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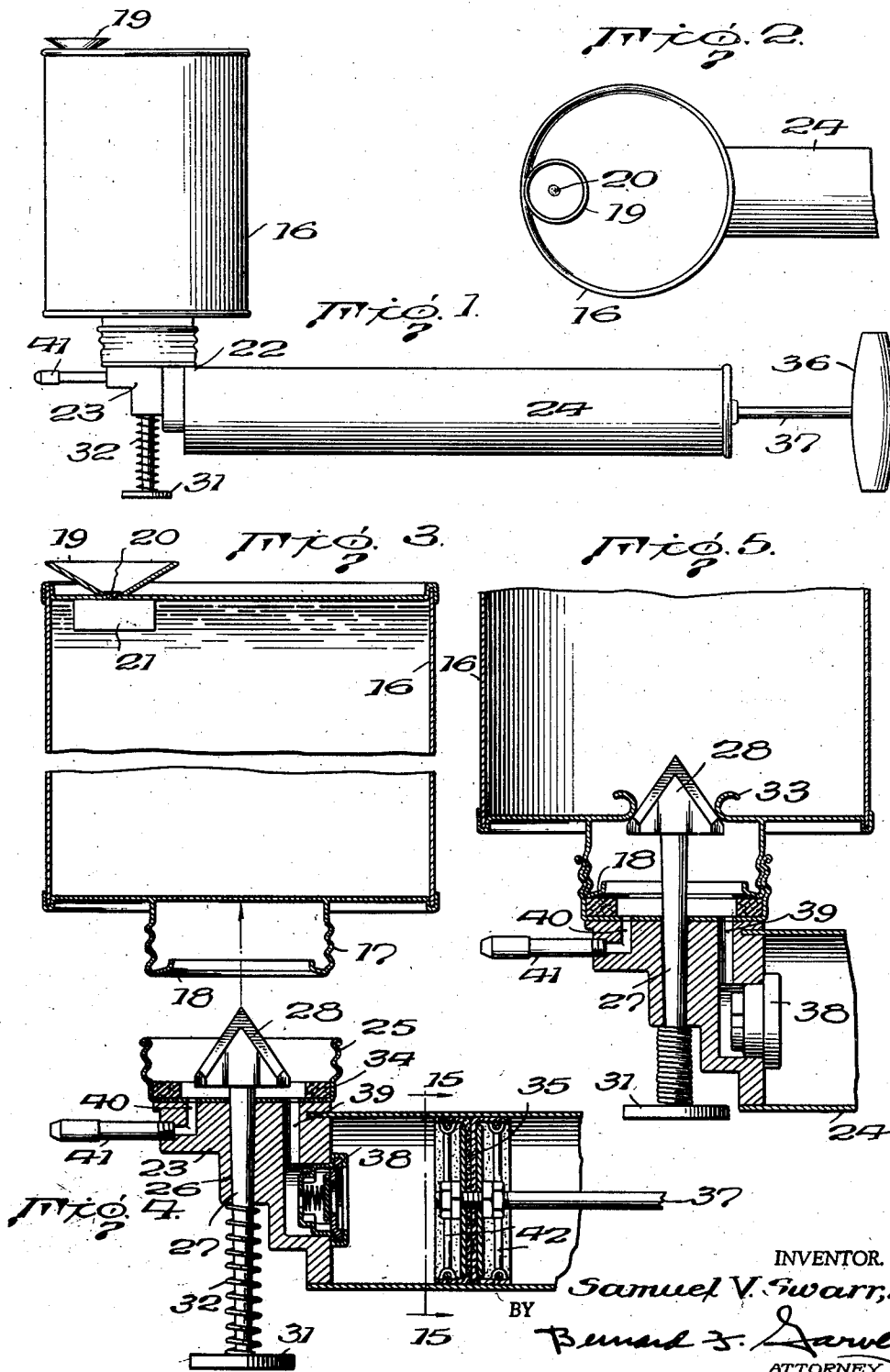
S. V. SWARR, SR

2,355,483

FIRE EXTINGUISHER

Filed Jan. 8, 1942

3 Sheets-Sheet 1



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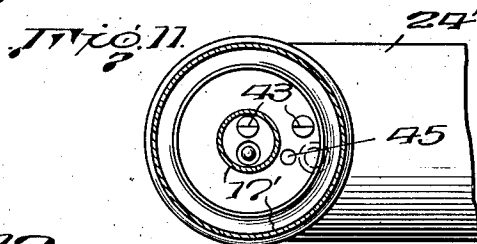
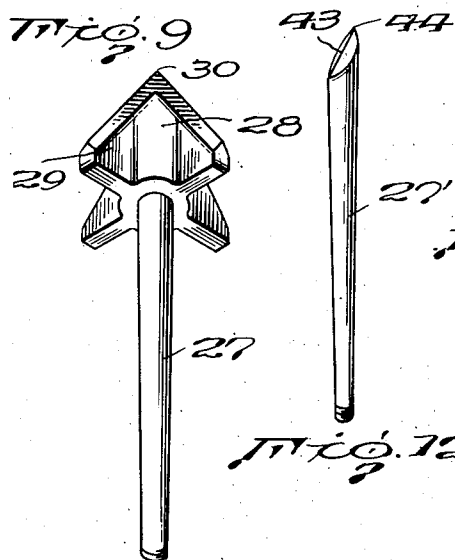
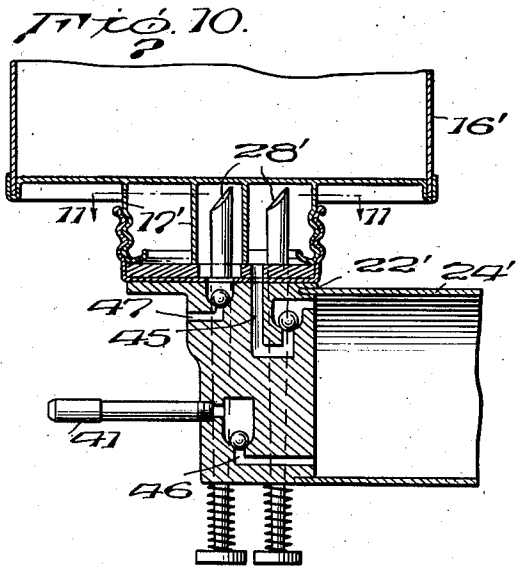
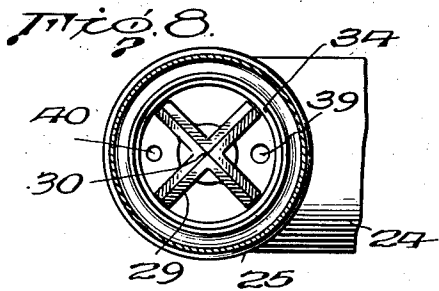
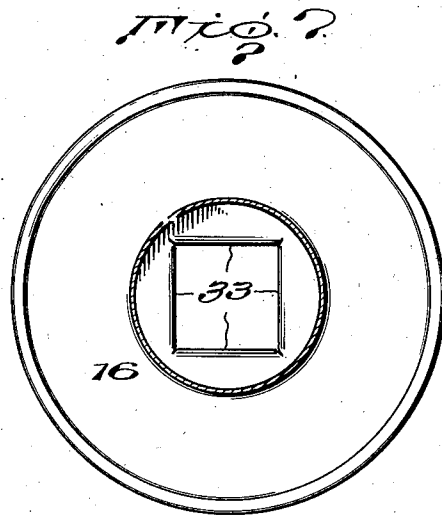
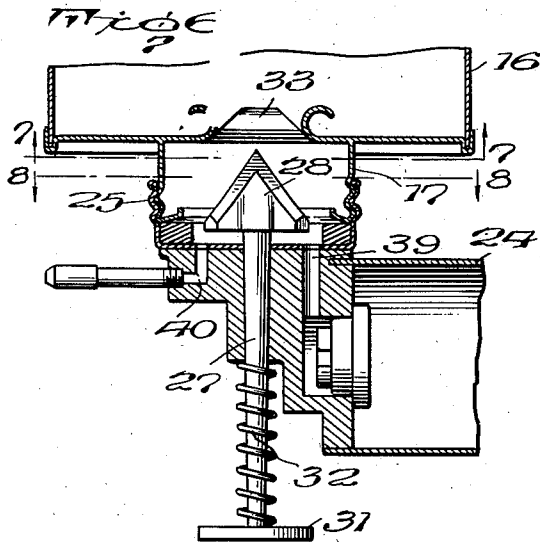
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FIRE EXTINGUISHER

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3 Sheets-Sheet 2



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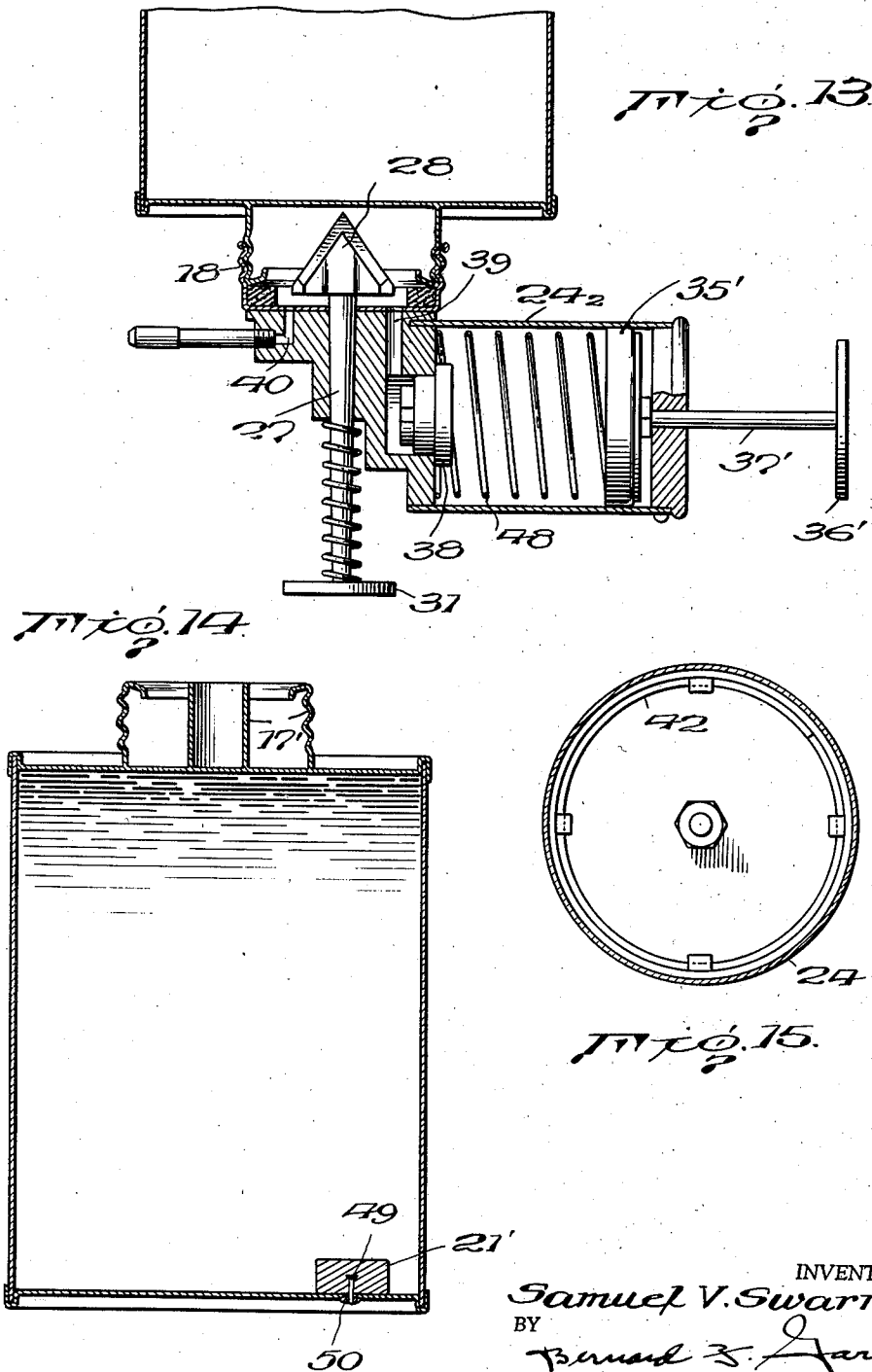
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2,355,483

FIRE EXTINGUISHER

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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,355,483

FIRE EXTINGUISHER

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twenty per cent to Leon L. Eckert and Sue M.
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Application January 8, 1942, Serial No. 426,090

2 Claims. (Cl. 169—33)

The present invention consists of a portable fire extinguisher especially adapted for household and vehicular use, being of a size and construction to permit stowing in a relatively small space in addition to lending itself to facile personal transportation.

It is likewise within the contemplation of this invention to provide a hand pump extinguisher for expelling the fluid under pressure, yet permitting use of the fluid container per se, for automatic dispensing of the fluid by thermal action.

It is also an object of this invention to employ a sealed container for the fire extinguishing fluid which co-acts with a suitable fluid dispensing means, the latter initially functioning to open the container thereby permitting immediate expulsion of the fluid, under action of said means, without the necessity of first removing or adjusting the means.

It is apparent that various other objects will be manifest from the following description of the present preferred forms of the invention taken in connection with the accompanying drawings, wherein

Fig. 1 is a side elevational view of a fire extinguisher constructed in accordance with the present invention;

Fig. 2 is a fragmentary top plan view of the same;

Fig. 3 is a fragmentary vertical sectional view of the fire extinguishing fluid container per se;

Fig. 4 is a fragmentary sectional view of the means employed for puncturing the fluid container and expelling the fluid from the container;

Fig. 5 is a detail fragmentary sectional view of the container and container puncturing and fluid expelling means, shown in engagement before the puncturing means has been withdrawn from the container;

Fig. 6 is a similar view of said container and means after the puncturing means has been withdrawn from the container;

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6, looking in the direction of the arrows, showing the punctured end of the container in end elevation;

Fig. 8 is a similar view taken on the line 8—8 of Fig. 6, looking in the direction of the arrows, showing to advantage the puncturing agent and its associated structure;

Fig. 9 is a perspective view of the puncturing agent per se;

Fig. 10 is a detail fragmentary sectional view of a modified form of container and means for puncturing the latter and expelling its contents;

Fig. 11 is a sectional view taken on the line 11—11 of Fig. 10, looking in the direction of the arrows, showing to advantage the modified punc-

turing agents of the present invention and their associating structure;

Fig. 12 is an elevational view of one of the modified puncturing agents shown in Figs. 10 and 11;

Fig. 13 is a detail fragmentary sectional view of a container and means for puncturing the latter and expelling its contents, the expelling means being a modification of that shown in Figs. 1 to 11;

Fig. 14 is a longitudinal sectional view of a modified form of container as used in the embodiment of invention illustrated in Figs. 10 and 11; and

Fig. 15 is a cross sectional view taken on the line 15—15 of Fig. 4, looking in the direction of the arrows.

In the form of invention illustrated in Figs. 1 to 9 of the drawings, I employ a sealed container 16 which may be of any desired size and shape and constructed of any suitable material. Both ends of the container are closed, the bottom wall having a threaded nipple 17 issuing therefrom, the lower end of which is reversely folded to provide an annular flange 18. The top wall of the container is equipped with a truncated cone 19, the inner end of which communicates with an opening leading through said top wall into the container body. This opening has a fusible plug 20 extending therethrough, the inner end being engaged by a float 21. Said float normally extends across the opening, as illustrated in Fig. 3, to provide, in conjunction with said fusible plug 20, a seal. When the temperature reaches a predetermined degree, the plug melts, thereby permitting the contents to be dispensed by the simple expedient of turning the container upside down, assuming it to be in the position shown in Fig. 1.

The container 16, in addition to being adapted for use per se to automatically expel extinguishing fluid under thermal influence, is adapted to be used in conjunction with suitable means, generally designated 22, employed for successively puncturing the container and expelling the contents thereof under pressure. The means 22 consists of a head 23 and pump 24, the head and pump being preferably fixedly connected in liquid tight relationship. The head 23 includes a screw threaded cap 25 which complements and is adapted for detachable engagement with the threaded nipple 17 of the container 16. The head 23 is provided with a tapered opening 26 in which a tapered shank 27, corresponding to the taper of the opening 26, is slidably mounted. The inner enlarged end of the shank 27 is equipped with a puncturing agent 28, which agent, as shown to advantage in Fig. 9, consists of a plurality of knife-edge flutes 29. In the present instance, I employ four flutes, but this number

may be increased or diminished as found advisable. The flutes converge to a sharp point 30 which is adapted to first penetrate a wall of the container, when pressure is exerted on the puncturing agent, in a manner presently described. The opposite or reduced end of the shank 27 is provided with a hand engaging button 31 upon which pressure may be exerted to force the puncturing agent through the wall of the container 16, in the manner shown in Fig. 5 of the drawings. As soon as pressure is released from the button 31, the puncturing agent is automatically withdrawn from the container, by a coil spring 32 which is convoluted on the shank 27 at a point between the head 23 and button 31. When the expansive force of the spring 32 has been spent, the puncturing agent is in substantially the position shown in Fig. 6 of the drawings.

I have found that in using a puncturing agent as herein shown and described, the wall of the container in being punctured, initially forms four separate segments 33, each of which curls or rolls, as shown to advantage in Fig. 6, thereby insuring free egress of the contents of the container.

By preference, a washer 34 is mounted in the cap 25 adapted for engagement with the flange 18, as illustrated to advantage in Fig. 5, to insure a liquid tight connection.

The pump 24 includes a cylinder having reciprocally mounted therein a piston or plunger 35, the latter being reciprocated by a handle 36 carried by a rod 37. The inner end of the pump 24 is provided with a recess in which a one-way valve 38 is mounted. The recess communicates with an air-inlet passageway 39, the latter opening into the cap 25. The head 23 is also provided with an outlet air passageway 40, one end of which communicates with the cap 25, the opposite end communicating at one end with the bore of a nozzle 41.

The pump or piston 35 may be of any desired design, but I prefer to use backed-leather cups, in each of which is mounted an expansion spring 42, in order to positively urge the cups into engagement with the periphery of the pump 24, insuring instantaneous effective movement of the piston when the pump handle 36 is manipulated.

In use of the form of invention above described, after the means 22 is engaged with the container 16, and the latter punctured, in the manner above described, operation of the pump 24, in a manifest manner, forces air through the opening 39 into the container 16, building up pressure in the latter to force the liquid under pressure through the opening 40 and into the bore of the nozzle 41.

In the modification of this invention illustrated in Figs. 10 to 12 inclusive, a container 16' is used, which is identical in construction with the container 16 except for the improvement of concentric nipples 17', these, in addition to being shown in Figs. 10 and 11, are likewise illustrated to advantage in Fig. 14.

The container puncturing and fluid expelling means 22' of this modification likewise differs from that already described in that two or more container puncturing agents 28' are provided, each of which consists of a tapered shank 27' the working end of each of which is provided with a knife edge 43, which terminates in a sharp point 44. The agents 28' are operated through the head of the means 22' in exactly the same manner as the puncturing agents 28 are operated through the head of the means 22. In use of this

modification, air and fluid openings are formed in the container, being of course much smaller in size than the opening formed by agent 28. The head of the means 22' is provided with fluid passageways 45 and 46 constituting fluid inlet and fluid outlet channels respectively, for the pump 24'. In addition, the head of said means is provided with an air inlet opening 47 which communicates with the container 16'. Each of the passageways is provided with one-way valves of standard construction, operable in a manner well known in the art, for an obvious purpose.

In the modified form of invention shown in Fig. 13, I employ structure identical to that shown in detail in Figs. 4, 5, and 6, of the drawings, except for the pump construction. Here the pump, designated 24² is constructed to have a much shorter throw. With this end in view, a one-cup piston 35' is provided which is normally urged to its outermost position, in a relatively short cylinder, by a helical spring 48. The piston is operated by a handle 36' preferably of discal configuration which is connected to the piston 35' by a rod 37'. By forcing the handle 36' inwardly, against the resistance of the spring 48, pressure is built up in the fluid container, permitting expulsion of the latter from the container under pressure, in the same manner as described for the form of invention illustrated in Figs. 1 to 9 inclusive.

Preferably when the container 16 is to be used per se, the cone 19 is employed in order to concentrate heat on the fusible plug 20. If desired however, the cone may be removed and, as illustrated in Fig. 14, a float 21' employed, in which one end of a pin 49 is mounted. The opposite end of the pin is adapted to project through an opening in the bottom of the container and is secured by a fusible seal 50. As will be apparent, when a predetermined temperature is reached, the fusible seal will be broken, thereby permitting the contents of the container to be dispensed. It is of course understood that although I have shown and described only a single float 29 and its associate structure, a plurality of floats may be used if so desired, each of course engaged over an opening in the container bottom.

Although I have herein described preferred forms of my invention, it is nevertheless to be understood that various changes may be made herein, especially in the details of construction, proportion and arrangement of parts, within the scope of the claims hereto appended.

What is claimed is:

1. A fire extinguisher including a sealed fluid container, means including a pump engaged with a wall of the container and having puncturing means therein operable to produce an opening in said wall to provide communication between the container and pump, and a nozzle carried by the pump through which fluid flowing through said opening is discharged upon operation of said pump.

2. A fire extinguisher including a sealed fluid container, and means for ejecting the contents of said container comprising a unitary structure detachably connected to one wall of the container, said structure comprising puncturing means, pump means and discharge means, said puncturing means opening the wall of the container for flow of fluid from the container into the discharge means for ejection therefrom.

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