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3,030,633

PLASTIC STRIPS

Filed Sept. 22, 1959



FIG. 1



FIG. 3

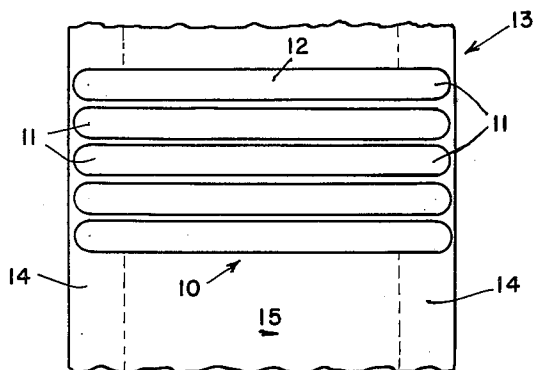


FIG. 2



FIG. 4

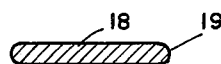


FIG. 5

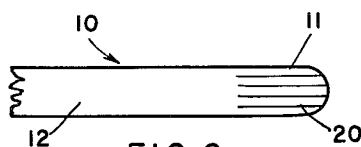


FIG. 6

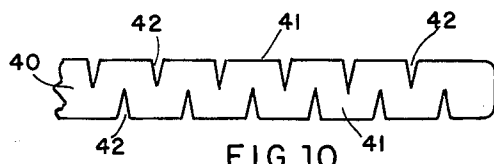


FIG. 10

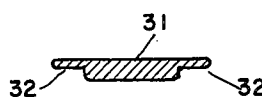


FIG. 7



FIG. 11

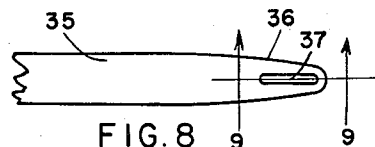


FIG. 8

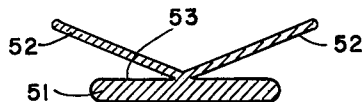


FIG. 12



FIG. 9

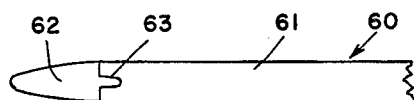


FIG. 13

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PLASTIC STRIPS

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This invention relates to plastic strips, and more particularly, concerns strips particularly adapted for use as boning means.

An object of this invention is to provide improved strips formed from synthetic plastic materials, such strips varying along the length thereof as to resiliency, stiffness and penetrability by sewing needles or the like.

Another object of this invention is to provide improved boning strips formed of synthetic plastic materials, which may be produced economically and which have relatively soft end portions and relatively stiff intermediate portions.

Still another object of this invention is to provide improved plastic strips which have substantial flexibility in directions within the plane of the strip as well as in directions at right angles to the plane of the strip.

Yet a further object of this invention is to provide improved, plastic boning strips which have structural features adapted to facilitate the use thereof in assembly with apparel through the use of sewing machines.

Still a further object of this invention is to provide improved stay or boning strips which may be sewn into place on a garment, the strips being disposed in suitable pockets or being directly sewn without a pocket.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

In the drawing,

FIG. 1 is a top plan view of a boning strip embodying the invention;

FIG. 2 is a top plan view of an extruding and blanking operation for forming the boning strip of FIG. 1;

FIGS. 3, 4 and 5 are transverse sectional views of modified forms of boning strips embodying the invention;

FIG. 6 is a top plan view of one end of a boning strip illustrating still another modification;

FIG. 7 is a transverse sectional view of still another modified form of boning strip;

FIG. 8 is a top plan view of one end of yet another form of boning strip;

FIG. 9 is a longitudinal sectional view thereof;

FIG. 10 is a top plan view of an end portion of still another form of boning strip;

FIG. 11 is a view similar to that of FIG. 10, showing a variation thereof;

FIG. 12 is a transverse sectional view of yet another form of boning strip; and

FIG. 13 is a top plan view of one end of a boning strip embodying the invention.

Referring to the drawing, and particularly to FIGS. 1 and 2, a plastic strip embodying the invention, is shown at 10. Such strip, which is particularly suitable as a boning element for garments, comprises opposite end portions 11 which are somewhat softer and more yielding than the intermediate portion 12, which may be quite stiff.

Strips 10 may be made in various ways, one method being illustrated in FIG. 2, wherein a sheet 13 of plastic is produced by extrusion. Sheet 13 comprises opposite end zones 14 and an intermediate zone 15. The extruding device which produces sheet 13 is arranged to receive separate batches of plastic for producing zones 14, 15. The batch of plastic to produce zones 14 is formulated to provide in the extruded sheeting 13 a relatively soft and

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yielding effect, whereas the formulation of the plastic batch forming intermediate zone 15 is productive in the extruded sheeting 13 of a central portion which is stiffer than end zones 14.

The extruded sheeting 13 may be blanked by a suitable die, not shown, operating transversely of the sheeting 13, to produce the individual strips 10. It is understood that the formulation of the plastic batches may be based on varying the proportion of plasticizer or softening agents in a master batch of a given plastic. Alternatively, one plastic may be used for forming central zone 15 and another plastic for forming zones 14.

If desired, strips 10 may be slightly curved as indicated at 16 in FIG. 13; may have a tapered cross section 17, as shown in FIG. 4; or may have a rectangular cross section 18 with rounded edges 19, as shown in FIG. 5.

As the stay strips are frequently sewn into position relative to the garment with which they are associated, the ends of strips 10 may be corrugated or indented, as at 20 in end portions 11, as shown in FIG. 6. Such corrugations or indentations prevent needle slippage and breakage during the sewing operation. Furthermore, if the stay strip 10 is formed from polypropylene, it has been found that the temperature of the plastic is raised during the sewing operation to a value sufficient to plasticize the stay material and seal the same to the sewing thread.

As shown in FIG. 7, the stay strips 30 may comprise a fairly stiff body portion 31 with thinned lateral edge portions 32 on either side thereof, the portions 32 being quite flexible and readily penetratable by needles. In FIGS. 8, 9, is shown a stay strip 35 which has tapered end portions 36 formed with an opening 37. As a result end portions 36 of strip 35 have a stiffness less than the body portion thereof and the opening 37 will facilitate sewing operations.

In FIG. 10 is shown a modified form of stay strip 40 wherein, the lateral portions 41 thereof are notched, as at 42; the notches on opposite sides of the strip being in offset relation. Such a strip displays flexibility in directions parallel to the plane of the strip, as well as at right angles thereto. Upon forming strip 40 of polypropylene and raising the temperature of the notched strip, a zig-zag structure 43 is produced, as shown in FIG. 11. The strip 43 is even more articulate in its ability to conform to various curvatures which a garment such as a brassiere, may have to assume, in use.

As shown in FIG. 12, the stay strip may include a body portion 51, which may have a thickness of the order of about .055", with integral wing portions 52 joined at their inner ends to a mid portion 53 of body portion 51. The wing portions 52 may have a thickness of the order of about .010" and the same project beyond the lateral edges of body portion 51.

The stay strip shown in FIG. 12 may be sewn in place with the stitching passing through the outer end portions of wings 52, leaving body portion 51 in a floating relation to the garment surface with which the stay is associated. Such arrangement increases the scope of design in boning various items of wearing apparel.

As indicated in FIG. 13, stay strip 60 comprises an elongated body portion 61 which may be quite stiff and formed from a suitable resin such as nylon or the like. Body portion 61 has secured to the opposite ends thereof tips 62 of a relatively softer resin, such as polypropylene, which will readily pass a needle during a sewing operation. Body portions 61 may be preformed by extrusion or the like, with a notch 63 at the opposite ends thereof. Body portions 61 may then be passed through another extruder to apply tips 62 to the ends thereof, notches 63 providing means for receiving a projecting portion of tip 62 for adhering and mechanically interlocking the dissimilar resins.

The stay strips of the instant invention may be formed of various plastics including polyvinyl chloride, cellulose acetate, polystyrene, nylon and the like. However, polypropylene is particularly effective for strips which are to be subjected to sewing operations, particularly since the sewing needle appears to be lubricated as it passes through the plastic, thereby minimizing needle breakage.

As various changes might be made in the several embodiments of the invention herein described, without departing from the spirit thereof, it is understood that all matter herein shown or described, is illustrative and not by way of limitation except as set forth in the appended claims.

What is claimed is:

1. A unitary elongated plastic boning strip having an elongated intermediate portion formed of a composition providing stiffness and resistance to penetration by needles, and at least one tip portion formed of a composition of reduced stiffness and penetrable by needles.
2. A plastic boning strip as in claim 1 wherein at least one tip portion is of a thickness substantially less than the thickness of said intermediate portion.
3. A strip as in claim 1 wherein at least one tip portion thereof is formed with spaced indentations on the face thereof.
4. A plastic strip as in claim 1 wherein the lateral edge portions are formed with indentations extending toward

the medial line of said strip, said indentations being in staggered relation on the opposite edges of said strip.

5. A unitary plastic boning strip having an elongated body portion formed of a composition providing stiffness and resistance to needle penetration, and elongated flat portions formed of a composition penetrable by needles, said flat portions being integrally connected along their inner longitudinal edges with a surface portion of said body portion, the outer longitudinal edges of said flat portions projecting beyond the lateral edges of said body portion.

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