

United States Patent

[11] 3,633,247

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[73]	Assignee	Mobil Oil Corporation

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Application

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[54] PERFORATED STRAP CLOSURE FOR BAGS
8 Claims, 7 Drawing Figs.

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229/62
[51] Int. Cl..... B65d 63/00
[50] Field of Search..... 24/206 A,
208 A, 16 PB, 30.5 PB, 30.5 TC, 17 A, 20 R; 40/21
R; 229/62

[56]	References Cited		
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ABSTRACT: A device for easily, quickly, and securely closing flexible bag structures comprising an elongated strap made of resilient material having at least two longitudinally spaced apart perforations. The strap has an end portion of configuration adapted for insertion into and pulling through a perforation in said strap spaced apart from another perforation intermediate said end portion and the perforation through which the end portion is inserted to form a noose. In use, such as for closing the gathered mouth of a bag, a positive lock is provided upon further pulling of said end portion until the intermediate perforation interlocks with the perforation through which the end portion is inserted.

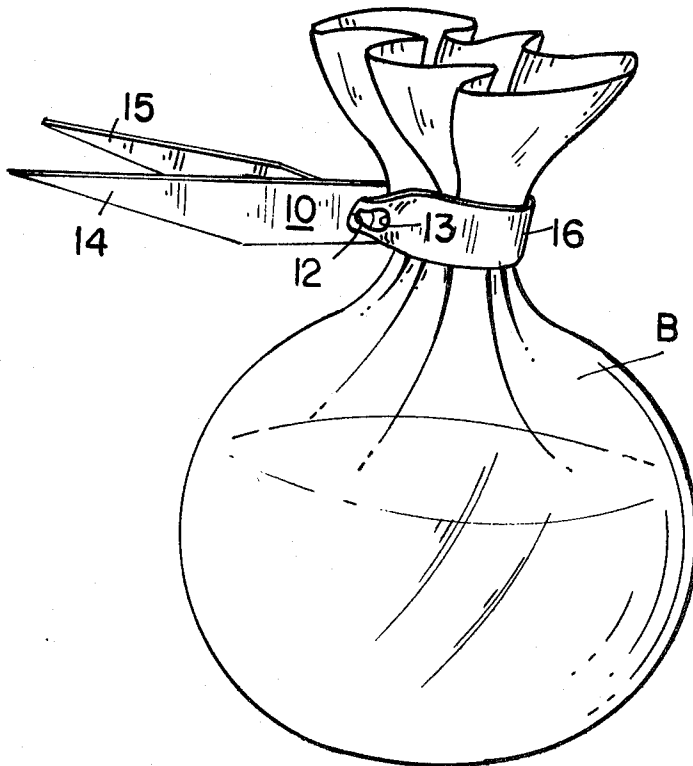


FIG. 1

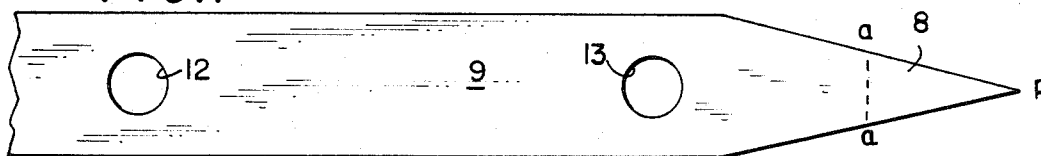


FIG. 2

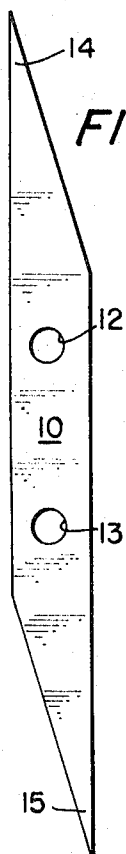


FIG. 3

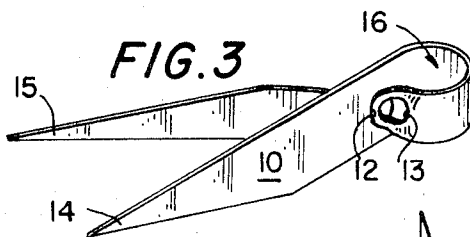


FIG. 7

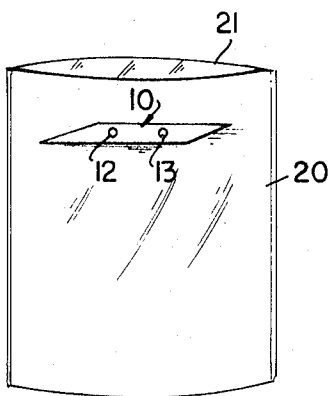


FIG. 5

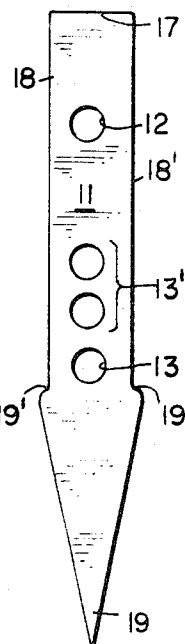


FIG. 4

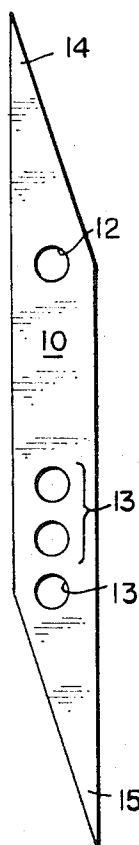
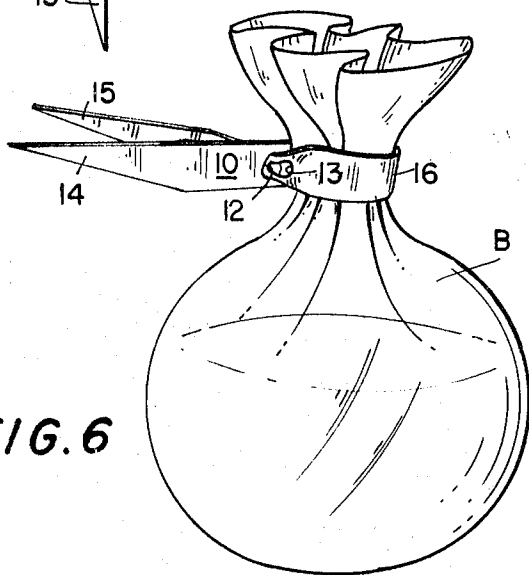


FIG. 6



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PERFORATED STRAP CLOSURE FOR BAGS

BACKGROUND OF THE INVENTION

1. Field of the Invention

The closure device of the present invention has application as a means for closing flexible bags.

2. Description of the Prior Art

U.S. Pat. No. 3,114,184 discloses a device for use as a bag closure which comprises a male-to-female interlocking means having exterior edges of lateral teeth on the male member, and U.S. Pat. No. 3,363,293 discloses a bag tie with a locking mean similar to that of the above patent. No prior art is known of the type provided by the present invention for the described closure of flexible bag structures.

SUMMARY OF THE INVENTION

This invention provides a closure device, for a flexible bag structure, comprising a flexible elongated strap, preferably substantially flat, having at least two longitudinally spaced-apart perforations (e.g., circular holes). An end portion of said strap has a configuration adapted e.g., elongatedly tapered to a point) for insertion into pulling through one of the perforations spaced apart from another perforation intermediate said end portion and the perforation through which said end portion is inserted to form a noose. Upon further pulling of said end portion until the intermediate perforation interlocks with the perforation through which said end portion is inserted, a positive lock is provided. The noose so formed may be tightened around the gathered folds of a flexible bag structure opening to effect closure of the bag structure.

The closure device of the present invention may as an embodiment comprise several of such intermediate perforations (e.g., circular holes) located substantially on the longitudinal axis of a resiliently flexible elongated strap to provide several points of positive locking action by interlocking with the perforation through which said adapted end portion is inserted as the noose is progressively tightened.

Another embodiment of the closure device of the present invention comprises such a strap having two end portions of a configuration adapted for insertion into and pulling through a perforation spaced apart from a perforation intermediate one of the end portions and a perforation through which said end portion is inserted.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a flat top view of a flexible elongated strap embodied by the present invention;

FIG. 2 is a flat top view of another embodiment of a resiliently flexible strap;

FIG. 3 is a perspective view of the strap of FIG. 2 in a tightened noose position;

FIGS. 4 and 5 are flat top views of still other embodiments of flexible straps as embodied herein;

FIG. 6 is a perspective view of a bag closed by a closure of the present invention; and

FIG. 7 is a plan view of a plastic bag in combination with a closure device, as embodied herein, detachably secured to the bag.

DESCRIPTION OF SPECIFIC EMBODIMENTS

Referring now more particularly to the drawings in which like reference characters indicate like elements throughout, in FIG. 1 there is shown flexible elongated strap 9, made of a plastic material such as polyethylene. Strap 9 comprises an end portion 8 of configuration adapted (i.e., elongatedly tapered to a point P) for insertion into and pulling through a perforation as described hereafter, and two longitudinally spaced-apart perforations (i.e., circular holes), of which one perforation 12 is spaced apart from the other perforation 13 intermediate said end portion 8. When used for a bag closure, the strap of FIG. 1 is adapted for insertion of end portion 8 into perforation 12 and further pulled therethrough until per-

foration 13 interlocks with perforation 12, thus, the strap provides a noose tightenable around the gathered folds of a flexible bag structure opening to effect closure of the bag structure.

In the embodiment of FIG. 1, end portion 8 of strap 9 is of smaller size in width from line aa to end point P of end portion 8 than is the diameter of perforation 12 which is spaced longitudinally apart from intermediate perforation 13. The intermediate perforation 13 is disposed in the end portion 8 of strap 9 where the width of the end portion 8 is greater than the diameter of perforation 12. That is, and as shown, intermediate perforation 13 is disposed in the strap 9 at a portion thereof which is wider than end portion 8.

In FIG. 2 there is shown another embodiment of a flexible strap 10 provided as a closure device for a flexible bag structure and, in FIG. 3, such a strap is shown in the form of a closed interlocked loop. The strap 10 comprises end portions 14 and 15 of a configuration adapted (i.e., elongatedly tapered to a point) to be inserted into and pulled through a perforation longitudinally spaced apart from a perforation intermediate the spaced-apart perforation and the inserted end portion to form a noose. In this embodiment, perforations 12 and 13 are disposed so that either one can be used as the perforation into which an end portion of the strap can be initially inserted. Thus, if end portion 15 is used as the inserted end portion, perforation 12 is the spaced-apart perforation into which end portion 15 is inserted and perforation 13 is the intermediate perforation which provides the positive locking action when it engages with perforation 12 as the end portion 15 is pulled through perforation 12. Likewise, when end portion 14 is used as the inserted end portion, perforation 13 is the spaced-apart perforation and perforation 12 is the intermediate perforation.

FIG. 3 shows the first of the above options in which end portion 15 is used as the inserted end portion and the noose 16 is formed which may be tightened around the gathered folds of a flexible bag structure opening to effect closure of the bag structure. Also shown in FIG. 3 is the positive locking action provided by interlocking of perforation 12, with perforation 13, when the noose is tightened to where perforation 12 and 13 coincide. This positive locking action is accomplished when the flexible strap is compressed into a curl (e.g., generally U-shaped, upon being pulled through a perforation which is smaller in width (e.g., diameter) than is the width of the strap where the intermediate perforation is located. The resilient force due to the compressing of the strap against the inner edge of the outer encompassing perforation is less where the holes interlock than it is on either side of the inside encompassed hole along the strap. This compressive force differential causes the interlocking of the holes to be substantially positive, effectively restraining movement in either a noose tightening or loosening direction.

As a further embodiment, as shown in FIG. 4, strap 10 comprises a plurality of intermediate or spaced-apart perforations 13' on the longitudinal axis between perforations 12 and 13 to provide said positive locking action at various points as the noose is tightened. FIG. 5 shows still another embodiment of the closure device of the present invention in which flexible strap 11 comprises perforation 12 in body portion 17 cut at right angles to the parallel side edges 18 and 18' of the strap and in which the diameter of hole 12 is smaller than the width of at least a portion of tapered end portion 19 of the strap 11. End portion 19 of strap 11 is tapered to a point so that it can be inserted into and pulled through perforation 12. Intermediate perforations 13, 13', etc., provide a positive locking action by interlocking with perforation 12 as the noose is tightened. In the embodiment shown in FIG. 5, the end portion 19 may be in the configuration shown wherein the tapered end has shoulders (i.e., shoulders 19') that provide a positive catch in hole 13.

FIG. 6 shows a closure device, as illustrated in FIG. 3, in combination with a flexible bag B to effect closure of the bag opening by securely holding the gathered folds of said bag

opening closed In this embodiment, and with bag B filled or otherwise containing material that may be trash, food products, etc., the closure is effected in the manner aforesaid in regard to FIG. 3.

The closure device of the present invention may be used with flexible bag structures of various types. Nonlimiting examples of flexible bag structures with which the present closure device is useful include paper, cellophane, vinyl, polyethylene and the like. The closure device may be attached, in detachable manner, to individual bag structures for use when closure of the bag is desired. Nonlimiting means of attaching them to bags include adhesive tape, glue, and pressure sensitive adhesives. An embodiment of the latter is shown in FIG. 7 wherein a closure device 10 as embodied herein is attached by means of, for example, a pressure sensitive adhesive to an outside wall of plastic bag 20 having an open mouth at 21. When the bag 20 is used for packaging and is to be closed, strap 10 can be readily detached and used for closure as aforesaid.

The closure device may be made from any resilient material, examples of which include thermoplastics, suitably flexible paper products, etc., in single film thickness or a plurality of films (laminates) sealed together to give a desired thickness and rigidity for the intended usage.

The closure device, as embodied herein, is desirably provided with an embossed pattern in the body of the strap material to add to the security of the strap in its use as a closure device by imparting one resilient strength to the strap wall in the interlocking position. However, for some applications, a smooth surface is suitable.

The size specifications of the closure device of the present invention may vary according to its prospective use. For many usages, a strap as embodied herein is suitable when comprised of a suitable plastic material from about 3 mils to about 6 mils or more in thickness, from about 5 to about 7 inches in length and from about 3/4 to about 1 1/2 inches in width, and in which the perforations, when in the form of holes, have a diameter generally about 25 percent of the width of the strap at the area of the perforations. Nonlimiting examples of perforations in the present device include circular holes, cross slits, slits of various orientations, combinations of these and any other suitable configuration of a perforation opening.

A specific example of a closure device of the present invention, generally suitable for closure of plastic garbage bags and food bags comprises a 6-mils thick embossed polyethylene film of the configuration shown in FIG. 5 having an overall length of 6 inches, a width of 1 inch at the area defined by 3-inch-parallel side edges 18 and 18' and circular holes (12, 13, and 13') one-fourth inch in diameter disposed in the strap with perforation 12 being about one-half inch from end 17 and the remaining holes being disposed on the substantially lon-

gitudinal centerline of the device towards the other end of the strap.

Although the present invention has been described with preferred embodiments, it is to be understood that modifications and variations may be resorted to, without departing from the spirit and scope of the invention, as those skilled in the art will readily understand.

What is claimed is:

1. A device for closure of flexible bag structures which comprises a flexible elongated strap having at least two longitudinally spaced-apart perforations, both end portions of said strap being elongatedly tapered such that either end may be inserted into and pulled through one of said perforations spaced apart from another of said perforations intermediate said end portion being inserted and said perforation through which said end portion is inserted to form a noose, said strap being adapted to securely close the open end of a flexible bag structure by gathering the bag structure opening, surrounding said gathered opening with said strap, passing an end portion of said strap, adapted for insertion into and through a perforation spaced apart from a perforation intermediate said end portion and said perforation through which said end portion is inserted, to form a noose, and pulling said end portion until said intermediate perforation engages with the perforation through which said end portion is inserted to provide a positive lock for said noose.

2. A closure device as defined in claim 1, wherein said strap comprises a thermoplastic material, said perforations in said strap are substantially circular holes, and said end portions of said strap are elongatedly tapered to a point.

3. A device, as defined in claim 1, which comprises an elongated substantially flat film of resilient material, said film having a width defined by substantially parallel sides for a substantial portion of the overall length of said film and end portions in substantially tapered configuration from said body portion to the ends of said film, and at least two longitudinally spaced apart perforations in the portion of said film defined by said substantially parallel sides.

4. A device, as defined in claim 3, wherein the perforation through which an end portion is to be inserted is substantially circular and has a diameter smaller than the width of at least a portion of said tapered end portion to be inserted.

5. In combination, a flexible bag having an open mouth and, detachably secured on an outside wall of said bag, a device as defined in claim 3.

6. A flexible bag having an open mouth in gathered form closed by a device as defined in claim 3.

7. In combination, a flexible bag having an open mouth and, detachably secured thereto, a device as defined in claim 1.

8. A flexible bag having an open mouth in gathered form closed by a device as defined in claim 1.

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