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C. B. WHITE

FIRE EXTINGUISHER

Filed Aug. 7, 1925

Fig. 1.

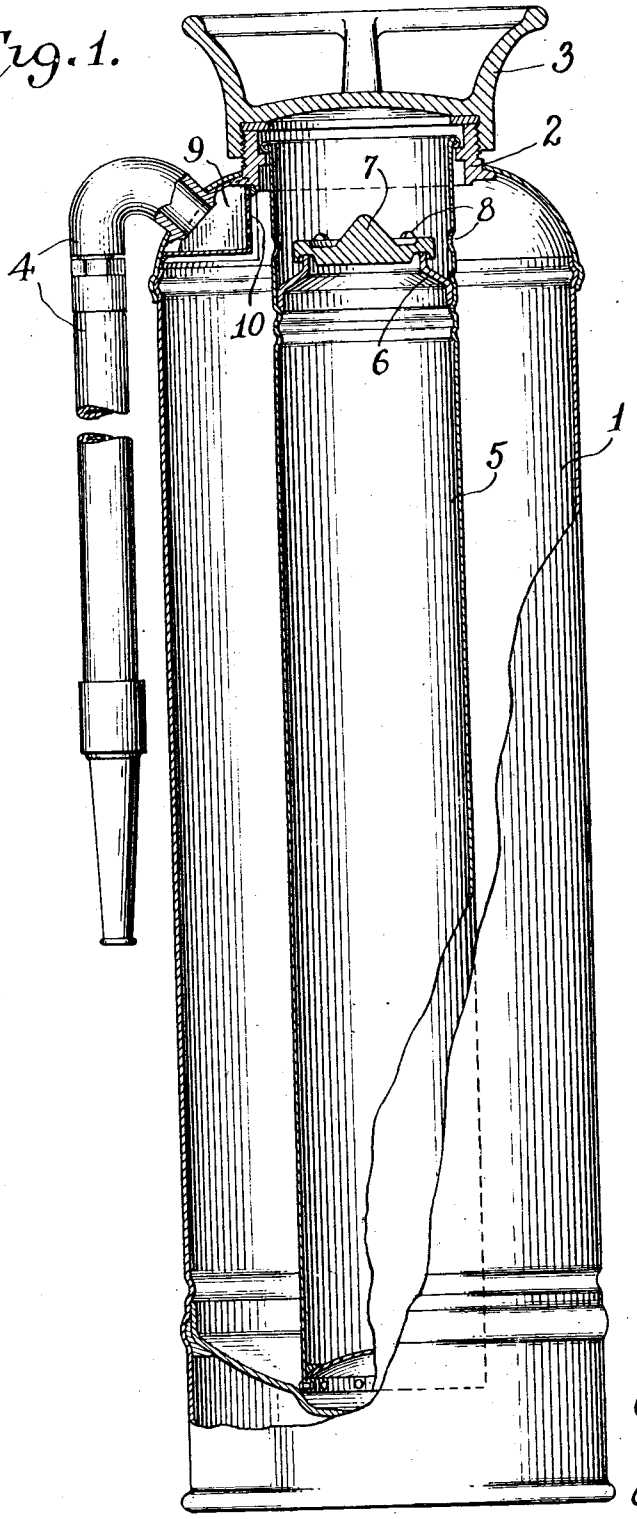
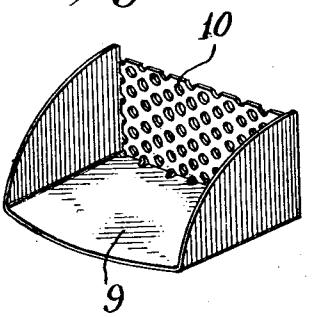


Fig. 2.



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FIRE EXTINGUISHER.

Application filed August 7, 1925. Serial No. 48,712.

The object of the invention is to improve the structure and action of invertible fire extinguishers, and more particularly of foam-type invertible extinguishers, which normally contain two foam-making solutions, brought together, on inversion, to produce a fire extinguishing foam. The object is to cause such extinguishers to deliver a proper mixture of the two solutions, in the first few seconds of the discharge as well as later and thereby increase the amount of foam produced from a given extinguisher. Ordinarily extinguishers of this class initially deliver a predominance of one of the solutions when first inverted, which is objectionable for several reasons and is eliminated by the present invention by the simple expedient of extending the outlet or discharge conduit inwardly, or otherwise locating it, in the outer container, so that it receives substantially uniform and appropriate relative amounts of both solutions immediately on inversion and thereafter. This results in a material increase in the amount of foam delivered because the full chemical value of both solutions can thus be utilized.

The preferred form of the invention is illustrated in the accompanying drawing wherein Figure 1 is an axial section of a standard form of foam-type extinguisher having the invention applied and Fig. 2 an enlarged perspective of the conduit extension member, detached.

As will be recognized in the drawing, the outer container 1 is provided with the usual domed top and neck opening 2, and screw cap or cover 3, and with the usual discharge conduit 4 comprising an outlet elbow, hose and nozzle. The inner container 5 is a cylindrical tube seated at its lower end on the bottom of the main container and laterally supported at its upper end in the neck opening 2. It is removable through this opening. It is generally preferred to provide a stopple seat in the inner container as indicated at 6 and a gravity or other stopple 7 therefor which falls away from the seat, on inversion, and allows the acid solution in said container to pass into the upper or cage part of the inner container, and thence through a series of cage openings or ports 8 in tht tubular wall, into the upper part of the outer container. It is preferred that the outlets 8 be constituted of relatively small holes 8, of which the aggregate area is not greater than the area of the stopple closed outlet.

The discharge conduit 4 is extended inwardly from the wall of the outer container by means of the part 9 which may be termed a conduit extension and which may be variously shaped and variously combined with the rest of the apparatus. As shown in Figure 2 it consists simply of a trough-like member, one wall of which is multi-perforated to constitute a screen and the other walls of which are cut or shaped to fit the interior concave surface of the top dome of the outer container to which it is brazed or soldered above the normal level of the basic solution in that container. The effect of this member, so placed, is to locate the entrance orifice to the discharge conduit nearer than otherwise to the point where the inner or acid solution emerges from the inner container into the outer container, and where the two solutions naturally come together on inversion and it is found that when located in substantially the position indicated, for this particular design of extinguisher, the conduit immediately receives proper proportions of both solutions so that the initial discharge from the hose nozzle is a stream of foam, of good range and not a liquid, as heretofore commonly the case. In extinguishers as heretofore designed the first discharge is generally a solid stream of the basic solution of very short range and this is objectionable because it is injurious to varnished surfaces, whereas, the mixed solutions are neutral or harmless. The liquid stream is also objectionable because it is a conductor of electricity whereas a foam stream is a poor conductor, and obviously and as above stated the chemical value of the liquid is wasted with corresponding impairment of the discharge pressure and volume of extinguishing medium.

The entrance orifice of the conduit extension 9 is represented by the holes in the perforated wall or strainer 10 and should be in a plane or surface substantially parallel to the axis of the extinguisher or faced upwardly or toward the screw cover, but not downwardly in which position it would be likely to receive an excessive quantity of the basic solution in the outer container on the surge of liquid incident to inversion. It will be noted that the orifice is relatively close to the side wall, or the line of the side wall, of

the inner container, and closer to it than to the cylindrical wall, or line of the wall, of the outer container. Being thus close to the line of the neck opening, the strainer is visible when the cap is off and easily examined and cleaned which is an important advantage regardless of the character of the contained solutions.

The width or diameter of the conduit entrance does not require to be larger than necessary to accommodate an adequate screen such as 10 and in general nothing will be gained by making it wider. Inasmuch as it is standard practice to protect the discharge conduit of extinguishers by means of a strainer applied to the interior and of the outlet elbow, it will be seen that the advantages of the present invention are attained with no additional expense of manufacture and none of material except the negligible cost of the metal contained in the imperforate walls of the conduit extension. The inner solution container may be variously designed, either with a gravity stopple or an externally opened stopple and with any desired configuration of the cage structure above the stopple seat, although the best results are obtained by a structure in which the flow ports, such as 8, are relatively small and located in substantially the same horizontal zone as the orifice of the conduit extension, and spaced at intervals around the container. The advantage of this construction is that there is always one port hole, such as 8, directed towards the outlet, but as above stated this is merely the preferred form and there is no intended limitation to the use of small holes except as specified by certain of the claims, the object and result of the invention being accomplished by virture of the location of the outlet close enough to the inner container to avoid initial discharge of liquid as distinguished from foam.

I claim:

1. In an invertible foam type extinguisher having a basic solution container, the combination between an inwardly extending discharge passage having a widened entrance and an inner acid container which has at least one acid discharge orifice directed against that wide entrance, thus insuring that there will always be some acid in the initial flow through the delivery hose.

2. The combination of the preceding claim in which the solution outlet from the inner container is constituted of an annular series of small holes whose aggregate area is not greater than the cross sectional area of the acid flow opening from the rest of the container thereto.

3. In an invertible type extinguisher having a basic solution container, the combination between an inwardly extending discharge passage having its solution entrance located closely adjacent the filling opening of the extinguisher, and a cylindrical acid container supported in the filling opening and removable therethrough and having at least one acid delivery orifice directed against the solution entrance of the discharge passage and located closely adjacent the same.

4. The combination in an invertible foam type extinguisher of an outer basic solution container having a neck opening and an inner acid solution container occupying said neck opening and having one or more acid discharge orifices in its upper part, with a discharge passage extending inwardly from the side and top of the extinguisher and terminating and having its total entrance orifice adjacent the neck of the extinguisher and opposite and close to the perforated wall of the acid container, whereby on inverson of the extinguisher said discharge outlet receives initially and, as they mingle, both basic and acid solutions.

5. A foam extinguisher of the invertible type comprising an outer container of a foam-making solution having a neck-opening provided with a cover, and having a foam discharge nozzle, and an inner container of foam-making solution contained within the outer container and insertible through said neck-opening thereof, in combination with a part forming a passage leading to said discharge nozzle, the entrance to said passage being located above the liquid level of said outer container, close to said inner container and neck-opening but faced otherwise than toward the rush of solution in said outer container which occurs therein on the inversion of the extinguisher, said entrance being also located directly in the path of the outflow from the inner container on inversion, whereby said entrance initially receives portions of both said foam-making solutions.

6. A foam extinguisher of the invertible type comprising an outer container of a foam-making solution having a neck-opening provided with a cover, and having a foam discharge nozzle, and an inner container of foam-making solution located within the outer container and insertible through said neck-opening thereof, in combination with a part forming a passage leading to said discharge nozzle, said passage having an entrance relatively wide compared to the rest of said passage and provided with a screen, and said screened entrance being located in the upper part of said container close to said inner container but faced otherwise than toward the rush of solution which occurs in said outer container on the inversion of the extinguisher said screened entrance being also located directly in the path of the outflow from the inner container on inversion, whereby said

entrance initially receives portions of both solutions and is readily accessible for inspection and cleaning through said neck-opening.

7. A foam extinguisher of the invertible type comprising an outer container of foam-making solution having a neck-opening provided with a cover, and having a foam discharge nozzle, and an inner container of foam-making solution located within the other container and insertible through its neck-opening, in combination with a part forming a passage leading to said discharge nozzle, said passage having an entrance relatively wide compared to the rest of said passage and said nozzle entrance being located in the upper part of said container close to said inner container and substantially in line with the edge of said neck-opening and being also located in the path of outflow from the inner container, and so that the initial discharge through said nozzle, is foam as distinguished from liquid.

8. In a fire extinguisher of the type having a cylindrical outer container and a top dome provided with a neck opening and a removable cover therefor, an improved screen for the outlet from such container comprising a trough-shape body with substantially flat end and bottom walls and a perforate vertical wall, said end and bottom walls having curved edges engaged to the curved interior surface of said container and said perforate vertical wall being substantially in line with said neck opening whereby it is visible and easily accessible when said cover is removed.

In testimony whereof, I have signed this specification.

CLIFFORD B. WHITE.