

Aug. 27, 1963

R. BOSER ETAL

3,101,483

GARMENT STIFFENER

Filed Dec. 5, 1960

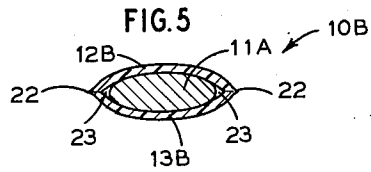
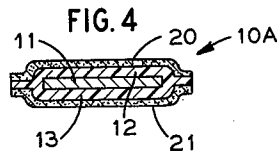
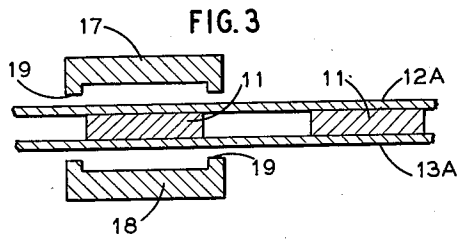
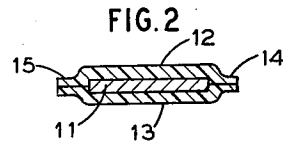
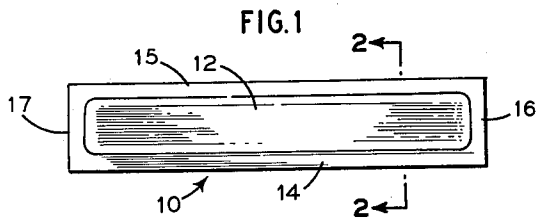


FIG. 6

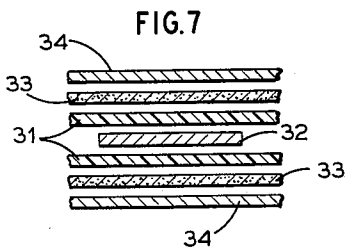
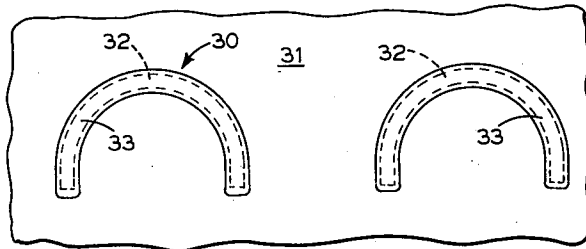
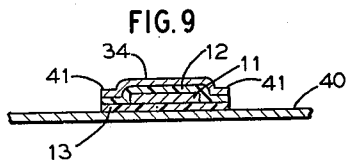
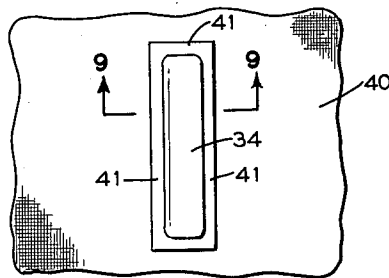


FIG. 8



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GARMENT STIFFENER

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 Filed Dec. 5, 1960, Ser. No. 73,870
 3 Claims. (Cl. 2-260)

This invention relates to garment stiffeners and methods of making the same.

Substantial amounts of stiffeners are used in the manufacture of various items of wearing apparel, and particularly in the making of brassieres, foundation garments and the like. Such stiffeners conventionally comprise a wire, bone or the like, which is enclosed in various materials, including fabric, plastic or the like. Thus, fabric pockets are stitched to receive the stiffener element. Such mode of manufacture is expensive and necessarily is at a low rate of production.

Accordingly, one object of this invention is to provide a novel garment stiffener structure and method of making the same, which results in substantial manufacturing economies and increased rates of production.

Another object of this invention is to provide a novel method of making garment stiffeners where the stiffening element may take varied shapes or configurations, yet the same may be covered with selected covering materials at a very high rate of production.

A further object of this invention is to provide a novel garment stiffener wherein a stiffener element is sealed within a pocket structure containing air under some compression thereby giving the garment stiffener a cushioned effect.

Yet another object of this invention is to provide a novel garment stiffener comprising a stiffening element sealed within a pocket structure, said pocket structure including inner portions of heat sealable resin material and outer cover portions of resilient foam, fabric or combinations thereof which are sealed about the stiffening element to provide outer facings for the garment stiffener of selected texture, quality and characteristics.

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

In the drawing, FIG. 1 is a plan view of a garment stiffener embodying the invention; FIG. 2 is a transverse section taken on the line 2-2 of FIG. 1; FIG. 3 is a sectional view showing the method of making a garment stiffener; FIG. 4 is a sectional view showing a modified form of stiffener; FIG. 5 is a sectional view showing a further modification; FIG. 6 is a plan view showing the making of a curved garment stiffener; FIG. 7 is a sectional view showing the elements forming a garment stiffener; FIG. 8 is a plan view showing a further embodiment of the invention; and FIG. 9 is a sectional view taken on the line 9-9 of FIG. 8.

Essentially, in accordance with the invention, the novel garment stiffeners are formed by a die cutting or blanking procedure. Thus, individual stiffener elements, which may be formed of wire, braided wire, plastic, metal or the like, are sandwiched between thin sheets of thermoplastic resin material such as vinyl, polystyrene, polyethylene, polypropylene or the like.

Heat sealing and/or cutting dies are then applied to the sandwiched materials to cut and seal the resin sheets about the perimeter of each stiffener element; the sealing edge of the die being related to the configuration of the stiffener element. Furthermore, the sandwich may further include resilient foam layers, various types of fabric, or combinations thereof, thus providing stiffeners having selected coverings.

Thus, as shown in FIGS. 1, 2, a garment stiffener generally

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designated at 10 comprises a stiffener element 11 which may be a wire, bone, braided wire or the like, in elongated form, is enclosed between strips 12, 13 of a thermoplastic material such as vinyl resin. The strips 12, 13 are sealed together about the periphery of element 11, as at side edges 14, 15 and ends 16, 17, thus fully enclosing and sealing element 11.

Stiffener 11 may be formed as shown in FIG. 3, wherein stiffener elements 11 are disposed in spaced relation between vinyl resin sheets 12A, 13A and dies 17, 18 having combined cutting and sealing edges 19, are suitably registered in relation to each stiffener element 11, to effect the sealing operation. Dies 17, 18 are arranged for heating and appropriate movement, in a manner known in the art.

As shown in FIG. 4, a garment stiffener generally indicated at 10A, is similar to stiffener 10, except that strips 20, 21 of polyvinyl chloride foam are disposed over resin strips 12, 13 and are concomitantly sealed at edges thereof, thereby providing each of stiffeners 10A with a cushioning outer layer. The thermoplastic strips 12, 13 firmly secure the edges of strips 20, 21.

While the sealed coverings for stiffeners 10, 10A are shown in FIGS. 1, 2 and 4 with flanged peripheral portions as at 14, 15, 16, 17, which also provides means for sewing said stiffeners to portions of garments with which the stiffeners are associated; the sealing-cutting die used may have operative edges which produce a stiffener 10B with sealed edges 22 of the pinch type, as shown in FIG. 5.

Furthermore, the stiffener element 11A, shown in FIG. 5 may be of elliptical section; and further, the sealing perimeter of strips 12B, 13B may be such as to provide air spaces 23 about element 11A, allowing the same to shift laterally within the pocket formed by strips 12A, 13A. Provision may also be made for limited longitudinal shift of the element 11A. In addition, the air entrapped within the sealed strips may be under slight compression to give a cushioning effect to the stiffener 10B.

The procedure described above, particularly lends itself to the formation of covered stiffeners of irregular shape. Thus, as shown in FIG. 6, curved stiffeners 30 may be formed from superposed sheets 31 of thermoplastic vinyl resin, with the precurved stiffener elements 32 sandwiched therebetween in spaced relation. The cutting and sealing die, not shown, has an operative sealing edge of appropriate configuration, so that the individual stiffeners 30 may be blanked out at a high rate of production. By the use of supplemental layers of foam, fabric or combinations thereof, stiffeners 30 may be provided with any desired outer covering.

Thus, as shown in FIG. 7, stiffener element 32 may be sandwiched between successive layers of resin material as at 31, foam at 33 and fabric at 34.

Furthermore, stiffener elements 11 may be applied directly to a selected portion of a garment panel, without sewing. Thus, as shown in FIGS. 8, 9, a garment panel, generally designated at 40, is stiffened on a selected portion thereof, by locating on such panel portion stiffener element 11, together with thermoplastic resin strips 12, 13 on either side thereof, and a fabric cover strip 34. A foam strip may be associated with or replace fabric strip 34. Upon applying a heated sealing die of appropriate configuration, the peripheral edges 41 of fabric strip 34 are heat sealed to panel 40 by way of thermoplastic resin strips 12, 13.

It is understood that separate dies may be used for heat sealing the thermoplastic strips and associated layers and for cutting the peripheral edges thereof; such dies being used in succession.

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As various changes might be made in the embodiments of the invention herein disclosed without departing from the spirit thereof, it is understood that all matter shown or described herein shall be deemed illustrative and made by way of limitation except as set forth in the appended claims.

What is claimed is:

1. A garment stiffener comprising an elongated stiffener element, a covering for said stiffener element comprising a pair of thin thermoplastic resin strips respectively on opposite sides of said stiffener element, said resin strips having peripheral marginal portions projecting beyond the peripheral edges of said stiffener element, a pair of thermoplastic resilient foam cushioning strips over and enclosing said resin strips, the opposed marginal edges of said resin and foam strips being heat sealed together continuously about the perimeter of said stiffener element, to enclose said stiffener element.

2. A garment stiffener as in claim 1 wherein air under

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compression is entrapped between said thermoplastic strips.

3. A garment stiffener as in claim 1 and further including fabric strips overlying said foam strips, the marginal edge portions of said fabric strips being bonded to the marginal edge portions of said foam strips.

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