March 26, 1957 H. WAINESS 2,786,537

SELF-ENERGIZING FIRE EXTINGUISHER

Filed Dec. 9, 1955

Fig. 1.

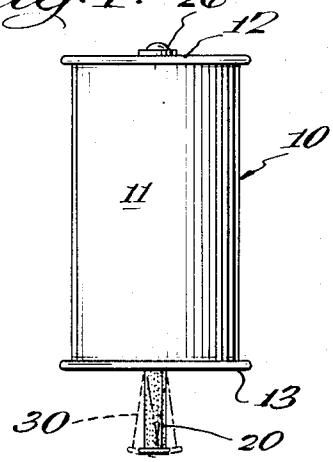


Fig. 2.

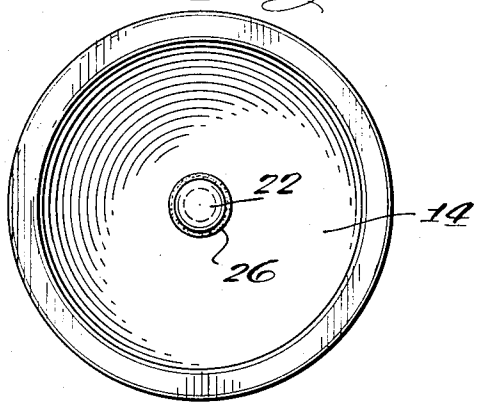


Fig. 4

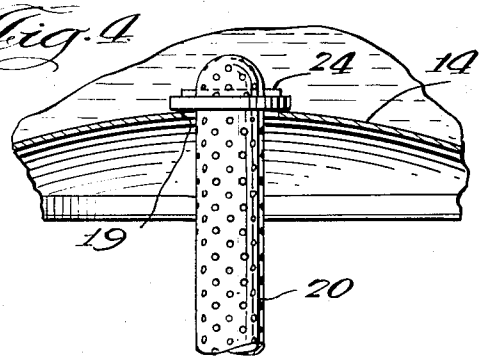
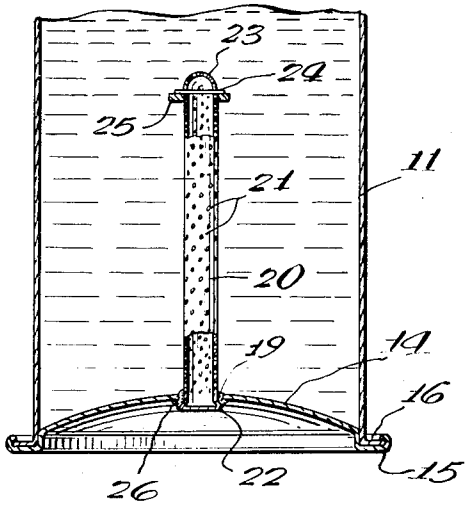


Fig. 3.



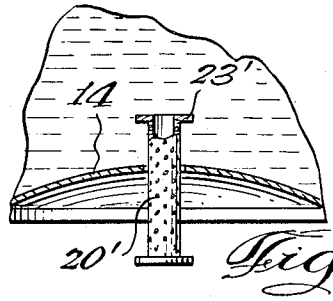


Fig. 6.

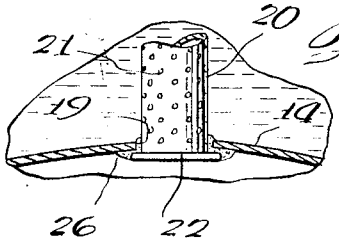


Fig. 5.

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SELF-ENERGIZING FIRE EXTINGUISHER

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9 Claims. (Cl. 169—26)

This invention relates generally to portable fire extinguishing devices and more particularly relates to a device of this character in which fire extinguishing chemicals are stored in a pressure holding canister and dispensed by means of the pressure in the canister, the invention being characterized by the provision of a novel valve structure for such a canister.

Pressure holding canisters, formed of thin gauge metal and having concave ends to enable the canister to withstand internal pressures in the range of 40 to 50 pounds, are widely used for dispensing insecticides, wax, paints and many other liquid materials. The herein invention is concerned with this type and size canister, but which will store a fire extinguishing chemical. However, all such canisters employ a valve housing and valve button usually mounted in the top end of the pressure vessel, and require depression of the valve button to dispense the contents. Such valve structures are therefore limited in utility in connection with fire extinguishing devices to the extent that they do not operate automatically. It is therefore a principal object of this invention to provide a fire extinguisher comprising a pressure holding canister of thin metal gauge and having a novel valve structure which enables the fire extinguishing chemicals stored in the canister to be dispensed automatically in the presence of fire.

Another object of the invention is to provide such a fire extinguishing device in which the novel valve structure causes wide angle spraying of the contents of the device during its dispensing, thereby increasing the effectiveness of the dispensed chemicals.

By reason of the novel valve structure provided, the invention has been adapted for use in a particularly advantageous manner. There are numerous fire hazards in the home which may be reduced in seriousness, if not completely eliminated, by reason of the invention. For instance, during the yule season, Christmas trees with their inflammatory adornments may catch fire. The fire extinguisher embodying the invention is particularly adaptable for hanging on the tree as an ornament, but serving the main function of dispensing the fire extinguishing chemicals automatically in the event the tree catches fire. It is therefore another important object of the invention to provide such a fire extinguisher device.

Other objects of the invention include the provision of a valve structure for devices of the character described which is economical and sturdy and simple to fabricate and install.

These and other objects of the invention will become apparent as the description thereof proceeds, in connection with which a preferred embodiment has been described in detail in the specification and shown in the accompanying drawing. It is contemplated minor variations in size, arrangement, construction and proportion of the several parts of the invention may be made without sacrificing any of the advantages or departing from the principles of the invention.

In the drawings:

Fig. 1 is a side elevational view of the fire extinguisher device embodying the invention, and shown with its valve in position, dispensing the fire extinguishing chemicals.

Fig. 2 is a bottom plan view of the device.

Fig. 3 is a vertical sectional view taken through said device and showing said valve in closed condition.

Fig. 4 is a fragmentary sectional view through the bottom end of the device and showing the valve open.

Fig. 5 is a fragmentary sectional view through the valve in closed position.

Fig. 6 is a fragmentary sectional view showing a modified form of elongate valve stem.

Referring now to the drawings, the reference character **10** designates generally the fire extinguishing device embodying the invention. Same comprises a pressure vessel or canister **11** preferably formed of relative thin gauge sheet metal, the opposite ends of which have been capped as indicated at **12** and **13** respectively. The capped end **13** will be considered the bottom end of the pressure vessel **11**, said end being formed by the concave wall **14**, the circumferential edge **15** of which is engaged over the outwardly extending lip or flange **16** on the adjacent end of the canister for attachment thereat. The caps forming said ends **12** and **13** likewise may be formed from thin gauge sheet metal, however, it should be understood that the particular manner of forming the basic canister **11** has no bearing on the principles of the invention, the canister **11** as described being more properly considered merely representative of a pressure vessel of conventional size and configuration. Loaded under pressure on the interior of the canister will be a suitable fire extinguishing chemical compound of which many are known and available.

The concave wall **14** is provided with a central opening **19** in which is mounted an elongate cylindrical valve member or stem **20**. The member **20** preferably is formed of a material which will not react chemically with the fire extinguishing chemical agent stored in the device. The diameter of opening **19** is relatively greater than the diameter of the elongate member **20** for a special purpose. The member **20** is hollow and is provided with perforations **21** through the annular side wall thereof substantially the entire length of said member.

The original position of the member **20**, that is, prior to the contents of the canister having been dispensed, is seen in Figs. 3 and 5. The forward end of the said member **20** is closed off by an enlarged imperforate head **22** the diameter of which is greater than the diameter of the opening **19**. The head **22** is arranged on the exterior of the wall **14** with the remaining portion of elongate member **20** extended through opening **19** into the interior of the canister. The opposite end **23** of the member **20** likewise is perforated, and spaced therefrom is affixed a stop member **24**. The stop member **24** may comprise a pin secured transversely through elongate member **20** or a washer of suitable size affixed on the member **20**. If desired, a washer **25** of a material incapable of reacting chemically with the fire extinguishing agent may be attached on the member **20** in front of stop **24**. In the form of invention shown in Fig. 6, the valve stem **20'** is formed with a flange **23'** integral with the interior end thereof to provide stop means.

Since the fire extinguishing chemical agent is stored in the canister **11** under pressure, the member **20** is anchored to the top wall **14** to prevent ejection of said member **20**. However, in anchoring the member **20** to the wall **14**, a low temperature melting solder **26** is disposed between the wall **14** and head **22** as shown in Fig. 5. The solder not only maintains head **22** overlying

opening 19 but also seals the opening 19 to prevent escape of the fire extinguishing chemical.

The exterior surface of the canister 11 may be embellished or suitably finished to provide an attractive adornment of the type capable of being hung on a Christmas tree, for instance. A suitable hook (not shown) may be provided on the opposite end 12, for instance, to facilitate such hanging.

We now consider the situation where device 10 has been hung on a tree in the home and the tree catches fire. By reason of the low temperature melting solder 26, the heat from the fire will melt the solder rupturing the connection between head 22 and wall 14. By reason of the internal pressure exerted by the chemicals in the canister, the member 20 will be propelled forwardly out of opening 19, but prevented from complete ejection therefrom by reason of engagement of stop 24 or the washer 25 or flange 23', as the case may be, with the interior of wall 14. The forwardly projected position of the member 20 is shown in Fig. 4. The fire fighting chemicals will flow under pressure into member 20 through the perforations 21 in end 23, up the interior of the member 20 and spray through said perforations 21 in the exposed external portion of the member 20. However, by reason of the greater diameter of opening 19, the pressure of the dispensed chemicals may cause the member 20 to rock back and forth as shown in broken outline at 30 in Fig. 1.

The effect of such rocking movement of the member 20 during dispensing of the fire fighting chemical agent is to disperse the chemical over a wider area than would be achieved merely by dispensing through opening 19. Thus, as the member 20 rocks back and forth, the chemical will escape and be projected outwardly through the perforations 21 a distance related to the speed of the rocking movement of the member 20. This area covered will be more than sufficient to extinguish the burning tree under normal circumstances. By reason of the low temperature melting solder 26, dispensing of fire fighting chemicals may be commenced before the fire has had the opportunity to spread or become very large. The device 10 also is effective when supported in erect position as distinguished from the inverted position illustrated. Also for manual use, the end 12 may have the conventional button valve 26' thereon.

It will be seen that I have provided a novel self energizing fire extinguisher which may be installed within convenient distance of potential fire hazards and which by reason of its novel valve construction, automatically will dispense the fire extinguishing contents thereof in the presence of fire. Further, my invention insures dispensing of said contents over a wide area greatly decreasing, if not eliminating, the possibility of the fire getting out of hand. Thus, more than one such extinguisher may be employed commensurate with the protection and fire control required. In addition, the device may be formed as a suitable ornament so as to increase the attraction for employing the same without detracting from the appearance of the environment in which used.

Although a preferred embodiment has been described in an effort to comply with the patent statutes, such description is desired to be construed commensurate with the broad principles of the invention as set forth in the claims hereto appended.

What is desired to secure by Letters Patent of the United States is:

1. A self energizing fire extinguisher device comprising a canister of relatively thin gauge sheet metal having a top and bottom wall closing off the ends thereof and adapted to contain a fire extinguishing chemical agent under pressure, a valve structure operable automatically to dispense said agent in the presence of fire comprising, an elongate, rigid hollow member slidably mounted in said bottom wall having the major length thereof on the interior of the canister and its forward end exterior of the canister and secured to said bottom wall by means of a low temperature melting solder, stop means on said rigid member adjacent the opposite end thereof, said forward end being imperforate and said opposite end and major length being perforated, said canister normally being sealed, said solder adapted to be melted by heat from said fire to rupture the connection between said forward end and bottom wall whereupon said major length will be slided automatically outwardly of the canister by the internal pressure of the said agent to the extent permitted by said stop means, said chemical agent thereafter being dispensed through said perforations, said bottom wall having an opening therein the diameter of which is greater than the cross-sectional dimension of said rigid member, said rigid member extending through said opening whereby during dispensing of the chemical agent said rigid member is caused to rock to increase the area sprayed.

2. A device as described in claim 1 in which said rigid member is substantially cylindrical and said bottom wall has an opening therethrough the diameter of which is greater than the diameter of said rigid member, said forward end having an enlarged head thereon for attachment over said opening.

3. A device as described in claim 2 in which said opposite end has a flange thereon larger than said opening to provide said stop means.

4. A self energizing fire extinguisher device comprising a pressure holding vessel of relatively thin gauge sheet metal having closed opposite ends, and adapted to hold a first extinguishing chamical compound under pressure, an escape valve on one end of the vessel adapted automatically to dispense said agent in the presence of fire comprising, an elongate, substantially cylindrical hollow metallic stem having an imperforate end and perforated along the major length thereof including its opposite end, said one end having a central opening therein the diameter of which is greater than the diameter of said stem, said stem being slidably received in said opening with its major length on the interior of said vessel and its imperforate end secured over said opening on the exterior of the vessel by means of a low temperature melting solder sealing the vessel, said solder adapted to be melted by heat from said fire to thereafter permit sliding movement of the stem forwardly out through said opening, stop means on said stem limiting extent of such forward movement of said stem, said chemical agent thereupon being dispensed through said perforations accompanied by a rocking movement of said stem, whereby said agent is dispersed over a relatively wide area.

5. A device as described in claim 4 in which there is an enlarged head integrally formed with said imperforate end.

6. A device as described in claim 4 in which there is an outstanding extending flange integral with said opposite end of the stem providing said stop means.

7. A device as described in claim 4 in which there is a pin secured transversely through said rigid member providing said stop means.

8. A self energizing fire extinguisher device comprising a pressure vessel of relatively thin gauge sheet metal having end walls sealing the vessel, a fire extinguishing chemical agent stored under pressure in said vessel, a valve operably installed in one of said end walls and anchored thereto in closed position by means of a low temperature melting solder, whereupon in the presence of heat from a fire said solder will melt automatically to open the valve and permit dispensing of the chemical therethrough by reason of said pressure, said valve comprising an elongate rigid perforate stem slidably mounted in said end wall and having an imperforate enlarged end securing exterior of said end wall by said solder in closed position of the valve, said end wall having an opening the dimension of which is greater than the cross-sectional

dimension of the stem, said stem being rocked laterally during dispensing of the chemical agent to increase the area sprayed.

9. A device as described in claim 8 in which said stem has stop means on its opposite end to prevent complete ejection thereof during dispensing of the chemical agent.

References Cited in the file of this patent

UNITED STATES PATENTS

1,362,223	Braman	Dec. 14, 1920
1,790,995	McErlane	Feb. 3, 1931
2,166,277	Adams	July 18, 1939
2,560,468	Morton	July 10, 1951