Aug. 21, 1956 C. L. ZABRISKIE 2,759,547

FLUID DISPENSING PACKAGE AND CONTAINER THEREFOR

Filed Sept. 24, 1951 2 Sheets-Sheet 1

Fig. 1.

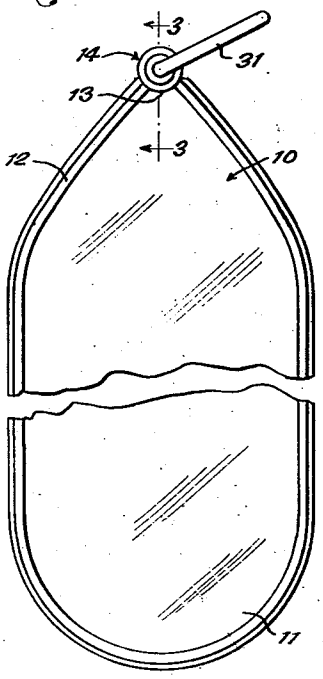


Fig. 5.

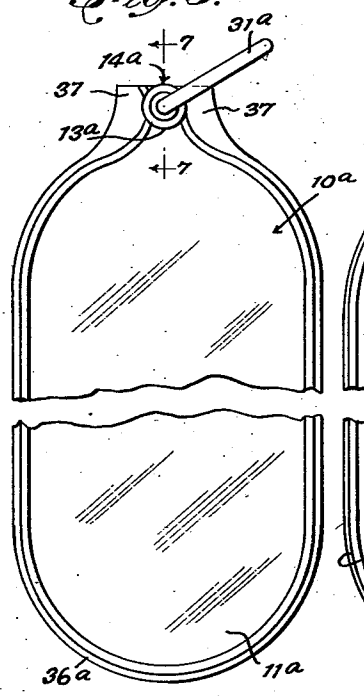


Fig. 8.

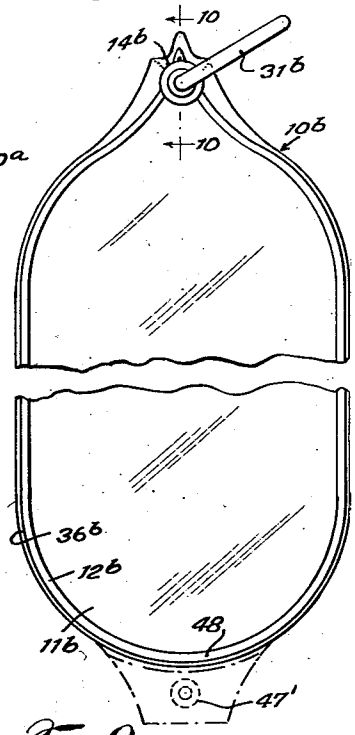


Fig. 2.

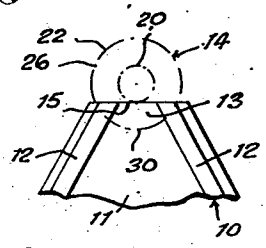


Fig. 6.

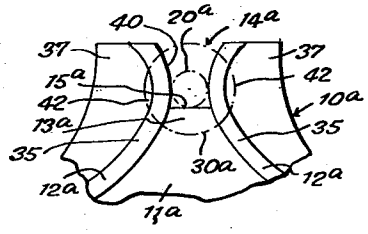


Fig. 9.

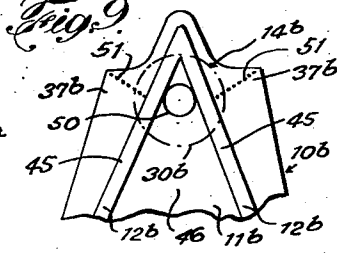


Fig. 3.

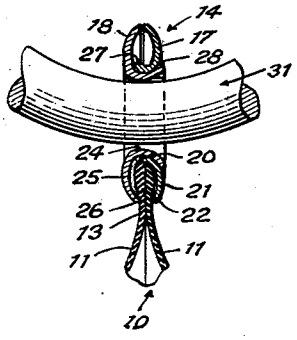


Fig. 7.

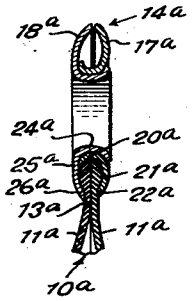
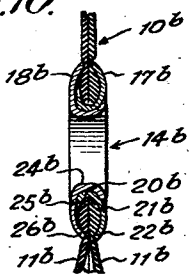


Fig. 10.



INVENTOR

Charles L. Zabriskie

BY

Emery, Vanney, Whittemore & Ely

ATTORNEYS

Aug. 21, 1956 C. L. ZABRISKIE 2,759,547

FLUID DISPENSING PACKAGE AND CONTAINER THEREFOR

Filed Sept. 24, 1951 2 Sheets-Sheet 2

Fig. 4.

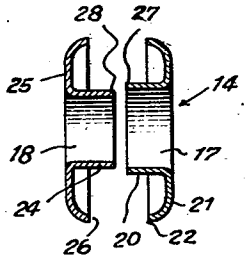


Fig. 12.

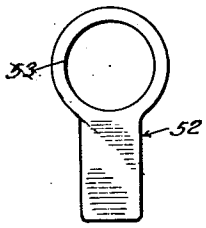


Fig. 11.

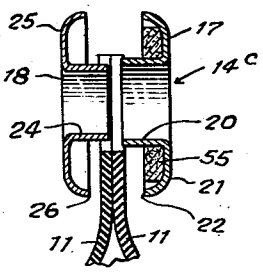


Fig. 13.

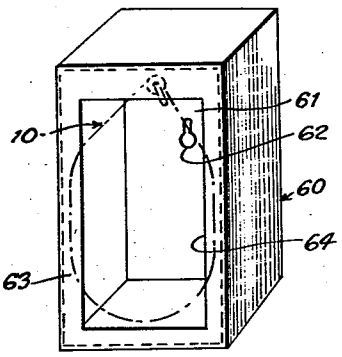


Fig. 14.

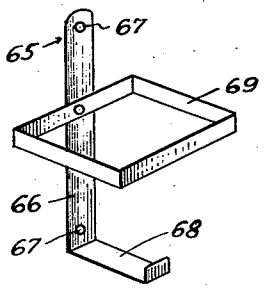


Fig. 15.

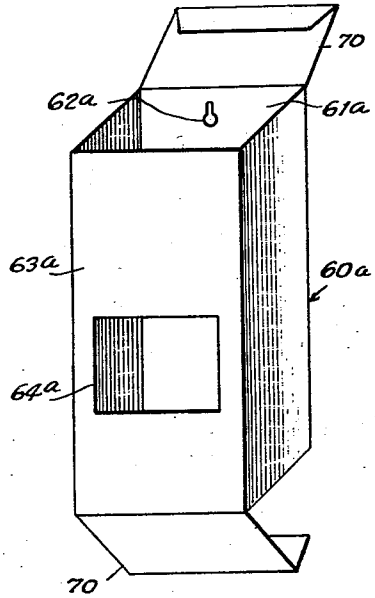
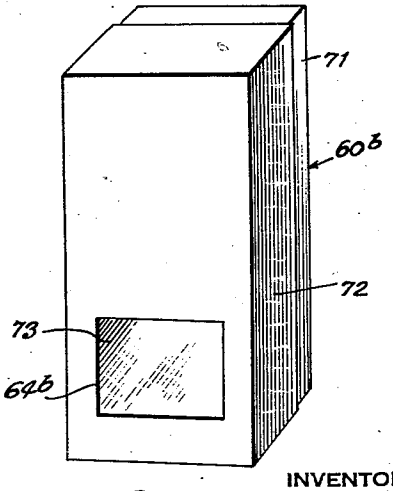


Fig. 16.



INVENTOR
Charles L. Zabriskie
BY
Emery, Vaney, Whittemore & Dix
ATTORNEYS

United States Patent Office 2,759,547 Patented Aug. 21, 1956

2,759,547

FLUID DISPENSING PACKAGE AND CONTAINER THEREFOR

Charles L. Zabriskie, New York, N. Y., assignor to Essex Products, Inc., New York, N. Y., a corporation of New Jersey

Application September 24, 1951, Serial No. 248,073

18 Claims. (Cl. 169—35)

The present invention relates to an improved fluid dispensing package, and particularly to improved structural features permitting the package to be rapidly operated from a stored position. It especially relates to a package of the type comprising a flexible bag containing the liquid to be dispensed and having a discharge mouth sealed by a closure member.

One of the special objects of the present invention is to provide a low-cost unit of the general type described which may be especially utilized as a fire extinguisher; which is simple and light in construction; which can be stored or transported safely without danger of leakage; which can be easily and quickly opened by simple manipulation for ready use; which when so opened is free of mechanical restrictions or rigid parts, and which has an improved sealed end providing a pointing nozzle, creating a definite stream of extinguishing liquid pointed at the fire when the extinguisher is squeezed.

Another object of the present invention is to provide the combination of a fire extinguisher of the general type described with an outer rigid or semi-rigid holder, which is of simple inexpensive construction; which will effectively and satisfactorily protect the flexible bag of the fire extinguisher against possible damage; which can be easily stored or transported; which permits visible inspection of the fire extinguisher therein; which can be easily supported on a wall; and which is constructed to permit ready removal of the fire extinguisher therefrom without destruction or mutilation thereof.

In carrying out certain features of the invention, the bag is made of suitable flexible sheet material resistant to the fire extinguishing liquid contained therein, and converge at one end towards a throat serving as a discharge mouth, or opening or nozzle. This opening is sealably closed by a simple removable clamp which can be easily applied to the bag after it is filled and which clamp can be easily detached from the bag by a simple pulling manipulation. In one form of the invention, this clamp is frictionally applied to the mouth of the bag to compress the overlapping panels of the bag in the area of the discharge opening in a manner to hermetically seal them together, and can be removed therefrom without mutilating the bag. For the larger bags, the clamp has a pin passing through the overlapping panels of the bag near the discharge opening and clamping flanges compressing said panels into sealing closing contact. In this latter form, when the clamp is pulled from the mouth of the bag, the pin tears through the bag, but the resulting mutilation is not sufficient to affect materially the discharge from the opening as a well-defined jet. The active nozzle structure of the bag is not destroyed by this pulling action.

As an important feature of the invention, the effective closure device for the bag is preferably in the form of a simple grommet comprising a pair of telescoping parts, one of which includes a hollow rivet pin or stem having a clamping flange ring extending substantially radially from one end thereof, and the other part including a clamping ring slipped over said pin. In fastened position, the end

of the rivet pin is upset over the latter clamping ring to press the two rings against the overlapping panels of the bag at the region of the discharge opening and to thereby hermetically seal said opening. The grommet fastening process can be effected simply by a quick stamping operation.

Because of the hollow construction of the grommet pin, the grommet when attached is generally in the form of an eyelet. As another feature of the present invention, a ring is passed through the grommet pin to define a finger piece by which the grommet may be yanked off the bag.

In some of the embodiments of the invention, the carton or holder for the fire extinguisher is made of semi-rigid paper or cardboard and has means such as a hole by which it may be suspended from a wall nail or hook. In one form, this holder has an open front to permit the fire extinguisher to be readily taken out therefrom by a simple manipulation without removing the holder from the wall.

In another form, the holder has end closure flaps at either end which can be easily opened to remove the fire extinguisher from the holder through the corresponding open end. This holder preferably has in its front wall a window opening through which the fire extinguisher can be seen.

In still another form, the holder comprises an open-front box adapted to be supported on a wall and a front cover which is telescoped thereon and which can be easily slipped off. This front cover preferably has a window to show the fire extinguisher therethrough.

Various other objects, features and advantages of the invention will be apparent from the following particular desciption and from an inspection of the accompanying drawings, in which:

Fig. 1 is a side elevation of one of the smaller forms of fire extinguishers embodying the present invention and shown comprising a flexible bag containing a fire extinguishing liquid and hermetically sealed at said discharge end by a removable closure clamp device;

Fig. 2 is a fragmentary side elevation of the upper discharge end of the flexible bag of Fig. 1 but shown on a larger scale and before application of the closure clamp device thereto, the position of said device on said discharge end being indicated in dot and dash lines;

Fig. 3 is a section of the fire extinguisher taken on lines 3—3 of Fig. 1, but on an enlarged scale;

Fig. 4 is an exploded sectional view of a form of closure clamp device but on an enlarged scale;

Fig. 5 is a side elevation of a larger form of fire extinguisher embodying the present invention and shown comprising a flexible bag containing a fire extinguishing liquid and hermetically sealed at its discharge end by a removable closure clamp device;

Fig. 6 is a fragmentary side elevation of the upper discharge end of the flexible bag of Fig. 5, but shown on a larger scale and before application of the closure clamp device thereto, the position of said device on said discharge end being indicated in dot and dash lines;

Fig. 7 is a section of the fire extinguisher taken on lines 7—7 of Fig. 5, but on an enlarged scale;

Fig. 8 is a side elevation of a still larger form of fire extinguisher embodying the present invention and shown comprising a flexible bag containing a fire extinguishing liquid and hermetically sealed at its discharge end by a removable closure clamp device;

Fig. 9 is a fragmentary side elevation of the upper discharge end of the flexible bag of Fig. 8, but shown on a larger scale and before application of the closure clamp device thereto, the position of said device on said discharge end being indicated in dot and dash lines;

Fig. 10 is a section of the fire extinguisher taken on lines 10—10 of Fig. 9;

Fig. 11 is an exploded sectional view of another form

of closure clamp device incorporating a resilient washer as a sealing port thereof and shown on an enlarged scale;

Fig. 12 is a front elevation of a tongue which is adapted to be anchored to the pin of a grommet or clamp and to be interleaved between the opposite panels of the flexible bag at its discharge end to prevent said panels from sticking together after long storage;

Figs. 13, 14, 15 and 16 show perspectives of different forms of rigid or semi-rigid cartons or holders respectively which may be employed in connection with the fire extinguishers of Figs. 1 to 9.

Referring to Figs. 1 to 4 of the drawings showing one of the smaller fire extinguishers embodying the present invention, this fire extinguisher comprises a flexible bag **10** made of suitable film or sheet material resistant to the action of the fire extinguishing liquid contained therein. The fire extinguishing liquid is desirably carbon tetrachloride, although as far as certain aspects of the invention are concerned, this liquid may be any other suitable fire extinguishing material. A plastic composition found highly suitable from which the bag can be made, especially when used with carbon tetrachloride, is polyvinyl alcohol. Films made from such a composition are impervious to carbon tetrachloride, usually are almost colorless and transparent, are exceptionally tough exhibiting high tensile strength, high tear resistance and high abrasive resistance, are highly resistant to disintegration or solution by carbon tetrachloride, have good aging characteristics, and can be easily bonded or autogenously held together by a simple application of heat and pressure to form strong hermetic seals.

In the specific form shown, the flexible bag **10** is made of two similar sheets or films **11** of polyvinyl alcohol disposed in overlapping relationship to define opposite panels of the bag and sealed together along their confronting margins by heat and seal to form an hermetically sealed seam **12**. This seam **12** has parallel sides and a rounded bottom and at the upper section, the sides thereof converge towards a discharge mouth or opening **13** which is open except for the action of a closure device **14** thereon to be described, and which for the smaller bags may be as small as ⅛" wide at its outlet end.

The converging side walls of the bag **10** towards this opening **13** serve to define a nozzle from which a high pressure stream may be discharged. Since pressure to the liquid to be discharged is applied by hand manipulation and is controlled thereby, it is not necessary for the bag **10** to have a long slender throat leading to the outlet end of the opening **13**. As a matter of fact, often a long throat is not desirable as far as certain aspects of the invention are concerned, since it tends to freeze or bind and to prevent a full stream of liquid to be discharged therefrom. With the construction shown, in which the side walls flanking the discharge opening **13** converge towards said opening at a comparatively wide angle, to define a comparatively short nozzle, such freezing or binding of the discharge opening in closed or partially closed position is prevented and full flow through said opening is assured upon removal of the closure device **14**.

The design of the bag **10** shown in Figs. 1 to 3 is adapted for use in connection with fire extinguishers of the smaller size. Such a bag when empty may, for example, be about 7½ inches long and about 3½ inches wide and has a straight or square edge **15** at its discharge end to receive the closure device **14**.

Since completely hydrolyzed polyvinyl alcohol is soluble in water, the bag **10** made therefrom may disintegrate if it comes in contact with water. To protect the bag **10** against the action of water, it is desirably coated on the outside with a suitable layer of material inert to the action of water. For producing such a protective coating on the bag, this bag may be dipped in a bath containing such a material and then dried.

As another alternative, the bag **10** may be of laminated construction, consisting essentially of an inner layer of polyvinyl alcohol and an outer protective layer of any other suitable material inert to the action of water.

This outer layer may be of vinyl composition and may be bonded to the inner layer of polyvinyl alcohol by any suitable manner to form the laminated bag construction.

The bag **10** is filled with carbon tetrachloride or other fire extinguishing material through the discharge opening **13**, and then closed and sealed by means of the closure device **14**. This closure device **14** is in the form of a clamping member which when applied is frictionally retained on the discharge end of the bag **10** and which may be slipped off said end by a pulling manipulation thereon to permit use of the fire extinguisher and the flow of the extinguishing liquid in a stream.

As a feature of the present invention, this closure device **14** is in the form of a grommet comprising a pair of telescoping parts **17** and **18**, the part **17** having an outer hollow cylindrical stem or pin **20** and a head **21** at one end of said stem in the form of a radial flange or ring dished to define an inwardly turned marginal clamping edge **22**. The other grommet part **18** comprises an inner hollow cylindrical stem or pin **24** adapted to fit snugly into the outer stem **20** and a dished head **25** in the form of a radial flange or ring similar to the flange **21** and similarly provided with an inturned marginal clamping edge **26**.

The grommet **14** is applied by telescoping the two parts **17** and **18** and pressing or stamping them together to cause the marginal flange edges **22** and **26** to be sealably clamped on to the bag **10**. During this operation, the rim **27** of the outer stem **20** curls radially outwardly against the inner face of the flange **25** to permit the two flanges **21** and **25** to approach axially towards clamping position and the rim **28** of the inner stem **24** acting as a rivet, is swaged or upset radially outwardly against the outer face of the flange **21** to hold the two grommet parts **17** and **18** permanently together. This operation of fastening the grommet **14** in position is effected by stamping action through the use of a so-called grommetting machine, or will occur when the two parts are pounded together.

In applying the grommet **14** to the discharge end of the filled bag **10**, the telescoped grommet parts **17** and **18** are placed centrally with respect to said discharge end with the stem **20** of the grommet part **17** positioned against the square edge **15** of said bag at said discharge end and the two grommet flanges **21** and **25** located on opposite faces of the bag **10** as shown in Fig. 2 in dot and dash lines. While in this position, the grommet **14** is fastened by stamping action into the state shown in Fig. 3 and clamped onto the bag **10** as already described, to seal the bag opening **13**. In this clamping position, the lower sections of the marginal flange edges **22** and **26** are firmly pressed against the overlapping panels of the bag **10** across the opening **13** along an arc **30** bringing said panels compressively together and thereby hermetically sealing said opening. The sealing of the discharge end of the bag **10** is continued along the arc defined by the marginal flange edges **22** and **26** and across the seam **12** at said end, up to the edge **15** of said bag. Beyond this arc, the marginal flange edges **22** and **26** have no clamping function.

The grommet **14** is firmly retained in sealable closure position indefinitely notwithstanding rough usage during storage or transportation. The grommet **14** is so retained on the discharge end of the bag solely by friction and can be removed by merely pulling said grommet, to open up the bag opening **13**, without mutilating the bag.

Because of the hollow structure of the grommet stems **20** and **24**, the grommet **14** forms an eyelet through which a split ring **31** is inserted. This ring **31** is large enough to permit the index or forefinger or the thumb of the hand to be conveniently inserted therein, when it is desired to remove the grommet **14** from the bag and to open the mouth **13** for discharge purposes. This removal of the grommet **14** is effected by the simple operation of pulling

the finger 31 away from the bag 10, until the grommet slips off the bag 10.

When it is desired to use the fire extinguisher, the grommet 14 is quickly and simply removed and the discharge opening 13 pointed toward the fire. Upon application of hand pressure to the bag 10, the liquid will be discharged through the discharge opening 13 as a well defined stream or jet which can be projected a substantial distance and which can be directed with a pronounced degree of accuracy. This stream may be played upon the fire and controlled by hand manipulation, until the bag 10 is exhausted.

Where the fire extinguisher embodying the present invention is larger than that indicated in connection with Figs. 1 to 3, it is desirable that the grommet employed in connection therewith be retained more firmly onto the discharge end of the bag. Figs. 5, 6 and 7 show a modified form of fire extinguisher which is suitable for the larger types and which comprises a flexible bag 10*a* made essentially of two similar sheets or films 11*a* of polyvinyl alcohol, which are later protectively coated against the action of water as described in connection with the construction of Figs. 1 to 3, or which are bonded to outer water insoluble films respectively, to form a laminated construction. These two films 11*a* are heat-sealed together along the confronting margins to form the hermetically sealed seam 12*a*. At the upper section of the bag 10*a*, the sides of this seam 12*a* converge towards the discharge mouth or opening 13*a*, as in the construction of Figs. 1 to 3. This discharge opening 13*a* is closed by a grommet 14*a* similar to the grommet 14 of Figs. 1 to 3, except that the grommet 14*a* may be larger if desired, to accommodate for the larger size of bag employed. The parts of the grommet 14*a* corresponding to those of the grommet 14 are designated in the drawings by similar numbers except for the subscript *a*.

For affording greater clamping area between the grommet 14*a* and the bag 10*a*, than is provided in the construction of Figs. 1 to 3, the sides 35 of the seam 12*a* at the discharge end of the bag 10*a* are divergently continued beyond the throat or discharge opening 13*a*, so that the seam 12*a* is in the general form of a venturi at this end of the bag, and the usual marginal trim edges 36*a* of the bag sheets 11*a* beyond the seam 12*a* are laterally extended from the seam at the discharge section of the bag to form two wing or web extensions 37. Although the sides 35 of the seam 12*a* at the discharge end of the bag are shown curved, they may, if desired, be straight, converging towards a throat and then diverging therefrom.

For receiving the stem or pin section of the grommet 14*a*, the upper discharge end of the bag 10 has a recess 40 bounded on its sides by the edges of the sides 35 of the seam 12*a* and extending to the throat of the bag opening 13*a* to an edge 15*a*.

In fastening the grommet 14*a* to the filled bag 10*a*, the grommet parts 17*a* and 18*a* are telescoped and the telescoped stems or pins 20*a* and 24*a* inserted in the bag recess 40, until the outer stem 20*a* contacts the edge 15*a* of the bag at the lower end of said recess. In this initial position, the grommet flanges 21*a* and 25*a* will extend beyond the sides 35 of the seam 12*a* and into overlapping relation with the bag wings 37 as shown in Fig. 6. In this position, the grommet 14*a* is clamped onto the bag 10*a*, causing the marginal flange edges 22*a* and 26*a* of the grommet 14*a* to be firmly pressed against the overlapping panels of the bag 10*a* across the opening 13*a* along an arc 30*a* bringing said panels compressively together and thereby hermetically sealing said opening. The marginal flange edges 22*a* and 26*a* of the grommet press firmly against the overlapping panels of the bag 10*a*, not only across the opening 13*a* to seal said opening, but also across the sides of the seam 12*a* at two spaced sections of each side and along an arcuate region 42 of each bag wing 37 between said sections, as shown in Fig. 6. The frictional contact area between the grommet 14*a* and the discharge end of the bag 10*a* is therefore substantial enough to assure good sealing closure of the bag opening 13*a* and retention of the grommet 14*a* indefinitely through periods of storage and transportation.

The grommet 14*a* in the form of an eyelet, has a finger ring 31*a* extending therethrough for the purpose indicated in connection with the ring 31 of Figs. 1 to 3. When it is desired to use the fire extinguisher, the grommet 14*a* is pulled off the discharge end of the bag 10*a* without mutilating the bag, by manipulation of this finger ring 31*a*. The fire extinguisher can then be used in the manner already described in connection with the construction of Figs. 1 to 3.

Figs. 8, 9 and 10 show the adaptation of the invention to an even larger fire extinguisher. In this embodiment, the fire extinguisher comprises a flexible bag 10*b* made of two similar sheets or films 11*b* of polyvinyl alcohol which are later protectively coated against the reaction of water, as described in connection with the construction of Figs. 1 to 3, or which are bonded to outer water insoluble films respectively, to form a laminated construction. These two films 11*a* are heat-sealed together along the confronting margins to form the hermetically sealed seam 12*b*. Near the upper section of the bag 10*b*, the sides of this seam 12*b* converge and near the discharge end, the sides 45 of this seam approach at a smaller angle and meet to define therebetween a triangular bag area 46 and to completely seal the bag at this discharge end. To permit the bag 10*b* to be filled, the bottom of the bag is not completely closed by the seam 12*b*, but is left open by means of a pouring spout extension 47, shown in dot and dash lines in Fig. 8. If desired, a grommet 47′ may be attached to extension 47. The bag 10*b* is filled through this spout 47 with carbon tetrachloride or other suitable fire extinguishing liquid, and then sealably closed by heat-sealing across the base of of said spout to form a seam 48 meeting the ends of the seam 12*b*. The spout extension 47 may remain on the bag 10*b* or may be trimmed off close to the seam 48 after the bag is filled and completely sealed.

To the discharge end of the filled bag 10*b* is applied a grommet 14*b*. To permit the entire lengths of marginal flange edges of the grommet parts to be effective on the bag for clamping action, the usual trim edges 36*b* of the bag sheets 11*b* beyond the seam 12*a* are laterally extended from the upper sides 45 thereof to form two wing or web extensions 37*b*.

The grommet 14*b* is similar to the grommet 14 of Figs. 1 to 3, except that the grommet 14*b* may be larger to accommodate for the larger size of bag employed. The parts of the grommet 14*b* corresponding to those of the grommet 14 are designated in the drawings by similar numbers except for the subscript *b*.

For applying the grommet 14*b* to the bag 10*b*, a hole 50 is stamped in the triangular bag area 46, clear of the seam sides 45 and large enough to permit the pin or stem 20*b* of the grommet part 17*b* to pass therethrough. The pin or stem 24*b* of the other grommet 18*b* is then inserted into the pin 20*b*, and the two grommet parts 17*b* and 18*b* upset and swaged by stamping into clamped position onto the bag. It should be noted that in clamped position, the lower sections of the marginal flange edges 22*b* and 26*b* are firmly pressed against the overlapping panels of the bag 10*b* along an arc 30*b* bringing said panels compressively together and thereby hermetically sealing the bag below the hole 50. These marginal flange edges 22*b* and 26*b* press on the bag panels including seam areas and the wing extensions 37*b* along their entire length, so that complete hermetic sealing of the bag around the hole 50 is assured.

The hollow pins or stems 20*b* and 24*b* conjointly form an eyelet to receive the finger ring 31*b* similar to the ring 31 in the construction of Figs. 1 to 3. When it is desired to use the fire extinguisher, the grommet 14*b* is torn off the discharge end of the bag 10*b* by manipulation

of this finger ring 31*b*. This tears open the seal near the apex of the triangular bag area 46 and forms a discharge opening through which the liquid from the bag may be discharged. The mutilation of the bag 10*b* by this tearing action will not be severe enough to destroy the nozzle confirmation at the discharge end of the bag, so that the liquid will be ejected from the discharge opening as a well defined stream or jet. If desired, predetermined tear lines 51 in the wings 37*b* formed by scoring or pin-pricks may be provided, to insure the complete separation of the end piece of the bag beyond the nozzle, when the grommet 14*b* is yanked from the bag. The protection of a well defined stream from the nozzle is thereby assured.

In the constructions of Figs. 5 to 10, instead of employing a ring 31*a* or 31*b* as a finger piece, the eyelets formed in the grommets 14*a* and 14*b* may, in accordance with certain aspects of the invention, be large enough to permit a finger to extend therethrough, so that the ring may be dispensed with and the grommet itself may serve as a finger piece.

Also, in the construction of Figs. 8, 9 and 10, instead of using the specific grommet 14*b* as described, a solid rivet may be employed. This rivet would be passed through the hole 50 in the bag 10*b* and would have a head at one end cooperating with the upset flanged end at the other end to define clamping operating in the sealing manner of the flanges 21*b* and 25*b* in the grommet 14*b*. A finger ring could be attached to the head or any other part of the rivet to facilitate pulling manipulation.

In the bag construction of Figs. 8, 9 and 10, the bag 10*b* may be filled from the bottom, the filled bag sealed at the bottom and the grommet 14*b* then applied, or the grommet may be applied while the bag is empty, the bag filled from the bottom and then sealed at the bottom. The empty bag with the grommet 14*b* applied thereto and the bottom open for filling may be stored or may be shipped in this condition to a distant point for filling.

In the constructions of Figs. 1 to 10, the bag has been described as made of two similar sheets or films disposed in overlapping relationship and heat-sealed together along their confronting margins to form a hermetic border seal. However, as far as certain aspects of the invention are concerned, the bag may be made of a single sheet, having its opposite longitudinal sides sealed together to form a tube, or the bag may be made in the form of a seamless tube by drawing or extrusion or the bag may be formed in one piece by moulding.

The grommets 14, 14*a* and 14*b* in the form of the invention shown in Figs. 1 to 9, are adequate to be frictionally retained indefinitely upon the discharge end of the bag in clamped sealing condition, without the use of any resilient sealing washers or rings. However, there may be severe climatic or other adverse conditions present, under which the bag films or sheets may shrink in thickness. Under these conditions, it might be necessary in order to assure the continued sealing action of the grommet, to provide a resilient washer between the grommet clamping flanges.

In Fig. 11 is shown a grommet 14*c*, which is similar in all respects to the grommet 14, 14*a* and 14*b* described, except that it has incorporated therewith a washer 55 of suitable resilient material such as cork, encircling the outer stem or pin 20 and fitting into the discharge flange 21 of the grommet part 17. This washer washer 55 resiliently presses the two sheets of the bag sealably together, when the grommet 14*c* is clamped in position, and if and when these sheets shrink in thickness, the washer will through its resiliency, follow these sheets and maintain sealing contact therewith.

Even if the opposed panels of the bag along the nozzle should have a tendency to stick together, the nozzle is short enough so that the pressure of the liquid in the bag, when said bag is squeezed, will separate said panels. However, if it is desired to prevent the opposed panels of the bag along the nozzle from adhering, a tongue 52 shown in Fig. 12, may be interleaved between these panels near the discharge opening. This tongue 52 is made of material which is different from that of the bag panels to be separated and which does not adhere thereto, and has a hole 53 at one end to receive the outer hollow stem 20 of the grommet part 17. This tongue 52 is supported between the two telescoping grommet parts 17 and 18 and is pulled out from the nozzle between its opposed bag panels, when the grommet is pulled from the bag.

The fire extinguishers shown in Figs. 1 to 9 are intended to be supported and protected in an outer carton or holder during storage and transportation. Fig. 13 shows a form of carton 60 which may be used for the purpose. This carton 60, preferably of rigid or semi-rigid cardboard, is rectangular in shape to receive the fire extinguisher comfortably therein and comprises a rear wall 61 having a hole 62 by which the carton with the fire extinguisher therein may be supported from a wall nail or hook. The front wall 63 of this carton has opening 64 through which the fire extinguisher therein may be seen and its condition determined, without the necessity of removing it therefrom. This opening 64 is preferably large enough to permit the fire extinguisher to be easily removed therethrough when it is desired to use the extinguisher.

Under certain conditions, as for example where the supporting wall may be subjected to vibrations or sudden movements, as in a truck, the hole 62 for hanging the holder or carton from a wall nail or hook may not afford the necessary stable support. Under such conditions, instead of the carton shown in Fig. 13, a bracket as shown in Fig. 14 may be employed as a holder for the bag. This bracket made of metal or other suitable rigid strong material may comprise an angle piece 65 having one leg 66 with two holes 67 to receive wall screws or nails by which the bracket may be rigidly fastened to a supporting wall and an outstanding leg 68 to seat the bag thereon. Secured to the leg 66 as for example by riveting as shown, or if desired by welding, is a ring 69 for encircling the bag and holding it against lateral displacement. This ring 69 may be rectangular as shown, or if desired, may be circular or elliptical. In other instances where there is vibration at the point of holding, the bag and box may be introduced with the bracket shown in Fig. 14.

Fig. 15 shows another form of outer carton or holder 60*a* which may be used in conjunction with any of the fire extinguishers described. This carton 60*a* made of rigid or semi-rigid cardboard is rectangular in shape and comprises a rear wall 61*a* having a hole 62*a* by which the carton with the fire extinguisher therein may be supported from a wall nail or hook. The front wall 63*a* of this carton has a window opening 64*a* to permit inspection of the fire extinguisher without the necessity of removing it therefrom.

To permit the fire extinguisher to be easily removed from the carton 60*a*, the carton is provided with a closure flap 70 at either or both ends. If the closure flap 70 is at the bottom, the fire extinguisher can be removed from the carton simply by pulling said flap open and permitting the fire extinguisher to drop out from the open bottom of the carton. If the closure flap 70 is at the top, the fire extinguisher can be removed from the carton, simply by pulling said flap open and lifting the fire extinguisher out through the open top of the carton by means of the finger ring on the grommet attached to the discharge end of the fire extinguisher bag.

Fig. 16 shows another form of outer protective carton 60*b* which is particularly suitable for the larger fire extinguishers. This carton comprises a rectangular box 71 open at the front and having a rear wall provided

with a hole to permit suspension from a wall nail or hook, and a front rectangular cover **72** telescoped over the box and slidable off and on said box. This box cover **72** has an opening **64***b* with a transparent window **73** to permit inspection of the fire extinguisher, without the necessity of removing it therefrom.

In case of a fire, the front cover **72** is slipped off the box **71** and the extinguisher taken out. The grommet at the discharge end of the extinguisher bag is then yanked off to open the mouth of the bag for jet discharge.

It may be desirable to construct the outer carton itself of a flexible or semi-rigid material such as heavy acetate, so that the device may be employed without taking the bag out of the carton. This could be accomplished by making the carton shown in Fig. 15 of a heavy acetate material. In operation, the upper flap **70** would be opened, the finger ring **31** pulled to free the discharge orifice **13**, and the entire carton squeezed. This method of operation would have the added advantage that the walls of the carton, being more rigid than the bag itself, would serve to apply uniform pressure against the bag without any impairment in the functioning of the device.

As far as certain aspects of the invention are concerned, the carton instead of being of rectangular cross-section, may be of any suitable shape, as for example, circular, elliptical or octagonal in cross-section.

It will be noted from the above description that an improved portable fire extinguisher is provided, that the extinguisher by a quick pull is ready to be pointed to a fire and that by a squeezing action there is produced a stream of the extinguishing liquid that will normally reach a fire about twenty-five to thirty feet away.

It will also be noted that the extinguisher is capable of being stored for long periods of time without loss or deterioration and that the simple sealing device is still capable of being easily removed from its position of completely sealing the nozzle of the extinguisher, even after such periods.

While the invention has been described with particular reference to specific embodiments, it is to be understood that it is not to be limited thereto but is to be construed broadly and restricted solely by the scope of the appended claims.

The invention claimed is:

1. A fluid dispensing package adapted for rapid operation from a stored position, the package including a flexible container containing a liquid to be dispensed and having a mouth portion forming an orifice proportioned and shaped to eject a predetermined form of liquid discharge when the container is squeezed, and a two-part closure member, each of the parts of which are biased against opposite sides of the mouth portion and pressing the latter shut tightly enough to substantially hermetically seal the portion closed, said member frictionally engaging the mouth portion with a degree of firmness proportioned to sustain the weight of the liquid in the container when the container is stored by suspension from said member and to permit the mouth portion to be pulled free from the member when the container is manually pulled away therefrom.

2. A squeezebag operable for instant liquid discharge, comprising a flexible bag containing liquid to be discharged and having an integral portion preformed with converging side walls to form a discharge orifice adapted to emit a jet of liquid, a two-part closure and suspension member, each of said parts engaging said side walls on opposite sides thereof and pressing the latter shut tightly enough to hermetically seal said orifice while still allowing the closure member to be slidably removable therefrom without impairment of said orifice, and means for rapidly removing said closure from said bag.

3. A fluid dispensing package according to claim 1, in which the liquid to be dispensed is carbon tetrachloride.

4. A fluid dispensing package according to claim 1, in which the flexible container is constructed of a polyvinyl alcohol film.

5. A fluid dispensing package according to claim 1, in which the flexible container comprises a pair of opposed panels of thermoplastic film sealed together at their edges to form a container, said panels having corresponding converging areas to form said mouth portion for the ejection of said fluid.

6. A fluid dispensing package according to claim 1, in which the closure member engaging the mouth portion is a grommet comprising two parts, one part being a hollow stem having a flange at one end thereof and the other part being a hollow pin having a flange at one end thereof, said pin being telescoped within said stem to secure said parts together and to clamp said flanges against said mouth portion.

7. A fluid dispensing package according to claim 6 and a resilient washer between said flanges for engaging said mouth portion to maintain a uniform frictional engagement with said mouth portion.

8. A fluid dispensing package according to claim 1 in which the liquid to be dispensed is a fire extinguishing fluid.

9. A fluid dispensing package adapted for rapid operation from a stored position, the package including a flexible container containing a liquid to be dispensed, said container having a mouth portion at one end thereof provided with coverging side walls forming an orifice proportioned and spaced to eject under pressure a predetermined form of liquid discharge when the container is squeezed and a filling portion at the other end thereof, said filling portion being adapted to be permanently sealed after said container has been filled, and a two-part closure and suspension member, each of the parts of which are biased against opposite sides of the mouth portion and pressing the latter shut tightly enough to substantially hermetically seal the portion closed, said member frictionally engaging the mouth portion with a degree of firmness proportioned to sustain the weight of the liquid in the container when the container is stored by suspension from said member and to permit the mouth portion to be pulled free from the member when the container is manually pulled away therefrom.

10. In a fluid dispensing package according to claim 9, a grommet attached to said filling portion permitting said container to be suspended thereby.

11. In a fluid dispensing package according to claim 1, a finger ring attached to said closure member to facilitate the disengagement of said mouth portion from said closure member.

12. In a fluid dispensing package according to claim 5, a tongue secured to said closure member for removal therewith and extending between said panels adjacent said mouth portion to prevent adhesion of said panels to one another.

13. A fluid dispensing package according to claim 5, in which each of the panels is comprised of a sheet of polyvinyl alcohol film laminated to a sheet of moisture-resistant plastic film, said panels being sealed together to form a container in which the inner opposing faces are polyvinyl alcohol film.

14. An article of manufacture, comprising a flexible bag containing a fire extinguishing liquid to be dispensed, said bag comprising a pair of similar sheets of thermoplastic material in face-to-face contact heat sealed together at their marginal edges to form a seam, said seam converging at a relatively wide angle towards one end of said bag to define a discharge opening, and a two-part closure and suspension member, each of the parts of which are biased against opposite sides of said discharge opening and pressing the latter shut tightly enough to substantially hermetically seal the portion closed, said member frictionally engaging said sheets adjacent said discharge opening with a degree of firmness proportioned to sustain the weight of the liquid in

the bag when the bag is stored by suspension from said member, and to permit the discharge opening to be pulled free from the closure member without impairment of said discharge opening.

15. The combination of a fluid dispensing package according to claim 1 and an outer protective carton for said extinguisher comprising a box open at the front, and a front cover slidably telescoped over said box.

16. A fluid dispensing package according to claim 1, in which the flexible container is constructed of an inner layer of polyvinyl alcohol and an outer layer of a moisture-resistant plastic composition.

17. An article of manufacture comprising a flexible container having a mouth portion at one end forming an orifice proportioned and shaped to eject a predetermined form of liquid discharge when the container is squeezed, and a filling portion at the other end adapted to be sealed after said container has been filled, and a two-part closure and suspension member, each of the parts of which are biased against opposite sides of the mouth portion and pressing the latter shut tightly enough to substantially hermetically seal the portion closed, said member frictionally engaging the mouth portion with a degree of firmness proportioned to sustain the weight of the liquid in the container when the container is stored by suspension from said member and to permit the mouth portion to be pulled free from the member when the container is manually pulled away therefrom, whereby the container may be filled through said filling portion, and said filling portion then hermetically sealed, thereby providing a fluid dispensing package adapted for rapid operation from a stored position.

18. An article of manufacture comprising a flexible bag having a portion preformed at one end with converging side walls to form a discharge orifice for emitting a jet liquid under pressure, and a portion preformed at the other end to form a filling opening, a two-part closure member, each of said parts engaging the sidewalls on opposite sides thereof and pressing the latter shut tightly enough to hermetically seal said orifice while still allowing said closure member to be slidably removable therefrom without impairment of said orifice, whereby the bag may be filled through said filling opening then hermetically sealed, thereby providing a squeeze bag operable for instant liquid discharge from a stored position.

References Cited in the file of this patent

UNITED STATES PATENTS

558,126	Van Horne	Apr. 14, 1896
645,432	Stohr	Mar. 13, 1900
1,714,741	Urquhart	May 28, 1922
1,850,008	Gore	Mar. 15, 1932
2,050,812	Schweitzer	Aug. 11, 1936
2,222,267	Schnabel	Nov. 19, 1940
2,387,738	Bogolowsky	Oct. 30, 1945