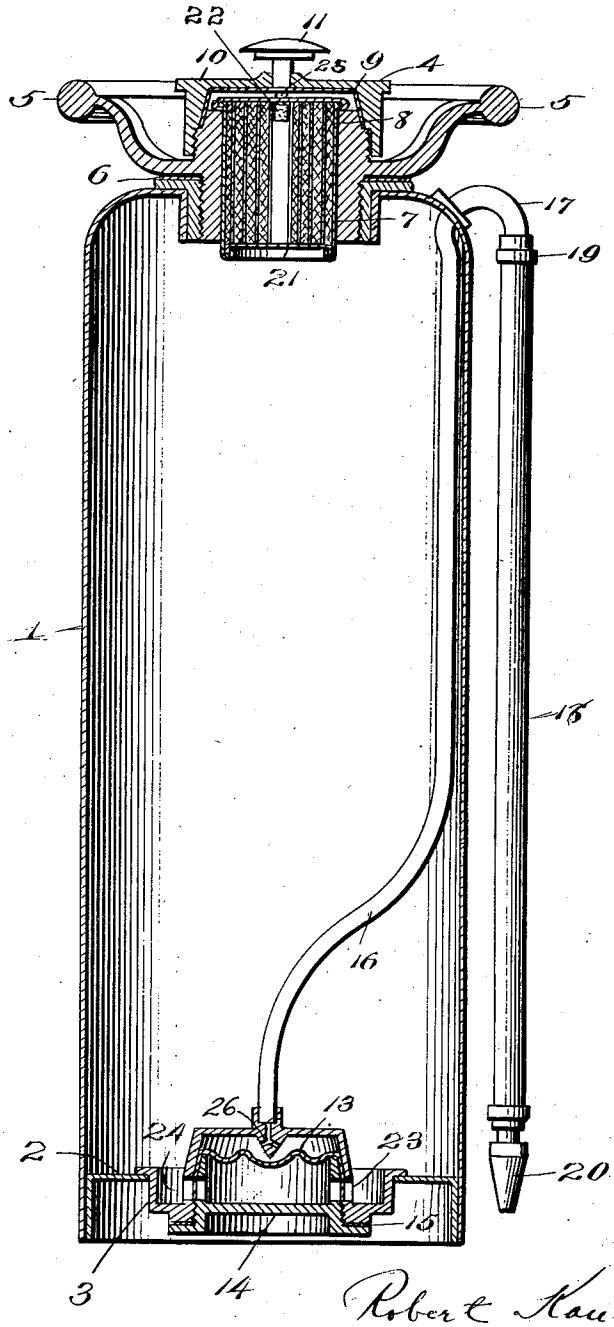
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PYROTECHNIC FIRE EXTINGUISHER

Filed March 21, 1923



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PYROTECHNIC FIRE EXTINGUISHER.

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This invention relates to pyrotechnic fire extinguishers, the broad object in view being to provide a fire extinguisher of the class referred to which may be conveniently mounted upon a wall or other vertical support, and which is of large capacity, enabling two and one-half gallons more or less, of soap foam, soda water or other fire extinguishing fluid or liquid to be expelled therefrom without the necessity of upsetting or inverting the fire extinguisher as a whole.

With the above and other objects in view the invention consists in the novel construction, combination and arrangement herein fully described, shown and claimed.

The accompanying drawing represents a vertical diametrical section through the improved fire extinguisher.

In the preferred and illustrated embodiment of the invention, the fire extinguisher comprises a hollow, cylindrical shell 1, constructed of sheet metal such as brass. A formed sheet metal bottom 2 is brazed into the lower end of the shell or container 1 and carries or has brazed thereto, a bottom thread adapter 3. Brazed or otherwise secured in the upper end of the shell 1 is an upper thread adapter 4. A hand wheel 5 is firmly screwed in the upper adapter and an airtight joint is maintained by the use of a leather washer or gasket 6 clamped between said wheel and thread adapter.

The hand wheel 5 is constructed in such a way as to provide a large central bore into which is tightly inserted a thin metal shell 7 which contains a slow burning fuselike charge. To this end a strip or tape of asbestos paper indicated at 8 is spirally wound upon itself and coated with a slow burning powder. An airtight joint is maintained upon this part of the mechanism by the use of a thin copper diaphragm 9 which is held in place by a locknut 10, the peripheral portion of said diaphragm being firmly clamped between tapered faces of the wheel and locknut as shown. The nut 10 also has a central opening through which passes the stem of the firing knob 11. The firing pin 25 of the mechanism is carried upon the inner face of the diaphragm 9, so as to come in contact with a primer 22 arranged in the upper end of an axial opening extending through the pyrotechnic device 8.

Referring now to the lower portion of the drawing, it will be observed that an airtight seal is maintained by a thin metal diaphragm 13 which is formed with concentric corrugations as shown to make the same readily deformable under pressure. The diaphragm 13 is clamped in place by a lower locknut 14 which seats against a leather washer or gasket 15. A copper tube 16 has the lower end thereof sweated into the lower thread adapter 3 and the upper end thereof united to a hose fitting 17 which extends through the upper part of the shell 1 and receives a flexible service hose 18 fastened to the fitting 17 by an ordinary hose clamp 19 and carrying at its free end a nozzle 20.

Due to the fact that the volume contained in such fire extinguisher is very large, it is necessary to provide means for generating pressure as the liquid is expelled from the container. This is accomplished by heavily coating asbestos paper with a slow burning powder mixture. A strip of such paper is rolled upon itself in such a way as to form a practically solid section as shown in the upper part of the drawing. This powder charge is contained in the brass shell 7 which is sealed against moisture by a thin lead diaphragm 21 at the inner end thereof.

The operation of the device is as follows:

The primer 22 is discharged by the firing pin 25 on the diaphragm 9. This action causes a rupture of the center of the thin lead diaphragm 21 and at the same time ignites the compressed powder charge along its inner surface. The powder will then burn spirally upward in much the same manner as a time fuse. The arrangement described allows any desired burning time to be obtained by variation in the thickness of the powder coating on the asbestos paper.

In case of fire the apparatus is taken down from the wall, carried to the location of the fire, a sharp blow is delivered upon the knob 11, which depresses the diaphragm 9 and causes the firing pin 25 to fire the primer 22. This ignites the powder charge and blows a hole through the diaphragm 21. This action generates pressure in the shell or container 1. This pressure is transmitted by the fire extinguishing agent through ports 23 and 24 leading into the bottom adapter, the interior of which forms an outlet chamber. Pressure against the corrugated diaphragm 13 causes distortion of said diaphragm and forces the same against the sharp projecting point of an outlet nozzle which faces toward said dia-

phragm. This action not only punctures the diaphragm 13 but brings it into such a position as to permit the liquid to be forced out through one or more holes or passages 26 in the nozzle. The liquid is then free to flow through the copper tube 16 and the hose fitting 17 and hose 18 to and from the nozzle of the hose upon the fire.

The construction above described has the advantage over fire extinguishers of the type now in use, of enabling the same to be operated without upsetting or inverting in order to throw the stream on the fire. This operation which is necessary in the conventional type, not only brings the fire extinguisher into an awkward position but also shortens the effective length of the hose 18. The mechanism described has the added advantage of being able to expel the fire extinguishing agent in its pure state. This is impossible with a conventional type because of the fact that acid or other chemicals or materials are deposited in the fire extinguishing material in order to generate pressure to expel such fire extinguishing material. This arrangement causes a mixture of fire extinguishing liquids and acids to be thrown upon the fire, causing much damage to adjacent objects not on fire.

We claim:—

1. In a fire extinguisher, a container for the fire extinguishing agent having a discharge outlet, means for generating pressure within said container consisting of a slow burning powder charge, a sealing diaphragm for said charge, firing means for said charge including a primer for igniting the charge and rupturing said diaphragm, an outlet chamber in communication with said container, a deformable diaphragm in said chamber and an outlet nozzle facing said diaphragm and having a pointed portion adapted to pierce said diaphragm when the latter is bulged by internal pressure in the container.

2. In a fire extinguisher, a container for the fire extinguishing agent having an outlet, means for generating pressure within said container consisting of a slow burning powder charge, a diaphragm for sealing said charge from the outside atmosphere, a firing projection on the inner face of said diaphragm and means to force the firing projection against the primer of the charge, an outlet chamber in communication with said container, a deformable diaphragm in said chamber and an outlet nozzle facing said diaphragm and having a pointed portion adapted to pierce said diaphragm when the latter is bulged by internal pressure in the container.

In testimony whereof we affix our signatures.

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