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SLIDE FASTENER

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Fig. 1

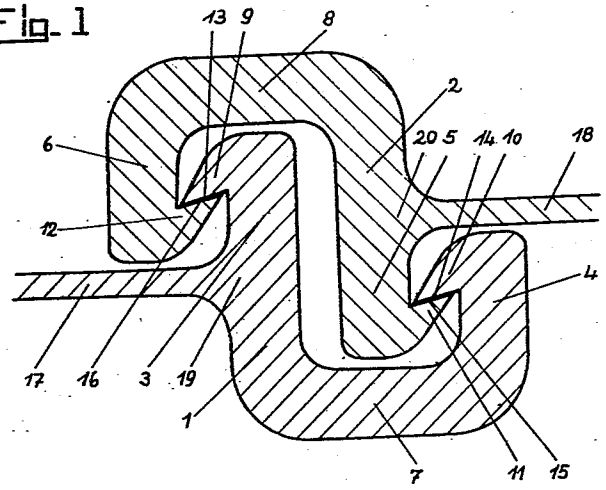
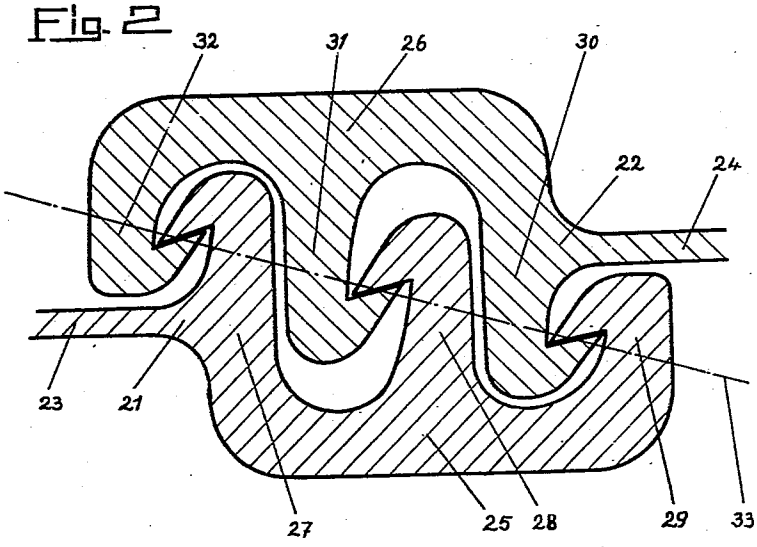


Fig. 2



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SLIDE FASTENER

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6 Claims. (Cl. 24—201)

This invention relates to slide fastener structures made from elastic material. The slide fastener according to the invention is manufactured in such a way that it allows slide fastener straps to interlock with each other by means of ribs and grooves. The mentioned ribs are provided with projecting barbed edges bringing about interlocked engagement.

Slide fasteners heretofore produced are provided with two elastic edges to be joined together. On these elastic edges there are arranged ridges and grooves, whereby the joining of two edges is done in such a way that the ridge or rib portions of one fastening edge will be pressed into the grooves or notches of the other slide fastener edge, which is carried out in almost perpendicular direction to the plane of the article portions to be connected.

The fact that the fastening of the two slide fastener edges is not sufficiently strong has proved very detrimental in known constructions. This is especially the case when the slide fastener runs about round angles. Furthermore it has proved that the slide fastener ribbons provided with the known profiles must be furnished with relatively strong profiles in order to guarantee at least an average efficiency. The result is that much material is required for manufacturing such slide fasteners.

All the slide fasteners which have been known until now have been provided with a stringer edge by which it has been fastened to various articles, on which they are used, and this edge has been connected with the upper rim of a vertical ridge. On the lower rim of this ridge there is a strip running parallel to the edge and plane of the slide fastener. This strip carries the ribs which are provided with barbed projections. By said kind of slide fasteners it was necessary to extend the ridge to the amount of the whole height. The ridge is located perpendicularly to the planes of the edges and to the slide fastener in order to permit the opening and closing slider of the slide fastener to enter behind the said ridge and in that way to give a strong abutment.

The present invention aims at overcoming the drawbacks of known constructions. To this end, the invention consists in a sliding clasp fastener of the kind referred to, wherein each of the strips comprises at least two spaced apart interconnected ribs of different height and a stringer edge attached to one of the outermost ribs.

In preferred embodiments of the invention the stringer edge is attached to the central region of an outermost rib and made integral therewith.

The fasteners according to the invention have been found to be very strong and lasting. They resist any kind of stress much better than known constructions of this kind. Moreover, the strips may be manufactured with much smaller dimensions than was hitherto believed to be possible while still retaining their efficiency and strength. In this way it is possible to save a considerable amount of material and for economical

reasons this fact is of great importance since such fasteners are mass-produced.

In order that the invention may be more readily understood reference is made to the accompanying drawing which illustrates diagrammatically and by way of example, two embodiments of a fastener in accordance therewith and in which:

Figure 1 shows in section a slide fastener which consists of two symmetrical ribbons with interlocking profiles arranged on one rim of said slide fastener.

Figure 2 shows in section a similar slide fastener, each of the two slide fastener ribbons being, however, provided with three ribs bearing barbed rims.

Referring now more particularly to the drawing there is disclosed ribbon or strip **1** which corresponds to the profiled ribbon or strip **2**. The two ribs **3** and **4**; and **5** and **6**, extend in a direction perpendicular to the slide fastener plane and are connected by strip-shaped links to their base strips **7** and **8**, the latter running parallel to the slide fastener plane. On their upper rims, the ribs **3**, **4**, **5** and **6** are formed with barbed strips or projections **9**, **10**, **11** and **12**, which, respectively, interlock with each other so that the planes of contact surfaces **13** and **16**, and **14** and **15** will be located opposite each other for engagement. The webs or edges **17** and **18** of the slide fastener, by means of which the ribbons **1** and **2** are fastened to respective edges of most various articles or objects, are connected with the vertical ribs **3** and **5**. This connection is performed approximately midway of the ribs **3** and **5**, that is to say at the locations or points **19** and **20**.

It will be noted and as most clearly seen in Fig. **1**, that the centers of the inclined contact surfaces **13**, **14** lie in respective planes positioned above and below opposite sides of web **17** and that likewise the centers of contact surfaces **15**, **16** lie along respective planes extending on opposite sides of web **18**.

The slide fastener shown in Fig. 2 is essentially the same as that shown in Fig. 1. On the rims **21** and **22** of the webs or edges **23** and **24**, the slide fastener shown in Fig. 2 is provided with profiled links or base strips **25** and **26**. Instead of two vertical ribs of the slide fastener shown in Fig. 1 each of said links or base strips **25** and **26** is provided with three ribs **27**, **28** and **29** and **30**, **31** and **32**, respectively, which have different lengths or heights and are directed perpendicular to the slide fastener plane. The edges or webs **23** and **24** extend directly to the ribs **27** and **30**, and about midway of the latter. The respective centers of the opposite contact surfaces of the barbed strips, or projections which are located on the ribs, are located along one inclined plane marked by dotted line **33**.

The profiled webs made in accordance with this invention have proved to guarantee the production of most efficient slide fasteners, which will resist all strains. Of most importance is the fact that this slide fastener may be provided with very small profiles, and, nevertheless, great efficiency is afforded. In this way it is possible to save considerable amount of material. Because of economical reasons this fact is of an essential importance for the production of such slide fasteners which represent mass products.

It can thus be seen that there has been provided in accordance with the invention a closable slide fastener structure made of elastic material and having two stringer webs for attachment to adjacent edges of an article to be closed; each web being provided with a base strip and with at least two ribs spaced from each other and extending from said base strip in a plane perpendicular to that of said base strip, said ribs being different in height, and barbed projections forming the ends of said ribs, respectively, said projections being provided with inclined

contact surfaces, said rib projections being in engagement with each other at said contact surfaces, respectively, in closed condition of said fastener structure, whereby upon pulling said webs in opposed directions corresponding and engaged contact surfaces of said ribs are pressed against each other, thereby enhancing interlocking of said ribs, the centers of said contact surfaces of two adjacent projections of a respective web lying along a plane substantially inclined with respect to the latter and respectively along planes above and below opposite sides of the respective web.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:

1. In a closable slide fastener structure made of elastic material and having two stringer webs for attachment to adjacent edges of an article to be closed; each web being provided with a base strip and with at least two ribs spaced from each other and extending from said base strip in a plane perpendicular to that of said base strip, said ribs being different in height, and barbed projections forming the ends of said ribs, said projections being provided with inclined contact surfaces, said rib projections of one web being in engagement with the corresponding rib projection of the other web at said contact surfaces, respectively, in closed condition of said fastener structure, whereby upon pulling said webs in opposed directions corresponding and engaged contact surfaces of said ribs are pressed against each other, thereby enhancing interlocking of said ribs, the centers of said contact surfaces of two adjacent projections of a respective web lying along a plane substantially inclined with respect to the latter and respectively along planes above and below opposite sides of the respective web.

2. In a structure according to claim 1, wherein each web extends in substantially horizontal direction from about midway of the rib of greatest height.

3. In a structure according to claim 1, wherein said contact surfaces of said projections form acute angles with the respective ribs.

4. In a closable slide fastener structure made of elastic material and having two webs for attachment to an article; each web including a base strip, and at least two ribs integral with said base strip and extending in spaced relation to each other from said base strip in a plane substantially perpendicular to that of the latter and of said web, said ribs being different in height, and barbed projections forming the ends of said ribs, said projections being provided with inclined contact surfaces, said projections of one web being in engagement with the corresponding projection of the other web at said contact surfaces in closed condition of said fastener structure, whereby upon pulling said webs in opposed directions corersponding contact surfaces of said ribs are pressed against each other, thereby enhancing interlocking of said ribs, one of the ribs positioned adjacent the respective web is greater in height than the remaining ribs, the centers of said contact surfaces of two adjacent projections of a respective web lying on planes, respectively, above and below opposite sides of said respective web.

5. In a structure according to claim 4, wherein three ribs project in parallel relation to each other from the respective base strip of each web, said ribs progressively decreasing in length from that rib positioned adjacent the respective web.

6. A slide fastener structure made of elastic material and having two webs for attachment to an article; comprising a base strip, at least two ribs integral with said base strip and extending in spaced relation to each other from the respective web and in a plane substatnially perpendicular to that of the latter, said ribs being of different heights, the rib positioned nearest its respective web being of greater height than the remainder of the respective ribs, and barbed projections forming the ends of said ribs, said projections being provided with inclined bottom edges forming contact surfaces, said contact surfaces of the ribs of one web being in engagement with said contact surfaces of the ribs of the other web in closed condition of said fastener structure, whereby said webs when pulled in opposed directions cause said contact surfaces of said ribs to be pressed onto each other, thereby maintaining said fastener structure in said closed condition, the centers of said contact surfaces of said two projections of a respective web lying along planes, respectively, above and below opposite sides of the respective web.

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