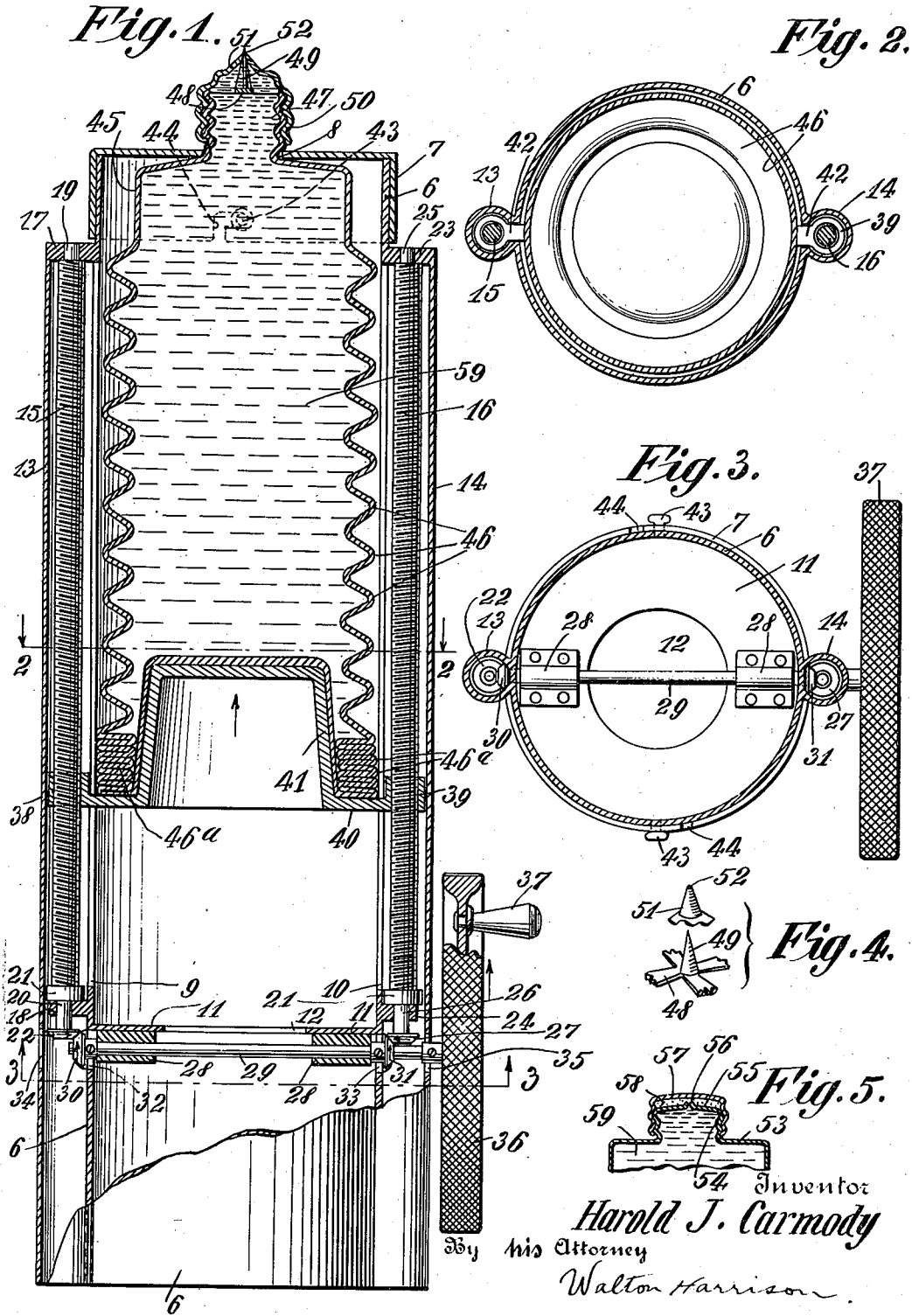


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FIRE EXTINGUISHER.
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FIRE-EXTINGUISHER.

1,235,550.

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To all whom it may concern:

Be it known that I, HAROLD J. CARMODY, a citizen of the United States, residing at New York, borough of Brooklyn, in the
5 county of Kings and State of New York, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a full, clear, and exact description.

10 My invention relates to fire extinguishers of the kind popularly known as chemical fire extinguishers, and adapted to be carried continuously on board railway trains or kept on the premises, and to be operated
15 more or less after the manner of a syringe, for the purpose of throwing into the fire a liquid capable of generating gases detrimental to combustion.

20 More particularly stated, I seek to improve the apparatus of the kind just mentioned by housing the liquid in collapsible tubes and using these tubes one at a time in the extinguishing apparatus, each virtually serving, for the time being as a part thereof.
25 In this way the cost of production of the fire extinguisher may be greatly reduced, as no part of the mechanism except the collapsible tubes need be made proof against the corrosive effects of the liquid used in the
30 extinguisher.

Reference is to be made to the accompanying drawing forming a part of this application, and in which like numerals indicate like parts in all of the figures.

35 Figure 1 is substantially a central section through the extinguisher complete, and shows it as containing a collapsible tube, from which a portion of the liquid has been ejected.

40 Fig. 2 is a section on the line 2—2 of Fig. 1, looking in the direction indicated by the arrows.

45 Fig. 3 is a section on the line 3—3 of Fig. 1, looking in the direction indicated by the arrows.

Fig. 4 is a detail view, showing fragmentarily in perspective the adjustable nozzle used upon one form of the collapsible tube.

50 Fig. 5 is a section, showing fragmentarily a nozzle used upon another form of the collapsible tube.

A casing is shown at 6, and has the general form of a cylinder. A cap 7 is fitted

over one end of this cylinder, and is provided centrally with an opening 8. 55

The cylinder has two slots 9, 10 disposed diametrically opposite each other and each extending parallel to the general longitudinal axis of the cylinder.

The casing is provided with a floor 11, spaced a little distance from the adjacent end of the casing, and provided with a central opening 12. As observations are made through this opening, as hereinafter described, I designate it as a peep hole. 60 65

Mounted upon opposite sides of the casing 6, and disposed adjacent the slots 9, 10 are a pair of substantially tubular housings 13, 14 and located within these housings are a pair of screw shafts 15, 16. 70

The screw shaft 15 is journaled in bearings 17, 18, and for this purpose is provided with reduced portions 19, 20. The screw shaft 15 carries a collar 21 which rests directly upon the bearing 18, and thus supports the end thrust of the shaft. A bevel gear 22 is mounted upon the reduced portion 20. 75

The screw shaft 16 is supported by bearings 23, 24, and is provided with reduced portions 25, 26 which extend through these bearings, a bevel gear 27 being carried by the reduced portion 26. 80

Secured to the annular floor 11 are a pair of bearings 28, 28, and supported by these bearings is a shaft 29. Two bevel gears 30, 31 are secured upon this shaft, and mesh respectively with the bevel gear 22, 27, so as to turn the same in opposite directions. For accommodating the shaft 29 and parts carried thereby the casing is provided with holes 32, 33. The tubular housings 13 and 14 are respectively provided with holes 34, 35, to promote access to the shaft 29. 85 90

A fly wheel 36, having its peripheral edge milled, as shown, is mounted rigidly upon the shaft 29, and is provided with a handle 37 whereby it is rotated. 95

Mounted to travel within the tubular housings 13, 14 are two nuts 38, 39, threaded internally to fit upon the screw shafts 15, 16, the shaft 15 being threaded left-handed and the shaft 16 being threaded right-handed. 100

Slidably mounted within the casing is a piston 40, which carries the nuts 38, 39, with

which it is rigidly connected by necks 42. The piston 40 is provided with a raised portion or protuberance 41, preferably integral with it.

5 The casing 6 is provided with a pair of bayonet pins 43 disposed diametrically opposite each other, and the cap 7 is provided with a pair of bayonet slots 44 for receiving these pins and anchoring the cap upon the
10 end of the casing.

Fitting loosely but neatly within the casing is a tube 45 provided with corrugations 46 and adapted to collapse by the application of pressure to its ends, as may be understood from Fig. 1. This tube is a transient
15 member, that is, intended to be used up and replaced by others from time to time. The corrugations 46 fold upon each other, as shown at 46^a, as the tube is gradually col-
20 lapsed.

The collapsible tube 45 is provided with a threaded neck 47, and carried by this neck is a spider 48, the form of which is shown
25 more particularly in Fig. 4. The spider is provided with a boss 49, having the form of a cone.

Fitting upon the threaded neck 47 is a threaded cap 50, provided with a conical portion 51 having a hole 52. This hole is
30 quite small, having a diameter of say $\frac{1}{16}$ to $\frac{1}{8}$ of an inch.

The collapsible tube may, if desired, have instead the form shown in Fig. 5. Here the body portion of the tube appears at 53, and
35 is provided with a threaded neck 54, having an end portion 55 provided with a nipple 56. Covering the neck is a threaded cap 57, which carries a disk 58 of cork and presses the same down upon the nipple 56.

40 The liquid contained within the collapsible tube appears at 59, and may be carbon tetrachlorid or any other substance suitable to be ejected in a small stream and to evolve a suitable gas for extinguishing flames.

45 The operation of my device is as follows:

A collapsible tube, made as above described and filled with a suitable liquid such as carbon tetrachlorid, is placed within the casing. This is done by removing the cap 7,
50 inserting the collapsible tube, and replacing the cap, so that the neck portion of the tube protrudes through the opening 8, as shown in Fig. 1. In order to introduce the collapsible tube, the piston 40 is drawn back to its normal position near the floor 11, and
55 for this purpose the wheel 36 is turned. If the movable parts are stuck or otherwise difficult to move, the wheel 36 is grasped by its milled edge and turned forcibly; but if it turns easily, as it normally should do, it
60 may be turned by the handle 37.

The collapsible tube being inserted, the extinguisher is laid aside until needed.

65 In order to use the extinguisher the cap 50 is given a single turn or two, so that the

hole 52 (see Fig. 4) is withdrawn a little from the adjacent pointed end of the cone 49. The liquid can now escape through the hole 52. Next the wheel 36 is turned so as to rotate the shaft 29 and bevel gears 30, 31 which
70 by their engagement with the bevel gears 22, 27 cause the screw shafts 15, 16 to turn in opposite directions. Thus the nuts 38, 39 are pushed along, carrying the piston 41 with them. The protruding portion 41 is
75 pushed into the end of the collapsible tube, which yields and becomes crumpled accordingly, as shown in Fig. 1, and the corrugations of the collapsible tube are thus gathered or folded around the protruding portion 41 of the piston.
80

All of the liquid within the collapsible tube need not be used upon a single occasion. Any part of it may be so used, and after each use of the tube it is again fastened up by giving the cap 50 a turn or two
85 in order to tighten it and effectively seal the hole 52.

In using the form of collapsible tube shown in Fig. 5 the procedure is the same, except that the cap 5 is removed bodily, in
90 order that the liquid may be ejected through the hole 56.

The collapsible tube may be made of pure tin or so-called tin plate—that is, thin sheet
95 steel or iron coated with tin. It may also be made of alloy of the kind usually employed in making collapsible tubes employed by painters for holding paints. The essential
100 requisite is that the metal of which the tube is made must not be such as to cause its destruction by the corrosive action of the liquid used.

The casing 6, housings 13, 14 and various other parts of the extinguisher may be made
105 of any cheap metal suitable for the purpose. They may be made of steel or iron, if desired, as the liquid does not come into contact with any part of them. On account of this feature there is a considerable saving,
110 as the various parts of the extinguisher do not have to be made proof against the corrosion of the fluid.

I do not limit myself to the precise mechanism shown, the spirit of my invention being
115 commensurate with my claims:

I claim:

1. In a fire extinguisher the combination of a casing provided with an opening, a container having such form as to be collapsible by pressure and located within said
120 casing, said container having a nozzle extending through said opening in order to facilitate the ejection of a liquid from said container as said container is collapsed, a
125 piston located within said casing and movable for the purpose of causing said casing to collapse, a plurality of nuts connected to said piston in order to shift the position thereof within said casing, a plurality of
130

screw shafts carried by said casing and journaled relatively thereto, and mechanism common to said screw shafts and controllable at the will of the operator for turning said screw shafts.

2. In a fire extinguisher the combination of a casing having the proximate form of a cylinder and provided with a pair of slots extending lengthwise of said cylinder and disposed diametrically opposite each other, a container located within said casing and having the general form of a cylinder, said container being collapsible endwise and provided with an outlet for the purpose of discharging a liquid, a piston slidably mounted within said casing and provided with a pair of oppositely disposed supporting members extending outwardly through said slots, a pair of threaded nuts carried by said supporting members, a pair of screws revolvably mounted upon opposite sides of said casing and extending through said nuts, and means

controllable at the will of the operator for turning said screws in unison.

3. In a fire extinguisher the combination of a casing provided with a compartment, a collapsible container mounted within said compartment, a piston mounted within said compartment and movable relatively to said casing for the purpose of exerting pressure upon said container in order to cause the same to collapse, a pair of nuts connected to said piston and provided with threads, the thread of one of said nuts being right handed and the thread of the other of said nuts being left handed, a pair of screw shafts extending through said nuts and engaging the same, one of said screw shafts having a left-hand thread and the other having a right hand thread, and means controllable at the will of the operator for turning said screw shafts in opposite directions.

HAROLD J. CARMODY.