally on the valve body and engageable with the valve actuator for effecting movement of the valve member, and hand locking means mounted pivotally on the valve body and releasably engageable with the hand lever valve operator means,

- b. and the automatic valve operator means includes securing means on the valve body pivotally mounting the hand lever valve operator means and the hand lever locking means and securing the housing to the valve body.

9. The combination of claim 6 wherein the plunger operator member has a central socket freely receiving the plunger therein and an outwardly extending shoulder on the socket end thereof, and the resilient means comprises a coil spring surrounding the operator member and abutting the shoulder thereof, the opposite end of the spring engaging the housing.

10. The combination of claim 6 wherein the housing comprises a pair of longitudinal halves, and connecting means releasably secures said halves together at their ends opposite the valve body, the connecting means also securing one end of the fusible link means to the housing.

11. The combination of claim 6 wherein the compressed gas dispenser includes

- a. a container for compressed gas of the fire extinguishing type,
- b. the valve body being mounted on the container with its inlet passageway communicating therewith, and
- c. a spray nozzle mounted on the valve body communicating with the outlet passageway.

12. The combination of claim 6 wherein the compressed gas dispenser includes

- a. a container for compressed gas,
- b. the valve body being mounted on the container with its inlet passageway communicating therewith, and
- c. a compressed gas horn communicating with the outlet passageway of the valve body.

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