

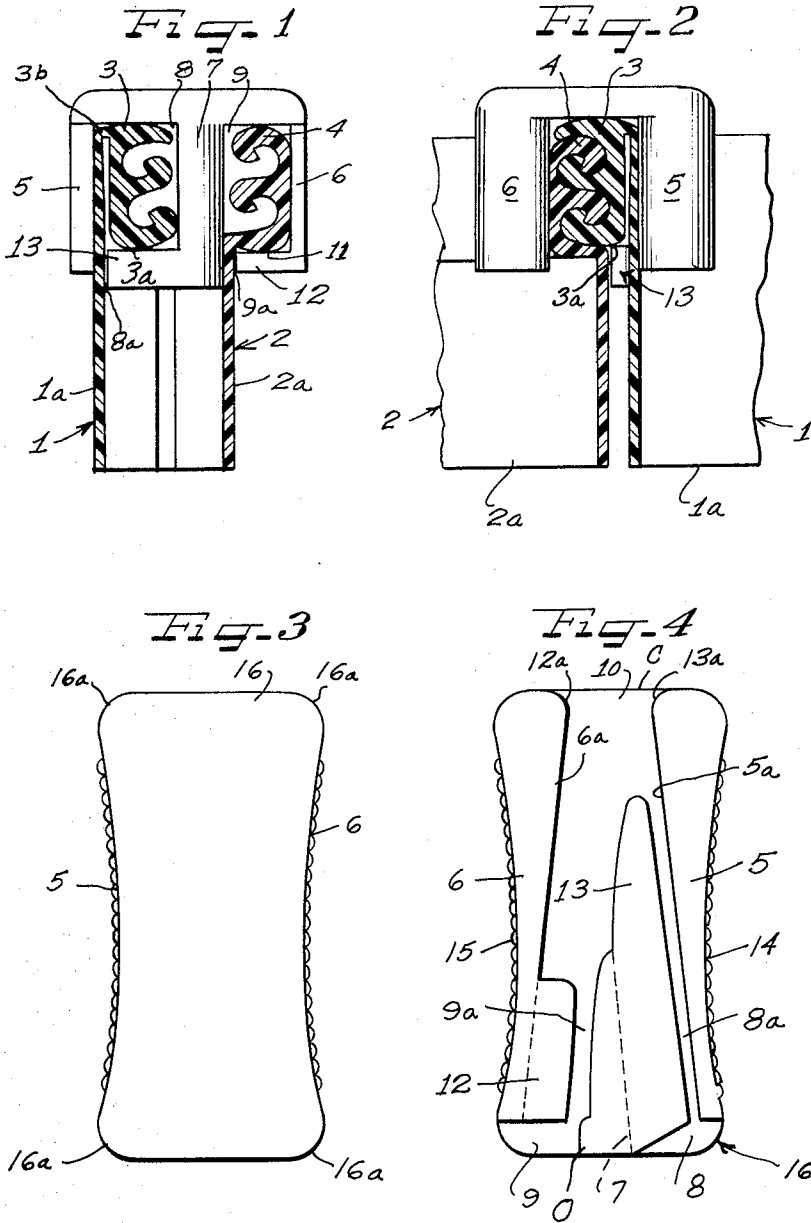
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SLIDE FASTENER FOR PROFILED STRIPS

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1

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**SLIDE FASTENER FOR PROFILED STRIPS**

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The present invention relates to improvements in flexible fasteners of the type having releasably interlocking rib and groove elements therealong with a slide to interlock or to separate the rib and groove elements.

The invention relates to slide fasteners for closings with elastic bands which can be opened and closed. Said slide fasteners are to slide astraddle on the adjacent edges of the two juxtaposed bands forming the closing device; said edges have at least one rib and one groove which by being encased into each other assure the hooking of these bands. The thickest parts of these ribs and grooves shall be called hereinafter "profiled ridges." The invention relates more specifically (because that is the case that ought to have greatest interest) but not exclusively, to those slide fasteners which must coact with unequal elastic bands, in one of which the thin part extends downward from the lower edge of the ridge of this band, while in the other one the profiled ridge is folded inwardly with regard to the thin part of this band, covering the back of the ridge and connected by the upper edge of its back to the upper edge of the thin part so that it can swivel with regard to this part around an axis parallel to the longitudinal direction of the band.

A main objective consists in making the slide fasteners of this kind in such fashion that they respond better than heretofore to the various requirements in the art.

Another object of the invention is the provision of an improved slide for flexible fastener strips of the type having web portions and marginal portions with the marginal portions of one of the strips positioned alongside its web portion and the other marginal portion offset from its web portion to provide first and second downwardly facing shoulders.

Another object of the invention is to provide an improved slider for fastener strips of the type above described wherein the slider is provided with improved means for retaining the slider on the strips, and for accommodating movement of the slider along the strips in a more smooth operation without sticking and capably either joining or separating the strips.

A still further object of the invention is to provide an improved and simplified slide which is easy to manufacture and which is easy to operate and in particular which can readily be gripped by the operator for sliding in either direction.

While two side walls and a median wedge-shaped partition are included with the slide, in order to receive the parts of the two closing strips which contain the ridges, the invention consists primarily in including two rims along the lower free edges at one of the side walls and the median partition, both projecting toward the other side-way of the slide, said edges cooperating with shoulders located at each strip of the same side with regard to the thin part of each strip.

Aside from this main arrangement it contains certain other arrangements which preferably are used at the same time; they will be discussed below.

It relates primarily to certain manners of application as well as to certain embodiments of these arrangements and it relates specifically also, and as new industrial products, to the slide fasteners of this kind, the tools, particularly the molds used in their production, the locks with

2

soft strips of such slide fasteners, as well as the products such as sacks, bags and the like, provided with elastic band fasteners which operate with similar slide fasteners.

And the invention can anyway be understood well with the aid of the supplementary description that follows as well as of the attached drawing; said supplement and drawing being of course furnished by way of indication.

FIGURES 1 and 2 of said drawing shown in elevation the entrance and exit ends respectively of a slide fastener produced according to the invention, mounted on the elastic strips of a fastener.

FIGURES 3 and 4 show the same slide fastener alone, viewed from above and below respectively.

According to the invention, and more specifically according to the one of its manners of application and according to those of the embodiment of its various parts to which it seems preference ought to be given, it is proposed to establish a slide fastener for a fastener with elastic bands, whose two juxtaposed strips 1 and 2 can hook into each other by means of the mutual fitting of ribs and grooves corresponding therewith and provided on the marginal profiled ridges 3 and 4 into which the slide fastener engages astraddle; this is accomplished as follows or analogously.

Two passages 8 and 9 converging into the slide fastener (FIGURE 4) in order to merge into a single passage 10 above the partition 7, near the end of the discharge of the slide fastener are included with the slide fastener to receiving the two strips land 2, at its entrance end, shown in FIGURE 1 between two side walls 5 and 6 and intermediate wedge-shaped partition 7.

That way, walls 5 and 6 of the slide fastener, when the latter is moved in one direction, exert a pressure on the outer faces of the strips, which pressure assures the fitting of the profiled parts of the ridges of these strips, while the wedge-shaped partition 7 causes the separation of these strips when the slide fastener is moved in the opposite direction. This slide fastener is used particularly to cooperate with closing strips of an asymmetric type like those shown in the drawing. Among these strips, strip 2 is operated in such a manner that the thin part 2a does not extend downward from the lower edge of its ridge 4 which projects on the strip toward the right, forming on the outer face of the strip a shoulder 11. As far as the other strip 1 is concerned, its thin part 1a extends downward from the upper edge of its ridge 3, said thin part receiving thus the back of the ridge 3 over the entire height of the ridge; the connection between part 1a and ridge 3 has a certain elasticity so that the ridge can execute angular movements with regard to the thin part 1a, around an axis parallel with the upper edge of this part; said ridge 3 constitutes at the same time a shoulder 3a which is also to the right of the thin part 1a of strip 1.

Once the slide fastener is put into place on the strips, it must be prevented from leaving them by a traction which might be exerted on it in a direction perpendicular to its direction of displacement on the strips.

For that purpose, and according to the invention, the sidewall 6 and the median partition 7 are provided along their free lower edges with an edge, 12 and 13 respectively; both edges project toward the same side, under the circumstances, toward the second outer wall 5 of the slide fastener, leaving above the passages 8 and 9 only openings in the form of narrow slots 8a, 9a for the passage of the thin parts 1a, 2a of strips 1 and 2.

Edge 12, bearing down on shoulder 11, prevents the ridge from leaving passage 9, whereas edge 13, bearing down against the inner face 3a of ridge 3, prevents it from leaving passage 8.

It is advisable to extend the edge 13 toward the rear of the slide fastener below the joint passage 10, preferably beyond the median partition 7, so that ridge 3 is

3

firmly maintained against the ceiling of the slide fastener when it penetrates into the mentioned joint passage 10.

Insofar as the edge 12, on the other hand, is concerned, it is advisable to make it shorter and to stop it, preferably even ahead of the stop which the median partition 7 of wedge shape forms at its free end to afford the ridge 4 the possibility of spacing sufficiently from the ceiling of the slide fastener prior to entering the joint passage 10, in order to penetrate into ridge 3 which covers its top part when the two ridges are engaged into each other.

The slide fastener may be made of any material, metal for instance, but preferably it is made from one single piece of plastic material by injection molding.

Preferably, the slide fastener is given the same width in the front and back by progressively increasing the thickness of the outside walls 5 and 6 toward the rear of the slide, where its walls must be particularly resistant to force the ridges of the strips to penetrate completely into each other.

The slide fastener according to the invention has, among others, the advantage of making superfluous a longitudinal rib on the outside on strip 1 which so far has been provided for forming a support between the slide fastener and this strip.

It goes without saying and the preceding description also shows that the invention is by no means limited to these manners of application nor to these embodiments of its various parts, which were shown more specifically. On the contrary it encompasses all variants.

In summary, and as set forth above, the fastener strips 1 and 2 have web portions 1a and 2a with marginal portions 3 and 4 presenting downwardly facing shoulders 3a and 11. The marginal portion 3 is connected to its web portion 1a by a laterally extending hinge portion 3b. The slide has a first side 6 extending downwardly from the back 16 of the slide and having the lateral inwardly turned flange 12 at its lower free edge. The separator partition 7 has its laterally turned flange 13 at its lower free edge and the flange 13 tapers together toward a narrower width at the closing end C of the slide, beginning at the opening end O. The sides 5 and 6 have their inner surfaces 5a and 6a tapering together toward the closing end C and the sides increase in thickness or width toward the closing end. This provides a slide which in plan view, as shown in FIGURES 3 and 4, is of substantially the same width at its opening end O or its closing end C so as to accommodate ease of gripping. Additionally the outer side surfaces 14 and 15 are slightly concave with the ends being wider than the mid portion to accommodate improved gripping. Further, the outer sides are provided with projecting frictional gripping surfaces shown in the form of vertical ridges in order that the slide may be firmly and reliably gripped between the thumb and forefinger of the operator.

The back 16 is provided with rounded corners such as shown at 16a to provide an attractive appearance as well as to accommodate ease of gripping with no sharp corners projecting. The rounded corners 16a also prevent the slide from digging into other soft surfaces such as plastic bags when the bags are stacked.

The flanges 12 and 13 have rounded trailing ends or corners 12a and 13a so as to present a smooth sliding surface to the material of the closure strips facing the closing end of the slide where the strips are forced together. The partition 7 also tapers from a wider width at the opening end O of the slide toward the closing end C. The back 16 overhangs the sides 5 and 6 slightly at the opening end O whereas the partition extends completely to the back at the opening end O.

The drawings and specification present a detailed disclosure of the preferred embodiments of the invention, and it is to be understood that the invention is not limited to the specific forms disclosed, but covers all modifications, changes and alternative constructions and methods

4

falling within the scope of the principles taught by the invention.

I claim as my invention:

1. A fastener comprising first and second closure strips extending alongside each other each having a web portion and a marginal portion with facing releasably interlocking rib and groove elements on the marginal portions, the marginal portion of the first strip being at the upper edge of the web portion and being laterally outwardly offset to form a first downwardly facing shoulder, the marginal portion of the second strip positioned alongside its web portion providing a downwardly facing second shoulder and connected to its web portion by a laterally extending integral hinge portion, a slider straddling the upper edge of said strips with a back and downwardly extending sides having laterally inwardly facing surfaces tapering together from an opening end toward a closing end of the slider, an intermediate downwardly extending separator partition between the sides, an inwardly turned lateral first flange on one of the sides extending beneath said first shoulder, and a lateral second flange on the partition extending in the same direction as said first flange beneath said second shoulder.

2. A fastener comprising first and second closure strips extending alongside each other each having a web portion and a marginal portion with facing releasably interlocking rib and groove elements on the marginal portions, the marginal portion of the first strip being at the upper edge of the web portion and being laterally outwardly offset to form a first downwardly facing shoulder, the marginal portion of the second strip positioned alongside its web portion providing a downwardly facing second shoulder and connected to its web portion by a laterally extending integral hinge portion, a slider straddling the upper edge of said strips with a back and downwardly extending sides having laterally inwardly facing surfaces tapering together from an opening end toward a closing end of the slider, an intermediate downwardly extending separator partition between the sides, an inwardly turned lateral first flange on one of the sides extending beneath said first shoulder, and a lateral second flange on the partition extending in the same direction as said first flange beneath said second shoulder, said second flange extending a greater distance toward the closing end of the slider than said first flange.

3. A fastener comprising first and second closure strips extending alongside each other each having a web portion and a marginal portion with facing releasably interlocking rib and groove elements on the marginal portions, the marginal portion of the first strip being at the upper edge of the web portion and being laterally outwardly offset to form a first downwardly facing shoulder, the marginal portion of the second strip positioned alongside its web portion providing a downwardly facing second shoulder and connected to its web portion by a laterally extending integral hinge portion, a slider straddling the upper edge of said strips with a back and downwardly extending sides having laterally inwardly facing surfaces tapering together from an opening end toward a closing end of the slider, an intermediate downwardly extending separator partition between the sides, an inwardly turned lateral first flange on one of the sides extending beneath said first shoulder, and a lateral second flange on the partition extending in the same direction as said first flange beneath said second shoulder, said second flange tapering toward a narrow width at the closing end.

4. A fastener comprising first and second closure strips extending alongside each other each having a web portion and a marginal portion with facing releasably interlocking rib and groove elements on the marginal portions, the marginal portion of the first strip being at the upper edge of the web portion and being laterally outwardly offset to form a first downwardly facing shoulder, the marginal portion of the second strip positioned alongside its web portion providing a downwardly facing second

5

shoulder and connected to its web portion by a laterally extending integral hinge portion, a slider straddling the upper edge of said strips with a back and downwardly extending sides having laterally inwardly facing surfaces tapering together from an opening end toward a closing end of the slider, an intermediate downwardly extending separator partition between the sides, an inwardly turned lateral first flange on one of the sides extending beneath said first shoulder, and a lateral second flange on the partition extending in the same direction as said first flange beneath said second shoulder and extending toward the closing end of the slider a greater distance than said first flange.

5. A fastener comprising first and second closure strips extending alongside each other each having a web portion and a marginal portion with facing releasably interlocking rib and groove elements on the marginal portions, the marginal portion of the first strip being at the upper edge of the web portion and being laterally outwardly offset to form a first downwardly facing shoulder, the marginal portion of the second strip positioned alongside its web portion providing a downwardly facing second shoulder and connected to its web portion by a laterally extending integral hinge portion, a slider straddling the upper edge of said strips with a back and downwardly extending sides having laterally inwardly facing surfaces tapering together from an opening end toward a closing end of the slider, an intermediate downwardly extending separator partition between the sides, and an inwardly turned lateral flange on one of the sides extending laterally inwardly below said first shoulder and located at the opening end of the slider and extending only a portion of the length of the slider toward the closing end thereof.

6. A fastener comprising first and second closure strips extending alongside each other each having a web portion and a marginal portion with facing releasably interlocking rib and groove elements on the marginal portions, the marginal portion of the first strip being at the upper edge of the web portion and being laterally outwardly offset to form a first downwardly facing shoulder, the marginal portion of the second strip positioned alongside its web portion providing a downwardly facing second shoulder and connected to its web portion by a laterally extending integral hinge portion, a slider straddling the upper edge of said strips with a back and downwardly extending sides having laterally inwardly facing surfaces tapering together from an opening end toward a closing end of the slider, an intermediate downwardly extending separator partition between the sides, and a lateral flange on said separator partition extending beneath said second shoulder preventing the slider from being raised upwardly relative to said strips.

7. A fastener comprising first and second closure strips extending alongside each other each having a web portion and a marginal portion with facing releasably interlocking rib and groove elements on the marginal portions, the marginal portion of the first strip being at the upper edge of the web portion and being laterally outwardly offset to form a first downwardly facing shoulder, the marginal portion of the second strip positioned alongside its web portion providing a downwardly facing second shoulder and connected to its web portion by a laterally extending integral hinge portion, a slider straddling the upper edge of said strips with a back and downwardly extending sides having laterally inwardly facing surfaces tapering together from an opening end toward a closing end of the slider, an intermediate downwardly extending separator partition between the sides, and a laterally extending flange on the partition projecting beneath the second shoulder and extending from the opening end toward the closing end of the slider and decreasing in width toward said closing end accommodating relative movement of said strips together as said rib and groove elements interlock.

6

8. A slider for closing a pair of flexible strips having web portions in side-by-side parallel relationship and integral marginal portions attached to the web portions with said marginal portions having facing releasable pressure interlocking continuous resilient rib and groove elements extending along the strips, the slider comprising, a single back for sliding along above the marginal portions, side walls integral with the back extending downwardly for applying a lateral closing force to the full height of the marginal portions, said side walls having inner vertical camming surfaces which converge toward the closing end of the slider and slidingly engage smooth outer surfaces of the strips and which are planar lying in converging vertical planes so that the surfaces converge at a uniform rate and apply uniformly increasing closing forces to the marginal portions, the side walls at the closing end of the slider gradually increasing in thickness in a direction toward the closing end so that the cantilever beam strength and the strength of the attachment of the side walls to the back increases toward the closing end to accommodate increased resistance to closing as the marginal portions are pressed more closely together toward the closing end, the outer surfaces of the side walls remaining at least as far apart along the slider toward the closing end thereof for increasing the thickness of the side walls and presenting gripping surfaces which are free from convergence, said back and sides being molded of one piece, and a cantilever separating finger at the forward opening end of the slider extending substantially the height of said side walls and positioned for projecting downwardly between the strips to separate the rib and groove elements.

9. A fastener comprising first and second closure strips extending alongside each other each having a web portion and a marginal portion with facing releasably interlocking rib and groove elements on the marginal portions, the marginal portion of the first strip being at the upper edge of the web portion and being laterally outwardly offset to form a first downwardly facing shoulder, the marginal portion of the second strip positioned alongside its web portion providing a downwardly facing second shoulder and connected to its web portion by a laterally extending integral hinge portion, a slider straddling the upper edge of said strips with a back and downwardly extending sides having laterally inwardly facing surfaces tapering together from an opening end toward a closing end of the slider, an intermediate downwardly extending separator partition between the sides, said sides increasing in thickness from the opening to the closing end of the slider, and an inwardly turned lateral flange on one of the sides extending laterally inwardly below said first shoulder and located at the opening end of the slider and extending only a portion of the length of the slider toward the closing end thereof.

10. A fastener comprising first and second closure strips extending alongside each other each having a web portion and a marginal portion with facing releasably interlocking rib and groove elements on the marginal portions, the marginal portion of the first strip being at the upper edge of the web portion and being laterally outwardly offset to form a first downwardly facing shoulder, the marginal portion of the second strip positioned alongside its web portion providing a downwardly facing second shoulder and connected to its web portion by a laterally extending integral hinge portion, a slider straddling the upper edge of said strips with a back and downwardly extending sides having laterally inwardly facing surfaces tapering together from an opening end toward a closing end of the slider, said sides increasing in thickness from the opening end to the closing end, an intermediate downwardly extending separator partition between the sides, and a lateral flange on said separator partition extending beneath said second shoulder preventing the slider from being raised upwardly relative to said strips.

7

## References Cited by the Examiner

## UNITED STATES PATENTS

1,183,652	5/1916	Krich	-----	24—205.15
2,067,735	1/1937	Silberman	-----	24—205.1
2,171,335	8/1939	Gross	-----	24—205.1
2,810,944	10/1957	Sander.		
3,005,247	10/1961	Doelter	-----	24—205.15
3,054,434	9/1962	Ausnit.		
3,074,137	1/1963	Hawley.		
3,115,689	12/1963	Jacobs.		
3,122,807	3/1964	Ausnit.		

8

## FOREIGN PATENTS

564,633	2/1958	Belgium.
1,067,661	6/1954	France.
1,042,491	11/1958	Germany.
174,910	4/1961	Sweden.

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