May 24, 1932. W. B. BRONANDER 1,860,074

FIRE EXTINGUISHING APPARATUS

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Fig. 1.

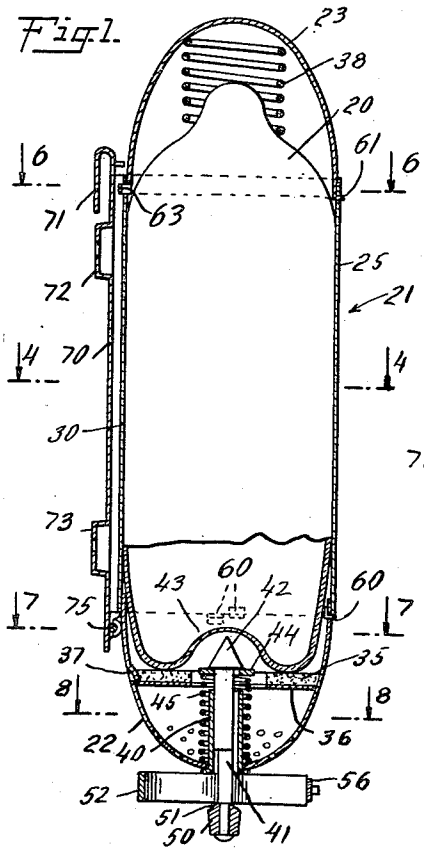

Fig. 2.

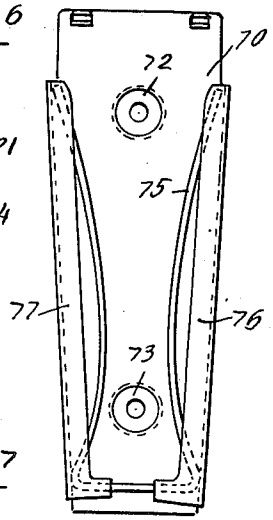

Fig. 3.

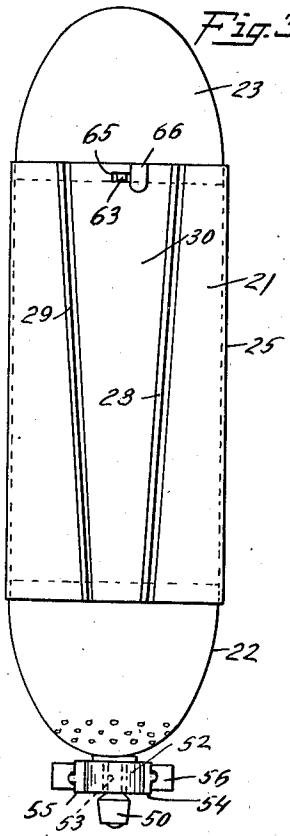

Fig. 9.

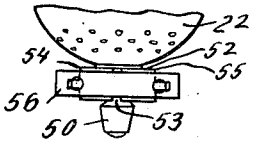

Fig. 4.

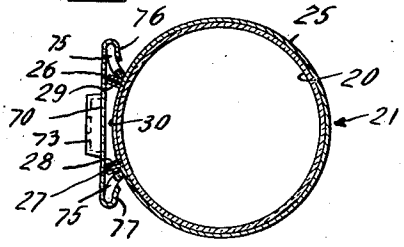

Fig. 8.

Fig. 5.

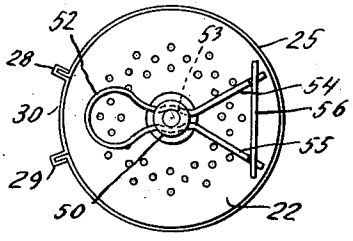

Fig. 6.

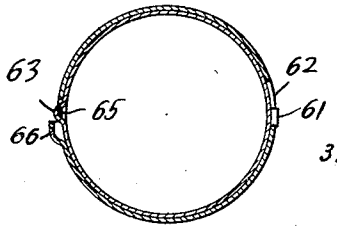

Fig. 7.

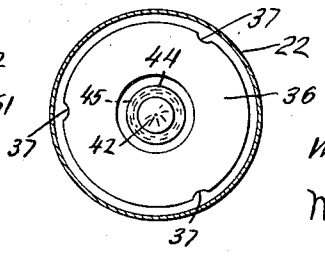

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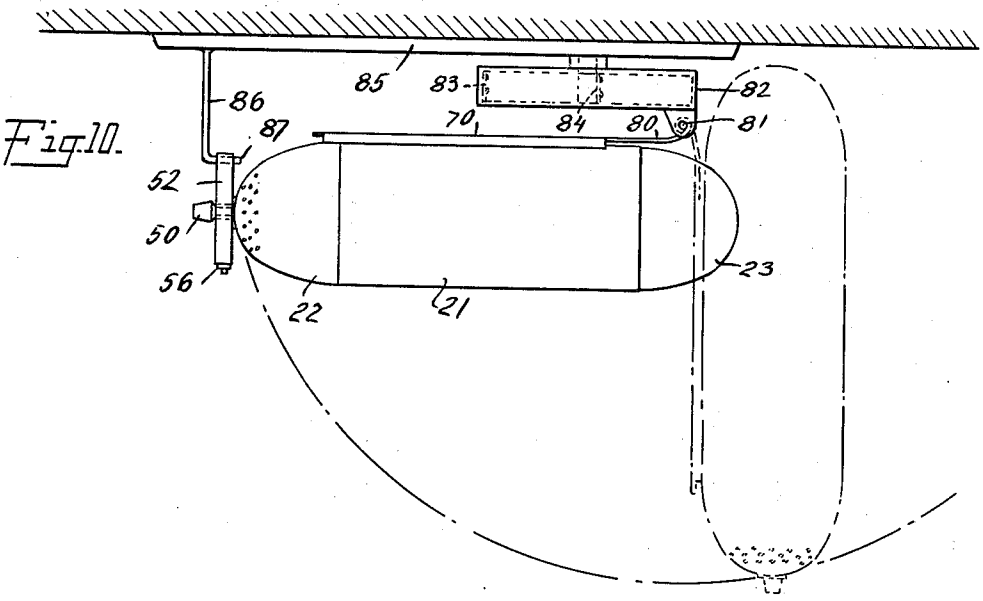
Fig. 10.



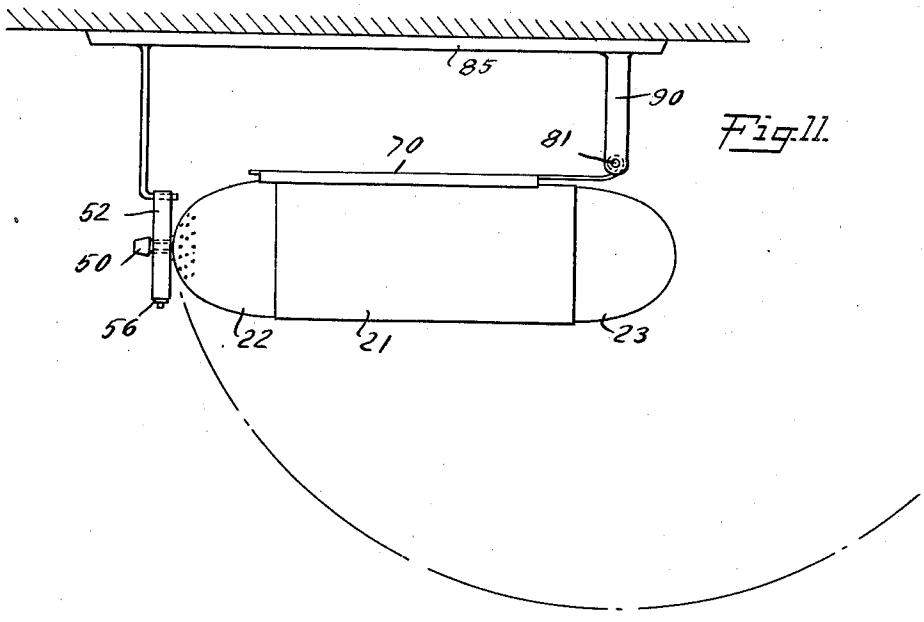


Fig. 11.

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UNITED STATES PATENT OFFICE

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FIRE EXTINGUISHING APPARATUS

Application filed June 6, 1929. Serial No. 368,845.

This invention relates to fire extinguishing apparatus.

More particularly stated, the invention relates to fire extinguisher supports for frangible grenades or containers.

One of the objects of the invention is to provide means for supporting the grenade or container so constructed and arranged that in case of fire the container will be automatically broken and the fire extinguishing fluid will be spread on the fire in a varying path.

Another object of the invention is to provide a mounting or support for a fire extinguisher container and means carried thereby so constructed and arranged that the container will be automatically punctured or broken in case of fire or can be broken by manual manipulation without breaking the automatic control means.

Another object of the invention is to provide a support or mounting for fire extinguisher containers so constructed and arranged that the fire extinguishing liquid or fluid will be dispensed in paths of varying or decreasing radius.

Further objects of the invention will appear from the following specification taken in connection with the drawings, which form a part of this application, and in which

Fig. 1 is a longitudinal sectional elevation of a casing or housing for a fire extinguishing grenade constructed in accordance with the invention;

Fig. 2 is a front elevational view of the bracket or supporting plate on which the casing is mounted;

Fig. 3 is a rear elevational view of the casing;

Fig. 4 is a transverse sectional elevation taken substantially on line 4—4 of Fig. 1;

Fig. 5 is a bottom plan view of the device shown in Fig. 1;

Figs. 6, 7 and 8 are transverse sectional elevations taken substantially on lines 6—6, 7—7 and 8—8 of Fig. 1;

Fig. 9 is an elevational view, partly broken away, of the lower end of the casing and automatic control mechanism;

Fig. 10 is an elevational view showing a grenade housing or casing such as that shown in Fig. 1, mounted to swing and rotate upon release of the heat controlled element; and

Fig. 11 is a view similar to Fig. 10 but showing a slightly different form of mounting or support for the grenade container.

The invention briefly described consists of a casing for enclosing a frangible fire extinguishing grenade or container, means being provided at one end of the casing for puncturing or breaking the container to release the fire extinguishing fluid or liquid therein. In the particular form of the invention shown, a plunger is slidably mounted in the end of the casing and is actuated by a spring in a direction to break or puncture the container. The plunger is normally held in retracted position by resilient means, which in turn is controlled by a fusible element in such a manner that in case of a fire the fusible element will release the resilient means, thus permitting the plunger to be actuated by the spring and break the grenade or container. The resilient means is further so constructed and arranged that the plunger can be forced into operative position by manual manipulation without breaking the resilient means or the fusible control element.

The invention furthermore includes a mounting for the grenade housing or casing so constructed and arranged that when the fusible element gives way the housing or casing will be permitted to swing about a pivot and also to rotate, thus distributing the fire extinguishing liquid in varying paths.

Further details of the invention will appear from the following description.

In the particular form of the invention illustrated in the drawings and shown particularly in Figs. 1 to 9, a fire extinguishing grenade or container 20, preferably formed of glass or other frangible material, is enclosed within a substantially cylindrical casing having a central portion 21, a bottom 22, and a top or cover 23.

The central portion of the casing comprises a substantially cylindrical band 25 having laterally extending flanges 26 and 27 which are engaged by flanged portions 28 and 29 of a longitudinally tapered plate 30.

The grenade or container 20 rests at its

lower end on a pad 35 which is supported on a partition 36, which in turn is mounted in the bottom or lower end 22 of the casing and is held in position by indented lugs 37 formed in the wall of the bottom portion 22. The container is held against endwise movement in the casing by a spring 38 which engages the upper end thereof and holds the lower end against the pad 35.

The sleeve or bushing 40 is secured to the bottom 22 at the lower end thereof and extends upwardly, forming a bearing for a plunger 41 which is slidably mounted therein. The portion of the plunger 41 which slidably engages the inner wall of the sleeve 40 is preferably formed triangular in section, as shown in Fig. 8. With this form of construction it will be evident that the plunger bears against the sleeve in three lines only. Thus, in case of corrosion between the plunger and the sleeve, there is not sufficient contact between the plunger and the sleeve to prevent the operation thereof.

The plunger 41 has a barb, spike, or pointed inner end 42 which is normally disposed in a reentrant portion 43 formed in the lower end of the grenade or container 20. A washer 44 is mounted on the plunger against the end 42 thereof and a spring 45 surrounds the sleeve 40 and engages the washer, normally tending to force the plunger inwardly into engagement with the portion 43 of the container.

A head 50 is secured to the outer end of the plunger 41, the inner portion of the head being beveled as shown at 51. In order to hold the plunger in retracted or inoperative position, a U-shaped spring 52 engages and surrounds the plunger 41, being disposed between the head 50 and the outer end of the sleeve 41. The spring 52 has a reduced or constricted portion 53 which embraces the plunger and the ends of the spring diverge, as shown at 54 and 55. The U-shaped spring 52 is so constructed that the legs or ends 54 and 55 tend to spread apart or move away from each other. These portions are, however, normally held in the position shown in Fig. 5 by means of the fusible element or link 56. When the fusible element gives way, the legs of the spring 52 will spread apart, releasing plunger 41 which is actuated by the spring 45 into engagement with the container 20.

In case it is desired to manually manipulate the plunger to break the container and release the fire extinguishing liquid, a blow on the plunger will force the plunger inwardly, spreading the legs of the spring 52 without causing the fusible element 56 to be broken. Thus, after manual manipulation, the plunger can be reset without requiring any replacement of parts.

The bottom 22 of the casing may be secured to the central portion in any desired manner but in the form of the invention shown the central portion 21 is provided with lugs 60 which extend through slots in the bottom 22 and are clinched over to hold the bottom in place. The bottom is perforated, as clearly shown in Figs. 1 and 5, to permit the escape of the fire extinguishing liquid after the container 20 has been broken.

The top or cover 23 is provided, as shown in Figs. 1 and 6, with a laterally extending lug 61 which is adapted to seat in a slot 62 formed in the central portion 21 of the casing and wider than the width of the lug 61. The cover 23 is also provided with an offset portion or protuberance 63 which is disposed substantially diametrically opposite the lug 61. A central portion 21 of the casing has a slot 65 adapted to receive the protuberance 63, access to the slot being had through an outwardly extending groove or recess 66 which extends downwardly from the upper edge of the central portion 21 of the casing and communicates with the slot 65.

In order to place the cover in position on the central portion 21 of the casing, the lug 61 is positioned in the slot 62 and the protuberance 63 is positioned in the recess or groove 66. The cover is then depressed until the protuberance 63 is disposed at the lower end of the groove 66 and in alinement with the slot 65. The cover is then turned to a sufficient extent to cause the protuberance 63 to be positioned in the slot 65.

In Fig. 2 there is shown one form of bracket or back plate on which the container casing may be mounted. The plate 70 is provided at its upper end with a flap or lip 71 which is substantially parallel to the plate and may be used to secure the plate over the upper end of a pocket or other receptacle. The plate also has depressed portions 72 and 73 adapted to receive screws for securing the plate to a support.

In order to detachably secure the container casing to the plate 70, a U-shaped spring 75 is carried by flanges 76 and 77 formed at the longitudinal edges of the plate. The legs of the U-shaped spring 75 are adapted to grip the flanged portions 28 and 29 of the plate 30, as clearly illustrated in Fig. 4. Since the flanges 28 and 29 are longitudinally tapered, the casing can be inserted between the legs of the spring by a longitudinal movement of the device downwardly between the legs of the spring.

Instead of fixedly mounting the supporting plate or bracket 70 on a wall or ceiling, or mounting the bracket upon a stationary support, the device may be mounted in the manner shown in Figs. 10 and 11. In Fig. 10 the plate 70 is shown as provided with an extension 80 which is pivotally mounted at 81 to a casing 82. The casing 82 houses and is connected to one end of a spiral-spring 83,

the other end of the spring being connected to a spindle 84.

The spindle 84 is carried by a supporting bracket 85 which also has depending therefrom an arm 86 having at the end thereof a lug 87 which is adapted to seat in the closed end of the U-shaped spring 52.

With the form of the invention just described it will be evident that in case of fire the fusible element 56 will give way, thus releasing the spring 52 from engagement with the plunger. The plunger will then be forced into puncturing or breaking engagement with the container and the container and casing will swing about the pivot 81 and will also be moved bodily around the axis of the spindle 84 by the action of the spring 83. It will be evident that the centrifugal force acting on the casing will vary with the speed of rotation thereof and as the spring runs down the casing will swing in arcs of decreasing radii. The fire extinguishing liquid will thus be dispensed in varying paths.

In the form of the invention illustrated in Fig. 11, the casing is also mounted to swing about the pivot 81, but in this embodiment of the invention the pivot 81 is carried by a fixed support 90 depending from the bracket 85. Thus, in the form of the invention shown in Fig. 11, the release of the container and casing by the fusible element will permit the container and casing to swing back and forth about the pivot 81.

From the foregoing description it will be clear that simple, practical and effective means have been provided for housing and supporting a frangible container and that the device will operate effectively and efficiently in case of fire to dispense or distribute the fire extinguishing liquid in varying paths. Furthermore, it will be clear that the grenade or container can be punctured by manual manipulation of the plunger without requiring any replacement of the plunger detaining spring or fusible element.

Although certain specific embodiments of the invention have been particularly shown and described, it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention, as expressed in the following claims.

What I claim is:

1. In combination, means for supporting a fire extinguisher container, a plunger carried thereby and movable to puncture a container supported by said means, actuating means for moving the plunger to operative position, a resilient clip embracing the plunger to hold said plunger against movement to operative position, and fusible means controlling said clip, said clip and plunger being so constructed and arranged that the plunger can be moved to operative position without breaking the fusible means.

2. In combination, means for supporting a fire extinguisher container, a plunger carried thereby and movable to puncture a container supported by said means, said plunger having a head at its outer end, actuating means for moving the plunger to operative position, means embracing the plunger to hold said head and plunger against movement to operative position, and fusible means controlling said embracing means, said embracing means being constructed and arranged to spread and permit movement of the plunger and head upon manual manipulation thereof without breaking the fusible means.

3. In combination, means for supporting a frangible fire extinguisher container, a member mounted for movement against said container, actuating means for moving said member against the container, resilient means for holding said member against movement by said actuating means, said resilient means being biased to spread and release said member, and heat controlled means for holding said resilient means in operative position.

4. In combination, a fire extinguisher support mounted for pivotal movement and biased to swing on its pivot, a fire extinguisher container carried by said support, a member movable into engagement with and adapted to puncture said container, means for moving said member into engagement with the container and common, heat controlled means for holding said member against movement toward the container and for holding said support against movement on its pivot.

5. In combination, a fire extinguisher support mounted for pivotal movement and biased to swing on its pivot, a fire extinguisher container carried by said support, a member movable into engagement with and adapted to puncture said container, means for moving said member into contact with the container, means including heat controlled means engaging said member for holding said member against movement to operative position, and means engaging said heat controlled means for holding said support against movement on its pivot.

6. In combination, means for supporting a fire extinguisher container, a plunger carried thereby and movable to puncture a container supported by said means, said plunger having a head at its outer end, actuating means for moving the plunger to operative position, a spring clip engaging the plunger to hold said head and plunger against movement to operative position, and fusible means controlling said engaging clip.

7. In combination, a fire extinguisher support mounted for pivotal movement about one end thereof and biased to swing on its pivot, a fire extinguisher container carried

by said support, a member movable into engagement with and adapted to puncture said container, means for moving said member into engagement with said container and common, heat controlled means for holding said member against movement toward the container and for holding said support against movement on its pivot.

8. In combination, a fire extinguisher support mounted for pivotal movement about one end thereof and biased to swing on its pivot, a fire extinguisher container carried by the support, means for puncturing said container, means for moving said puncturing means into engagement with said container and common, heat controlled means for holding said puncturing means in inoperative position and for holding the support against movement on its pivot.

9. In combination, a member mounted for rotary movement, a fire extinguisher support mounted for pivotal movement thereon, means for rotating said member, a fire extinguisher container carried by the support, said support being biased to swing on said rotary member, means for puncturing said container, means for actuating said puncturing means, and heat controlled means for holding the puncturing means against actuation, holding the support against movement on its pivot and for holding said member against rotation.

10. In combination, means for supporting a fire extinguisher container, a plunger carried thereby and movable to puncture a container supported by said means, said plunger having a head at its outer end, actuating means for moving the plunger to operative position, means engaging the plunger to hold said head and plunger against movement to operative position, and fusible means controlling said engaging means, said engaging means being constructed and arranged to spread and permit movement of the plunger and head upon manual manipulation thereof without breaking the fusible means.

11. In combination, a member mounted for rotary movement, means for rotating said member, an extinguisher support pivoted thereon at one end of the support, a fire extinguisher container carried by the support and biased to swing on said pivot, means carried by the support at the end remote from the pivoted end for releasing the contents of the container, and heat responsive means for holding the support against movement.

12. In combination, a fire extinguisher container, a rotary support therefor, said support being rotatable in a fixed plane, a pivotal connection between said container and support, said container being biased to swing on its pivot, means for rotating said support, means for releasing fire extinguishing liquid from said container, and heat controlled means for holding said releasing means inoperative, said heat controlled means also serving to hold said rotary support against rotation.

13. In combination, a fire extinguisher container, a rotary support therefor, a pivotal connection between said container and support, means for rotating said support, means for releasing fire extinguishing liquid from said container, and heat controlled means including a spring and a fusible element for holding said releasing means inoperative, said heat controlled means also serving to hold said rotary support against rotation.

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