Jan. 26, 1937. O. R. ERWIN 2,068,978

POWDER DISTRIBUTOR

Original Filed Aug. 30, 1933

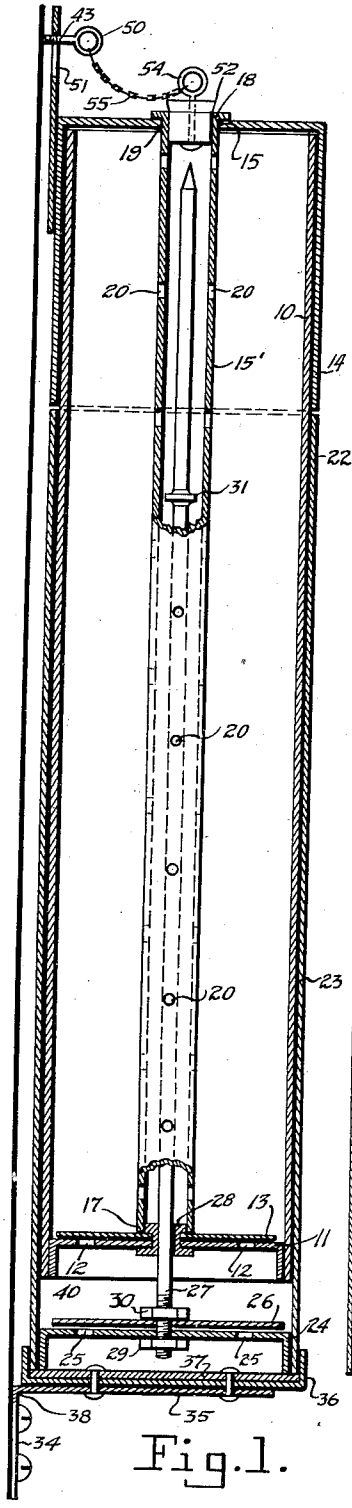


Fig. 1.

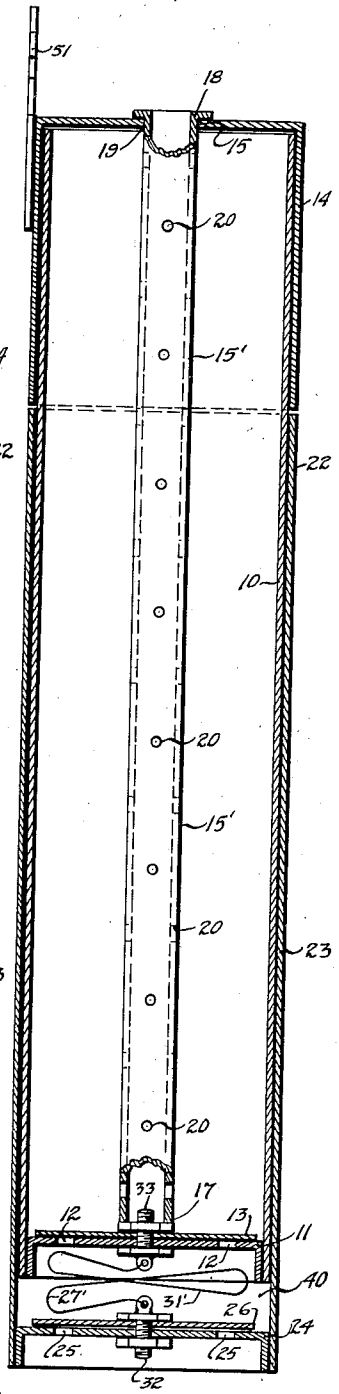


Fig. 2.

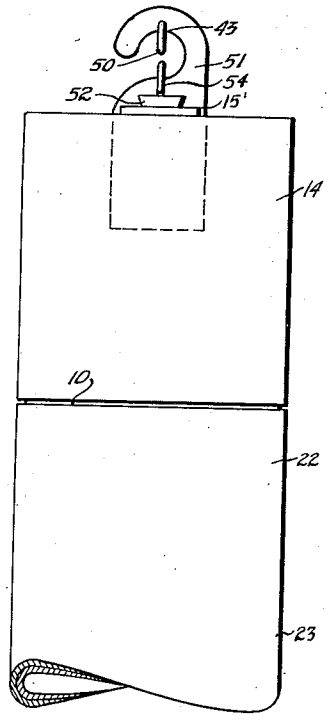


Fig. 3.

INVENTOR

Orlando R. Erwin

Patented Jan. 26, 1937 2,068,978

UNITED STATES PATENT OFFICE

2,068,978

POWDER DISTRIBUTOR

Orlando R. Erwin, Wauwatosa, Wis., assignor to Arthur F. Erwin, Wauwatosa, Wis.

Application August 30, 1933, Serial No. 687,396
Renewed September 30, 1936

5 Claims. (Cl. 169—33)

The invention resides in a powder spraying device of telescopic construction, comprising a container compartment, which receives and stores a supply of powder, which is especially adapted for use for fire extinguishing purposes, said container having a reciprocable telescope blower compartment slidably fitting the container, which blower acts as an air compressor to blow successively quantities of the powder and air mixture from the container, in a cloud-like spray, and effect its distribution, upon each forward stroke of the blower. The container compartment is provided at its forward end with a discharge nozzle, through which the powder and air mixture may be forcibly sprayed and distributed as for the purpose of extinguishing a fire.

The foregoing and other features residing in my invention will now be more fully described, and then set out in the appended claims.

In the accompanying drawing:

Figure 1 is a longitudinal, central, sectional view through a powder distributor embodying my invention, with the parts in their normal inoperative position, and the distributor being shown as stored in a bracket in its telescoped and sealed condition,

Figure 2 is a similar view to that shown in Figure 1 showing some modified details of construction, and showing the distributor removed from its bracket, and

Figure 3 is a front view of the upper portion of the device shown in Figure 1, the lower portion thereof being broken away.

In the drawing, like parts are identified by the same reference characters throughout the several views.

Referring to the drawing, the numeral 10 indicates a powder container of elongated tubular form, the chamber of which is adapted to be filled with powder which is especially adapted for use for fire extinguishing purposes or of other suitable nature. The container 10 is provided with a permanently positioned bottom head forming a valve seat 11, provided with a plurality of suitable apertures 12, to permit the movement of air into the container. A check valve 13, in the form of a resilient circular sheet or disc, is applied to the front face of the valve seat 11, in position to overlie all of the apertures 12, and effectively seal such apertures against the rearward movement or sifting out of the powder. The resiliency of the check valve 13 causes it to yield under air pressure when the latter is exerted against the rear side of same, to uncover the apertures 12 and permit the flow of air, under pressure, into the powder chamber of the container.

The container 10 has a cap 14, affixed thereto at its forward end by any ordinary or convenient manner, applied after the powder chamber has been filled, to complete the closure. The cap 14 is provided at its outer end with a discharge port 15, through which the powder and air mixture is adapted to be blown and distributed, as is hereinafter described.

An unrestricted tube 15' extends longitudinally of the container 10, from one end thereof to the other, the end 17 of said tube being preferably adjacent the air inlet end of the container and being preferably closed thereat, and the other end 18 of said tube being in open discharge connection at 19 as by projecting through said opening 15 in the cap 14 of the container 10, the joint thereof being secured as by soldering thereat. The said tube 15' is shown provided with a plurality of spaced apertures 20, 20, whereby air forced into the container 10 will be mixed with the powder therein and discharged through said apertured tube 15' and out through the nozzle outlet end 18 thereof.

Associated with the powder container 10 is a tubular telescope blower 22 reciprocably fitting said container and constructed and arranged to force air into the same. Said blower 22 comprises a tube or cylinder 23, having its rear end permanently closed by the fixed bottom head 24, which latter is apertured at 25, 25 as before, to form a valve seat, like the valve seat 11, and permit the entrance of air, on the outward stroke, into the interior space 40 of the blower 22. An air inlet check valve 26, of resilient material, constructed as before described, is attached to the front face of the bottom head 24, to seal the apertures 25, 25 against outward movement of the air, when a compression stroke is made.

The valve seats 11 and 24, are provided with alined axial perforations, through which, see Figure 1, passes the rear end of a rod or link 27, which extends longitudinally, and preferably axially, of the apertured tube 15', which rod or link 27 reciprocates therein, as is hereinafter described. A tubular rivet 28 is passed through the perforation in the valve seat 11, which rivet serves to hold the check valve 13 against its seat. The bore in the tubular rivet acts as a guide for the rear end of the rod or link 27 in the reciprocating movements of the latter. The rear end of the rod 27 is passed through the perforation in the valve seat 24, such end being secured therein by a pair of jam nuts 29 and 30 screwed on to the end of the rod or link 27. The check valve 26 is held against the valve seat 24 by said jam nuts 29 and 30 on the rod 27. A flange 31, affixed on the rod or link 27, near its upper end, serves the two-fold purpose of a powder agitator, for the interior of the tube 15', and of a travel-limiting stop, to prevent the total withdrawal of the blower 22 from the container 10, on its outward stroke. The rod or link 27, being in operative connection with the blower 22, reciprocates in

the apertured tube 15', when the blower 22 is reciprocated on the container 10.

Referring to Figure 2, a modified form of travel-limiting stop 27' is herein shown to prevent the total withdrawal of the blower 22 from the container 10 on its outward stroke, and the same preferably comprises a flexible cord or link 31', connected at one end to the bottom head 24 of the blower, through an eye-bolt 32, and at its opposite end to the bottom head 11 of the container, through another eye-bolt 33, which eye-bolts 32 and 33 also serve to hold the check valves 26 and 13 in operative connection on their respective bottom heads, or valve seats 24 and 11. Said flexible cord or link 31' may, obviously, be operatively connected exteriorly of the distributor, as by affixing one end of the cord or link to the cap 14 and the other end to the upper exterior end of the blower 23.

During storage disuse thereof, the distributor is telescoped and positioned in a storage wall-bracket 38, 43, as will now be described. The wall-bracket 38, 43, is designed for the reception and storage of the powder distributor when the latter is not in use and to seal the inlet and outlet ports thereof. The rear end 38 of said wall-bracket is preferably formed from a strip 34 of somewhat resilient metal, bent approximately into the form shown in Figure 1. The angular bend 35 of the bracket, has attached thereto a shallow cap 36, in which the rear end of the powder distributor is adapted to be removably seated, against a sealing gasket 37 placed therein when the distributor is closed. The upper part 43, of said wall bracket holding-means 38, 43 is shown comprising a screw-eye 50, screwed into a wall or other support, and a hook 51, which is affixed to the cap 14 of the distributor, is detachably hooked on to the shank of said screw-eye 50 and serves to support the device, at its upper end to said wall or other support. A detachable closure 52, shown in the form of a plug-valve, serves to normally close and seal the discharge outlet port 18 of the device. An eyed rivet 54, attached to said closure 52, is shown connected as by a chain 55 to said screw-eye 50, whereby when the distributor is removed from said wall-bracket or other support, the closure 52 will be withdrawn from its sealing engagement with the discharge outlet at the top end of the device, and the cap 36 will be removed from sealing engagement upon the rear end of the device.

In preparation for operation, the chamber of the telescoped powder container 10 will be filled with powder of the desired kind, and the nozzle-cap 14 secured thereon. In such condition, the powder distributor may be stored in the bracket 38, 43. When it is desired to use the distributor, it is withdrawn from said bracket, which withdrawal movement will open the nozzle port 18 and the bottom air-inlet ports 25, ready for the manual pump action and powder distribution of the device. On the outward stroke of the blower 23, the powder agitator rod 27, Figure 1, will be drawn backwardly through the powder in the nozzle tube 15'. In this movement, the check-valve 26 will be opened to permit the movement of air through the valve 26 into the blower chamber 40. The limit of separating movement described is determined by the contact of the travel-limiting stop 31, on the agitator rod 27, with the tubular rivet 28, fixed in the bottom head of the powder chamber. In the construction shown in Figure 2, the limit of separating movement described is determined by the length of the flexible cord or link 31', which connects the rear end of the blower 23 with the rear end of the container 10, as above described. In the forward movement, the parts described are telescoped, and the air which has been collected in the blower chamber 40 will then open check-valve 13, permitting such air to be forced through the mixing tube 15' in the powder chamber, carrying, mixed with the stream of air, a charge of powder, to be blown from the distributor through the nozzle 18. In the forward stroke, Figure 1, the rod 27, carrying the agitating flange 31, again acts to loosen and stir the stored mass of powder in the nozzle-tube 15'. The telescope action of the powder distributor is very rapid, and produces a practically continuous blast of mixed powder and air from the nozzle in any and all positions in which the device may be held by the operator.

The parts entering into the construction of the device, may be produced from any materials suitable for the purpose. The construction is simple, and capable of production at low cost, considering the nature and purposes of the invention.

From the foregoing description, it will now be obvious that this device, and its modifications, has important improvements over the prior art of vital necessity to ensure its proper functioning and maintenance as a fire extinguishing device to enhance its reliability and efficiency in time of fire emergency use during long periods of storage disuse, as follows:

(a) A suitable storage bracket-holder is provided to firmly and releasably grip the charged device and hold it in its fully telescoped condition, ready for quick access, for fire emergency use.

(b) Positive closure means are provided for the air-inlet and the discharge outlet ports, to normally maintain the device in an effectively sealed condition, against deterioration or loss of chemical contents, as during shipment of the device from factory to purchaser, and during long periods of storage disuse, and further to hold the device firmly against movement, as when mounted on a motor vehicle.

(c) Means are further provided including an apertured mixing-tube, in operative discharge connection with the nozzle outlet port, and with the air-inlet, extending longitudinally of the powder container, to prevent clogging of the nozzle, and to provide and ensure an open discharge outlet passage, through the powder charge in the container, for the mixed powder and air, said means further including a reciprocating powder agitator, in operative connection with the blower, reciprocating therewith in and throughout the apertured nozzle tube, to condition the powder as when packed, caked or lumped, through long periods of storage disuse of the device, and serving to prevent clogging of the nozzle, to loosen up the powder and mix air therewith, and further to increase the stream range and the efficiency of the mixture by plowing air-passages through the powder charge ahead of the inlet air blast, on each forward stroke of the blower.

(d) Link means are further provided, in operative connection between the blower and the container to limit the outward travel of the blower with respect to the container and to prevent its total unintentioned or accidental removal, which might be a serious matter in time of fire emergency use of the distributor.

(e) Being further designed to provide a complete fire extinguishing device, having the above mentioned important characteristics, which will operate to discharge its entire contents in any and all positions in which the device may be held,

by the operator, as in extinguishing a fire, and at the same time to provide a device of utmost simplicity, reliability and utility, as to operation, such that anybody can readily understand the same and operate it without previous instructions, and further, to render the device practicable, durable and easy to inspect, test and maintain in efficient operative condition, so as to be ready for fire emergency use at any time during long periods of storage disuse.

While I have herein shown my device in the preferred forms, it will be obvious that many changes and modifications may be made in the structures disclosed without departing from the spirit of the invention defined in the following claims.

What I claim as new, and desire to secure by United States Letters Patent, is:—

1. A powder distributing device for expelling a mixture of powder and air, comprising a tubular container provided with closed ends, an air inlet valve in one end and an opening in the opposite end, said container being adapted to store a charge of powder therein, a tubular telescope blower reciprocably fitting said container and constructed and arranged to force air into the same, an unrestricted tube extending longitudinally of the container from one end thereof to the other, the end of said tube adjacent the air inlet end of the container being closed and the other end of said tube being arranged to project through the container opening, said tube being provided throughout its length with spaced apertures, whereby air forced into the container will be mixed with the powder therein and discharged through said tube and outlet.

2. A powder distributing device, for expelling a mixture of powder and air, comprising a tubular container provided with end-enclosing top and bottom heads, an air inlet valve in the bottom end head and a discharge outlet opening in the top end head, said container being adapted to store a charge of powder therein, a tubular telescope blower reciprocably fitting said container and constructed and arranged to force air into the same, an unrestricted tube extending longitudinally of the container substantially from one end thereof to the other, the bottom end of said tube adjacent the air-inlet end of the container being closed, and the top end of said tube being affixed to the top end head, said tube arranged to have discharge outlet connection through the said discharge outlet opening in said top end head, and the wall of said tube being apertured throughout its length forming a strainer-screen to prevent clogging of the discharge outlet of the container.

3. A powder distributing device, for expelling a mixture of powder and air, comprising a tubular container provided with end-enclosing top and bottom heads, an air-inlet valve in the bottom end head and a discharge outlet opening in the top end head, said container being adapted to store a charge of powder therein, a tubular telescope blower reciprocably fitting said container and constructed and arranged to force air into the same, an unrestricted tube extending longitudinally of the container substantially from one end thereof to the other, the bottom end of said tube adjacent the bottom air-inlet end of the container being closed, and the top end of said tube being affixed to the top end head, said tube arranged to have discharge outlet connection through the said discharge outlet opening in said top end head, the wall of said tube being apertured throughout its length forming a strainer-screen to prevent clogging of the said container outlet and to provide a thorough mixture of the discharged powder and air, and a link in operative connection between the blower and the container to limit the outward travel of the blower with respect to the container.

4. A powder distributing device, for expelling a mixture of powder and air, comprising a tubular container provided with end-enclosing top and bottom heads, an air inlet valve in the bottom end head and a discharge outlet opening in the top end head, said container being adapted to store a charge of powder therein, a tubular telescope blower reciprocably fitting said container and constructed and arranged to force air into the same, an unrestricted tube extending longitudinally of the container from one end thereof to the other, the bottom end of said tube adjacent the bottom air inlet end of the container being closed, the top end of said tube being affixed to the top end head, said tube arranged to have discharge outlet connection through the said discharge outlet opening in said top end head, the wall of said tube being apertured throughout its length forming a strainer-screen to prevent clogging of the said outlet and provide a thorough mixture of the discharged powder and air, and holding means for the said distributing device for releasably retaining the said blower in its telescoped position of travel with respect to said container during disuse of the distributor.

5. A powder distributing device, for expelling a mixture of powder and air, comprising a tubular container provided with end-enclosing top and bottom heads, an air-inlet valve in the bottom end head, a discharge outlet opening in the top end head, said container being adapted to store a charge of powder therein, a tubular telescope blower reciprocably fitting said container and constructed and arranged to force air into the same, an unrestricted tube extending longitudinally of the container from one end thereof to the other, the top end of said tube being affixed to the top end head, said tube arranged to have discharge outlet connection through the said discharge outlet opening in said top end head, the bottom end of said tube adjacent the bottom air-inlet end of the container being closed, the wall of said tube being apertured throughout its length forming a strainer-screen to prevent clogging of the container outlet and to provide a thorough mixture of the discharged powder and air, a removable closure for the discharge outlet port of the container, another removable closure for the air-inlet port of the blower, a holder comprising provisions for releasably retaining the blower in its telescoped condition of travel with respect to said container and for releasably supporting said device upon a support and for releasably retaining said removable closures in effectively sealed condition on their respective ports while permitting ready removal or withdrawal of the device as by grasping and pulling the same from the holder, whereby when the device is withdrawn from said holder, air forced into the container, by the reciprocating blower, will be mixed with the powder therein and discharged through said tube and said discharge outlet port.

ORLANDO R. ERWIN.