

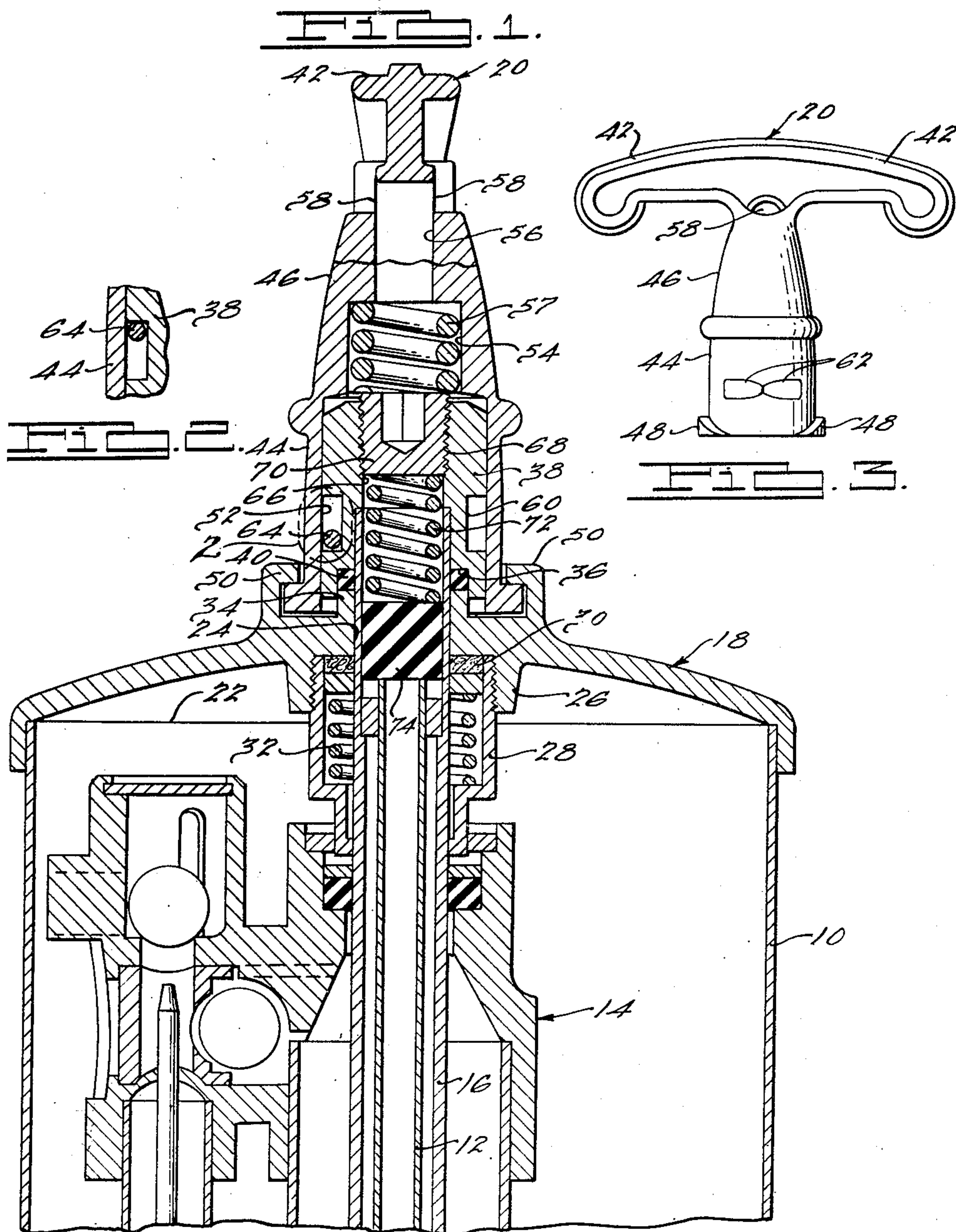
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**FIRE EXTINGUISHER**

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## FIRE EXTINGUISHER

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The present invention relates to fire extinguishers and, more particularly, relates to small portable, hand operated extinguishers of the type commonly sold in one to two quart sizes and which are frequently charged with carbon tetrachloride type fire extinguishing fluid. The present invention has particular relation to the provision of an improved handle construction including improved means connecting the handle to the piston tube.

It is an object of the present invention to provide an improved fire extinguisher of the above mentioned type which is simple in design, economical of manufacture, and reliable and efficient in operation.

Other and more detailed objects of the present invention will be appreciated from a consideration of the following specification, the appended claims, and the accompanying drawing wherein:

Figure 1 is a broken sectional view of a fire extinguisher constructed according to one form of the present invention showing the upper portion of the handle rotated 90° relative to the lower portion;

Figure 2 is a broken enlarged sectional view of that portion of the structure illustrated in Figure 1 indicated by the circle 2, and showing another relative position of the parts; and,

Figure 3 is an elevational view of the handle illustrated in Figure 1.

Referring to the drawing, the fire extinguisher there illustrated generally comprises a cylindrical tank 10 in which is mounted a centrally disposed discharge tube 12 through which the fire extinguishing fluid within the casing 10 is discharged by operation of the pumping mechanism generally indicated at 14 which is actuated by reciprocating the piston tube 16 which extends outwardly through a cover 18 and is connected to a handle generally indicated at 20. It will, of course, be appreciated that the pumping mechanism may be of any suitable construction and that only the upper portion of a conventional mechanism is shown in the drawing.

The open upper end 22 of the casing 10 receives the cover 18 which is shaped to closely fit the casing 10 and provide an annular seal between the cover 18 and the casing 10. The cover 18 also defines a centrally disposed cylindrical aperture 24 extending therethrough, and an inwardly extending boss 26 which is internally threaded to receive the upper end of a spring housing 28. The piston tube 16 is slidably received in the aperture 24. A seal between the piston tube 16 and the cover 18 is provided by an annular packing 30 which is maintained under pressure by a spring 32 disposed in the spring housing 28.

In the preferred embodiment illustrated, the cover 18 also defines an annular flange 34 extending outwardly along the piston tube 16 in sliding engagement therewith. This flange 34 extends into an annular recess 36 defined by a cylindrical member 38 fixed on the upper end of the piston tube 16. An annular seal 40 is received in the recess 36 and compressed therein by the flange 34 when the handle 20 is in the position illustrated in Figure 1 of the drawing.

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The handle 20 is generally T-shaped, including cross portions 42 adapted to be gripped by the hand, and a shank portion the lower end portion 44 of which, as viewed in the drawing, is generally cylindrical and is connected to the hand grip portions 42 by an intermediate shank portion 46 which tapers upwardly to a minimum diameter at the point of connection to the hand grip portions 42. As viewed in the drawing, the cylindrical portion 44 is provided with cam projections 48 disposed at diametrically opposite sides thereof and adapted to engage spaced projections 50 integrally formed on the cover 18, for releasably locking the handle 20 against movement relative to the cover 18.

The cylindrical handle portion 44 has a cylindrical recess or bore 52 which receives the cylindrical member 38 therein for sliding movement longitudinally thereof. The tapered handle portion 46 defines a reduced cylindrical bore 54 extending inwardly from the bore 52 and in which is housed a spring 57, the upper end of which seats against the handle 20 and the lower end of which engages the cylindrical member 38 to urge it outwardly of the bore 52 or downwardly as viewed in the drawing. The tapered handle portion 46 also defines a further reduced bore portion 56 extending inwardly from the intermediate bore portion 54, or upwardly therefrom as viewed in the drawing, and the upper end of which communicates with apertures 58 at opposite sides of the handle 20, venting the bore portions 56 and 54 and the portion of the bore 52 above the cylindrical member 38.

The outer surface of the member 38 is generally cylindrical and is formed to provide an annular recess 60. The generally cylindrical shank portion 44 of the handle 20 has a pair of outwardly projecting bosses 62 through which is drilled an aperture receiving a transversely extending pin 64, the intermediate portion of which is disposed within the annular recess 60, as illustrated in Figure 1, for providing a lost motion connection between the member 38 and the handle 20. It will be appreciated that upon rotation of the handle 20 to disengage the cam projections 48 on the handle from the co-operating projections 50 formed on the cover 18, the spring 57 will move the member 38 outwardly, or downwardly, as viewed in the drawings, relative to the handle 20, to a limiting position illustrated in Figure 2 in which the pin 64 engages the member 38 at the upper side of the annular recess 60 to prevent further movement of the member 38 outwardly of the bore 54. As illustrated in Figure 1, the parts are so proportioned that the seal 40 is compressed between the flange 34, on the cover 18, and the member 38 at the inner end of the annular recess 36 in which the seal is mounted, prior to movement of the member 38 inwardly of the bores 52 to a position in which the pin 64 would engage the member 38 at the lower side of the recess 60. Accordingly, with the parts in the position illustrated, the spring 57 is effective to hold the seal 40 under compression.

The annular member 38 has a centrally disposed bore 66 continuous with the internal diameter of the piston tube 16 and the upper portion thereof, as illustrated in the drawing, is threaded as indicated at 68 to receive a plug 70 which engages the upper end of a spring 72 disposed within the bore 66 and the piston tube 16, and the lower end of which engages a seal 74 slidable along the piston tube 16 for engaging and closing the upper end of the discharge tube 12.

During operation of the fire extinguisher by reciprocation of the piston tube 16 by means of the handle 20, fire extinguishing fluid within the casing 10 is drawn into the piston tube 16 in a conventional manner and forced outwardly through the discharge tube 12. When the handle 20 is returned to the nonoperating position illustrated in the drawing, in which it is locked against movement



relative to the cover 18, the seal 40 is gripped between the cover 18 and the handle 20 by the action of the spring 56 as above described, and the spring 72 holds the seal 74 in sealing engagement with the upper end of the discharge tube 12.

It will be appreciated that in the simplified and improved construction of the present invention, the single member 38 which is fixed to the upper end of the piston tube 16 co-operates with the cover 18 to grip the sealing ring 40 therebetween. This same member 38 also co-operates with the pin 64 to provide a lost motion connection with the handle 20, and supports the upper end of the spring 72 through the plug 70 threadedly mounted in the upper end of the member 38.

While only one specific embodiment of the invention has been illustrated and described in detail, it will be readily appreciated by those skilled in the art that numerous modifications and changes may be made without departing from the spirit of the present invention.

What is claimed is:

1. A fire extinguisher comprising a tank having a discharge tube, closure means at one end of said tank defining an opening communicating with the interior of said tank, pumping means disposed within said tank and including a piston tube coaxial with and telescopically fitting over said discharge tube, said piston tube extending through said opening and being longitudinally reciprocable for effecting operation of said pumping means, a seal encircling said piston tube externally of said closure means, a handle, co-operating means on said handle and said closure means for releasably locking the former to the latter, a member fixed to said piston tube, means providing a lost motion connection between said member and said handle, a spring engaging said handle and said member and effective when said handle is locked to said closure means to urge said member toward said closure means to grip said seal therebetween.

2. A fire extinguisher comprising a tank having a discharge tube, closure means at one end of said tank defining an opening communicating with the interior of said tank, pumping means disposed within said tank and including a piston tube coaxial with and telescopically fitting over said discharge tube, said piston tube extending through said opening and being longitudinally reciprocable for effecting operation of said pumping means, a seal encircling said piston tube externally of said closure means, a handle having an enlarged generally cylindrical portion having a bore therein, co-operating means on said portion of said handle and said closure means for releasably locking said handle to said closure means, a member disposed in said bore and fixed to said piston tube, co-operating means on said handle portion and said member disposed adjacent said first named means on said portion

of said handle and providing a lost motion connection between said handle and said member, a spring in said handle inwardly of said member engaging said handle and said member and effective when said handle is locked to said closure means to urge said member toward said closure means to grip said seal therebetween.

3. A fire extinguisher as defined in claim 2 wherein said second named co-operating means comprises means defining an annular recess in said member and a pin mounted in said portion of said handle and extending into said recess.

4. A fire extinguisher as defined in claim 1 wherein said handle has an enlarged generally cylindrical portion having a bore therein, said co-operating means is in part on said portion of said handle, said member is disposed in said bore, said lost motion connection means includes co-operating means on said handle portion and said member disposed adjacent said part of said co-operating means on said handle portion, and said spring is disposed within said bore inwardly of said member, and including a second seal mounted in said piston tube adapted to engage and seal the upper end of said discharge tube, and a spring disposed within said piston tube and acting between said member and said second seal to urge the latter toward said discharge tube.

5. A fire extinguisher as defined in claim 1 wherein said handle has an enlarged generally cylindrical portion having a bore therein, said co-operating means is in part on said portion of said handle, said member is disposed in said bore, said lost motion connection means includes co-operating means on said handle portion and said member disposed adjacent said part of said co-operating means on said handle portion, and said spring is disposed within said bore inwardly of said member, and including a second seal mounted in said piston tube adapted to engage and seal the upper end of said discharge tube, a spring disposed within said piston tube and acting between said member and said second seal to urge the latter toward said discharge tube, and a plug threadedly mounted in said member in coaxial relation with said piston tube, one end of said last named spring engaging said second seal and the other end of said last named spring engaging said plug.

6. A fire extinguisher as defined in claim 2 wherein said handle has an aperture communicating with the portion of said bore inwardly of said member for venting said bore portion.

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