March 9, 1965 H. L. GICLAS 3,172,478

FIRE EXTINGUISHER

Filed July 19, 1963

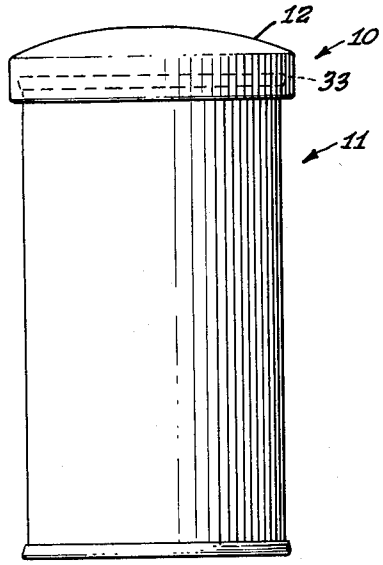



Fig. 1

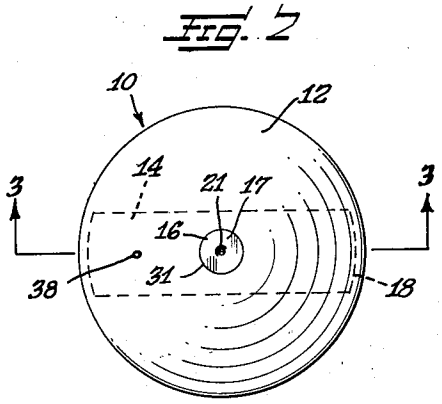



Fig. 2

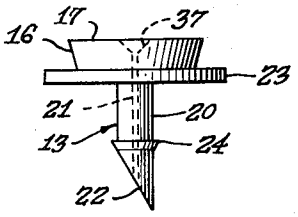



Fig. 4

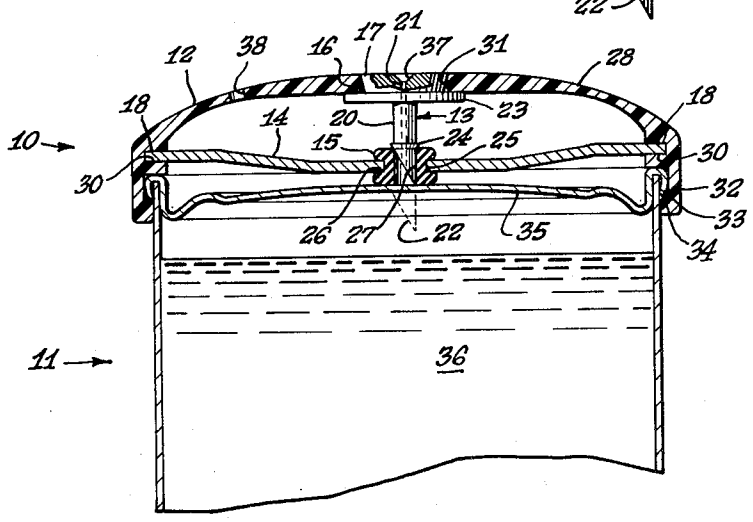



Fig. 3

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# FIRE EXTINGUISHER

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My invention relates generally to fire extinguishers and more particularly to an attachment for converting containers of pressurized fluids such as beer, carbonated soft drinks and carbonated water into implements for extinguishing fires.

It is well known that fluids in the form of foam containing a large proportion of an inert gas such as carbon dioxide are among the most efficient means of extinguishing many kinds of fires. Special implements designed for this purpose are readily available on the market, but for one reason or another many homes are without them.

Carbonated fluids such as beer and soft drinks are a familiar item in almost all homes. Such fluids are commonly marketed in standard size metal containers which are pressurized and sealed to retain the carbonation indefinitely. When agitated and suddenly released from the container, such fluids invariably spew foam. This foam, which contains a high proportion of carbon dioxide, if controlled and directed properly will extinguish a fairly large fire before the fluid or the pressure in the container is exhausted.

A primary object of my invention is the provision of an attachment for a pressurized fluid container which will convert the container into a fire extinguisher.

Another object of my invention is the provision of such an attachment which will both tap the contents of said container and direct the ensuing foam in an effective stream.

Another object is the provision of such an attachment which can be quickly removed from one container after use and installed on any subsequent number of containers of the same size and shape.

Another object is the provision of such an attachment whose actuation and operation is extremely simple.

Still another object is the provision of such an attachment at a sufficiently low cost to enable widespread availability of its useful properties as a novelty or advertising item.

Still another object of my invention is the provision of a unit which may be manufactured integrally with or attached to other types of containers whose primary purpose is specifically that of extinguishing fires.

Briefly, these and other objects are accomplished by means of a sharp, hollow plunger attached adjacent to the container and designed to be driven in to the container by being struck against a hard object. Pressure within the container when properly controlled forces the fluid out through the restrictive aperture in the plunger in a stream of liquid and foam which may be aimed at the fire to be extinguished.

A more detailed knowledge of the construction and operation of my invention may be gained from the following specification and accompanying drawing, of which:

FIG. 1 is a side elevation showing a preferred embodiment of my invention attached to a typical container;

FIG. 2 is a top plan view of the same;

FIG. 3 is a fragmentary section view taken on line 3—3 of FIG. 2; and

FIG. 4 is an enlarged elevation of the plunger removed from the unit for clarity.

Referring now to the drawing, a preferred embodiment 10 of my invention is shown secured to an end of a container 11 commonly used to market beer, carbonated soft drink, and certain kinds of pressurized fire extinguishing fluids.



Generally, my invention may be seen to comprise a cap 12 of resilient plastic or other deformable material, and a metal plunger 13, a diametral rigid guide member 14, and a sealing element 15, assembled and secured to the cap to form a unit. Plunger 13 includes an enlarged portion 16, a stem 20, a small longitudinal aperture 21, a sharpened end 22, shoulder 23 and annular flange 24. Upper surface 17 of enlarged portion 16 is designed to receive the impact necessary for actuation of the unit. Guide member 14 is provided with aperture 25 into which may be fitted sealing element 15 comprising a grommet of rubber or other suitable sealing material having a groove 26 to secure it in said hole, and having a hole 27 of diameter suitable for receiving stem 20 and sealing thereagainst.

In assembly, sealing element 15 is first inserted in hole 25 of guide member 14 and stem 20 inserted in hole 27. A hole 31 and a groove 30 in cap 12 receive and secure enlarged portion 16 of plunger 13 and ends 18 of guide member 14 respectively by distorting the cap slightly to increase its diameter. Holes 25 and 31 are aligned so as to maintain plunger 13 substantially perpendicular to the surface to be punctured at all times. Shoulder 23 retains plunger 13 in the unit, while the beveled sides of portion 16, mated with beveled hole 31, hold the plunger above end wall 35.

The assembled unit 10 is attached to container 11 by pressing cap 12 over one of the ends of said container. A cylindrical portion 32 of cap 12 of slightly smaller inside diameter than the outside diameter of lip 33 of container 11 is provided with a groove 34 for receiving said lip to hold the cap firmly in place. Guide member 14 is bent downward a predetermined amount in manufacture so as to position sealing element 15 for compression against end wall 35 when cap 12 is in place. With the unit thus attached to the container, sharpened end 22 of plunger 13 is maintained immediately adjacent to end 35 by the design of the curved portion 28 of cap 12. Standardized container construction allows these relationships of sizes and distances to be predetermined and incorporated in the manufacture of my invention.

To actuate the unit, thereby releasing the contents of the container, the operator agitates the container briefly and strikes upper surface 17 of plunger 13 against a hard object, thereby releasing plunger 13 from cap 12 and driving sharpened end 23 through end 35. By holding the cap end of the container slightly downward, pressure in the container will force liquid 36 through aperture 21, other routes of escape being prevented by sealing element 15. Sudden depressurization of the liquid as it emerges from the container as well as subsequent impact thereof against a target causes release of carbon dioxide dissolved therein, converting the liquid to a foam. Pressure inside the container is partially maintained by the continuing release of carbon dioxide from the liquid into the internal airspace provided by tipping the container, a reaction which may be stimulated even more by further agitation of the container during use. It has been found that this method will empty a container of beer at room temperature in about 45 seconds while delivering a stream of fire-blanketing foam and carbon dioxide a distance of approximately 15 feet, the rate of issuance being determined largely by the diameter of aperture 21.

Should more than one container of fluid be needed to extinguish the fire my invention can be quickly removed from the exhausted container and replaced on a fresh one and the same operations repeated for as many times as the supply of fresh containers lasts, there being little wear to my invention other than some slight dulling of the plunger.

To assure that aperture 21 cannot easily be closed by foreign particles of the force of repeated impacts against

surface 17, I have provided a countersunk portion 37 in aperture 21. To prevent blowing off of the cap in case of leakage around seal element 15 I have provided cap 12 with a relief hole 38. To prevent premature withdrawal of plunger 13 from lid 35 I have included annular flange 24, the upper surface of which will engage the edges of the puncture in lid 35 when plunger 13 is fully inserted.

The principles embodied in my invention as described could be applied as well to an expendable unit manufactured specifically for purposes of fire fighting. While its primary value and usefulness may reside in its application to beverage containers of the type described, I do not wish to limit it thereto. Instead of a removable, reusable unit, my invention might be manufactured integrally with the container and located almost anywhere thereon. Its inherent simplicity of operation would thus be retained and its efficiency increased even further through use with specially prepared fire-fighting chemicals operating at higher pressures in special containers. Its economy of construction is much the same no matter how or to what sort of pressurized container it is applied.

I have described a fire extinguisher attachment for pressurized fluid containers which accomplishes the objects herein stated for it. Although this has been done in some particularity it is understood that this is only by way of example and that obvious changes in details may be resorted to without departing from the spirit and scope of my invention as hereinafter claimed.

I claim as my invention:

1. A fire extinguisher attachment for a cylindrical pressurized fluid metal container lipped at one end, comprising:

a hollow plunger, sharpened at one end and restrictively apertured and adapted at its other end to receive impact for urging the sharpened end through the end wall of said container, said plunger further having a shoulder near its other end and an annular flange near its sharpened end; and a resilient cap adapted to fit snugly over the lipped end of said container, retaining the plunger at its shoulder by means of an aperture, said cap including a diametral rigid member receiving the plunger near its sharpened end through an aperture large enough to clear the flange, said flange being adapted to pass easily through the end wall of the container when the plunger receives impact, but to resist withdrawal therefrom.



2. The attachment of claim 1 wherein is further provided an annular seal slidably and sealably receiving the plunger, and supported beneath the rigid member, said seal and said rigid member cooperating to seal the juncture of the plunger and the end wall of the container when the attachment is in place on the container and in operation.

3. The attachment of claim 2 wherein the resilient cap is internally grooved to fit the container lip, is domed, and apertured at its center, said rigid member being apertured in alignment with the cap aperture to support and guide the plunger substantially perpendicular to the end wall of the container when the attachment is in place thereon.


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