

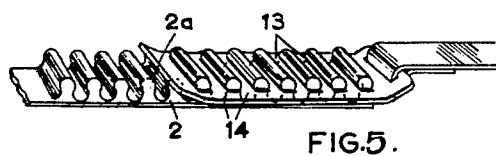
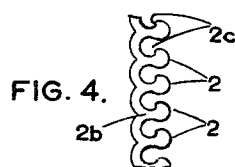
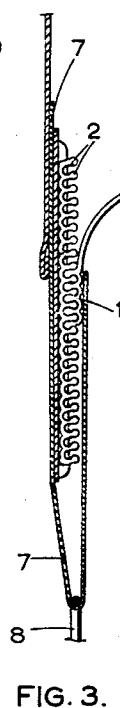
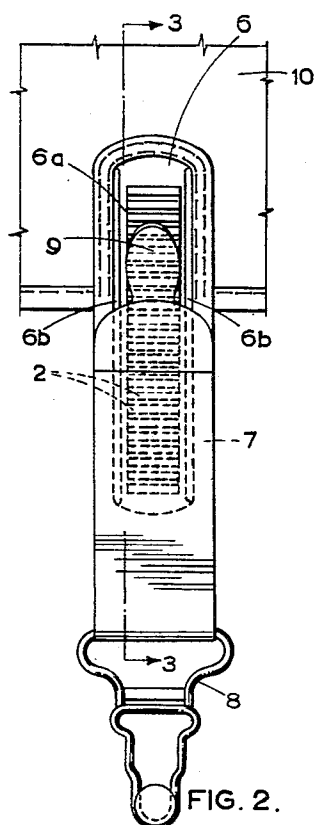
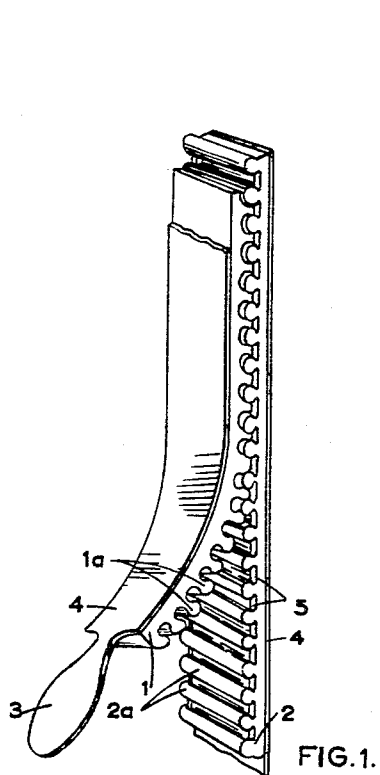
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FASTENING DEVICES FOR SUSPENDERS, BELTS AND THE LIKE

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FASTENING DEVICES FOR SUSPENDERS, BELTS AND THE LIKE

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1 Claim. (Cl. 24-206)

This invention relates to fastening devices where it is required to connect together readily overlapping parts for varying the effective length of an article, e.g. a suspender or belt, or for fastening together overlapping ends of belts and suspenders, the edges of infants' napkins, containers and various other like articles. The invention is therefore applicable to a large number of articles and is particularly suitable as an efficient substitute for buckles, buttons and similar existing fasteners many of which either do not afford much useful adjustment of the effective length of a belt or the like, or are awkward and uncomfortable in use. Thus, for example with suspenders for stockings, it is customary to employ a metal loop which engages over a stud on a tongue and to vary the effective length of the suspender by means of a buckle or similar form of fastener which has the disadvantage of being the cause of discomfort and protruding somewhat. Also with belt fasteners the customary form of buckles or buttons are liable to yield unduly or injure the fabric under tension, and ready interengagement of overlapping ends is not usually possible. The object of the present invention is to provide a form of fastener which can substitute the existing buckles, buttons, press studs, hooks and eyes, laces and safety pins and the like, and which will enable a flat and inconspicuous fastening to be effected without the aforesaid disadvantages.

According to the present invention a fastening device for adjusting the effective length of suspenders, securing together overlapping ends of belts, napkins, containers and for like purposes comprises with the opposed overlapping parts interengaging ribs and interstices or slots disposed transversely relatively to the direction of tension to which the fastening is subjected in the closed position, the said ribs having alternating channels and being moulded integral with a continuous base part from a plastic material which is deformable under hand or finger pressure and which reasserts itself on releasing such pressure. The ribs and channels can be shaped complementarily, the thickness across each rib being reduced from its free end towards its inner end and the ribs being composed of a material which will yield slightly to compression, e.g. a plastic material, vulcanised rubber, a neoprene product, or the like. Alternatively the ribs of one of the overlapping parts can be the transverse bars of a grid-like member the ribs of the other part being shaped as previously described to press into the gaps between the said bars.

In carrying one form of the invention into practice the means for connecting together overlapping parts comprises with each part a length of moulded or extruded plastic material having a characteristic such that it only yields slightly to compression and after slight compression reasserts itself, e.g. polythene vulcanised rubber or synthetic rubber. Each moulded or extruded element is formed with a plurality of parallel or transverse ribs, alternating with the transverse channels of complementary shape, each rib having a cross section which is substan-

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tially that of the Greek symbol capital "omega" or "mu" e.g. semi-circular at the outer end merged curvilinearly into a slightly narrower neck portion which in turn merges into the adjacent channels.

In practice the number of transverse ribs should preferably be a minimum of five, although of course this number can be modified according to the purpose to which the fastening is to be applied, and where a fair amount of adjustment is required, as for example with suspenders, the number of transverse ribs on each of the transverse parts can be in the neighbourhood of ten or even more. The moulded or extruded strips therefore take a somewhat corrugated form, and each of them is sewn or otherwise secured to the appropriate part of the garment, and with a suspender would be secured to opposite ends of a length of elastic which would be passed between its ends through the customary loop carrying the attachment for the stocking, and one corrugated element would be secured along the free end of the length of elastic and the other along the opposite end, so that in effecting a fastening operation these two ends are overlapped and pinched together to press the ribs of one into the interstices of the other whilst the elastic is under the required tension. The interengaging parts can be detached readily by providing on the front or outer face of the free end of the elastic a tab for pulling the interengaging parts apart.

The ribs may be straight or of chevron or arcuate form and it is found that by adopting chevron or arcuate shapes and by arranging them in the appropriate direction relatively to the line of tension extra security is obtained when the fastening is subjected to tensioning only in one direction.

To enhance the gripping action one of the lengths of moulded or extruded rib material can be provided along both sides with a marginal ridge extending along and closing the ends of the grooves, the other strip being left open at the ends of the grooves.

It will be apparent that the fastening device may be employed for readily securing together the overlapping ends of infants' napkins, bandages, for fastening flaps of brief cases and handbags, adjusting the effective length of braces and for many other purposes.

As an alternative form of the present invention one of the said overlapping parts can be constructed in the manner already described but the other can comprise a thin bar of metal or stiff plastic material provided with a line of holes each shaped to receive as a push fit an opposed rib on the other part, the material between the holes forming a succession of grid-like members which press into the channels alternating with the ribs. This slotted member may be sufficiently pliable to bend slightly to facilitate its attachment to the ribbed member and to enable it to adopt its contour to deformation applied to the ribbed member. One end of the slotted member is formed with a D or as a loop slightly bent away from the plane of the slotted member to afford an anchorage for one end of the suspender or belt, the free end of the slotted member having a tab preferably projecting from an angularly bent end part of the slotted member, the angularly bent ends of the slotted member bent away from the face of the member which is pressed against the ribbed member so that the tab and the belt or the like attached to the other end of the slotted member can lie close to the free ends of the adjacent ribs.

Embodiments of the invention are illustrated by the accompanying drawings, wherein,

Figure 1 is a perspective view showing two mutually interengaging strip elements exaggerated in thickness for clearness of illustration, partly disengaged, these elements being suitable as attachments to the ends of a belt, tabs for an expansible suitcase, briefcase or the like for

securing the lid or flap to the body of the case or for like purposes.

Figure 2 is a front elevation and Figure 3 a side elevation showing the use of one form of the invention with a stocking suspender, and Figure 4 is a detail side elevation view to a larger scale of a short length of the ribbed material.

Figure 5 is a detail perspective view of another embodiment in which one of the elements is a slotted stiff bar adapted to engage under pressure over the ribs of the other part.

Referring to Figure 1 of the drawings the adjustable fastening device comprises two strips 1 and 2 of polythene or other suitable similar mouldable flexible plastic material which is deformable slightly under finger pressure and which will reassert itself when the pressure is released.

The strip 1 is slightly narrower than the strip 2 but both are formed with identically shaped transverse ribs 1a and 2a each of which has a substantially capital "omega" shaped cross section the interstices between the successive ribs being of identical cross section so that, if the strips are composed of a firm yet somewhat yieldable plastic material such as polythene, if the ribbed faces of the two parts are pressed firmly one upon the other the heads or free end parts of the ribs will enter the correspondingly shaped inner parts of the interstices and become locked therein, thus requiring a strong pull to separate them. This pull can be applied by means of a tab 3 on a backing strip 4 of one of the strips or formed integral with the strip 1 or 2. The backing strips can comprise the end parts of a belt, or can be straps or tabs of a briefcase or suitcase or the like, to which the strips 1 and 2 are firmly secured by a suitable cement and/or stitching.

The thickness of the thinnest part of the ribbed strips need only be about .025 and the thickness of the ribs about the same, the intention being to keep the thickness of the material as low as possible provided it will withstand the tension to which it is to be subjected lengthwise of the strips for the purpose of securing two members together.

The reason for making the strip 1 slightly narrower than the strip 2 is to provide with the strip 2 positive abutments for the ends of the ribs 1a when the two strips are interengaged, this being obtained by moulding the strip 2 with webs or ridges 5 across the ends of the interstices to act as abutments for the ends of the rib 1a thus preventing sliding of the two interengaged strips laterally i.e. in a direction parallel with the axes of the ribs.

In the embodiment shown in Figures 2, 3 and 4 the ribbed strip 2 is permanently affixed to a back strip 6 of the same plastic material which is shaped to produce the equivalent of the aforesaid abutment webs or ridges 5 of Figure 1, thus enabling the strips 1 and 2 to be cut from a standardised length of moulded plastic material. For this purpose the back strip 6 is moulded with a shallow channel 6a to accommodate the strip 2 thus leaving two longitudinal marginal ribs 6b to act as abutments for the ends of the ribs 1a of the strip 1. The strip 1 need only have a length sufficient for about six ribs 1a as this is carried by the free end part of the strap 7 which is carried through the usual loop 8 of a suspender and folded back on itself so as to bring the ribbed strip 1 over the ribbed strip 2 and fastening effected by pressing the ribs of one into the interstices of the other. A tab 9 is provided for pulling the strip 1 away from the strip 2. The strap 7 is shown or otherwise secured to the garment 10.

The ribbed strips 1 and 2 can be moulded so that in cross section the bulbous free ends of the ribs incline uniformly towards one end of the strip as shown in Figure 4 so that the successive ribs and interstices form in effect a succession of substantially "mu" shaped parts each having on one face at the junction of the bulbous

head 2a and the associated neck part 2b a step 2c, this ensuring a still more positive anchorage of the strips 1 and 2 to each other provided the bulbous heads of each strip incline in the direction of tension applied to the member carrying them. That is to say, to some extent the ribs of one strip hook over the ribs of the opposed strip.

As a further embodiment of the present invention only one of the strips may be ribbed as e.g. shown in Figure 5, in which the bulbous section ribs 2a of a strip 2 attached to one end of a belt or the like are forced through transverse slots 13 in a rigid plate 14 attached to the other end of the belt or the like, the slots being narrower than the heads of the ribs 2a.

When using a slotted plate 14 the ribs 2a will be thicker than is required in the devices previously described to afford ample material and a rigidity for the plate 14.

It will be apparent that in some cases the width of the ribbed strips can be wider than shown in the examples already given, particularly when the strips 1 and 2 are applied to a napkin or the like, or the overlapping mouth parts of a bag. In such a case the longer dimension of the strips will be parallel with the ribs 1a and 2a and for each strip only a few, e.g. about five ribs, need be provided. In some cases the ribbed material can be produced by an extrusion process which also is contemplated under the term "moulding."

I claim:

A stocking suspender device adapted to be placed under tension for supporting a stocking, comprising a backing strip at one end adapted to be affixed to the garment from which the stocking is suspended and free at its other end, which ends are adapted to be secured together temporarily by interengaging fastening means to form a suspension loop so that the fastening means when interengaged receives the tension due to the securing or supporting of the stocking, said fastening means comprising at one end of the backing strip a first set of parallel identically shaped equidistantly spaced ribs of plastic material extending transversely across the backing strip, a second set of like ribs at the other end of the backing strip, a tab extending beyond one end of the backing strip, a loop-like garment-engaging member through which the backing strip passes between its ends, each rib being of bulbous cross-section so that each has a relatively thin neck between its free end and said strip, and the interstices alternating with the ribs being substantially correspondingly shaped in the reverse direction so that said interstices of one set will accommodate the free end parts of the ribs of the other set and vice versa when one set is pressed against the other to cause the free ends of the ribs to snap into the opposed interstices, abutments opposed to the ends of the interstices of one set of ribs constituting stops for the ends of the ribs of the other set to prevent the sliding of one set of ribs endwise of the ribs out of the interstices in which they are engaged.

References Cited in the file of this patent

UNITED STATES PATENTS

622,220	Goldsborough	Apr. 4, 1899
1,538,846	Tost	May 19, 1925
2,035,674	Sipe	Mar. 31, 1936
2,061,680	Sipe	Nov. 24, 1936
2,466,741	Roehrl	Apr. 12, 1949
2,499,898	Anderson	Mar. 7, 1950
2,558,367	Madsen	June 26, 1951
2,772,469	Staller et al.	Dec. 4, 1956

FOREIGN PATENTS

49,722	Netherlands	Dec. 16, 1940
158,946	Australia	Jan. 29, 1953
901,041	Germany	Jan. 7, 1954
952,885	France	May 9, 1949
1,037,455	France	Apr. 29, 1953