

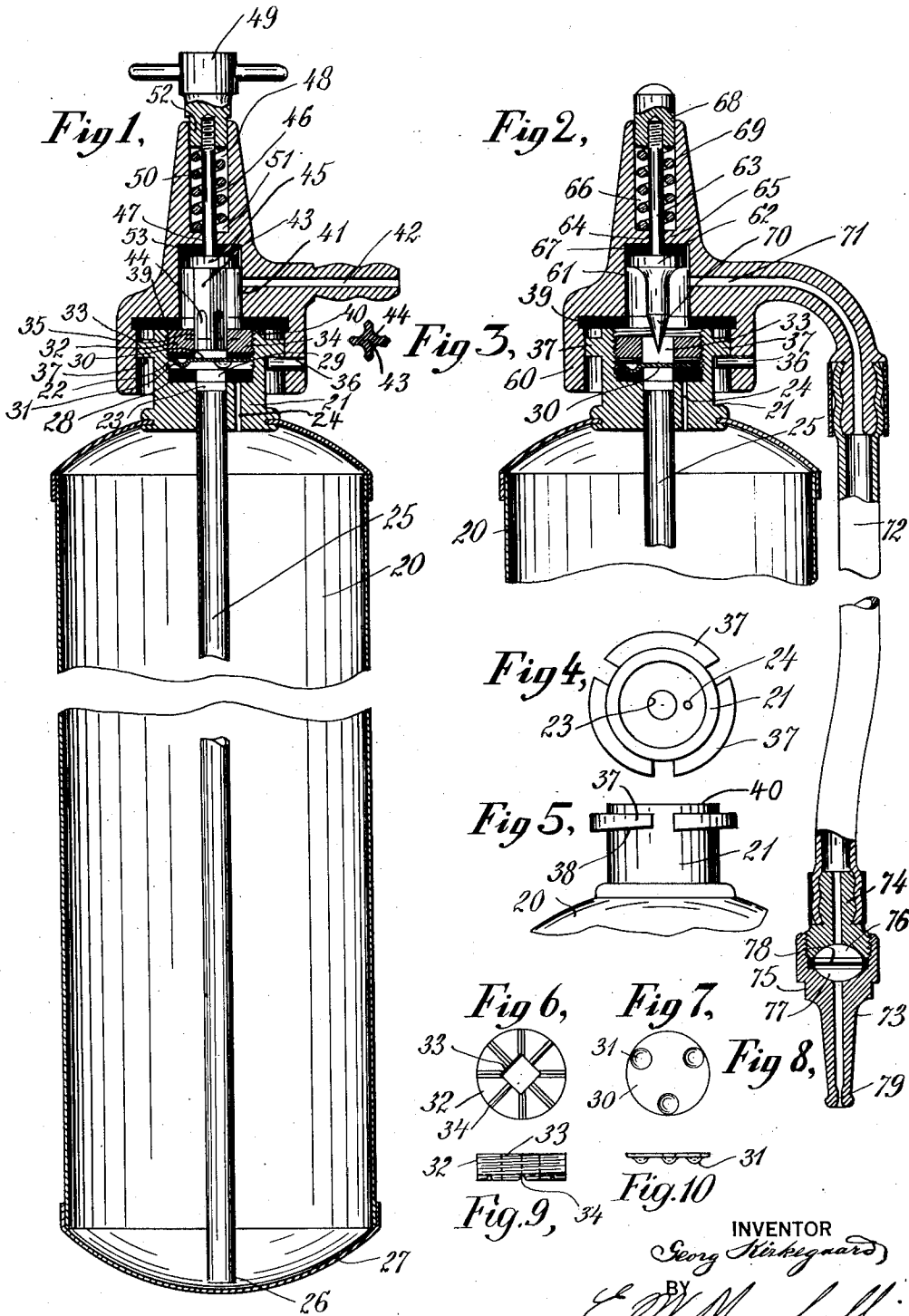
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DISPENSING DEVICE

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DISPENSING DEVICE.

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This invention relates to dispensing devices; and more particularly to devices such as those used as fire extinguishers or for spraying or dispensing liquids under pressure.

In dispensing devices of the type in connection with which my invention has been developed a liquid is contained in the receptacle and is forced out when released by means of pressure exerted by a compressed fluid such as compressed air. It will be understood that in such devices the discharging orifice must be very effectively sealed to prevent the escape of the compressed fluid or liquid. Furthermore, means must be provided for charging the receptacle with the compressed air and for effectively sealing the receptacle after the charge has been completed without permitting the compressed fluid or liquid to escape.

With these problems in mind, one of the objects of the invention is to provide simple and effective sealing means for a dispensing device.

Another object of the invention is to provide simple and easily operable means whereby the receptacle may be charged with compressed fluid such as air.

Another object of the invention is to provide simple and easily operable discharge control means, this control means being so constructed and arranged that it will not interfere with the proper directing of the stream from the receptacle.

Another object of the invention is to provide means for insuring the complete discharge of the liquid in the receptacle.

Another object of the invention is to provide charging and discharging means that may be easily and quickly attached to and detached from the receptacle.

Another object of the invention is to provide means for insuring a constant and steady flow of liquid from the receptacle and to prevent the stream from becoming clogged or stopped by foreign matter.

Another object of the invention is to provide a dispensing device and charging and discharging attachments therefor that will be simple in construction, comprise few parts, may be economically manufactured and may be easily and quickly operated.

Further objects will appear from the following specification taken in connection

with the drawing which forms a part of this application and in which;

Fig. 1 is a sectional elevation of a dispensing device constructed in accordance with my invention and having the charging means connected thereto.

Fig. 2 is a sectional elevation of the upper end of the receptacle shown in Fig. 1 having the discharging attachment connected thereto.

Fig. 3 is a transverse sectional view of the means carried by the charging attachment for rotating the sealing actuating member.

Fig. 4 is a top plan view of the receptacle showing the construction of the neck.

Fig. 5 is an elevation of the upper end of the receptacle and neck.

Fig. 6 is a bottom plan view of the plug which actuates and retains the sealing disc in sealing position.

Fig. 7 is a bottom plan view of the sealing disc.

Fig. 8 is a sectional elevation of the nozzle.

Fig. 9 is the side elevation of the construction shown in Fig. 6, and

Fig. 10 is the side elevation of the disc shown in Fig. 7.

The invention briefly described comprises a receptacle having means for conducting the liquid to and from the bottom thereof and having a neck extending outwardly from one end thereof. The neck is apertured to receive the liquid conducting means referred to and is recessed to receive a sealing member by means of which the opening through the neck may be closed. Means is provided for actuating or moving the sealing member to sealing position and for retaining the member in that position. Charging means in the form of a charging attachment is provided and is adapted to be coupled to the neck and has a conduit for conducting the compressed fluid such as air to the neck opening. This attachment also has means whereby the sealing member actuating means may be actuated to effect the sealing of the neck opening.

These parts are so constructed and arranged that the sealing disc may be assembled with the other parts before the charging attachment is coupled to the neck, but in such a manner that the sealing member will not prevent the passage of the compressed air into the receptacle.

A discharging attachment is also provided and this attachment may be coupled to the neck of the receptacle and has means for piercing or breaking the sealing member and for conducting and accurately directing the stream discharged from the receptacle. The discharge conduit also has means for insuring a steady and constant flow of liquid and for preventing the interruption of this flow by foreign matter.

Referring now to the drawings there is shown an elongated receptacle 20 having a neck 21 formed thereon or secured thereto and projecting outwardly from one end. The neck 21 has formed therein a recess 22 which communicates with an opening 23 and the opening leads into the receptacle. The neck also has a small opening 24 which extends from the interior of the receptacle to the recess 22 and forms an air vent for permitting the escape of air from the receptacle when the receptacle is receiving the liquid.

As will be hereinafter described the liquid in this type of dispensing device is forced out by pressure exerted on the surface of the liquid and in order to insure the complete discharge of the receptacle a conduit 25 is secured in the opening 23 and extends as shown at 26 to a position adjacent the closed end 27 of the receptacle.

A washer 28 of elastic material, such as rubber, is inserted in the bottom of the recess 22 and has an aperture 29 registering with the opening 23 in the neck.

For the purpose of sealing the neck discharge opening a flat disc 30, having a diameter slightly less than the diameter of the recess, is inserted in this recess above the washer 28. The disc 30 has downwardly projecting portions 31 preferably pressed out of the material of the disc and these portions 31 engage the upper surface of the washer 28 and hold the disc in spaced relation with respect to the washer when the parts are assembled and before the disc is moved to sealing position.

In order to move the disc to sealing position and to retain it in that position a threaded plug 32 is inserted in the recess 22, the latter being also threaded to receive the plug. The plug 32 has a central aperture 33 preferably square in cross section for a purpose hereinafter described. The plug also has a plurality of radial grooves 34 on its under surface communicating with the aperture 33 and extending to the periphery of the plug.

I will next describe the charging attachment. This attachment comprises a socket 35 which is adapted to be placed over the neck 21 and is provided with inwardly projecting pins 36 which coact with cams 37 formed on the neck 21 in retaining the socket in engagement with the neck. As

shown particularly in Fig. 4 the cams 37 are spaced apart to permit the passage of the pins 36 between the cams and these cams have inclined under surfaces 38.

A packing member 39 preferably of rubber is inserted in the inner end of the socket 35 and when the charging attachment is placed over the neck and rotated so that the pins 36 will engage the cams 37, the attachment and socket with the packing will be forced into tight engagement with the outer end 40 of the neck, thereby preventing any escape of the compressed air.

The charging attachment has formed therein a recess 41 which communicates with the recess in the socket 35 and the attachment also has a laterally extending conduit 42 communicating with the recess 41.

In order to control and rotate the plug 32 when the receptacle has been charged with compressed air or fluid, the charging attachment is provided with a stud 43 square in cross section and corresponding in section to the square aperture 33 in the plug 32. The end of this stud also has a plurality of longitudinal grooves 44 for permitting the passage of air through the plug 32. A disc 45 is secured to the opposite end of the stud and a stem 46 is secured to the disc and extends through an opening 47 and a recess 48 formed in the discharging attachment. A handle 49 is secured to the free end of the stem 46 and a spring 50 is mounted in the recess 48 and engages at one end a wall 51 of the charging attachment and at its opposite end a portion 52 of the handle. This spring retains the disc 45 in tight engagement with a washer 53 which is positioned between the disc and one side of the wall 51 through which the stem 46 extends. The washer, therefore, effectively prevents air from escaping from the charging attachment through the opening 47.

The operation of the charging attachment will now be briefly described. The parts are assembled in the manner shown in Fig. 1 and the source of supply of compressed air is connected to the conduit 42. The air then enters through this conduit and passes through the recess 41 and grooves 44, opening 33 and grooves 34 and plug 32 around the disc 30 and through the opening 23 and conduit 25 in to the receptacle. When a sufficient charge has been received, the operator by turning the handle 49 rotates the plug 32, thereby forcing the sealing disc 30 into sealing engagement with the rubber washer 28, this position being shown in Fig. 2.

Referring to Fig. 2, I will now describe the discharging attachment. This attachment comprises a socket 60 which corresponds to socket 35 of the charging attachment shown in Fig. 1 and is coupled to the neck 21 in the same manner as the socket 35. The discharging attachment also has a

recess 61 corresponding to the recess 41 in Fig. 1. A disc 62 is positioned in the recess 61 and has secured thereto a stem 63 which extends through an opening 64 located in a wall 65 between the recess 61 and an oppositely extending recess 66. A washer 67 preferably of rubber or some equivalent material is seated at the inner end of the recess 61 and between the disc 62 and the wall 65. A button 68 is secured to the free end of the stem 63 and a spring 69 surrounds the stem and is positioned between the button and the inner end of the recess 66. The spring, therefore, exerts an outward pressure on the button which is communicated to the stem and to the disc 62. This pressure forces the disc 62 against the washer 67 pressing the washer against the inner end of the recess 61, thereby preventing any escape of the compressed air or liquid through the opening 64.

For the purpose of piercing or breaking the sealing plate 30, a spike 70 is secured to or formed integral with the disc 62 and extends downwardly in alignment with the opening 33 in the plug 32. A conduit 71 communicates with the recess 61 and a flexible hose 72 connects the conduit 71 with a nozzle 73.

The nozzle 73 comprises two parts, 74 and 75, which are shown in Fig. 8 as screw-threaded. The member 74 is concaved as shown at 76 and the member 75 has a concaved registering portion 77. These two concaved portions form a reservoir for the liquid being discharged.

In order to interrupt the passage of any foreign matter through the nozzle, a screen 78 is interposed between the sections 74 and 75 of the nozzle and this screen as shown in Fig. 8 is positioned within the reservoir formed by the concaved portions 76 and 77. When the device is used as a fire extinguisher or for spraying, it is, of course, desirable that the stream be scattered or spread as it issues from the nozzle and for this purpose the outlet end of the nozzle is reduced in section as shown at 79. Because of this small cross section it is very desirable that any foreign matter in the stream be stopped before reaching the outlet 79 and this object is effectively attained by means of the screen 78. The screen also assists in insuring and maintaining a steady and constant flow of liquid through the nozzle.

The operation of the discharging attachment will now be briefly set forth. With the nozzle in place as shown in Fig. 2 the operator to break the seal merely strikes a sudden blow on the button 68, whereupon the sealing disc 30 will be pierced. The compressed fluid or air within the receptacle will then force the liquid out through the conduit 25 through the opening 33 in the plug through the recess 61 and conduit 71, flex-

ible hose 72 and nozzle 73. Particular attention is directed to the fact that after the sealing plate has been pierced or punctured the operator's entire attention can be given to the proper direction of the stream and in the case of fire extinguishers this, of course, is very important. The particular construction illustrated in the drawings has been designed for use as a fire extinguisher, but it will be obvious that the device can be equally well used for spraying trees or shrubs or for any other use in which liquid is to be discharged by pressure.

Furthermore, although one specific embodiment of the invention has been illustrated and described it will be understood that the invention is capable of modification and that changes in the construction and in the arrangement of the various cooperating parts may be made without departing from the spirit or scope of the invention as expressed in the following claims.

What is claimed is:

1. In combination, a receptacle having a neck, said neck having an opening, a sealing disc in said neck and adapted to seal the opening, a member having an opening registering with the opening in the neck and adapted to cooperate with the disc to seal the opening in the neck and means for normally positioning the disc out of sealing relation with respect to said member.

2. In combination, a receptacle having a neck, said neck having an opening, a sealing disc in said neck and adapted to seal the opening, a member having an opening registering with the opening in the neck and adapted to cooperate with the disc to seal the opening in the neck, means for normally positioning the disc out of sealing relation with respect to said member and means for moving the disc into sealing engagement with said member.

3. Sealing means for a receptacle discharging orifice comprising a disc, a member adapted to coact therewith to effect a seal, means on the disc for holding the disc in sealed relation to the coacting member and a threaded member engaging said disc for moving the disc into sealing engagement with the coacting member.

4. In combination, a receptacle having a neck with an opening therethrough, a packing member surrounding the opening, a sealing disc adapted to coact with said member to seal the opening and means normally holding the sealing disc in spaced relation with respect to the packing member and means for moving the disc into sealing engagement with said member.

5. In combination, a receptacle having a neck with an opening therethrough, a packing member surrounding the opening, a sealing disc adapted to coact with said member to seal the opening and means on the disc

normally holding the sealing disc in spaced relation with respect to the packing member and means for moving the disc into sealing engagement with said member.

- 5 6. In combination, a receptacle having a neck with an opening therethrough, a packing member surrounding the opening, a sealing disc adapted to coact with said member to seal the opening, and lugs on the disc for
10 normally holding the sealing disc in spaced relation with respect to the packing member and means for moving the disc into sealing engagement with said member.

- 15 7. In combination, a receptacle having an opening, a packing ring surrounding the opening, a sealing disc mounted on said ring, means for holding the disc in spaced

relation with respect to said ring and an apertured threaded plug for moving the disc into sealing position on said ring. 20

8. In combination, a receptacle having an opening, a packing ring around said opening, a sealing disc mounted on said ring and having projecting portions to retain said disc spaced from the ring, said disc having a 25 smaller diameter than the diameter of the opening, a threaded plug for moving the disc to sealing position on said ring, said plug having an opening therethrough and having grooves from said opening to the 30 periphery of the plug.

In witness whereof, I have hereunto set my hand this 26th day of August, 1921.

GEORG KIRKEGAARD.