March 5, 1968 W. M. BROOKS ET AL 3,371,949

BAG SEAL INCLUDING A UNITARY, DEFORMABLE SEALING ELEMENT WITH DEFORMABLE BAG GRIPPING ARMS

Filed Sept. 1, 1966 2 Sheets-Sheet 1

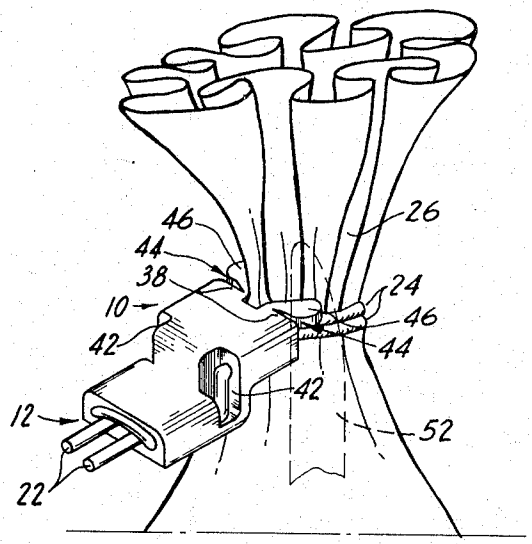


Fig. 1

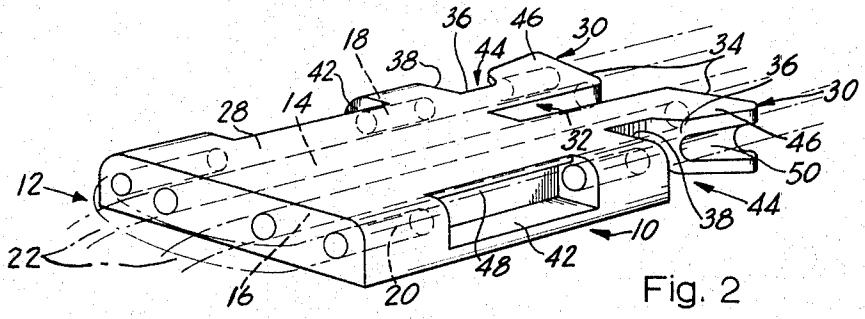


Fig. 2

Fig. 4

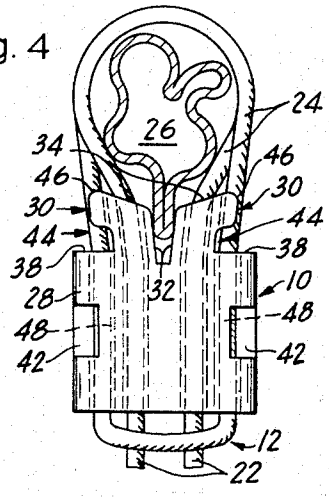
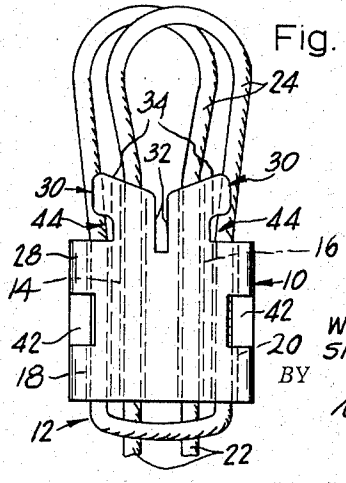


Fig. 3



INVENTORS:
WINFRED M. BROOKS
SIGURD M. MOBERG
BY
Robert Henderson
ATTORNEY

March 5, 1968 W. M. BROOKS ET AL 3,371,949

BAG SEAL INCLUDING A UNITARY, DEFORMABLE SEALING ELEMENT WITH DEFORMABLE BAG GRIPPING ARMS

Filed Sept. 1, 1966 2 Sheets-Sheet 2

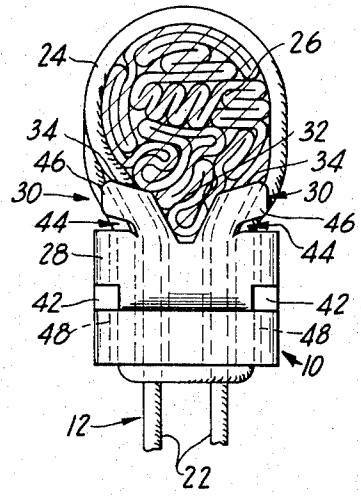


Fig. 5

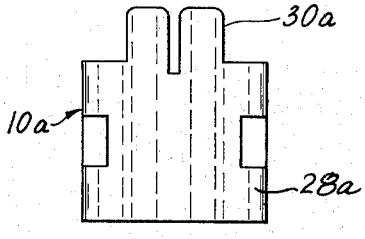


Fig. 6

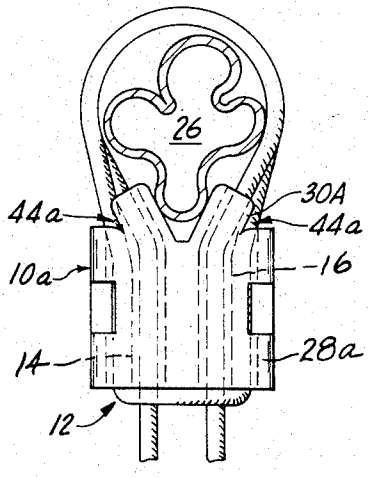


Fig. 7

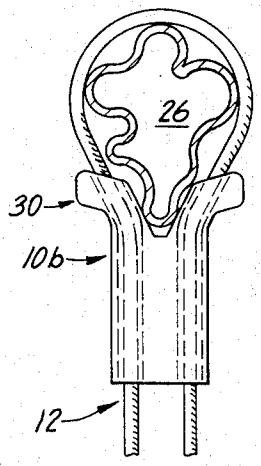


Fig. 8

INVENTORS:
WINFRED M. BROOKS
SIGURD M. MOBERG

BY
Robert Henderson
ATTORNEY

United States Patent Office 3,371,949 Patented Mar. 5, 1968

3,371,949

BAG SEAL INCLUDING A UNITARY, DEFORMABLE SEALING ELEMENT WITH DEFORMABLE BAG GRIPPING ARMS

Winfred M. Brooks, West Orange, and Sigurd M. Moberg, East Orange, N.J., assignors to E. J. Brooks Company, Newark, N.J., a corporation of New Jersey

Filed Sept. 1, 1966, Ser. No. 576,684
4 Claims. (Cl. 292—308)

ABSTRACT OF THE DISCLOSURE

A bag sealing device comprising a cord which extends through passages in the body portion of a lead block providing a loop portion engageable about a bag neck or the like; the block having inelastic integral spaced fingers in side by side relationship for disposition at opposite sides of the bag neck, and having opposed gripping surfaces to engage the neck of the bag therebetween. When the loop portion is tightened the bag neck is forcefully wedged between the surfaces causing the fingers to bend away from each other, and tangentially engage adjacent parts of the bag neck and to hold the bag neck tightly between the fingers.

This invention relates to bag seals of the type which includes a deformable block of lead or the like employed to tighten, hold and seal a cord or equivalent shackle securely in place about a bag neck to maintain the bag closed against undetectable tampering with the bag's contents.

The use herein of the term "lead" shall be understood to refer not only to lead but to include all other metals, metal alloys, and plastic materials which are usable as seals or sealing elements according to this invention as hereinafter described.

The use of the term "cord" herein shall be understood to refer not only to the most commonly accepted meaning of that word but also to all other members such as wire, tape, etc. usable as a shackle according to this invention as hereinafter described.

It has long been common practice to use a deformable. generally rectangular block of lead in conjunction with a cord to close and seal a bag neck; the cord extending through bores in the block and tightly about the bag neck, and the block being substantially deformed to grip the within cord portions. The arrangement was such that the cord could not be pulled from or slid within the block sufficiently to open the back without leaving some evidence of tampering on the seal.

To defeat any effort of an interloper merely to slide the cord of the seal upwardly and off of the bag neck, a separate bag gripping element, usually of sheet steel, has hitherto been employed in connected relation to the cord and lead, at the latter's inner end, for so firmly engaging the bag neck as to prevent such sliding of the cord.

The principal object of this invention is the elimination of such a separate bag gripping element for the purpose, among others, of avoiding the cost of such a gripping element and of assembling it with the cord and the lead in manufacturing the seal.

The stated object and other more or less obvious objects and advantages are accomplished by the present invention, in its broadest aspect, by providing, at the inner end of the lead block, integral bag-gripping arms which spread apart with the bag neck between them as a result of tightening of the cord and of deforming the lead block into very tight gripping engagement with cord portions therewithin. As the indicated spreading occurs in response

to pressing or tightening of the lead block against the bag neck, the mentioned arms effect a very tight engagement with the bag and, to some extent, dig into the latter to prevent sliding of the cord from the bag neck.

Several preferred embodiments of this invention are shown in the accompanying drawing for illustrative purposes and without limiting the invention to those particular embodiments.

In the drawing:

FIG. 1 is a perspective view of a preferred form of bag seal according to a first embodiment of this invention, shown as applied to the neck of a partly disclosed bag.

FIG. 2 is a perspective view of a lead sealing block of a seal according to the first embodiment of this invention; portions of a cord, as associated with the block being shown in chain lines.

FIG. 3 is a reduced, front elevational view of a seal according to the said first embodiment including a block as shown in FIG. 2. This figure illustrates the seal as delivered by the manufacturer to the user. This figure is also indicative, in its outline of the block, of the outline shape of the latter's back face which is flat and free of material recesses or depressions therein.

FIG. 4 shows a complete seal with a lead block according to FIGS. 2 and 3, in elevation, and the seal's cord partially tightened about a sectionally shown bag neck as during application of the seal to a bag. In this figure, the upstanding fingers of the lead block are shown as partly spread apart by the partial tightening of the cord.

FIG. 5 is a view, successive with respect to FIG. 4 and generally similar to the latter, except that the seal appears as fully or finally applied to the bag; the upstanding fingers being fully spread apart and tightly gripping the bag neck as a result of final tightening of the cord, and the lead being deformed and thus very tightly locked upon the cord.

FIG. 6 is a front elevational view of the lead sealing block of a bag seal according to a second embodiment of this invention; the block being shown as in a penultimate stage of its manufacture.

FIG. 7 is a front elevational view of a bag seal according to said second embodiment, as loosely applied initially to a sectionally shown bag neck; the upstanding fingers being shown as spread apart as in its final manufactured form.

FIG. 8 is a view, generally similar to FIG. 4, but illustrating a bag seal according to a third embodiment of this invention.

According to the first embodiment, the bag seal illustrated in FIGS. 1–5 comprises a deformable, lead, sealing block **10** and a cord **12** rather circuitously threaded through four, straight, parallel passages **14**, **16**, **18** and **20** in said block with free ends **22** extending downwardly (as viewed in FIG. 3) from the block and intermediate portions of the cord forming a pair of loops **24** which, in use, extend about the neck **26** of a bag as shown in FIGS. 1, 4 and 5.

The block **10** is illustrated as having a rectangular main or body portion **28** with which a pair of fingers **30** are integral and extend upwardly therefrom. These fingers, as formed in the manufacture of the block **10** (ordinarily by casting) are spaced apart with opposed inner surfaces **32** approximately in parallelism and merging at their upper ends with diverging surfaces **34** extending upwardly and outwardly. Outer surfaces **36** extend somewhat sinuously downwardly from surfaces **34** and inwardly to conjunction with shoulders **38** of the body portion **28**.

Passages **14** and **16** extend completely within the block and its fingers, while passages **18** and **20** extend only partly within the block; being partly interrupted by side

recesses 42 in opposite sides of the block and by spaces 44 between the shoulders 38 and wing portions 46 of the fingers. The partial continuity of the passages 18 and 20 includes channels 48 and 50 respectively in the side recesses 42 and the wing portions 46.

The degree of softness of the lead forming the block 10 is such as to enable the block and its fingers to be deformed in the manner hereinafter explained and the side recesses 42, by reducing the mass of lead in transverse alignment therewith, facilitate such deformation.

In use, the seal, in its condition shown in FIG. 3, is applied to a bag with the cord's loops 24 extending about the bag's neck 26 as shown in FIG. 4. After manually pulling the cord's free ends 22 to initially tighten the loops 24 to cause the seal to hug the bag neck, the user employs a hand tool, well known in the art, which, first, further tightens the cord about the bag neck and then finally deforms the lead block's body portion 28 from its FIG. 3 condition to its condition shown in FIGS. 1 and 5. In this final deformation of the lead block, the cord becomes further and finally tightened about the bag's neck.

The mentioned manual pulling of the cord's free ends is not forceful enough to cause any deformation of the lead block from its shape as manufactured, as in FIGS. 2 and 3. The mentioned tightening of the cord by the tool, however, so forcefully tightens the cord as to cause the bag neck 26, pressing against diverging surfaces 34, to wedge the fingers 30 apart, thus deforming said fingers, from their initial condition of FIGS. 2 and 3, to their condition shown in FIG. 4. Then, the deforming of the block's body portion 28 by the tool, spreads the fingers still further apart as shown in FIGS. 1 and 5.

It should be observed that the inner surfaces 32 and the diverging surfaces 34 of the fingers 30 perpendicularly adjoin the main front and back surfaces of said fingers forming rather sharp surface junctions. Thus, when the seal is tightly applied to a bag neck as in FIGS. 1 and 5, said surface junctions dig into and become partially embedded in the fabric of the bag neck, thereby preventing sliding of the seal upwardly and off of the bag, while the seal remains in its tightly applied condition. Of course, any effort by an interloper to loosen the seal either fails or so collapses the lead block as to make evident the occurrence of tampering.

Persons authorized to open the bag are not concerned in keeping the seal intact. They can easily open the seal, to open the bag, by using a knife, partly shown in broken lines at 52 in FIG. 1, to cut the cord where it extends within either of the spaces 44. As thus used, the sharp edge of the knife is guarded by one of the fingers 30 against harmful cutting engagement with the bag, thereby preserving the latter for reuse.

The second embodiment, illustrated in FIGS. 6 and 7, differs from the first embodiment only in the shape and disposition of fingers of lead block 10*a* which are disposed initially in parallelism and shaped approximately as shown at 30*a* in FIG. 6. Initially lacking diverging surfaces such as those shown at 34 in FIGS. 2–5, the fingers 30*a* are spread apart, during manufacture of this seal, to form them as diverging fingers 30A shown in FIG. 7. The user, as with the first embodiment, applies the seal of FIG. 7 to a bag neck, then manually tightens the cord, and, finally, employs the mentioned tool to further tighten the cord and finally deform the lead block's body portion 28*a* and fingers 30A approximately to the fully deformed conditions thereof as shown with reference to the lead block illustrated in FIGS. 1 and 5. With this embodiment, as with the first embodiment, the bag is safeguarded by a finger 30A against damage from a knife, employed at a space 44*a* to open the bag.

The third embodiment, illustrated in FIG. 8, differs from the first embodiment only in the omission from lead block 10*b* of side marginal portions within which the passages 18, 20 of the first embodiment are provided; the cord, however, being threaded through the lead block as shown to form only a single loop to extend about the bag neck. This embodiment affords no safeguard against damage of the bag by a knife in opening the bag.

Seals according to this invention lend themselves to automatic threading of the cord through the lead block in manufacture, thereby avoiding time consuming, costly manual threading. They also avoid the cost of the separate sheet steel, bag gripping element and the cost of assembling the latter with a lead block and cord. Moreover, the absence of such a separate bag gripping element makes it easier to apply the seal to a bag.

It is to be noted that, as seals according to the second embodiment are delivered to the user in the form shown in FIG. 7, the lead defining the passages 14 and 16, having been bent from the latters' straight condition as in FIG. 6, is at least slightly constricted at the bend, so that the cord is sufficiently gripped that the user is not likely to be inconvenienced by having the cord slide out of the lead block before the seal is used. If desired, this advantage can be imparted to the seals of the first and third embodiments by providing for the fingers 30 thereof to be at least partly spread apart during manufacture of the seals.

It should be understood that this invention may be practiced in various other ways without, however, departing from the invention as set forth in the following claims.

We claim:

1. A sealing device comprising a cord, a lead block having a body portion formed with passages extending therethrough through which said cord extends in such manner as to provide a loop portion in the cord adapted for disposition about a bag neck or the like; said block having inelastic spaced fingers integral with said body portion, arranged in side by side relationship for disposition at opposite sides of the bag neck and having opposed gripping surfaces adapted to engage the bag neck therebetween; said fingers being bendable away from each other in response to forceful wedging of said bag neck therebetween upon tightening of said loop portion, whereby to give said fingers a retentive relative angularity approximately conforming tangentially to the shape of adjacent parts of the bag neck and to hold the bag neck tightly between said fingers.

2. A sealing device according to claim 1, a pair of said passages extending separately through said fingers, and the bending of said fingers causing partial collapse of said passages, thereby enhancing the frictional engagement, of the lead defining said pair of passages, with the cord extending through the latter.

3. A sealing device according to claim 1, said fingers having opposed inner, wedging, surfaces extending away from said body portion, and diverging outwardly from each other, and coacting with the bag neck, upon tightening of the cord's loop portion, to wedge the fingers to bend them oppositely, away from each other, to seat the bag neck tightly between said fingers.

4. A sealing device according to claim 1, said fingers having opposed inner surfaces extending, in substantial parallelism, away from said body portion, and wedging surfaces, continuing from the ends of said inner surfaces distal from the body portion and diverging outwardly from each other, and coacting with the bag neck, upon tightening of the cord's loop portion, to wedge the fingers away from each other to seat the bag neck tightly between said fingers.

References Cited

UNITED STATES PATENTS

2,578,504	12/1951	Canter	292—308
2,619,696	12/1952	Scott	292—308
2,654,624	10/1953	Canter	292—308
2,983,539	5/1961	Norin	292—308

MARVIN A. CHAMPION, *Primary Examiner.*

EDWARD J. McCARTHY, *Assistant Examiner.*