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2,735,149

CLOSURE FASTENER

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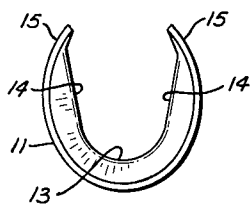


FIG. 1

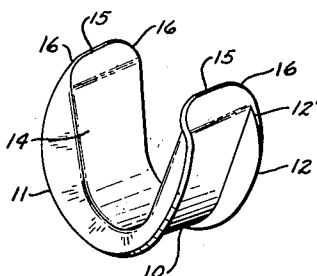


FIG. 2

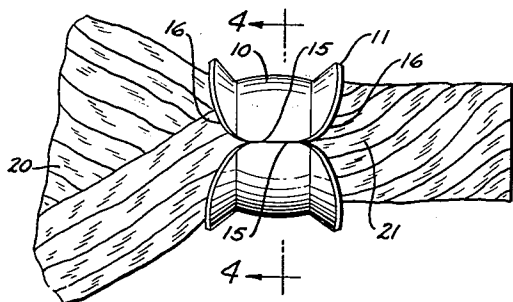


FIG. 3

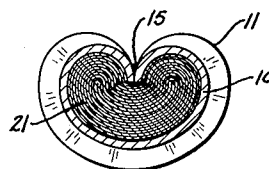


FIG. 4

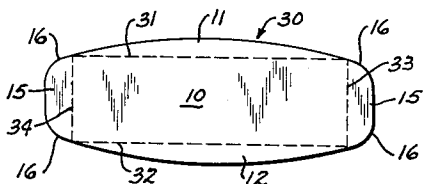


FIG. 5

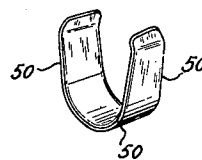


FIG. 6

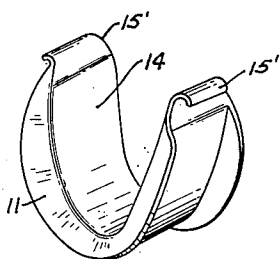


FIG. 7

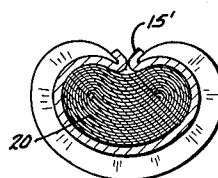


FIG. 8

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CLOSURE FASTENER

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Application August 13, 1951, Serial No. 241,511

5 Claims. (Cl. 24—30.5)

This application is a continuation in part of my application Serial No. 189,924, filed October 13, 1950.

This invention relates to a sausage, to a closure fastener, to a fastened closure, and to a method of fastening closures and sealing constrictions. The invention will be described as applied to the sealing of foodstuffs such as smoked meats, poultry, frozen foods, but it also includes sealing anything, for instance machine parts subject to rust, in hermetically sealed flexible containers protecting against liquids and gases, but the particular description is only illustrative of the general principles, procedures and apparatus.

An object of this invention is to seal materials such as foodstuffs in transparent, hermetically sealed packages. Thus, poultry, ham or the like may be enclosed in a bag composed of polyethylene, or of regenerated cellulose, or the like, evacuated by known methods, and sealed. The sealing has heretofore offered material difficulty, although attempted by string or various sorts of clamps. The first attempt at sealing usually involves forming a constriction at the mouth of the bag by collapsing the end and gathering it into a tight spiral to which the string is applied. However, prior methods have not succeeded in forming a successful hermetical seal in the end of a tube, except, it is believed, in the case of the barrel fasteners of my own prior invention.

It is an object of the invention to seal such a closure and to make a satisfactory closure fastener for that purpose.

It is another object to seal great sausages with metallic fasteners at both ends, an object heretofore difficult of accomplishment in many cases.

The application of the invention is not limited to the sealing of twisted closures but is equally applicable to the sealing of other types of constriction such as pleats and folds.

The invention includes a fastened closure, a closure fastener, and a method of fastening a closure with the fastener, the nature of which will be better understood by reference to the accompanying drawings.

A preferred form of the invention involves a closure fastener comprising an elongated body of stiff metal adapted to be curled around a flexible closure such as a sausage casing to form a sealing collar, said body having bracing means along an edge thereof and having a rounded protuberance at one end adapted to compress the flexible material of the closure to which the fastener is applied.

Fig. 1 is a side view of the fastener;

Fig. 2 is a perspective view of the fastener;

Fig. 3 is a plan view of a closure fastened with the novel fastener;

Fig. 4 is a section on the line 4—4 of Fig. 3;

Fig. 5 is a plan view of the blank from which the fastener is made, showing bend lines in dots; and

Fig. 6 is a perspective view of a modification.

Fig. 7 is a perspective view of a preferred form of the fastener; and

Fig. 8 is a section through a closure sealed by the fastener of Fig. 7.

The fastener itself has a transversely flat body portion 10. This portion need not be geometrically flat. Along the sides of this body portion in the preferred form extend flanges 11, 12, which project outwardly from the body portion at an obtuse angle, such angle being measured with respect to the geometrical elements of the external side of the body portion. These flanges have a plurality of functions serving not only to give the body portion a degree of rigidity sufficient to hold its shape after application but also to protect the material of the sealed casing against damage by the fastener itself. These flanges are reduced in height at their ends as indicated at 12' and disappear, their curvature being extended into the curves of the end pieces or tabs of the fastener. The angle at which the flanges are employed makes it possible to use flanges of material height, but flanges perpendicular to the body portion can be employed, care being taken that their height is not so great that they split when the fastener is applied. The form of flange shown is preferred.

The fastener is return bent at 13, a preferred form of return bend being the semi-circle, although other shapes may also be employed. Beyond the return bend 13 are comparatively straight side lengths 14 which terminate in tabs 15 which have rounded corners 16. These tabs are bent inwardly at an obtuse angle to side portions 14, preferably during the making of the fastener, but in any event, at some time during the application of the fastener. The tabs 15 are blunt. The preferred form of fastener is thus channel-shaped, having a channel formed between a central web or strip and bracing means that extends out of the level of the web.

The sealed closure forming a part of this invention may be produced in the following manner, reference being had to Figs. 3 and 4. A bag 20, such as polyethylene or other synthetic or natural flexible material, such as intestine, weasand, or paper is twisted at its end into a tight constriction 21 which is quite incapable, in itself, of hermetically sealing the casing. The fastener 10 of Figs. 1 and 2 is placed over the constricted portion 21 and while the body portion 10 is compressed upon said portion the ends 15 are curled inward into juxtaposition and forced into the constriction 21 without disrupting the material thereof. The two end portions set up internal compression which is evenly transmitted throughout all the turns and twists of the material in constriction, so that all portions thereof become hermetically sealed. It is not at first apparent why this should be so, but it will be understood better when it is perceived that a single line can be drawn through the compacted material which will be substantially equidistant from the surrounding metal and surrounded by equal quantities of compressed casing. There is, consequently, a locus of equal compression which may account at least, to some extent, for the success of the device. The intumed ends 15, being in juxtaposition, brace each other and mutually resist the expansive effort of the compressed material.

In some cases a single flange is sufficient but in general the double flanges are preferred because of the bracing effects and additional strength which they impart to the structure.

The device may be made as indicated in Fig. 5 by stamping out oval blanks 30, bending up flanges 11, 12 along bend lines 31, 32 and bending tabs 15, 15 in along bend lines 33, 34. The inturning of the ends 15 facilitates the application of the fastener. The body portion can be return bent in advance or at the time of use. The seal produced is hermetical and proof against dust, moisture and gases.

The curves 16 have the very valuable function of pre-

venting damage to the casing by the edge of the fastener even though there may be no flange at the precise point where the ends bite into the twist or other constriction.

The fasteners can be made of metal; brass, aluminum and steel having sufficient flexibility and high form persistence after being bent into sealing relation to the object sealed, and being illustrative. The thickness of metal used will depend on the service required. In the modification of Fig. 6 there is no flange, the body being provided with rounded edges 50, and with a mid portion of sufficient thickness to have the requisite form persistence after bending.

A preferred form of the invention is shown in Figs. 7 and 8, in which the ends or tabs of the collar are reverse bent to form rounded protuberances which are adapted to sink into and compress the material of the closure 21 without weakening or damaging it. Protuberances can be formed in other ways than curling the ends of the collar, for instance by displacing a portion of the flattish body 14 inwardly, and when so formed the protuberance may appear at a place other than the ends of the collar.

In Figs. 7 and 8, the numerals 11, 14 refer to the same structure as in Figs. 1 and 2. The ends 15' are reverse bent and constitute rounded protuberances capable of being forced into the body of the flexible closure 20 with more force than the uncurled ends 15 of the form of invention of Fig. 1, without damaging or penetrating the material of the closure. The tabs 15' are preferably inwardly inclined as at 15 and also reverse bent as shown in Fig. 7. This form of the invention is superior.

An advantage of the invention is in providing a seal which is applicable to closures of different size, which can seal a twisted constriction, and can be applied to constrictions between lengths of much larger diameter. For example, these fasteners can be applied to sausages in links before the links are severed. As is known, some sausages are made by filling a long casing with foodstuff, making constrictions in the length, and twisting the casing at the constrictions. These fasteners can be applied at such constrictions. Heretofore, such methods of making link sausage were applied only to little sausages, but this fastener makes it possible to form great sausages by a novel process.

A large and very long casing, for instance, several yards in length, is filled with foodstuff, constrictions are made at spaced intervals, in sequence or simultaneously, for instance a foot apart, and the stuffed parts of the casing on opposite sides of the constriction are relatively rotated to produce a twist in the casing, now freed of food, and two of these fasteners are applied side by side to the twist. The casing is severed between the fasteners. This constitutes a new method for making great sausages, continuously. By this method, the difficulty which had previously attended the sealing of both ends of a great sausage by a sanitary metal seal is overcome and such sausages are now producible with the metal seal at both ends.

The invention serves to close casings, paper and other bags, and to close all types of flexible containers capable of being constricted. It has a wide use, including the sealing not only of the ends of tubular bodies but of constrictions in their mid-lengths as well. The material is not cut by the inturnd ends, which compress the material in the constriction without rupturing it.

The problems that had heretofore prevented the use of metal fasteners other than barrel fasteners, that is, of metal fasteners of non-circular extent, are overcome.

The new fasteners do not cut the casing and do not release under internal pressure.

As many apparently widely different embodiments of the present invention may be made without departing from the spirit and scope thereon, it is to be understood that the invention is not limited to the specific embodiments.

What is claimed is:

1. A closure fastener made of flexible but stiff metal formed at its midlength in the shape of a channel, a longitudinally extending web forming the bottom of the channel, longitudinally extending sides projecting from opposite sides of said web at divergent angles, the said web extending beyond said sides and being provided with approximately semi-circular, return bent ends, the height of said sides being progressively reduced toward the ends and merging into the extended part of the central web.

2. A closure fastener made of flexible but stiff metal formed at its midlength in the shape of a channel, a longitudinally extending web forming the bottom of the channel and longitudinally extending sides projecting outwardly from said web at other than a right angle, the said web extending beyond said sides at an end of the fastener and being provided with a blunt end, the height of said sides being progressively reduced toward the end and merging into the extended part of the said web.

3. A closure fastener made of return bent flexible but stiff metal formed at its midlength in the shape of a channel, a longitudinally extending web forming the bottom of the channel, longitudinally extending sides projecting from opposite sides of said web at divergent angles, the said web extending beyond said sides and being provided with approximately semi-circular, return bent ends, the height of said sides being progressively reduced toward the ends and merging into the extended part of the central web.

4. A closure fastener made of return bent flexible but stiff metal formed at its midlength in the shape of a channel, a longitudinally extending web forming the bottom of the channel, longitudinally extending sides projecting from opposite sides of said web, the said web extending beyond said sides and being provided with approximately semi-circular, return bent ends, the height of said sides being progressively reduced toward the end and merging into the extended part of the central web.

5. A closure fastener made of return bent flexible but stiff metal formed at its midlength in the shape of a channel, a longitudinally extending web forming the bottom of the channel, longitudinally extending sides projecting from opposite sides of said web, the said web extending beyond said sides and being provided with return bent ends, the height of said sides being progressively reduced toward the ends and merging into the extended part of the central web.

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