July 30, 1946. F. J. LEE 2,404,804

FIRE EXTINGUISHING DEVICE

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Fig. 1

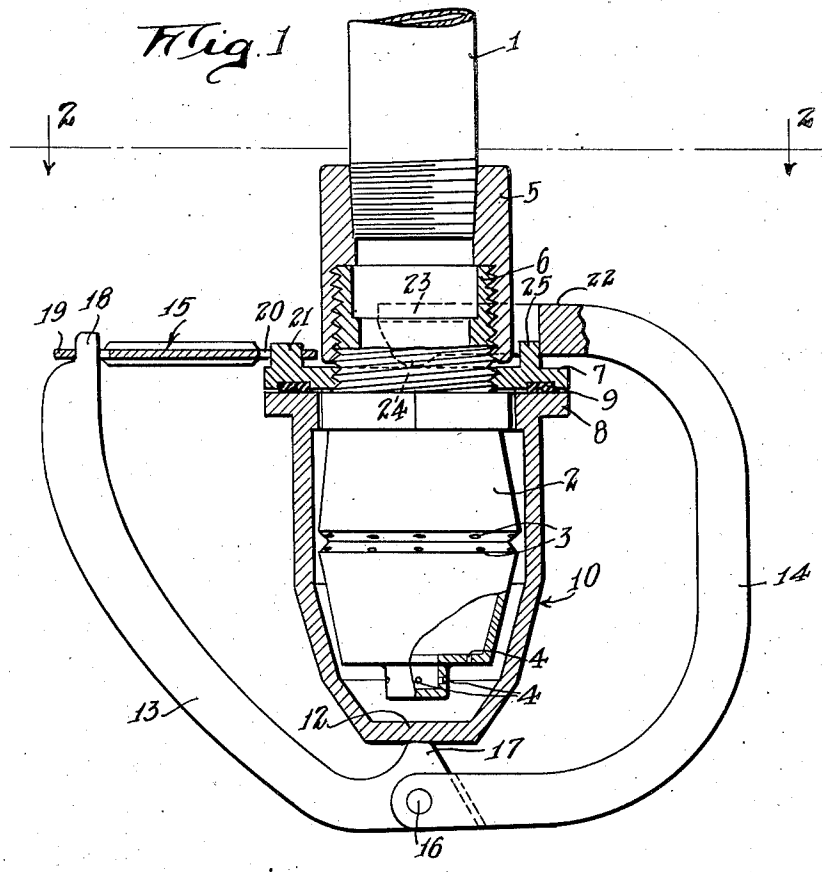
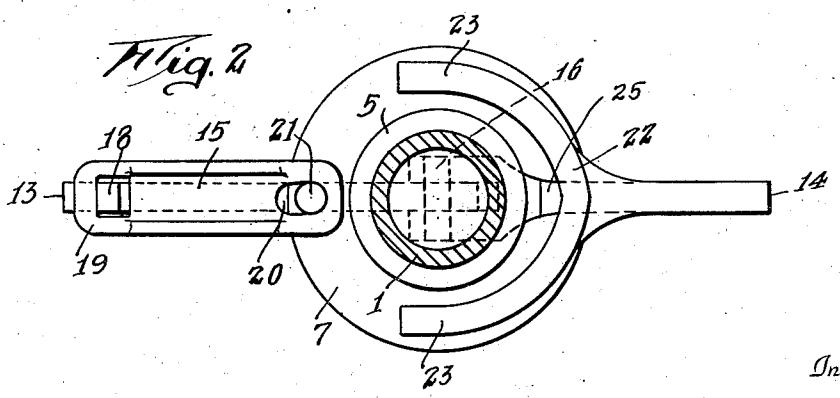


Fig. 2



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FIRE EXTINGUISHING DEVICE

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4 Claims. (Cl. 169—40)

1

This invention relates to fire extinguishing apparatus of the type employed in fixed installations for automatically extinguishing fires.

Heretofore in different fire extinguishing installations various types of spray heads or nozzles have been employed in connection with fusible link elements for controlling the operation of the spray heads or nozzles. While many different types of spray heads or nozzles have been employed in such installations they substantially all include one or a plurality of small orifices which are exposed to atmospheric conditions. The fusible link means which are employed for starting the operation of the spray heads or nozzles in prior installations have always actuated some type of valve mechanism which controls the supply of water to the orifice or orifices of the spray heads or nozzles. These orifices frequently become closed when the nozzles or spray heads are not operating, with the result that the installation cannot be relied upon for automatically extinguishing the fire, when such fire arises.

It is the general object of the present invention to provide a fire extinguishing apparatus for fixed installation which is constructed and arranged so as to prevent the orifices of the spray heads or nozzles from becoming plugged when the apparatus is not in operation.

In the usual practice of controlling a spray head, a valve means is interposed between the spray head and the liquid supply means, which valve means is operated by a fusible link. In accordance with the present invention the means which control the flow of fluid through the spray head is placed beyond the spray head so as to maintain all of the orifices of the spray head immersed in fluid during the period of time when the apparatus is inoperative.

Thus in the apparatus of the present invention instead of interposing a valve mechanism between the spray head and the source of fire extinguishing liquid, the spray head is surrounded by a closure element and the fire extinguishing liquid allowed to fill the closure element and to remain within and also surround the portions of the spray head or nozzle. In this manner the spray head or nozzle is maintained in condition for instant operation on removal of the closure member therefrom. Means for instigating the operation of the apparatus is applied by removing, in the event of fire, the closure member from the spray head or nozzle.

In the fire extinguishing apparatus of the present invention the spray head or nozzle is surrounded by a closure member and this closure

2

member is held in place by means including a fusible link, adapted on the fusing of the link to allow water or other fluid pressure behind the spray head or nozzle to eject the closure member and allow operation of the apparatus.

It is an object, therefore, of the present invention to provide a fire extinguishing apparatus which includes a closure member for a spray head or nozzle adapted to enclose the spray head or nozzle and permit the pressure of the fire extinguishing fluid to be continued through the nozzle and the closure member.

Another object of the present invention is to provide a fire extinguishing apparatus in which a closure member for a spray head or nozzle is supplied, which closure member is adapted to be ejected by the pressure behind the fire extinguishing fluid but is also retained from being so ejected by means including a fusible release link.

The fire extinguishing apparatus of the present invention will be understood from the following description of the preferred example of the present invention. I have, therefore, described the preferred example of the invention in connection with the accompanying drawing, in which

Fig. 1 is a elevation, partly in vertical section; and

Fig. 2 is a section on the line 2—2 of Fig. 1.

Referring to the drawing, 1 indicates a supply line for water or other fire extinguishing fluid. I have elected to show a form of the invention in which a so-called "fog nozzle" 2 is employed. The fog nozzle 2 illustrated is of the conventional type which contains a number of pairs of orifices 3 and 4. Each pair of orifices is arranged to produce jets of fluid, which jets impinge one against the other for breaking up the fluid into a uniform spray or fog. Obviously any other type of nozzle or spray head may be substituted in the apparatus of the present invention for the particular fog nozzle 2 illustrated. However the apparatus of the present invention is of particular value when used in connection with a fog nozzle such as indicated at 2 in the drawing for the reason that such fog nozzles have superior fire extinguishing properties, for the amount of water or fire extinguishing fluid employed, over other types of heads or nozzles. Utilization of fog nozzles in fixed installations has, however, been considerably hampered by the fact that the orifices of such fog nozzles are particularly susceptible to being plugged when exposed to the atmosphere so that in past practice the fog nozzles could not always be relied upon for stationary fire extinguishing installations.

The fog nozzle 2 is indicated as attached to the supply main 1 by means of a coupling 5 which is threaded to the base 6 of the fog nozzle. A ring 7 is provided which is shown as threaded to the base 6 of the fog nozzle 2. With other types of spray heads it is obvious that other means may be employed for fixing the position of the ring 7. The ring 7 is provided with an annular groove holding annular packing 9. A closure member 10 is formed shaped to enclose the head of the fog nozzle 2 and having a flanged base 8 adapted to engage the packing 9. The particular shape of the closure member 10 will vary in accordance with the shape of the nozzle or spray head to be covered, being indicated in the drawing as of a dome form and of sufficient size to be spaced slightly from the fog nozzle 2. The essential characteristic, however, of the closure member 10 is to provide a closure adapted to fit over the spray head or nozzle employed said closure being closed at its lower end, as indicated at 12, and adapted at its upper end to have a liquid-tight seal with the ring 7 immovably fixed to the supply line 1 or some element immovably attached thereto.

In the apparatus of the present invention no valve means need be interposed between the nozzle 2 and the supply main 1 but it is the intention that the fire extinguishing fluid will fill the space within the closure member 10 and thereby surround the nozzle 2 or other spray head enclosed within the member 10. As thus used it will be seen that the hydraulic pressure within the closure member 10 will act to eject the closure member 10 from its position unless the member 10 is restrained from so moving.

Clamping means are provided for restraining the movement of the closure member 10, said clamping means comprising levers 13 and 14 and a fusible link 15. The members 13 and 14 are pivoted together, as indicated at 16, and the member 13 is indicated as adapted to press against the bottom wall 12 of the closure member, as indicated at 17. The lever 13 is curved upwardly to about the elevation of the ring 7 and is provided with an ear 18 adapted to engage a head 19 on the fusible link 15. The fusible link 15 is provided with an eye 20 at its opposite end which fits over a pin 21 extending upwardly from the ring 7. The lever 14 is curved upwardly and then inwardly as indicated at 22 and provided with a fork 23, the ends of the fork having rounded surfaces 24 for engagement with the face of the ring 7. The ring 7 is provided with an abutment 25 which is adapted to contact the link 14 between the fork 23 and thereby limit the shifting of the clamping means to the left as viewed in the figure. The link 15 should be made of sufficient length so that it takes a slight compression or springing of the levers 13 and 14 to place the clamping element in the position indicated. Because of the leverage indicated there is thereby established a very considerable pressure against the closure member 10, forcing a compression of the packing material 19 to insure adequate sealing of the apparatus.

With the apparatus indicated, it will be obvious that in the event of fire, fusing of the link 15 by heat will liberate the lever 13 of the clamp and thereby permit the clamp to release the closure member 10. The closure member 10 will then be forced from its position covering the fog nozzle 2.

Since the fog nozzle 2 has been at all times filled and surrounded with the fire extinguishing fluid there is no danger of clogging of the orifices thereof and the fire extinguishing nozzle will immediately commence its intended action.

It is to be understood that while the particular example of the invention herein described has been proven to be well adapted to carry out the objects of the present invention, various modifications and changes may be made and this invention is not limited to the specific example shown, but is of the scope set forth in the appended claims.

I claim:

1. An apparatus for exteriorly controlling the movement of fire extinguishing fluid through a spray head of a fire extinguishing installation, said apparatus including a ring member to be fixed to said installation, a dome-shaped closure member for enclosing said spray head and forming a fluid-tight seal with said ring member, and clamping means for releasably clamping said closure member against said ring-shaped member, said clamping means including two pivoted levers, one of which is pressed against said closure member near the pivot point of said levers, one of said levers contacting said ring-shaped member, and a fusible link interconnecting the other lever with said ring-shaped member.

2. An apparatus for exteriorly controlling the movement of fire extinguishing fluid through a spray head of a fire extinguishing installation, said apparatus including a ring member to be fixed to said installation, a dome-shaped closure member for enclosing said spray head and forming a fluid-tight seal with said ring member, and clamping means for releasably clamping said closure member against said ring-shaped member, said clamping means including two pivoted levers, one of which is pressed against said closure member near the pivot points of said levers, one of said levers contacting said ring-shaped member, and a fusible link interconnecting the other lever with said ring-shaped member, said fusible link being proportioned to apply tension to the linkage for forcing the closure member against said ring-shaped member.

3. Apparatus for controlling from the exterior the discharge of liquid from a spray head of a fire extinguishing installation, said apparatus including a ring member fixed to said installation, a dome-shaped closure member enclosing said head and having its open end adjacent to said ring member fixed to said installation for forming a fluid-tight seal, and clamping means including two levers pivoted together, one of said levers contacting said closure member near the pivot point, said levers being secured to said installation.

4. Apparatus for controlling from the exterior the discharge of liquid from a spray head of a fire extinguishing installation, said apparatus including a ring member fixed to said installation, a dome-shaped closure member enclosing said head and haping its open end adjacent to said ring member fixed to said installation for forming a fluid-tight seal, clamping means including two levers pivoted together, one of said levers contacting said closure member near the pivot point, said levers being secured to said installation, and a fusible link interconnected between one of said levers and said installation.

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