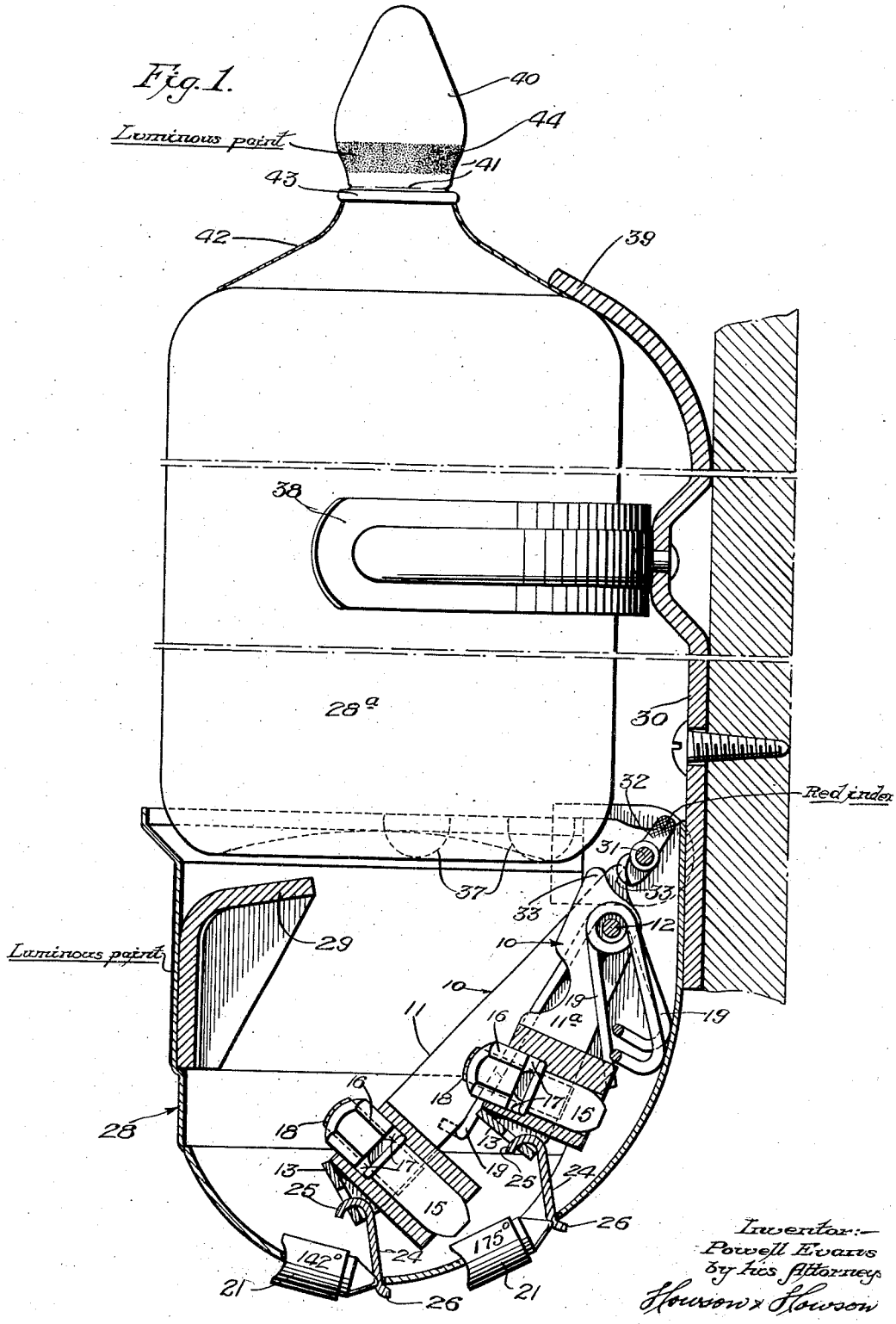
Nov. 29, 1938. P. EVANS 2,138,149

FIRE CONTROL APPARATUS

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Fig. 1.



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Fig. 2.

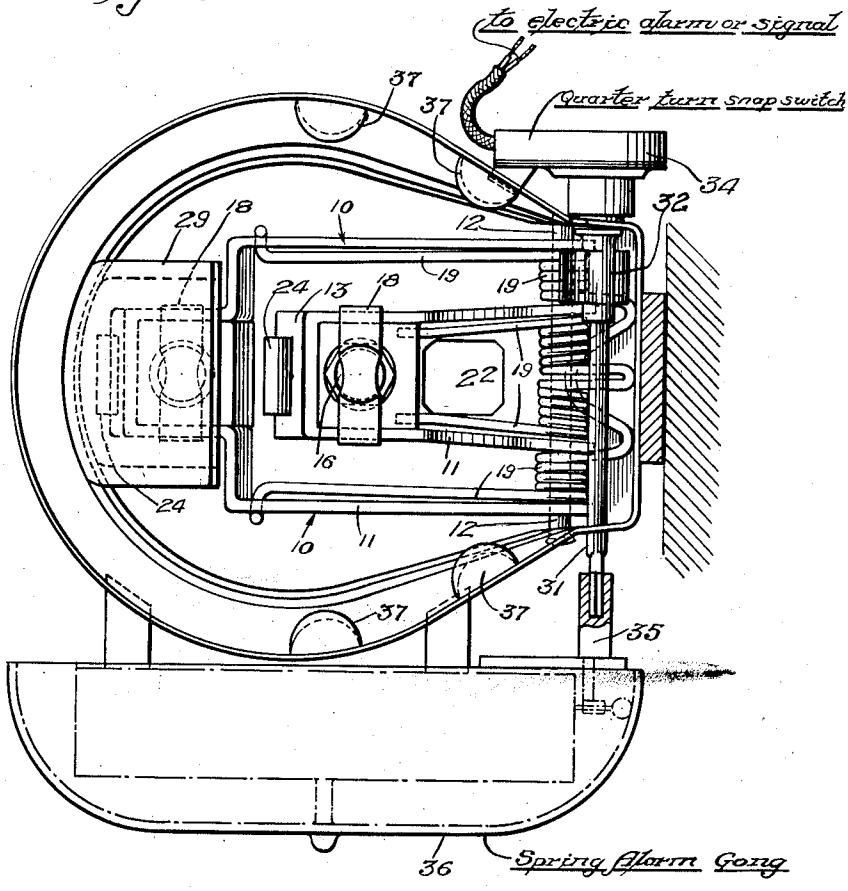
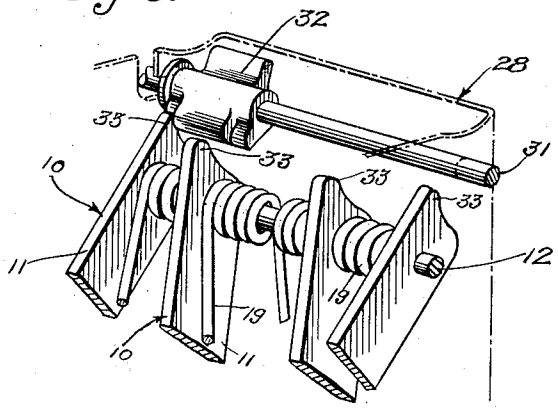


Fig. 3.



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FIRE CONTROL APPARATUS

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Fig. 4.

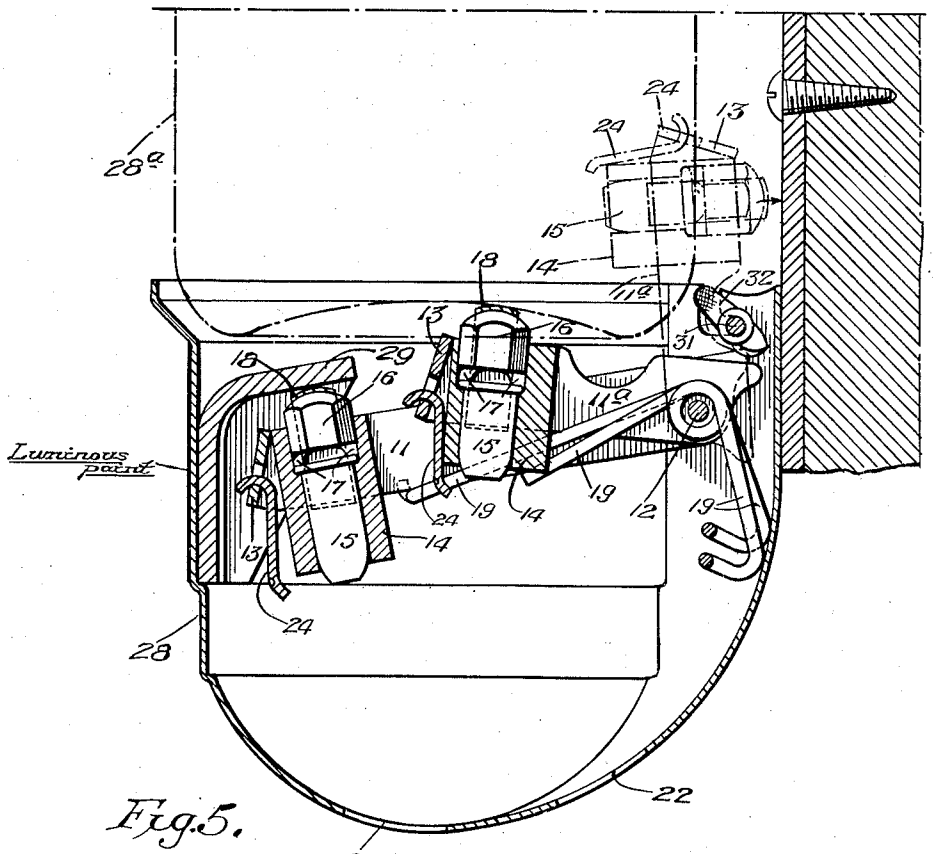
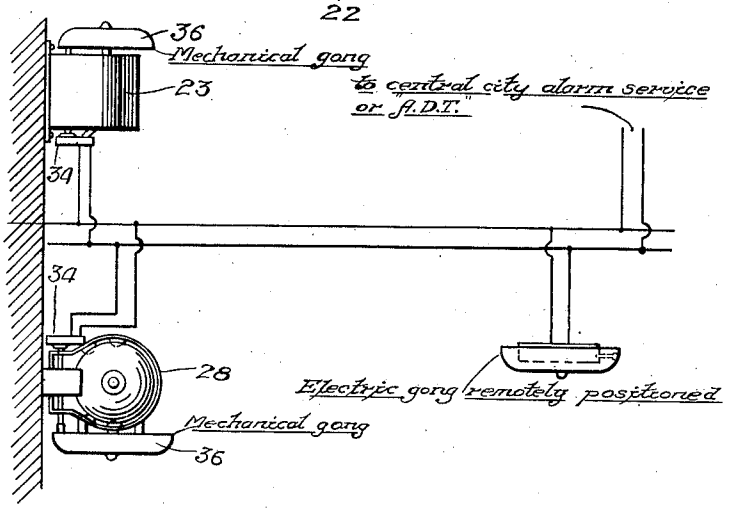


Fig. 5.



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Patented Nov. 29, 1938 2,138,149

UNITED STATES PATENT OFFICE

2,138,149

FIRE CONTROL APPARATUS

Powell Evans, Haverford, Pa., assignor to Merchant & Evans Company, Philadelphia, Pa., a corporation of Pennsylvania

Application February 1, 1934, Serial No. 709,382

13 Claims. (Cl. 169—26)

This invention relates to fire control apparatus, and more particularly to fire control apparatus for use in the control of fires in private homes and small establishments.

An important object of the invention is the provision of an efficient alarm mechanism which will thoroughly arouse occupants and which, at the same time, may be very readily and cheaply constructed and readily incorporated in a domestic type automatic fire extinguisher.

I am aware that it has been previously proposed to incorporate an alarm mechanism in automatic fire extinguishers, but such devices with which I am familiar employ a single explosive cap or detonator actuated by the same element which releases the fire extinguisher medium of the automatic extinguisher and give but a solitary warning explosion. An apparatus of this character provides a suitable alarm during waking hours and will, in many instances, arouse sleepers. Since, however, the alarm comprises a single detonation, if the occupants of the building are asleep, this detonation will, in many instances, only temporarily arouse the sleeper and thus become useless.

An important object of this invention is the provision of an apparatus which will provide successive alarms.

A further object of the invention is the provision in a device of this character of an arrangement such that alarm mechanism remotely disposed with relation to the extinguisher may be controlled by the extinguisher.

A further object of the invention is the provision of an arrangement such that a mechanical alarm associated directly with the extinguisher and capable of operating through an extended period may be controlled by the extinguisher.

A further object of the invention is to provide a novel and improved receptacle for the fire extinguishing fluid which is so constructed that a portion thereof may be safely and readily broken away to permit distribution of the contained fluid at the points where it will do the most good and which at the same time is so constructed that there is no danger to the person handling the container of cuts resulting from breakage of the container in an attempt to remove such portion.

A further object of the invention is the provision of means for enabling the extinguishing and signalling unit to be readily located in the dark, such means being preferably so arranged that they also constitute a signal indicating that the container forming a portion of the unit has been removed.

These and other objects I attain by the construction shown in the accompanying drawings wherein, for the purpose of illustration, I have shown a preferred embodiment of my invention and wherein:

Fig. 1 is a vertical sectional view through a fire extinguisher embodying alarm mechanism in accordance with my invention;

Fig. 2 is a plan view of the holder or cup containing the alarm mechanism and illustrating the addition of the alarm gong and signal alarm switch as accessories to the incorporated alarm mechanism;

Fig. 3 is a fragmentary perspective view illustrating the method of operating the switch or mechanical alarm;

Fig. 4 is a fragmentary view similar to Fig. 1 but showing the operation of the bottle-rupturing and alarm mechanisms;

Fig. 5 is a diagrammatic showing of an alarm circuit readily useable with a fire extinguisher of this type.

Referring now more particularly to the drawings, the mechanism comprises essentially a plurality of detonator-supporting elements 10, each at present illustrated as comprising a U-shaped frame 11 or 11a, the ends of the arms of which are rotatably mounted upon a shaft 12. Adjacent the cross bar 13 of the U a chambered block 14 is provided, this block being constructed to support the rim fire blank cartridge designated at 15 and the firing pin 16 having tangs 17 to engage the rim of the cartridge 15. A retainer, in the form of a U-shaped strap, designated at 18 is preferably provided to prevent dislocation of the firing pin by the recoil of discharge of the cartridge, the ends of the arms of this retaining strap being bent beneath the lower surfaces of the arms of the frame 11. A spring 19 associated with each detonator support constantly urges the detonator support in a direction such as to bring it into engagement with an anvil means. Normally the supports are withheld from engagement with the anvil means by action of fuses 21, these fuses being at present illustrated as extending between one edge wall of an opening 22 formed in a casing or support 28 for shaft 12 and the anvil means and a link 24 having at one end a hook 25 engaging in an opening formed in the cross bar 13 and at its opposite end a slightly bent terminal 26 hooking about the opposite edge wall of the opening 22. Fuses 21 have different temperature characteristics so

that the supports will be serially released. With fusing of the element 21, the link 24 is released, permitting spring 19 to throw the detonator support against the anvil, thus causing violent impact of firing pin 16 upon the cartridge and the explosion thereof. Each unit embodies a plurality of detonator supports and the associated mechanism.

The detonator units are shown as two in number and are supported in a cup-shaped casing 28 forming the lower end of an automatic extinguisher unit and which casing comprises the support for the lower end of a frangible extinguishing medium container 28a. One unit is made longer and wider than the other so that they may be nested and thus accommodate themselves to the restricted space available in the cup 28. One unit 10 co-acts with an anvil element 29 arranged within the cup-shaped casing while the other unit specifically designated at 11a coacts either with the bottom of the container 28a as an anvil element provided such container is in position or, if the container be removed, with an anvil element consisting of a bracket 30 by means of which the unit is attached to a wall or other support. The unit 11 will, upon engagement with the bottom of container 28a, break the container, as well as provide a detonating alarm.

In order that the mechanism just described may give in addition to the local and more or less temporary alarm afforded by the explosion of the detonators, a continual alarm or signal, I arrange adjacent shaft 12 an alarm control shaft 31. This shaft has an abutment piece, 32 which is arranged in the path of noses 33 formed on the ends of the arms of the frame of detonator support 10. When a detonator support 10 is released by its associated fusible element and is rotated upon the shaft 12 by its associated spring 19, the nose 33 acting upon the member 32 rotates shaft 31 through a quarter turn. The ends of shaft 31 project beyond the sides of the casing and one end thereof is preferably attached to the movable element of a quarter turn snap switch 34 which, as indicated, may be connected to either a remotely disposed electrical alarm or signal. The opposite end of this shaft is shown as engaged with the release clapper element 35 on a spring-operated alarm gong 36. Thus, when any of the members 10 are released, a detonation results, a local alarm gong is placed in operation and a remotely-disposed electrical alarm and/or signal is likewise placed in operation as suggested in Fig. 5. Either or both of the electrical or mechanical alarms may be employed, as desired.

In order that the sound of the explosion may readily escape from the U-shaped casing, the container seat afforded by said casing is preferably discontinuous, being at present illustrated as comprising spaced angular tabs 37 folded inwardly from the upper edge of the cup and against which the container bottom rests. The bracket 30, as in the prior application of Evans and Stoney, filed April 15, 1930 for Fire extinguisher, Serial No. 444,514, incorporates a spring clasp 38 for maintaining said container in firm position between the seat 37 and an overhanging shoulder 39 provided at the upper end of the bracket.

The container illustrated is of the bomb type which may be removed and thrown at the seat of the flames or may be employed simply as a bottle from which the contents are poured upon the seat of the flames. In order to facilitate this last action, I provide the container with a head 40 which is connected with the container proper by a scored neck 41. The scoring preferably consists of a circumferential series of relatively deep scores as indicated, this method permitting the neck to be more nearly severed without danger of accidental breakage. Practical experienced demonstrates the fact that breakage of such a head from the bottle often causes fractures extending into the bottle and, accordingly, endangers the hands of the person holding the bottle and forming the fracture. To prevent this, I may provide an adhesively attached collar 42 for those portions of the bottle immediately adjacent the neck. Any suitable material may be employed for this purpose, the collar preferably comprising a label identifying the container. This breakage may also be prevented by applying to the neck of the bottle immediately below the score line a bead of glass as suggested at 43. Since such containers may be removed by some unauthorized person and, since it is often desirable to locate the extinguishing and alarm mechanism during the night and in the confusion attending a fire, I provide illumination for the unit, such illumination being preferably provided by banding or spotting the container as indicated at 44 with luminous paint. In order that this banding or marking may not be obscured by collected dust, it is placed on either a vertical or undercut wall of the container, being at present illustrated as comprising a band surrounding the lower and inwardly tapering end of the head 40.

Since the construction illustrated is, obviously, capable of considerable modification without in any manner departing from the spirit of the invention, I do not wish to be understood as limiting myself thereto except as hereinafter claimed.

I claim:

1. In combination, an anvil means, a plurality of elements adapted when released to forcibly engage against said anvil means, an explosive alarm actuated by engagement of each of said elements against said anvil means, fusible link means withholding said elements from engagement with said anvil means, said anvil means comprising a frangible wall of a fluid fire extinguishing medium container, means detachably supporting the container in its anvil-forming position, and supplemental anvil means for engagement by the element normally engaging the container when the container shall have been removed.

2. In combination, an anvil means, a plurality of elements adapted when released to forcibly engage against said anvil means, an explosive alarm actuated by engagement of each of said elements against said anvil means and fusible link means having different temperature characteristics withholding said elements from engagement with said anvil means, said anvil means comprising a frangible wall of a fluid fire extinguishing medium container engaged by one of said elements, means detachably supporting the container in its anvil-forming position, and supplemental anvil means for engagement by the element normally engaging the container when the container shall have been removed.

3. In combination, a plurality of explosive alarm devices, means for independently operating said devices, fusible link means having different temperature characteristics preventing operation of said operating means, an electrical

signal, a circuit for said signal including a switch, means operated by the operation of one of said explosive alarm devices for closing said switch, and a sealed container for fire extinguishing fluid the contents of which are released by operation of one of said alarm devices.

4. In combination, a plurality of explosive alarm devices, means for independently operating said devices, fusible link means having different temperature characteristics preventing operation of said operating means, normally inoperative mechanical means for producing a prolonged signal, means operated by the operation of any of said explosive alarm devices for rendering said prolonged signal means operative, an electrical signal, a circuit for said signal including a switch, means operated by the operation of any of said explosive alarm devices for operating said switch, a sealed container for fire extinguishing fluid the contents of which are released by operation of one of said alarm devices, and means removably supporting said container permitting its rapid removal for use at a remote point.

5. In apparatus of the type described, a sealed frangible container for fire extinguishing fluid or the like having a head connected to the main body of the container by a frangible neck and a member adherently secured to the body of the container in the proximity of the neck whereby to prevent fractures occurring in removal of the head for extending into the body of the container.

6. In a fire extinguisher, means for detachably supporting a bomb type frangible extinguishing fluid container for rapid removal and use at a remote point, means associated with the support to engage and break the container and a fusible link withholding said means from operation, said container including a head connected to the body by a portion having a circumferential series of relatively deep unconnected score marks therein whereby said portion may be readily detached from the body of the container to permit manual distribution of the contents thereof.

7. In a fire extinguisher, means for detachably supporting a bomb type frangible extinguishing fluid container for rapid removal and use at a remote point, means associated with the support to engage and break the container, a fusible link withholding said means from operation, said container including a head connected to the body by a portion having a circumferential series of relatively deep unconnected score marks therein whereby said portion may be readily detached from the body of the container to permit manual distribution of the contents thereof, and means reenforcing the body of the container inwardly of said score marks to prevent the fracture, occurring in removal of said portion, from extending into the body of the container.

8. In fire control apparatus, a bracket, a frangible fire extinguishing container carried by the bracket, a fusible link withheld means to break the container and fusible link controlled means carried by the bracket and providing an automatic alarm prior to breakage of the container by the fusible link withheld means.

9. In fire control apparatus, a bracket, a frangible fire extinguishing container carried by the bracket, a fusible link withheld means to break the container, an audible alarm actuated by movement of said means to break the container, and fusible link controlled means carried by the bracket and providing an audible alarm prior to breakage of the container by the fusible link withheld means.

10. In fire control apparatus, a bracket, a frangible fire extinguishing container carried by the bracket, a fusible link withheld means to break the container, fusible link controlled means carried by the bracket and providing an automatic alarm prior to breakage of the container by the fusible link withheld means, an electrical signal and a control circuit for said signal including a switch and operating means for said switch actuated as an incident to operation of said fusible link withheld means.

11. In a fire control apparatus, a bracket, a frangible fire extinguishing container carried by the bracket, a fusible link withheld means to break the container, fusible link controlled means carried by the bracket and providing an automatic alarm prior to breakage of the container by the fusible link withheld means, and a normally inoperative mechanical signal actuated as an incident to operation of said fusible link withheld means.

12. In combination, a hollow body having an opening in its bottom end, a frangible container for a liquid fire extinguishing medium supported by said hollow body, several spring-operated clappers with explosive cartridges mounted on said hollow body, fuse links of different fusing temperatures holding said clappers from exploding said cartridges, at least one of said clappers being so mounted that when released it will strike the wall of the hollow body to explode its cartridge, and the clapper the fuse link of which has the highest fusing temperature being so mounted that when released it will pass through a second opening in said body to strike and break said container and explode its cartridge.

13. In apparatus of the type described, a spring pressed head, an objective into engagement with which the spring urges said head, a rigid strip flexibly secured to said spring pressed head, a support for the head including an opening through which the strip extends, a wall of the opening and said strip being mutually constructed and arranged to provide angular shouldered engagement therebetween whereby the strip is moved toward the opposite wall of the opening as the head moves under the influence of its spring and a fusible element disposed between the strip and the last-named wall of the opening and preventing movement of the strip toward the last-named wall of the opening whereby to restrain said head from movement under influence of its spring.

POWELL EVANS.