

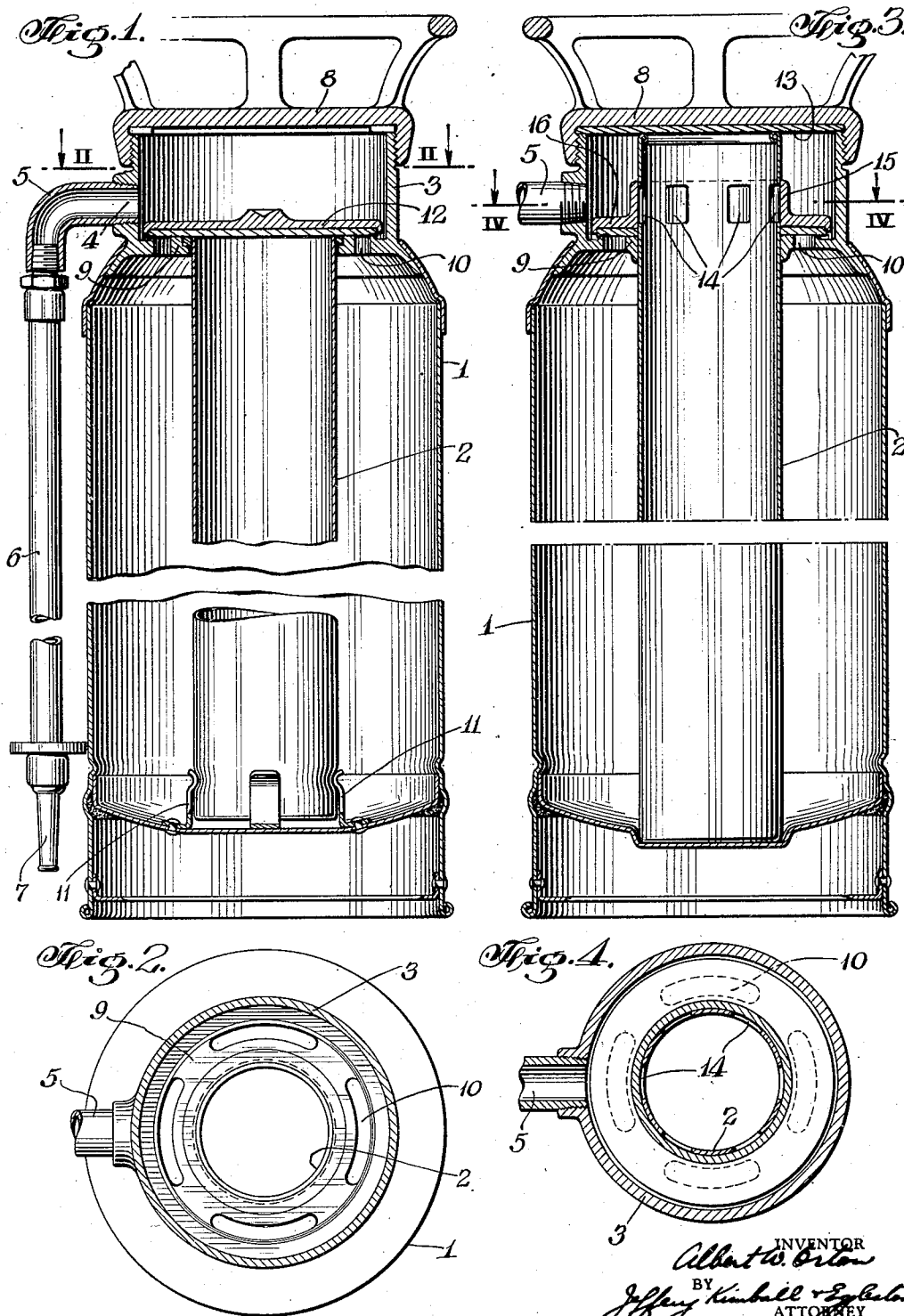
April 19, 1932.

A. W. ORTON

1,854,218

FIRE EXTINGUISHER

Original Filed May 29, 1928 2 Sheets-Sheet 1



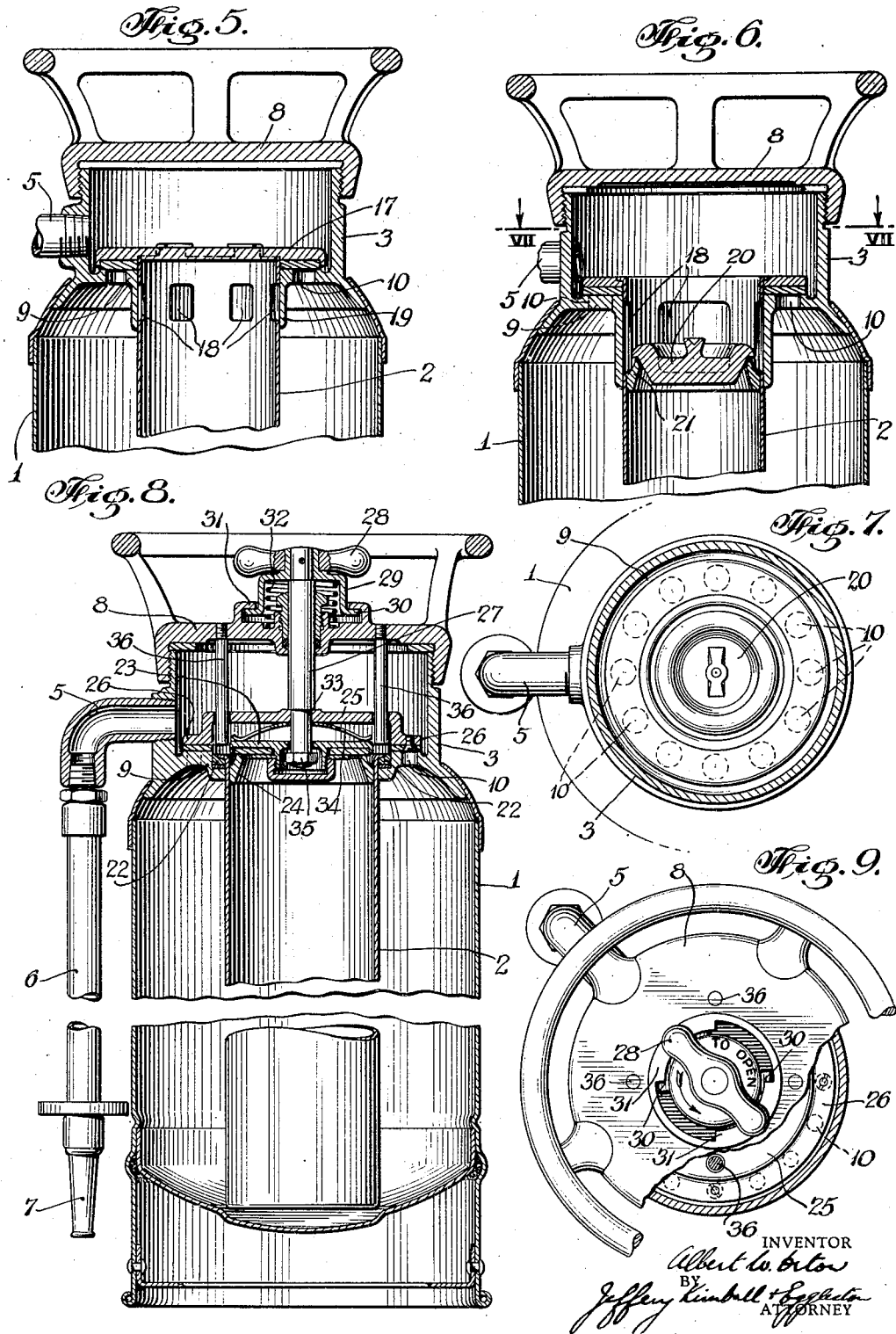
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## UNITED STATES PATENT OFFICE

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## FIRE EXTINGUISHER

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The invention relates to foam type extinguishers of the kind adapted to be inverted in time of fire to cause the solutions to flow into a mixing chamber from which the resulting foam is expelled.

The object of the invention is to prevent accidental splashing of the solutions one into the other, or through the foam outlet, and consists in the provision of means for confining the solutions to their respective compartments and, more particularly, in the improved means to that end herein described and exemplified in the accompanying drawings.

Fig. 1 is a vertical section of an extinguisher having the invention applied,

Fig. 2 is a horizontal section on line II—II of Fig. 1,

Fig. 3 is a vertical section of an extinguisher having a modified form of the invention applied,

Fig. 4 is a horizontal section on line IV—IV of Fig. 3.

Figs. 5 and 6 are broken out sections illustrating other forms of the invention,

Fig. 7 is a horizontal section on line VII—VII of Fig. 6,

Fig. 8 is a vertical section of an extinguisher having a manually operated form of the invention applied, and

Fig. 9 is a plan view of the extinguisher of Fig. 8, partly broken away to show a detail of the same.

The extinguishers illustrated include an outer container 1 and a removable, inner container 2, constituting the solution compartments. The neck casting 3 of the outer container serves as a mixing chamber from which the foam is discharged by way of outlet 4; an elbow 5 screwed into the outlet carries the usual hose 6 and nozzle 7. The outer container is closed by cap 8.

The neck casting 3 has an integral flange 9 which serves to locate the inner container and also as a partition between the outer container and the mixing chamber, openings 10 in the flange providing for the passage of the solution from the outer container into the mixing chamber.

In Fig. 1 spring fingers 11 riveted to the

bottom of container 1 serve to locate and grip the inner container, which may be suitably formed for this purpose, to hold the same against longitudinal movement when the extinguisher is inverted. The length of the inner container is such that when so held its upper end terminates flush with the neck flange so that a single stopple 12 seating on the flange serves to close the mouth of the inner container and also the outer container outlets 10. By this means the solutions are confined to their respective compartments and effectively prevented from splashing into each other or through the outlet. Upon inversion of the extinguisher, in this form, the stopple falls away by gravity and so releases the solutions which thereupon flow into the mixing chamber. The stopple may of course be manually controlled if desired.

In the form of Fig. 3, the inner container 2 rests in a cupped depression in the bottom of the outer container and its upper end extends up through the mixing chamber and is closed by a sealing disc 13, carried by cap 8. A ring of openings 14 comprises the outlet from the inner container into the mixing chamber.

In this form the compartment outlets are closed by an annular stopple which slides on the inner container. The sleeve portion 15 of the stopple normally closes openings 14 and the flange portion 16 closes openings 10, as above. When the extinguisher is inverted, the stopple slides on the inner container to the other end of the mixing chamber thereby opening the respective compartment outlets and releasing the solutions.

In Fig. 5 the upper end of the inner container is secured to and closed by a stopple 17 which seats on the neck flange and closes openings 10. Openings 18 in the inner container wall are normally closed by sleeve 19 depending from flange 9. Upon inversion of the extinguisher the inner container and stopple slide bodily towards the closure cap 8, bringing the container openings 18 into the mixing chamber and at the same time uncovering flange openings 10.

A slightly modified arrangement is shown in Fig. 6 in which the stopple is secured to

the inner container, as above, but is of annular form serving only to close outlets 10. The closure of the inner container is effected by a loose stopple 20 carried on a seat member 5 21 located just below the container openings 18. In operation, the inner container and annular stopple slide toward cap 8, as above described, and stopple 20 falls away from its seat to permit the solution to flow from the 10 inner container into the mixing chamber.

As above mentioned, both gravity and manually operated stopples are within the contemplation of the invention and, by way of illustration, Fig. 8 shows a further modified form embodying a manual control. 15

The neck flange 9 is recessed to receive a supporting ring 22 which is secured to the upper end of the inner container whereby the latter is suspended with its mouth approximately flush with flange 9. The solution compartments are closed by two stopple members which however are organized for operation as a unit. Stopples 23 engages a seat member 24 secured to the inner container 25 and stopple 25, which is of cupped form, has a rim portion 26 which seats on the neck flange, these two stopples thus closing respectively the inner and outer containers. Both stopples are loosely mounted on the reduced end of stem 27 which extends up through a stuffing box in the closure cap 8 and terminates in a handle 28. A bayonet cap 29 is rigidly secured to the stem and its shoulders 30 co-operate with lugs 31 upstanding from the closure cap to prevent upward movement of the stem and handle until the latter is rotated one half-turn from the position shown. Spring 32 holds the shoulders and lugs in engagement. In this position of 40 the handle shoulder 33 on the stem locks stopple 25 so that its rim 26 seals the outer container outlets 10 and a spring 34 inserted between the stopples urges stopple 23 into engagement with its seat on member 24. 45 Thus locked, the extinguisher can be tipped, shaken or even inverted without fear of the solutions splashing into each other or through the outlet and in time of fire it is merely necessary to rotate and lift handle 28 when nut 35 will engage and lift stopple 23 and the latter in turn, through spring 34, will lift stopple 25, whereupon both solutions are free to flow into the mixing chamber when the extinguisher is inverted.

To facilitate the separation of stopple 23 from its seat in case it should be stuck and also to prevent the inner container from sliding into the mixing chamber when the extinguisher is inverted, I have shown a number of pins 36 screwed into the closure cap and passing freely through stopple 25. These pins terminate adjacent the supporting ring 22 and constitute a rigid stop against which the ring will strike if the inner container moves toward the closure cap. 65

In each of the above forms of the invention it will be apparent that I have provided a simple and inexpensive means for confining and thereby conserving the solutions. By reason of the concentric arrangement of the compartment outlets to the mixing chamber, the solutions are rapidly and thoroughly mixed. The provision of means for obstructing the flow of both solutions and releasing the same simultaneously results in the two solutions reaching the mixing chamber at about the same time, so that foam is produced from the beginning and the usual preliminary squirt of liquid is avoided. 70 75

Having now described my invention, I 80 claim:

1. A foam type extinguisher comprising in combination an outer solution container terminating at its upper end in a threaded neck constituting a mixing chamber, a closure cap therefor, a flange projecting inwardly from the lower end of said neck and having apertures therein constituting outlets to permit direct flow of the solution from the outer container into the mixing chamber, an inner solution container centered in said flange within the outer container and having an outlet directly into said mixing chamber, a discharge hose connected with and opening into said chamber, and means to obstruct all of said outlets to prevent flow of the solutions from both of said containers into the mixing chamber. 85 90 95

2. A foam type extinguisher comprising in combination an outer solution container terminating at its upper end in a neck constituting a mixing chamber, a closure cap therefor, a flange projecting inwardly adjacent the lower end of said neck and having outlets therein to permit direct flow of the solution from the outer container into the mixing chamber, an inner solution container positioned by said flange within the outer container and having an outlet directly into said mixing chamber, said inner container adapted to be held against movement when the extinguisher is inverted, a discharge hose connected with said chamber, and means to obstruct all of said outlets to prevent flow of the solutions from both of said containers into the mixing chamber. 100 105 110 115

3. A foam type extinguisher comprising in combination an outer solution container, an inwardly extending flange separating off the upper portion of said container to provide a mixing chamber, said flange having apertures therein to permit direct flow of the solution from said outer container into the mixing chamber, an inner solution container positioned by said flange within the outer container and having an outlet directly into the mixing chamber, located substantially in the plane of said flange, means for restraining movement of the inner container when the extinguisher is inverted, and valve means 120 125 130

movable within the mixing chamber relatively to said containers to coincidentally control said apertures and outlet.

4. A foam type extinguisher comprising in  
5 combination an outer solution container, an inwardly extending flange separating off the upper portion of said container to provide a mixing chamber, said flange having apertures therein to permit direct flow of the solution  
10 from said outer container into the mixing chamber, an inner solution container positioned by said flange within the outer container and having an outlet directly into the mixing chamber, means for restraining move-  
15 ment of said inner container when the extinguisher is inverted, valve means obstructing both said apertures and said outlet and a single external handle arranged to operate said valve means.

20 5. A foam type extinguisher comprising in combination an outer solution container, an inwardly extending flange separating off the upper part of said container to provide a mixing chamber, said flange having aper-  
25 tures therein to permit direct flow of the solution from said outer container into the mixing chamber, a valve adapted to seat upon said flange and overlie said apertures, an inner container positioned by said flange within  
30 the inner container and having an outlet directly into the mixing chamber and a second valve overlying said inner container outlet.

6. A foam type extinguisher comprising in  
35 combination an outer solution container, an inwardly extending flange separating off the upper part of said container to provide a mixing chamber, said flange having apertures therein to permit direct flow of the solution from said outer container into the mixing  
40 chamber, a valve adapted to seat upon said flange and overlie said apertures, an inner container positioned by said flange within the inner container and having an outlet di-  
45 rectly into the mixing chamber, means restraining movement of the inner container when the extinguisher is inverted, a second valve normally closing said inner container outlet and an external handle operable to  
50 coincidentally open both said valves.

7. A foam type extinguisher comprising in  
50 combination an outer solution container, an inwardly extending flange separating off the upper portion of said container to form a mixing chamber and the upper surface of  
55 said flange constituting a valve seat, said flange having apertures therein to permit direct flow of the solution from said outer container into the mixing chamber, an inner so-  
60 lution container positioned by said flange within the outer container, a normally closed outlet from the inner container to the mixing chamber, and a valve member carried by said inner container normally adapted to seat upon said flange over said apertures to close  
65 the same, said inner container slidable in said

flange upon inversion of the extinguisher to coincidentally open said outlet and lift said valve member off its seat on the flange.

8. A foam type extinguisher comprising in  
70 combination an outer solution container, an inwardly extending flange separating off the upper portion of said container to form a mixing chamber, an inner solution container positioned by said flange within the outer container and having its side wall apertured  
75 adjacent its upper end, a sleeve encircling the inner container and normally overlying and closing said aperture, said sleeve and inner container relatively movable when the extin-  
80 guisher is inverted to uncover said aperture, discharge openings in said flange to permit direct flow of the solution from the outer container into the mixing chamber and a valve member adapted to seat on said flange and normally close the discharge openings  
85 therein.

9. A foam type extinguisher comprising in  
combination an outer solution container, an inwardly extending flange separating off the  
90 upper part of said container to form a mixing chamber, an inner solution container positioned in said flange within the outer container and having an outlet directly into the mixing chamber, means holding the inner container against movement when the extin-  
95 guisher is inverted, said flange being apertured to permit flow of the outer container solution into the mixing chamber, and a single gravity stopple normally seating on said flange and closing both said outlet and  
100 said aperture.

In testimony whereof, I have signed this specification.

ALBERT W. ORTON.

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