May 17, 1949. W. L. ROESSNER 2,470,371

AUTOMATICALLY OPERABLE FIRE EXTINGUISHER

Filed Feb. 24, 1948

Fig. 1.

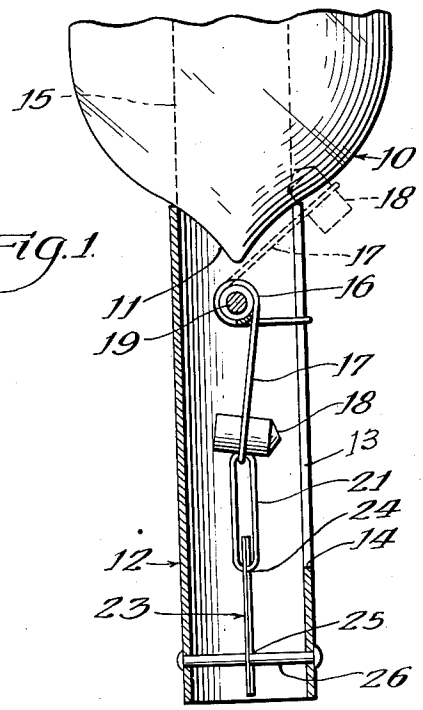


Fig. 2.

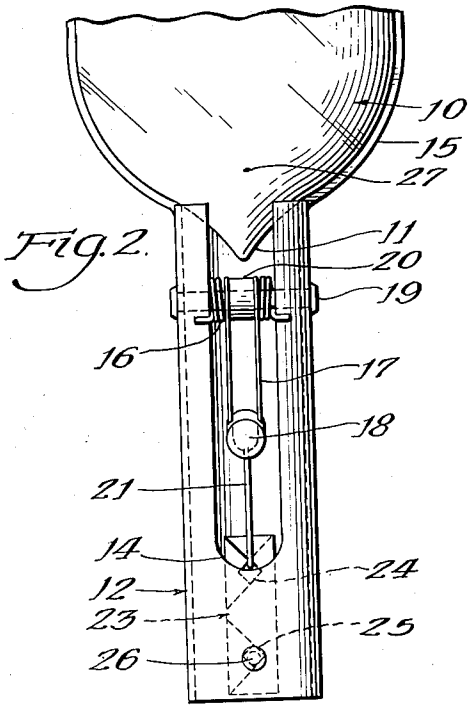


Fig. 3.

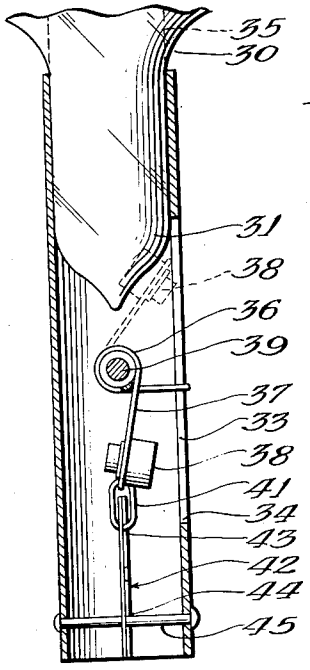
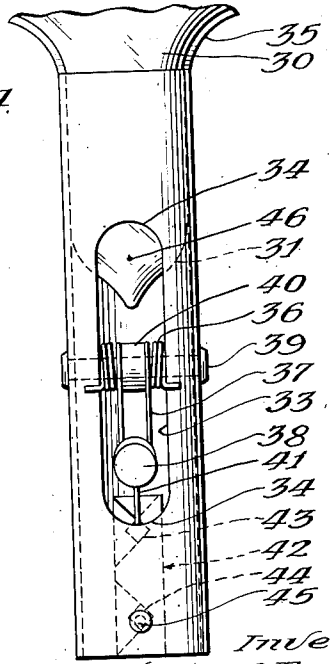


Fig. 4.



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AUTOMATICALLY OPERABLE FIRE EXTINGUISHER

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5 Claims. (Cl. 169—26)

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This invention relates to automatically operable fire extinguishers, and more particularly to extinguishers capable of either manual or automatic operation.

The main object of the invention is to produce an extinguisher in which the automatically operable mechanism is of the pivoted hammer type, mounted in a holder of the handle type. The holder provides a convenient mounting for the shatterable chemical containing grenade and at the same time embodies a reduced portion which serves as a handle for convenient manual operation of the extinguisher by throwing it toward a fire.

Heretofore, handle type automatically operable fire extinguishers have depended on the projectile type of grenade breaking means. These embody striker means which move in an axial direction in the handle and, necessarily, the breaking impact is directed to that part of the grenade which is located in or immediately above the interior of the handle portion of the holder in which said striker means is mounted. In certain types of installations it is desirable to employ pivotally mounted, hammer type breaker mechanisms which are capable of directing the breaking impact against a part of the grenade located outside of the handle portion of the holder, as well as pivotally mounted mechanisms which direct the breaking impact against a part of the grenade located within the handle. In this application I have shown both of these types of pivotally mounted mechanisms in holder handles.

Another advantage of the present invention resides in the feature that the pivotally mounted hammer type breaking means are protectively housed entirely within the handle portion of the holder while in restrained, inoperative position, but when released for operation they swing in an arcuate path which extends outwardly of the handle proper, into breaking impact against the grenade. By this means, I am enabled to employ very powerful breaking means, having ample momentum for dependable crashing of thick walled grenades. The fact that the movement of the breaker mechanism is not confined to the restricted space within the handle portion of the holder is an important factor in accomplishing this desirable result. It will be understood that in certain environments it is necessary to employ grenades of varying thicknesses and to provide breaker mechanisms capable of releasing the fire extinguishing chemicals from such grenades.

Although the breaker mechanism herein shown and described is relatively large as compared to the space within the holder in which it is housed when inoperative, I am able to restrain the mechanism in inoperative position, without premature or unintentional releasing thereof, by means of a special form of fusible link which is very small and thin, and extremely sensitive to heat, and which because of its relatively small size may be mounted in and become operative within the restricted space available in constructions such as shown herein.

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Other objects and advantages will appear from the following specification.

In the drawings:

Fig. 1 is a fragmentary vertical sectional view of the lower portion of an automatically operable fire extinguisher embodying my invention, the grenade and operating mechanism in the holder being shown in elevation; full lines showing the mechanism in restrained or inoperative position, and dotted lines indicating the hammer and actuating means in the grenade crashing position which they assume after the fusible link has been released under influence of heat.

Fig. 2 is an elevational view of the lower portion of the extinguisher, taken at right angles to the view of Fig. 1, and showing the grenade breaking mechanism in restrained, inoperative position.

Fig. 3 is a fragmentary, vertical sectional view of a modified form of construction, showing the lower portion of the extinguisher, with the grenade and breaking mechanism in elevation; full lines showing the mechanism in restrained position, and dotted lines indicating the hammer and actuating means in grenade crashing position.

Fig. 4 is an elevational view taken at right angles to the view of Fig. 3, showing the mechanism in restrained position.

In that embodiment of the invention shown in Figs. 1 and 2, the chemical containing glass grenade, only the lower portion of which is shown, is indicated at 10 and its lower reduced end or tip at 11. The grenade is mounted in a holder 12 of the handle type, that is, any form which may be grasped by the operator for manual use and in which the automatically operable mechanism may be mounted in operative relation to the grenade 10.

The handle 12 in this embodiment is cylindrical in form and slotted or cut away at one side wall, or opposite side walls, as indicated at 13 to form an elongated opening which extends from the upper edge of the handle downwardly to the

rounded edge 14. At the upper end of the handle 12 are strap members 15 which engage the grenade and serve with the holder portion 12 to mount the grenade in the holder.

The grenade breaking mechanism comprises a spring 16, with an arm 17 on which is mounted a hammer 18. The spring 16 is mounted in the handle 12 by means of a tubular rivet 19 which extends horizontally through apertures in the handle 12 and through the coiled portion of the spring 16 and the spacer 20. A loop 21 of wire or other suitable material engages the end of the spring arm 17 and holds the spring under tension, in inoperative position, by connecting the spring arm 17 and hammer 18 to a fusible link 23.

The link 23 is of the pull type shown in Fig. 1 of my U. S. Letters Patent No. 2,414,243, in which two superposed flat members, held together by fusible solder, form two apertures 24, 25 as shown in Fig. 2. The loop 21 which engages the spring arm 17 also extends through the opening 24 of the fusible link. A cross piece 26 in the form of a tubular rivet or other suitable shape extends through the opening 25 of the fusible link and through apertures in the lower opposite side walls of the holder 12 for retaining the fusible link in restrained position as shown.

When the fusible link is released by heated air passing through and around the holder 12, the tension exerted by the spring 16 causes the spring arm 17, carrying the hammer 18, to move in an arcuate path, outwardly and upwardly through the slot 13 in the side of the holder 12, from the solid line position to that shown in dotted lines in Fig. 1, where the hammer 18 will strike the grenade outwardly of the handle at the spot indicated at 27 in Fig. 2.

In the modified form of construction shown in Figs. 3 and 4, the lower part of the glass grenade 30 is provided with a tip or reduced portion 31 which is longer than the tip 11 described in connection with Figs. 1 and 2. The holder handle 32 is cut away at one side or at two opposite sides to provide a slot 33 which extends between but not to the upper and lower ends, as indicated at 34, 34. The grenade 30 is held in the handle portion of the holder by strap members 35 which extend upwardly from the handle 32 at opposite sides as shown in dotted lines in Fig. 3 and in side edge view in Fig. 4.

The grenade breaking mechanism is mounted in the holder and comprises a spring 36 having an arm 37 on which is mounted the hammer 38; said spring 36 being mounted pivotally in the handle by the tubular rivet 39 which extends horizontally through the coiled portion of the spring, the spacer 40, and apertures in the handle 32. A ring 41 engages the end of the spring arm and holds the spring in tensioned, inoperative position by connecting the spring arm 37 to a fusible link 42 which in turn is fastened as hereinafter described.

The fusible link 42 is of the pull type previously described, and has openings formed therein by the superposed pieces constituting the link, the openings being indicated at 43 and 44. The ring 41 which engages the spring arm 37 also passes through the opening 43 of the link. At the other end, the link is connected to a cross piece 45 in the form of a tubular rivet or shaft with enlarged ends which extends through the opening 44 in said link and through apertures in the holder handle 32 for holding the link in the restrained position shown.

When the fusible link 42 is released by heated air passing through and around the handle 32, the hammer 38 is carried by the spring arm 37 in an arcuate path outside of the handle into striking position against the part 31 of the grenade inside of the handle, the hammer contacting the spot indicated at 46 in Fig. 4 on said grenade tip.

In each of the two forms of construction shown and described, the pivotally mounted hammer travels in an arcuate path which extends outwardly of the handle and thus gains substantially more breaking power and momentum than a pivoted member confined to the interior of the handle. By this means, the hammer head may be made as heavy and as large as desired for its intended purposes.

Changes in form and in details of construction may be made without departing from the scope of my invention as set forth in the appended claims.

I claim:

1. An automatically operable fire extinguisher comprising a shatterable chemical containing grenade, a grenade holder including a slotted handle portion, grenade breaking means comprising a striker, striker actuating means pivotally mounted in the handle, a fusible link releasably connected to the actuating means, and link restraining means mounted in the handle and releasably connected to the link, said grenade breaking means being housed within the handle when in restrained position and said striker being moved by the actuating means in an arcuate path extending outwardly of the handle into grenade crashing position when the actuating mechanism becomes operable by release of the fusible link.

2. An automatically operable fire extinguisher comprising a shatterable chemical containing grenade, a grenade holder including a handle portion slotted from its grenade contacting edge to a point near the open end of the handle, grenade breaking means comprising a striker, striker actuating means pivotally mounted in the handle, a fusible link releasably connected to the actuating means, and link restraining means mounted in the handle and releasably connected to the link, said grenade breaking means being housed within the handle when in restrained position and said striker being moved by the actuating means in an arcuate path extending outwardly of the handle into grenade crashing position when the actuating mechanism becomes operable by release of the fusible link.

3. An automatically operable fire extinguisher comprising a shatterable chemical containing grenade having a reduced tip, a grenade holder including a slotted handle portion surrounding the tip, grenade breaking means comprising a striker, striker actuating means pivotally mounted in the handle, a fusible link releasably connected to the actuating means, and link restraining means mounted in the handle and releasably connected to the link, said grenade breaking means being housed within the handle when in restrained position and said striker being moved by the actuating means in an arcuate path extending outwardly of the handle into crashing position relatively to the grenade tip when the actuating mechanism becomes operable by release of the fusible link.

4. An automatically operable fire extinguisher comprising a shatterable chemical containing grenade, a grenade holder including an open

ended handle portion having a side opening therein, grenade breaking means comprising a striker, a spring having an arm on which the striker is mounted, a shaft mounted transversely in the handle on which the spring is pivotally mounted, a fusible link releasably connected to the spring arm, and link restraining means releasably connected to the link and mounted in the handle near its open end, said grenade breaking means being housed within the handle when in restrained position and said striker and spring arm being automatically movable outwardly through said side opening in the handle into grenade crashing position when the fusible link is released.

5. An automatically operable fire extinguisher comprising a shatterable chemical containing grenade, a grenade holder including an open ended handle portion having a side opening therein, grenade breaking means comprising a striker, a spring having an arm on which the striker is mounted, a shaft mounted transversely

in the handle on which the spring is pivotally mounted, a small flat fusible link extending longitudinally of the handle, releasably connected to the spring arm, and link restraining means releasably connected to the link and mounted in the handle near its open end, said grenade breaking means being housed within the handle when in restrained position and said striker and spring arm being automatically movable outwardly through said side opening in the handle into grenade crashing position when the fusible link is released.

WILLIAM L. ROESSNER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,417,374	Morton	Mar. 11, 1947