March 3, 1964 E. M. AUSNIT 3,122,807

SLIDER FOR A POUCH AND THE LIKE

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Fig. 1

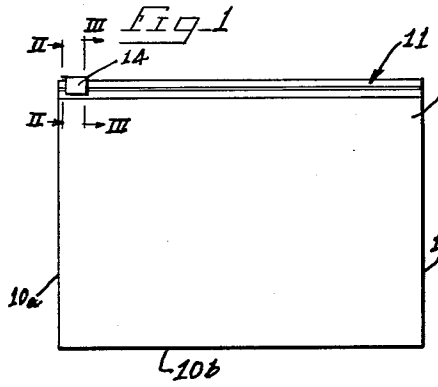


Fig. 2

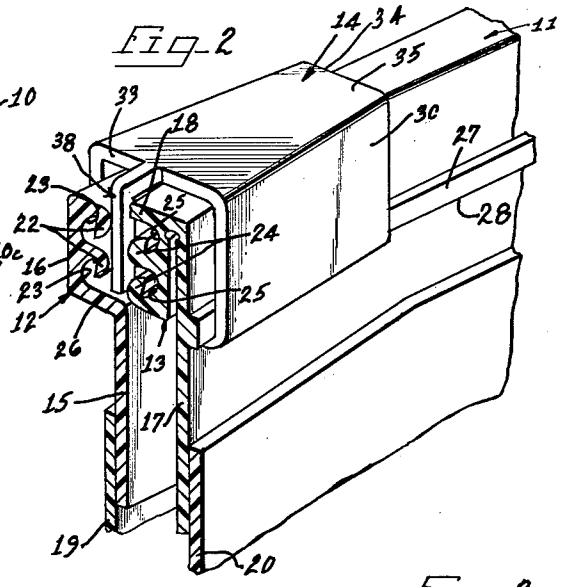


Fig. 4

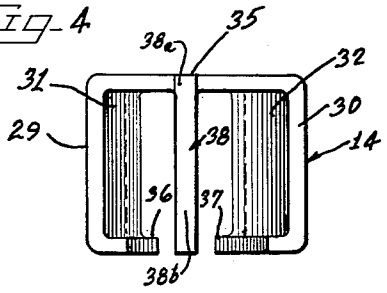


Fig. 3

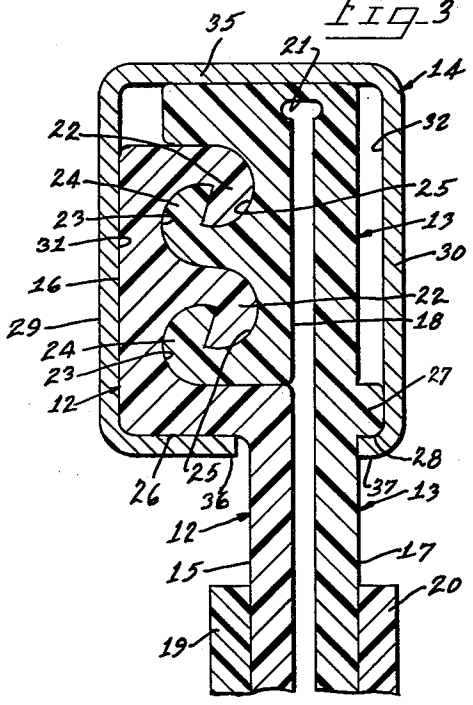


Fig. 5

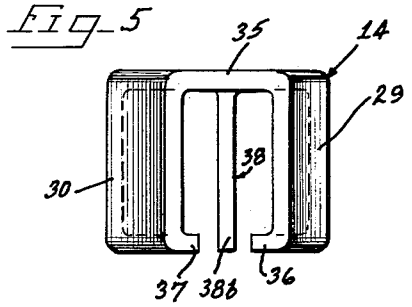
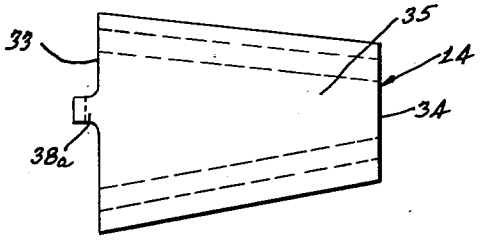


Fig. 6



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SLIDER FOR A POUCH AND THE LIKE

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Fig. 7

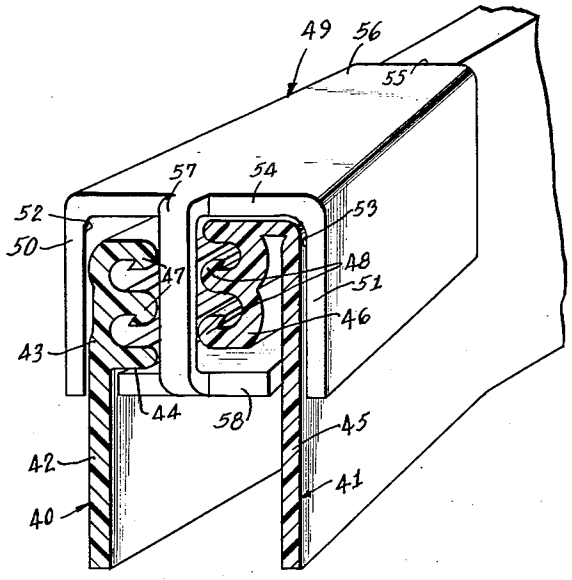


Fig. 8

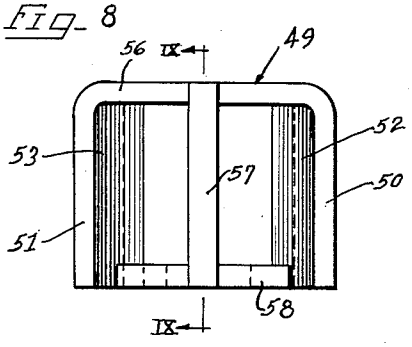
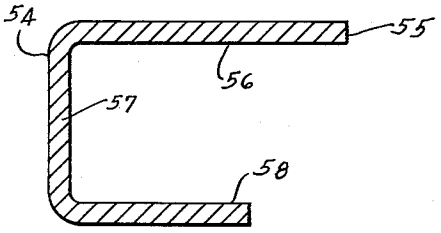


Fig. 9



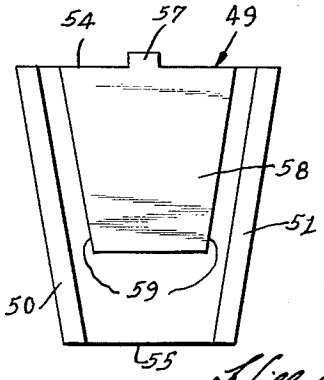


Fig. 10

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United States Patent Office 3,122,807 Patented Mar. 3, 1964

3,122,807

SLIDER FOR A POUCH AND THE LIKE

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Filed July 22, 1960, Ser. No. 44, 668
10 Claims. (Cl. 24—201)

The present invention relates to a flexible slide fastener such as used to close an opening at the edge of a pouch or envelope.

More particularly the invention contemplates providing a pair of flexible closure strips formed of plastic or like suitable material each having a web portion and a marginal portion with the marginal portions having confronting locking surfaces provided with interlocking channel and ridge elements which extend therealong. The marginal portion for the first strip is thickened and extends substantially parallel to the web portion and the marginal portion for the second strip is turned or folded inwardly inside the web portion so as to preferably lie inside the marginal portion of the first strip with the ridge and channel elements facing each other for being pressed into interlocking relationship. A slider straddles the edge of the strips and has opposed tapering sides for engaging and forcing the strips together when moved in a closing direction and has a separating finger for separating and releasing the strips when moved in an opening direction.

An object of the invention is to provide a flexible fastener or closure of the type embodying interlocking closure strips with a slider for opening or closing the strips, of an improved nature capable of reliable operation and having a structure which is simple and inexpensive to manufacture.

Another object of the invention is to provide an improved flexible closure or fastener and slider for same, particularly suited to be attached at the top edge of a pouch opening or to join the edges of two facing sheets.

A further object of the invention is to provide an improved inexpensive slider which can be stamped rather than cast for closing or opening flexible closure strips having interlocking ridge and channel elements.

Other objects and advantages will become more apparent with the teaching of the principles of the invention in connection with the disclosure of the preferred embodiment in the specification, claims and drawings, in which:

FIGURE 1 is a plan view of an envelope provided with a closure constructed in accordance with the principles of the present invention;

FIGURE 2 is a sectional view shown in perspective form taken substantially along line II—II of FIGURE 1;

FIGURE 3 is a sectional view taken substantially along line III—III of FIGURE 1;

FIGURE 4 is an end elevation view of the slider shown from the left end as viewed in FIGURE 2;

FIGURE 5 is an end elevational view of the slider shown from the end opposite FIGURE 3;

FIGURE 6 is a top plan view of the slider;

FIGURE 7 is a perspective view shown in section similar to FIGURE 2 but illustrating a modified form of the invention;

FIGURE 8 is an end elevational view of the slider shown from the left end as viewed in FIGURE 7;

FIGURE 9 is a vertical sectional view taken substantially along line IX—IX of FIGURE 8; and

FIGURE 10 is a bottom plan view of the slider of FIGURES 7 through 9.

As shown on the drawings:

In FIGURE 1 the reference numeral 10 indicates a pouch or envelope having a fastener or a closure 11 across the top edges for closing and opening the envelope 10.

The fastener 11 of FIGURES 1 through 6, as illustrated in FIGURES 2 and 3, includes first and second flexible

closure strips 12 and 13. Slidably mounted on the closure strips is a slider 14 which is moved in an opening direction (to the right in FIGURE 2) to separate the closure strips 12 and 13, or in a closing direction (to the left in FIGURE 2) to join the closure strips 12 and 13.

The closure strip 12 includes a web portion 15 and a marginal portion 16 with the marginal portion extending substantially parallel and providing an extension of the web portion.

The closure strip 13 has a web portion 17 and a marginal portion 18. For this second closure strip, the marginal portion is turned inwardly or doubled back so as to lie alongside the web portion 17. An inner fold or crease 21 is formed at the juncture of the marginal portion 18 and web portion 17 and this crease 21 may be formed with grooved sides so as to prevent the formation of a sharp juncture of material which would weaken the strip 13 and the material joining the web portion 17 and the marginal portion 18 at said juncture forms a hinge portion.

The closure strips 12 and 13 are suitably attached at the upper edges of the side walls 19 and 20 of the envelope 10. The walls are made of a suitable material such as plastic and the web portions 15 and 17 of the closure strips are suitably attached thereto such as by a heat sealed bond or by being sewed to the edges of the walls 19 and 20 of the envelope. The envelope walls are joined to each other at the edges, as illustrated at 10*a*, 10*b* and 10*c* in FIGURE 1, to provide a flat closed envelope. It will of course be understood that envelopes or pouches of other designs may be employed or that the closure strips may be used in other environments which suitably employ the features of the invention.

The marginal portions 16 and 18 of the closure strips are provided with confronting interlocking means for joining the strips. The interlocking means are shown preferably in the form of mating ridge and groove or channel elements. The closure strip 12 is shown as provided with ridges 22 having enlarged heads so as to define channels 23 therebetween. The channels lockingly receive ridges 24 on the closure strip 13. The ridges 24 have enlarged heads so as to define channels 25 therebetween which lockingly receive the ridges 22 of the first closure strip 12. In the arrangement illustrated, each of the ridges has an overhanging portion at one side so as to form a locking surface which engages with a locking surface of the overhanging portion on the ridge of the other closure strip.

In the preferred arrangement, each of the closure strips is provided with two channels and two ridges although different numbers may be employed and the ridges and channels preferably extend substantially parallel to the closure strip. As will be appreciated by those skilled in the art, other interlocking arrangements may be utilized in some circumstances and in the preferred general arrangement the interlocking means on the confronting faces of the closure strips automatically interlock in response to the application of a lateral pressure forcing them together and separate by a separating force applied between the confronting surfaces so as to draw them apart.

The strips are conveniently manufactured of plastic which is suitable for extruding and is flexible. Suitable materials for manufacturing the closure strips 12 and 13 include the thermoplastic and thermosetting organic synthetic resins. Of particular importance for this use are the vinyl type resins such as polyvinyl chloride, polyvinyl acetate, polyvinyl chloride-polyvinyl acetate copolymers, and similar vinyl resins, and polyethylene. Rubber, either natural or synthetic is not a preferred material since, in the case of rubber, it is more difficult to control the degree of rigidity for interlocking engagement between the strips. However, by proper compounding and vulcanizing the rubber, the degree of rigidity can be controlled to make

rubber acceptable for the purposes of the instant invention. The material of the envelope may be formed of the same or of different plastic.

The slider 14 may also be formed of a plastic of a sufficiently nonresilient nature so that the sides will not be spread by the resistance of the closure strips. A slider of stamped metal is preferred although a non-resilient plastic may be suitable in some circumstances.

The slider 14 slides along the closure strips and is retained in place by engagement with shoulders on the strips. The first closure strip 12 has its marginal portion thicker than the web portion 15 and laterally offset so as to provide a retaining shoulder 26. The marginal portion 18 of the closure strip 13 is similarly thicker than the web portion for convenience of accommodating the ridges and channels. On the outer surface of the closure strip 13 is a bead 27 which has a downwardly facing shoulder 28, and shoulders 26 and 28 hold or retain the slider on the closure strips as will be described. Bead 27 may or may not be used.

The slider 14, as illustrated in FIGURES 2 through 6, has a pair of opposed sides 29 and 30 having inner facing closing surfaces 31 and 32 for engaging the outer surfaces of the closure strips and forcing them together to interlock the ridges and channels. The closing surfaces 31 and 32 taper inwardly from the feed end 33 of the slider to the closing end 34 to be sufficiently close together to press the closure strips 12 and 13 together in the manner shown in FIGURE 3. The surfaces are preferably substantially flat vertical planar surfaces but in an alternative form may be slightly curved. As will be apparent from the illustrations, the outer surfaces of the sides form convenient broad gripping surfaces for gripping between the thumb and forefinger for moving the slider.

Across the top of the slider is a back 35 which is integral with the sides 29 and 30 and holds them in a fixed lateral position.

At the feed end 33 of the back 35 is a separator finger 38. The separator has an upper projecting portion 38*a* and a downwardly extending finger portion 38*b* with the finger portion functioning to force the closure strips apart when the slider is moved in an opening direction (to the right as shown in FIGURE 2). The projecting portion 38*a* may be omitted and the finger portion attached directly to the back 35.

The slider is provided with retaining means to hold it on the strips. At the lower edges of each of the sides 29 and 30 are inwardly turned retaining flanges 36 and 37 which extend beneath the shoulders 26 and 28 and hold the slider on the closure strips.

In the arrangement shown in FIGURES 7 through 10, flexible closure strips 40 and 41 are provided of construction somewhat similar to the strips of FIGURES 1 through 6. The closure strip 40 has a web portion 42 and a marginal portion 43. The marginal portion 43 is thicker than the web portion 42 and projects inwardly toward the strip 41 so as to provide a downwardly facing shoulder 44. The closure strip 41 has a web portion 45 and a marginal portion 46. The marginal portion 46 is turned inwardly and downwardly or doubled back so as to lie along on the inside of the web portion 45. The marginal portion 46 thus also forms a downwardly facing shoulder. The marginal portion is thus joined to the web portion by a laterally extending hinge portion. The marginal portions 43 and 46 are provided with confronting interlocking means for joining the strips and the marginal portion 43 is shown as provided with ridges 47 and the marginal portion 46 is provided with ridges 48. The ridges define grooves or channels therebetween and the channels lockingly receive the ridges.

Straddling the upper edges of the strips is a slider 49. The slider is of a construction that can be simply and inexpensively stamped rather than cast and includes sides 50 and 51 with inner surfaces 52 and 53 that taper inwardly from a feed end 54 of the slider to a closing end 55. The sides are integral with a back 56 and are shown as simply bent downwardly from the back at right angles thereto. The sides have straight flat inner surfaces 52 and 53 and there are no inturned flanges at their lower edges such as are provided with the slider of FIGURES 1 through 6.

Secured to the back and projecting integrally downwardly therefrom is a separator finger 57. At approximately right angles to the lower end or base of the finger 57 is an integral tab 58 in the form of a small flat plate which projects toward the closing end of the slider. The tab projects beneath the marginal portions 43 and 46 on the closure strips. The tab has inclined sides 59 which taper to a narrow width toward the closing end 55 of the slider and are substantially parallel to the inner surfaces 52 and 53 of the slider. The tab slides beneath the shoulder 44 and ridge 49 and retains the slider in its position on the edges of the closure strips. The tab 58 may also aid the finger 57 in separating the closure strips when moved in an unlocking direction (to the right as shown in FIGURE 7).

The slider is preferably formed of stamped metal although a non-resilient or hardened plastic may be suitable in some circumstances.

In operation of the arrangement of FIGURES 1 through 6, the user, for closing the envelope, moves the slider 14 to the left (as shown in FIGURE 2) along the envelope 10 and the tapering opposed sides 29 and 30 move the closure strips together to force the ridges 22 and 24 into the grooves 25 and 23 from the positions shown at the separated end of the strips in FIGURE 2 to the locking position of FIGURE 3. For opening the closure strips 12 and 13 for access to the envelope, the slider 14 is moved to the right, as shown in FIGURE 2, and the separator finger 38 separates the strips. As will be appreciated, the spaces between the closure strips 12 and 13, between the marginal portion 18 and web portion 17, and between the closure strip 13 and the side of the slider 14 are exaggerated in FIGURE 3 and the gap between the closure strips will be substantially non-existent when the strips are being pressed together. The slider in FIGURES 7 to 10 works on the same principle.

Thus it will be seen that I have provided an improved slider and closure mechanism for a container or similar object having separated edges, which meets the objectives and advantages hereinbefore set forth. The slider is of simplified construction and can easily be manufactured and assembled on the closure strips. The closure strips are preferably extruded in length and cut to size before attaching to the envelope and the slider is then placed on the strips. The slider is well adapted for easy gripping and handling by the user and provides a small compact and lightweight unit for carrying on the pouch or envelope with which the closure strips are used. The elements are easily and inexpensively made and are well adapted to mass production methods and manufacture with relatively inexpensive materials.

The drawings and specification present a detailed disclosure of the preferred embodiment of the invention, and it is to be understood that the invention is not limited to the specific form disclosed, but covers all modifications, changes and alternative constructions and methods falling within the scope of the principles taught by the invention.

I claim as my invention:

1. A flexible closure comprising a pair of flexible closure strips, each having a web portion and a marginal portion integral therewith, said marginal portions having interlocking channel and ridge elements extending along the marginal portions, the marginal portion for the first strip extending substantially parallel to its web portion and being thicker than its web portion and projecting outwardly to form a retaining shoulder where it joins the web portion, the marginal portion for the second strip turned inwardly alongside its web portion with the channel and ridge elements in confronting relationship, and

a slider straddling the strips having opposed tapered sides for engaging the strips and forcing them together to join the channel and ridge elements when moved in a closing direction and having a separator for separating said elements when moved in an opening direction, said slider having a retaining flange positioned beneath said shoulder of the first strip for holding the slider on the strips.

2. A flexible closure assembly comprising in combination,

first and second opposed closure strips each having a web portion and a marginal portion,

the marginal portions having interlocking means including projecting longitudinally extending continuous flexible ribs defining grooves therebetween for releasably interlockingly receiving said ribs,

the marginal portion of said second strip positioned alongside its web portion and connected to its web portion by a laterally extending hinge portion,

at least one of said marginal portions having a downwardly facing shoulder,

and a slider straddling said strips having,

a pair of opposed sides with outwardly facing gripping surfaces and inwardly facing closing surfaces tapering toward each other from a feed end to a closing end,

a back extending across the upper ends of the sides and being integral with said sides,

and a downwardly bent finger at the feed end of the slider integral with the back and bent downwardly therefrom having strip separating side surfaces simultaneously engaging the crests of each of the ribs on both strips for separating the strips.

3. A flexible closure assembly comprising in combination,

first and second opposed closure strips each having a web portion and a marginal portion,

the marginal portions having interlocking means including projecting longitudinally extending continuous flexible ribs defining grooves therebetween for releasably interlockingly receiving said ribs,

the marginal portion of said second strip positioned alongside its web portion and connected to its web portion by a laterally extending hinge portion,

at least one of said marginal portions having a downwardly facing shoulder,

and a slider straddling said strips having,

a pair of opposed sides with outwardly facing gripping surfaces and inwardly facing closing surfaces tapering toward each other from a feed end to a closing end,

a back extending across the upper ends of the sides and being integral with said sides,

a downwardly bent finger at the feed end of the slider integral with the back and bent downwardly therefrom having strip separating side surfaces simultaneously engaging the crests of each of the ribs on both strips for separating the strips,

and an integral tab on the lower end of the finger bent to extend toward the closing end of the slider having an upper surface engaging beneath said shoulder for holding the tab on the strips.

4. A flexible closure assembly comprising in combination,

first and second opposed closure strips each having a web portion and a marginal portion,

the marginal portions having interlocking means including projecting longitudinally extending continuous flexible ribs defining grooves therebetween for releasably interlockingly receiving said ribs,

the marginal portion of said second strip positioned alongside its web portion and connected to its web portion by a laterally extending hinge portion,

at least one of said marginal portions having a downwardly facing shoulder.

and a slider straddling said strips having,

a pair of opposed sides with outwardly facing gripping surfaces and inwardly facing closing surfaces tapering toward each other from a feed end to a closing end,

said web portions extending downwardly parallel to each other and said sides of the slider being substantially parallel to said web portions,

a back extending across the upper ends of the sides and being integral with said sides,

a downwardly bent finger at the feed end of the slider integral with the back and bent downwardly therefrom having strip separating side surfaces simultaneously engaging the crests of each of the ribs on both strips for separating the strips,

and an integral tab on the lower end of the finger bent to extend toward the closing end of the slider having an upper surface engaging beneath said shoulder for holding the tab on the strips and being sufficiently narrow so that the strips are not separated by the tab and the sole separation force is applied by said finger side surfaces,

said tab being of a length less than the length of said slider and extending short of said closing end of the slider.

5. A flexible closure assembly comprising in combination,

first and second opposed closure strips each having a web portion and a marginal portion,

the marginal portions having interlocking means including projecting longitudinally extending continuous flexible ribs defining grooves therebetween for releasably interlockingly receiving said ribs,

the marginal portion of said first strip being offset from its web portion and forming a downwardly facing shoulder,

the marginal portion of said second strip positioned alongside its web portion and connected to its web portion by a laterally extending hinge portion,

a slider straddling said strips having,

a pair of opposed sides with outwardly facing gripping surfaces and inwardly facing closing surfaces tapering toward each other from a feed end to a closing end,

a back extending across the upper ends of the sides and being integral with said sides,

and a downwardly bent finger at the feed end of the slider integral with the back and bent downwardly therefrom having strip separating side surfaces simultaneously engaging the crests of each of the ribs on both strips for separating the strips.

6. A flexible closure assembly comprising in combination,

first and second opposed closure strips each having a web portion and a marginal portion,

the marginal portions having interlocking means including projecting longitudinally extending continuous flexible ribs defining grooves therebetween for releasably interlockingly receiving said ribs,

the marginal portion of said first strip being offset from its web portion inwardly toward the mar-

ginal portion of said second strip and forming a downwardly facing shoulder,

the marginal portion of said second strip positioned alongside its web portion adjacent the first strip and connected to its web portion by a laterally extending hinge portion integral with the marginal and web portion of the second strip,

a slider straddling said strips having,

a pair of opposed sides with outwardly facing vertical planar gripping surfaces and inwardly facing closing surfaces tapering toward each other from a feed end to a closing end,

a back extending across the upper ends of the sides and being integral with said sides,

a downwardly bent finger at the feed end of the slider integral with said back and bent downwardly therefrom having strip separating side surfaces simultaneously engaging the crests of each of the ribs on both strips for separating the strips,

and an integral tab on the lower end of the finger bent to extend toward the closing end of the slider and engaging beneath said shoulder for holding the slider on the strips and being sufficiently narrow so that the strips are not separated by the tab and the sole separation force is applied by said finger side surfaces.

7. A flexible closure assembly comprising in combination,

first and second opposed closure strips each having a web portion and a marginal portion,

the marginal portions having interlocking means including projecting longitudinally extending continuous flexible ribs defining grooves therebetween for releasably interlockingly receiving said ribs,

the marginal portion of said first strip being offset from its web portion and forming a downwardly facing shoulder,

the marginal portion of said second strip positioned alongside its web portion and connected to its web portion by a laterally extending hinge portion,

and a slider straddling said strips having,

a pair of opposed sides with outwardly facing gripping surfaces and inwardly facing closing surfaces tapering toward each other from a feed end to a closing end,

a back extending across the upper ends of the sides and being integral with said sides,

means on said slider positioned beneath said downwardly facing shoulder holding the slider on the strips,

and a downwardly bent finger at the feed end of the slider integral with the back and bent downwardly therefrom having strip separating side surfaces simultaneously engaging the crests of each of the ribs on both strips for separating the strips.

8. A flexible closure assembly comprising in combination,

first and second opposed closure strips each having a web portion and a marginal portion,

the marginal portions having interlocking means including projecting longitudinally extending continuous flexible ribs defining grooves therebetween for releasably interlockingly receiving said ribs,

the marginal portion of said first strip being offset from its web portion outwardly away from said second strip and forming a downwardly facing shoulder,

the marginal portion of said second strip positioned alongside its web portion and connected to its web portion by a laterally extending hinge portion,

and a slider straddling said strips having,

a pair of opposed sides with outwardly facing gripping surfaces and inwardly facing closing surfaces tapering toward each other from a feed end to a closing end,

a back extending across the upper ends of the sides and being integral with said sides,

means on said slider extending beneath said shoulder and holding the slider on the strips,

and a downwardly bent finger at the feed end of the slider integral with the back and bent downwardly therefrom having a strip separating side surfaces simultaneously engaging the crests of each of the ribs on both strips for separating the strips.

9. A flexible closure assembly comprising in combination,

first and second opposed closure strips each having a web portion and a marginal portion,

the marginal portions having interlocking means including projecting longitudinally extending continuous flexible ribs defining grooves therebetween for releasably interlockingly receiving said ribs,

the marginal portion of said first strip being offset from its web portion outwardly away from said second strip and forming a downwardly facing shoulder,

the marginal portion of said second strip positioned alongside its web portion and connected to its web portion by a laterally extending hinge portion,

and a slider straddling said strips having,

a pair of opposed sides with outwardly facing gripping surfaces and inwardly facing closing surfaces tapering toward each other from a feed end to a closing end,

a back extending across the upper ends of the sides and being integral with said sides,

an underhanging retaining flange on the lower edge of said side engaging said first strip positioned beneath said shoulder and holding the slider on the strips,

and a downwardly bent finger at the feed end of the slider integral with the back and bent downwardly therefrom having strip separating side surfaces simultaneously engaging the crests of each of the ribs on both strips for separating the strips.

10. A flexible closure assembly comprising in combination,

first and second opposed closure strips each having a web portion and a marginal portion,

the marginal portions having interlocking means including projecting longitudinally extending continuous flexible ribs defining grooves therebetween for releasably interlockingly receiving said ribs,

the marginal portion of said first strip being offset from its web portion outwardly away from said second strip and forming a downwardly facing first shoulder,

the marginal portion of said second strip positioned alongside its web portion and connected to its web portion by a laterally extending hinge portion,

a bead extending along the outer surface of said second strip forming a downwardly facing second shoulder,

and a slider straddling said strips having,

a pair of opposed sides with outwardly facing gripping surfaces and inwardly facing closing sur-

faces tapering toward each other from a feed end to a closing end,

a back extending across the upper ends of the sides and being integral with said sides,

underhanging inwardly turned retaining flanges on the lower edges of each of said sides for engaging beneath said shoulders for holding the slider on the closure strips,

and a downwardly bent finger at the feed end of the slider integral with the back and bent downwardly therefrom having strip separating side surfaces simultaneously engaging the crests of each of the ribs on both strips for separating the strips.

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