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DISPENSING APPARATUS

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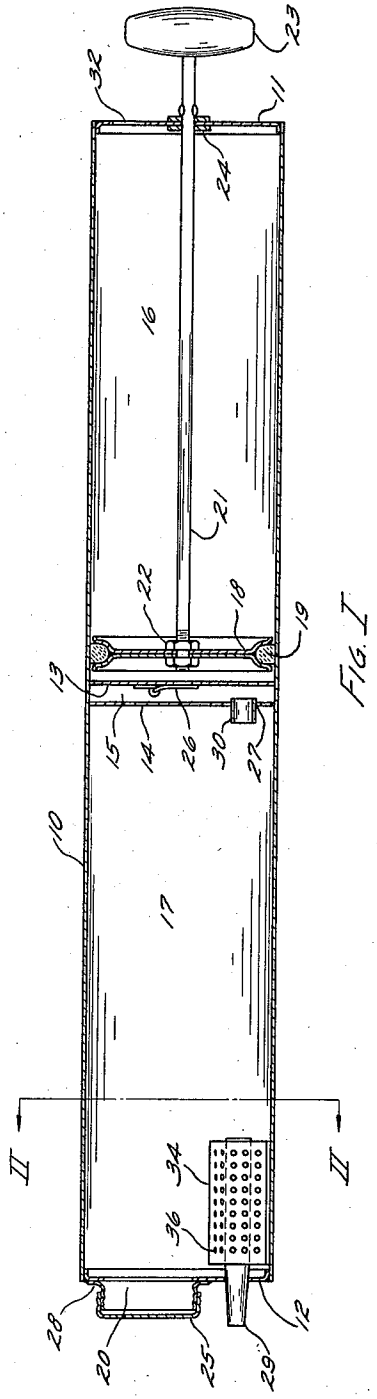



FIG. I

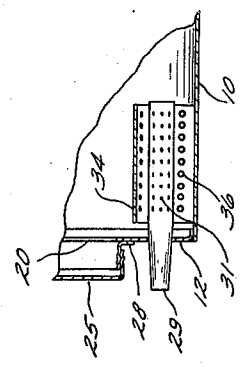



FIG. III

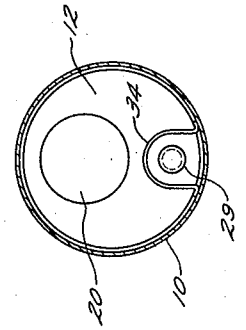



FIG. II

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## DISPENSING APPARATUS

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4 Claims. (Cl. 169—33)

This invention relates to dispensing apparatus and particularly to fire extinguishers of the hand operated type designed to exhaust a dry powder under pressure.

Fire extinguishers of this type which have heretofore been in use employ an air compression chamber and a powder chamber having an exhausting nozzle communicating therewith which in some instances is perforated. However, in the practical operation of devices of this character the dry powder when under pressure tends to pack around the nozzle and wholly or partially clogs it so that the amount of powder which will be exhausted is always more or less uncertain. During a portion of the operation, large portions or slugs of powder may be exhausted through the nozzle and at other times only a small portion is forced therethrough resulting in a very fine spray insufficient to extinguish a blaze.

In an attempt to overcome this difficulty, it has been proposed to provide an auxiliary powder storage chamber above and separated from the chamber having the nozzle therein. In such constructions, an opening is provided near the forward end of the auxiliary chamber to permit the powder to flow therefrom into the exhausting chamber.

A serious disadvantage of the above construction, however, arises when it is necessary to point the fire extinguisher upwardly out of a horizontal position. When this is done the powder in the auxiliary chamber moves downwardly toward the bottom thereof, due to the forces of gravity, so that it does not pass through the opening into the exhausting chamber. The practical result is that extinguishers of this character are inoperative when being pointed upwardly, and to secure satisfactory results must always be used in a substantially horizontal position.

An object of the present invention is to provide a fire extinguisher which will overcome the above mentioned disadvantages present in constructions heretofore in general use.

Another object of the invention is to provide a dispensing apparatus which is equally effective when in either a horizontal or vertical position.

Another object of the invention is to provide, in an apparatus for dispensing a powder, a construction which will insure the even flow of powder therefrom whether the powder chamber be full or nearly empty.

A further object of the invention is to provide a fire extinguisher having a compression chamber, a powder containing chamber, an exhaust nozzle, and means interiorly of the powder chamber for protecting the nozzle from direct contact with the mass of powder therein.

Another object of the invention is to provide an apparatus for dispensing a powder, the construction of which will insure the complete evacuation of the powder from the apparatus.

A further object of the invention is the provision of a dispensing apparatus of the above character having a minimum number of parts making it economical to manufacture and simple to operate.

Other objects and advantages of the invention will become apparent from a reading of the following description taken in connection with the accompanying drawing in which;

Fig. I is a vertical sectional view, partially in elevation, showing a dispensing apparatus constructed in accordance with the present invention;

Fig. II is a sectional view taken on the line II—II of Fig. I, and;

Fig. III is a view showing the nozzle member in elevation.

Referring now to the drawing, reference numeral 10 designates a cylindrical hollow casing having side walls and end walls 11 and 12 which may be secured together as by soldering, brazing, or by any other suitable method. The interior of the casing 10 is provided with a double partition substantially midway thereof comprising spaced walls 13 and 14 which provide a small chamber 15 therebetween. These partitions divide the casing 10 into two separate chambers 16 and 17, the chamber 16 forming an air compression chamber and the chamber 17 forming a combined powder containing and exhausting chamber.

It is desirable that the powder be forced out of the apparatus under pressure and to that end a piston 18 is slidably disposed within the chamber 16 and is provided with a suitable gasket member 19, which engages the side walls of the chamber. A piston rod 21 is suitably secured centrally of the piston as at 22 and extends outwardly of the casing 10 through the end wall 11 thereof where it may be provided with a handle 23. A suitable bearing member 24 for the piston rod 21 may be secured to the end wall 11, and an opening 32 is provided to supply air to the compression chamber.

A one way valve member 26 of any suitable well known construction is positioned centrally of the partition 13 to permit air under compression in the chamber 16 to pass into the space 15 between the partitions 13 and 14 but preventing its return into the compression chamber. An opening 27 is provided in the partition 14 to permit air to pass therethrough into the powder chamber 17 and a small nozzle 30 is secured to the partition in registration with this opening. It will be noted that the opening 27 and the nozzle 30 are spaced in a radial direction from the valve member 26 to lie near the periphery of the wall 14 and closely adjacent the lower wall portion of the casing.

This positioning of the opening and nozzle 30 aids in the substantially complete evacuation of the powder remaining in the bottom of the chamber 17 as will later appear. It will be apparent that due to the one way valve member 26 and the radially spaced opening 27, powder cannot be drawn from the chamber 17 back into the chamber 16.

A suitable powder or other fire extinguishing substance may be placed in the chamber 17 through an opening 20 formed in the end wall 12 of the casing. This opening may be closed by a suitable removable filler cap 25 which may be provided with screw threads to engage like threads formed on a projection 28 of the casing.

For directing the powder to the desired point, a nozzle 29 is soldered or otherwise secured in the end wall 12 of the casing 10 closely adjacent one side wall thereof, which is the bottom wall when the extinguisher is properly positioned for use. This nozzle, as shown, is open at one end only and extends into the interior of the chamber 17 through the end wall 12. The portion of the nozzle extending within the chamber 17 is preferably perforated as at 31 so that the powder may sift into the interior thereof to be exhausted by air under pressure flowing from the chamber 16. It will be noted that the nozzle 29 and the air opening 27 are both closely adjacent the floor of the chamber 17 and lie in the same horizontal plane so that substantially no powder will remain in the chamber 17 when complete evacuation thereof is desired.

In order to prevent powder from packing around the nozzle member 29, a shield 34 is provided which partially surrounds that portion thereof which extends interiorly of the chamber 17. As shown, this shield is positioned in spaced telescopic relation to the nozzle to allow the powder or dust to enter the perforations therein and is itself perforated as at 36. The perforated portion 36 of the shield functions to break up the powdered mass and allows the fine dust to sift into the space adjacent the nozzle where it is free to be forced therethrough by the air under pressure. From Fig. II it will be noted that the end of the shield adjacent the closed end of the nozzle member is open to the interior of the chamber 17.

The operation of the device will be readily apparent. The chamber 17 is first filled through the opening 20 with the powder to be employed, and the cap 25 replaced. The casing 10 may be held in the operator's one hand, with the nozzle lowermost, and the handle manipulated with the other to force air under pressure from the chamber 16 through the one way valve 26 and opening 27 into the chamber 17. Air being forced into the chamber 17 will greatly agitate the powder therein and the small particles or dust will be forced through the nozzle member and exteriorly of the casing 10 in a substantially constant stream or spray. Due to the fact that the nozzle 29 and the air opening 27 are closely adjacent the lower wall of the chamber 17 and lie in the same horizontal plane, substantially all the powder in the apparatus may be effectively exhausted.

It will be seen that by the present invention a fire extinguisher is provided which overcomes several disadvantages present in constructions heretofore in use. A single cylinder casing is provided, thus eliminating the auxiliary chamber which has heretofore been employed, and a shield is provided for the nozzle, preventing clogging thereof and assisting in reducing the powder to a fine dust which readily passes through the perforations therein.

While the invention has been shown and described as adapted for use as a fire extinguisher, it will be apparent to those skilled in the art that the device would be equally as well fitted for many other uses, and that the construction as shown is susceptible of numerous changes without departing from the spirit of the invention which is to be limited only by the scope of the appended claims.

What is claimed and desired to be secured by Letters Patent is:

1. In a dispensing apparatus, a hollow casing forming a chamber, a perforated cylindrical nozzle positioned adjacent the lower portion of said chamber and extending a substantial distance into said chamber, an elongated shield arranged with the walls thereof in parallel spaced relation to the walls of said nozzle, and a piston reciprocably mounted in said casing to provide air under pressure.

2. In a dispensing apparatus, a hollow casing having side walls and end walls, a perforated nozzle secured to one of said end walls and extending a substantial distance interiorly of said casing adjacent and in parallel relation to a side wall thereof, an elongated shield secured to said side wall and arranged with the walls thereof in parallel spaced relation to the walls of said nozzle, and a piston reciprocably mounted in said casing to provide air under pressure.

3. In an apparatus for dispensing a powder, a hollow casing, a partition in said casing dividing the interior thereof into an air compression chamber and a powder containing chamber, a piston reciprocably mounted in said compression chamber to provide air under pressure, means for moving said piston, one-way valve means associated with said partition to permit air under pressure to pass from the compression chamber into the powder chamber but preventing the passage of powder into the compression chamber, a perforated nozzle extending a substantial distance into said chamber adjacent the lower portion thereof, and an elongated perforated shield substantially conforming in cross sectional shape to that of said nozzle and arranged with the walls thereof in parallel spaced relation to the walls of said nozzle.

4. In an apparatus for dispensing a powder, a hollow casing, a partition in said casing dividing the interior thereof into an air compression chamber and a powder containing chamber, a piston reciprocably mounted in said compression chamber to provide air under pressure, means for moving said piston, one-way valve means in said partition to permit air under pressure to pass from the compression chamber into the powder chamber but preventing the passage of powder into the compression chamber, a perforated cylindrical nozzle extending a substantial distance into said chamber adjacent the lower portion thereof, and an elongated perforated shield substantially conforming in cross-sectional shape to that of said nozzle and arranged with the walls thereof in parallel spaced relation to the walls of said nozzle.

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