

J. B. THOMAS.
FIRE EXTINGUISHER.
APPLICATION FILED MAY 11, 1912.

1,038,026.

Patented Sept. 10, 1912.

Fig. 1.

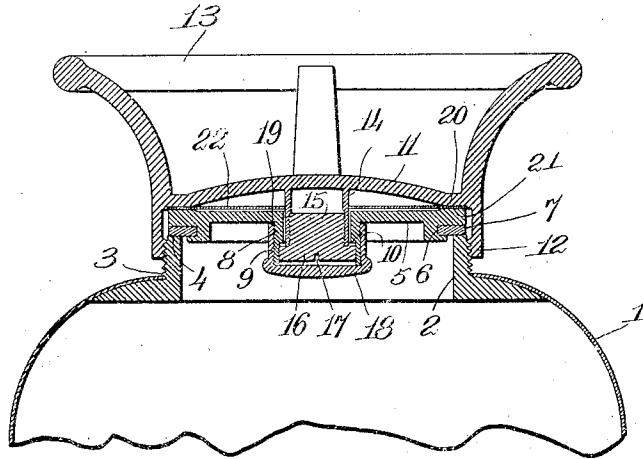


Fig. 2.

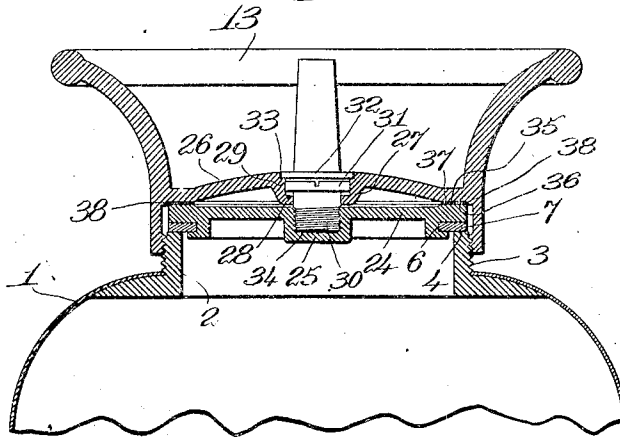


Fig. 3.

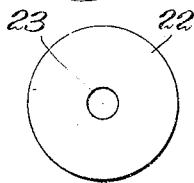
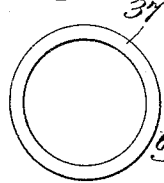


Fig. 4.



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UNITED STATES PATENT OFFICE.

JESSE B. THOMAS, OF BOSTON, MASSACHUSETTS.

FIRE-EXTINGUISHER.

1,038,026.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Application filed May 11, 1912. Serial No. 696,577.

To all whom it may concern:

Be it known that I, JESSE B. THOMAS, a citizen of the United States, and resident of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Fire-Extinguishers, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to fire extinguishers of the type wherein well known chemicals are brought together in a metal canister provided with a removable fluid-tight closure, and the invention relates more particularly to the structure of the closure and the means for connecting the sealing member or cover with the cap.

The cap is adapted for threaded engagement with the neck of the canister, in well known manner, and herein I have connected permanently the cover and the cap so that the said parts may be rotated relatively and also have a limited relative axial movement. Such an arrangement prevents any rotative movement of the cover upon or against the usual packing ring when the canister is being opened or closed, and it also enables the cover to be lifted readily, if it should bind, the lifting of the cover being effected by turning backward the cap after relieving the sealing pressure upon the cover.

In my prior U. S. Patents Nos. 1,019,859 and 1,022,211 I have shown means for connecting the cover and the cap of a fire extinguisher in such manner that a free relative rotation of said parts is permitted, with a limited relative axial movement, and one of the features of my present invention is a simplified structure whereby such movements are permitted, while another object is the provision of means to overcome any tendency of the cover to rotate upon or with relation to the neck of the canister when the cap is rotated to seal the canister or to open it. By eliminating the rotative tendency of the cover at such times I obviate any undesirable rubbing of the packing ring upon the engaging lip or end of the canister neck.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a vertical diametral section and part elevation of the upper portion of

a fire-extinguisher embodying one form of my present invention, the cover being shown in sealing position and held in such position by the cap; Fig. 2 is a similar view of a different form of the connection between the cap and the cover; Figs. 3 and 4 are plan views, on a very much smaller scale, of the friction-reducing member which is loosely interposed between the opposed bearing surfaces of the cover and cap, shown respectively in Figs. 1 and 2.

Referring to Figs. 1 and 2, 1 represents the metallic canister of usual construction, 2 is the upright tubular neck at its open upper end, externally threaded at 3 and forming at its upper end an annular lip 4, all of well known construction.

Referring now to Fig. 1, a circular metal plate 5 constitutes a cover for the canister, said cover having on its under side an annular undercut seat 6 for a suitable packing ring or gasket 7, to contact with the lip 4 when the cover is applied to the canister. The cover has a central, tubular hub 8 projecting from its inner face, externally threaded at 9 and provided with an internal annular shoulder 10. I have shown the circular cap 11 as slightly arched and imperforate, and provided with a depending peripheral flange 12 internally threaded for screwing onto the canister neck, the cap having a usual circular rim 13 to facilitate its application to or removal from the canister. The flange 12 surrounds loosely the edge of the cover, as shown. A tubular, central boss or hub 14 projects from the inner face of the cap and is of such dimensions that it will enter freely the cover hub 8 and will extend a slight distance beyond the shoulder 10. The cap hub 14 is shown as internally threaded to be engaged by the threaded shank 15 of a connecting member having a cylindrical head 16 provided with a suitable nick 17 by which it can be fixedly set into the hub 14. The cap and cover are assembled by inserting the hub 14 into the hub 8 of the cover, and then the connecting member is fixed in the hub 14 with its head 16 projecting laterally opposite the shoulder 10 with a clearance therebetween, as shown, and as the head 16 fits easily in the lower end of the hub 8 the cap and cover are held from relative lateral movement, but one of said parts is freely rotatable relatively to the other part. So, too, while the connecting

member unites them permanently the cap and cover have a limited relative axial movement to the extent of the clearance between the shoulder 10 and the head 16.

5 It is necessary to close fluid tight the cover hub 8, and herein I have shown a cup-like closure 18 internally threaded to screw tightly onto the threaded portion 9 of the hub 8, and in practice said closure will be
10 sweated or otherwise hermetically closed, as by solder at 19, Fig. 1. This arrangement makes the cover 5 fluid tight, so that when it is pressed toward the canister neck 2 the canister will be sealed hermetically, such
15 sealing being effected when the cap 11 is screwed down. I have provided opposed flat and annular bearing surfaces 20, 21 on the cap and cover, respectively, adjacent their peripheries, and instead of permitting
20 said bearing surfaces to directly engage I interpose between them loosely a friction-reducing member, shown in Fig. 3 as a centrally apertured disk 22. This disk is made of thin sheet metal, the central aperture 23
25 fitting loosely around the hub 14 to position the disk laterally. When the cap 11 is turned to move the cover 5 toward the canister neck the pressure is transmitted from the bearing surface 20 to the disk, and the latter
30 transmits the pressure to the bearing surface 21 of the cover, the interposition of the disk obviating any tendency of the cover to rotate with the cap. This is an important feature, for as the cover has no tendency
35 to rotate, either when the cap is screwed down or turned backward, there is no rubbing or abrading action between the packing ring 7 and the lip 4, and thereby the life of the packing ring is increased very
40 materially. The closing pressure of the cap is applied, however, to the cover directly above the lip, to obviate any undue strain upon the cover. Should the packing ring stick on the neck, as it will sometimes, especially
45 if the canister has been sealed for some time, the permanent connection between the cover and the cap enables the cover to be lifted axially when the cap is turned backward to take up the clearance
50 between the head 16 of the connecting member and the shoulder 10. Any continued backward turning of the cap thereafter will exert a powerful lifting action upon the cover in a direct axial line, to unseal the
55 canister, without the use of tools or other extraneous devices.

In the embodiment of my invention illustrated in Fig. 2 the cover 24 is made as an imperforate plate, but provided as before
60 with an undercut seat 6 for the packing ring 7, and said cover has a central, internally threaded central projection 25 projecting from its inner face. The arched cap 26 has projecting from its inner face a central
65 tubular hub 27 provided with internal an-

nular shoulders 28, 29. The connecting member has a threaded shank 30 and a cylindrical head 31, suitably nicked, as before, and the shank of said member is
70 passed loosely through the hub 27 and screwed tightly into the projection 25 of the cover, the head 31 extending laterally opposite the shoulder 28 with a clearance therebetween. To protect the connecting
75 member and prevent any removal thereof a metallic disk-like closure 32 is dropped into the open upper end of the hub 27 and upon the shoulder 29, and said closure is fixed in position in any convenient manner, as for
80 instance by solder at 33. The headed connecting member is preferably fixed permanently in the projection 25 of the cover, and this may be effected conveniently by solder at 34, between the bottom of said projection
85 and the adjacent end of the shank 30. The cover and the cap are thus permanently and securely connected, but said parts are freely rotatable relatively, and they have a limited relative axial movement due to the clearance
90 between the shoulder 28 and the opposed face of the head 31 of the connecting member. Said head fits easily into the bore of the hub 27 between the shoulders 28, 29 thereof and any improper lateral movement
95 of the cap relative to the cover is prevented. Inasmuch as the cover 24 is in this embodiment of my invention imperforate no fluid tight closing of the latter is necessary, as in the construction shown in Fig. 1, but I prefer
100 to close the outer end of the hub 27, to thereby conceal and prevent tampering with the connecting member, and also to give a neat finish to the cap.

In Fig. 2 the cap and cover are provided with opposed flat and annular bearing surfaces 35, 36, adjacent their peripheries, substantially as described with relation to Fig. 1, but instead of the friction reducing disk
105 therein shown I use a thin, flat metal ring 37, which is interposed loosely between the bearing surfaces, and for the purpose hereinbefore set forth. To position said ring 37 and maintain it properly between the bearing surfaces I recess the inner face of the cap, when forming the bearing surface
110 35, to leave a depending annular shoulder 38, which surrounds loosely the periphery of the ring 37 and maintains it in position.

The operation of closing and opening the canister by the structure shown in Fig. 2 is
120 precisely as has been described in detail with relation to the structure illustrated in Fig. 1, and will be fully understood without further explanation.

Changes or modifications in details of
125 construction and arrangement may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims appended hereto.

Having fully described my invention, 130

what I claim as new and desire to secure by Letters Patent is:

1. In a fire-extinguisher, a canister having a tubular neck, a cover, cooperating sealing means on the cover and neck, respectively, a cap having a depending peripheral flange adapted for threaded engagement with the neck, said cap being adapted to depress the cover and effect sealing of the canister, a permanent connection between the cap and cover comprising an internally shouldered central hub on one, and a headed connecting member having threaded engagement with the other of said parts and extended into the hub, the head of said member extending laterally opposite the shoulder of the hub with a clearance therebetween, and a permanent closure for the open end of the hub adjacent the head of the connecting member, the latter permitting free relative rotation of the cap and cover and limited relative axial movement thereof.

2. In a fire-extinguisher, a canister having a tubular neck, a cover, a cap having threaded engagement with the neck and adapted to force the cover toward the canister neck to seal the same, a central, permanent connection between said cap and cover comprising a central, internally shouldered hub on one, and a headed connecting member permanently attached to the other, of said parts and extended loosely into the hub, the head of said member extending laterally opposite the shoulder with a clearance therebetween, and means to close the open end of the hub adjacent the head of the connecting member, said member permitting free relative rotation of the cap and cover and limited axial movement thereof, combined with a metallic friction-reducing member interposed loosely between the opposed portions of the cap and cover adjacent their peripheries, whereby when

the cap is rotated the tendency of the cover to rotate is obviated.

3. In a fire-extinguisher, a canister having a tubular neck, a cover having a depending central hub provided with an internal annular shoulder, an imperforate cap having threaded engagement with the neck and adapted to force the cover toward the neck to seal the canister, a central, tubular hub depending from the cap and extended rotatably into the cover hub, a connecting member fixed in the inner end of said cap hub and having a head extended laterally below the shoulder in the cover hub with a clearance therebetween, whereby the cap and cover have a limited relative axial movement and are rotatable freely relatively to each other, and a fluid-tight closure for the inner end of the cover hub adjacent the head of the connecting member.

4. In a fire-extinguisher, a canister having a tubular neck, a cover having a depending central hub provided with an internal annular shoulder, an imperforate cap having threaded engagement with the neck and adapted to force the cover toward the neck to seal the canister, a tubular, internally threaded hub depending centrally from the cap and extended rotatably into the cover hub, a connecting member screwed into the inner end of the cap hub and having a cylindrical head extended laterally adjacent the shoulder of the hub with a clearance therebetween, to permit limited relative axial movement of the cap and cover, and a closure for the inner end of the hub to close the same fluid tight.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JESSE B. THOMAS.

Witnesses:

JOHN C. EDWARDS,
FREDERICK S. GREENLEAF.