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I. WALCOFF

2,329,496

SELF-CONFORMING SHOULDER PAD

Filed Nov. 17, 1942

Fig. 1

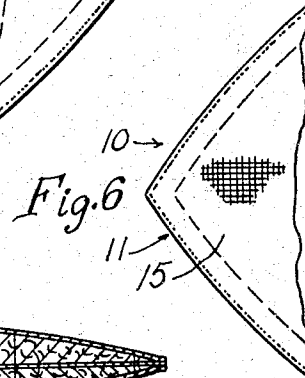
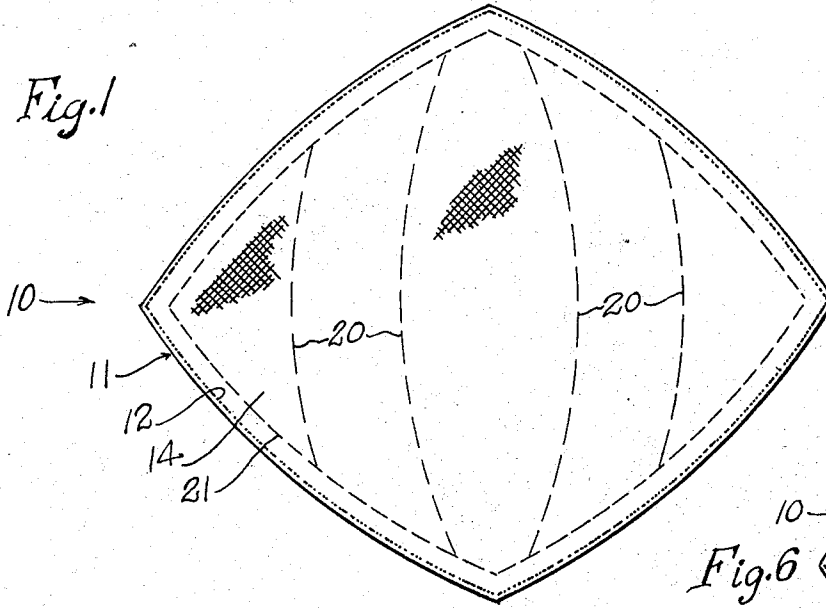


Fig. 2

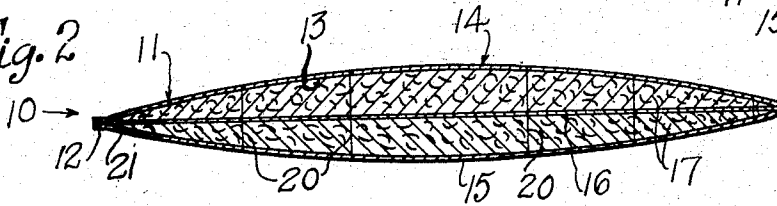


Fig. 3

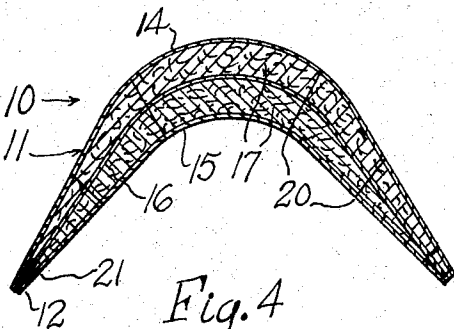
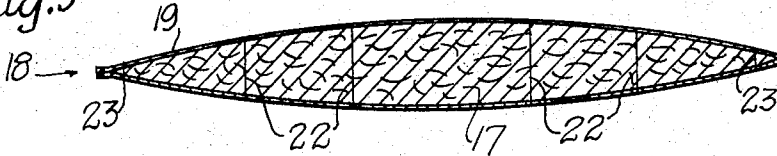


Fig. 4

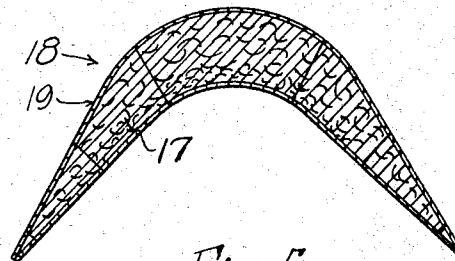


Fig. 5

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SELF-CONFORMING SHOULDER PAD

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3 Claims. (Cl. 2-268)

This invention relates to pads especially of the type used in the shoulder portions of garments.

One object of the invention is the provision of an improved pad having inherent and special capability of bending or arcing to conform to the wearer's body, for instance, at the shoulder.

Another object of the invention is to furnish a pad of the nature set forth having a filling which is adapted to permanently maintain a change in shape from an initial flat position, by reason of fibers capable of becoming differently interlaced in the new set position, so that the pad shall afford a reliable fit on many different shoulders.

A further object of the invention is to provide a shoulder pad of the character described which is inexpensive in material, simple in construction, and adapted for quantity production.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists in the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated on the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

In the drawing:

Figure 1 is a plan view of a shoulder pad embodying the invention.

Fig. 2 is a central horizontal sectional view thereof.

Fig. 3 is a similar sectional view of a modification.

Figs. 4 and 5 are sectional views corresponding to Figs. 2 and 3 respectively, but showing the pad maintained in a curved self conforming position.

Figure 6 is a plan view showing in part the reverse side of the pad of Figure 1.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in one and the same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to which this invention appertains, that the same may be incorporated in several different constructions. The accompanying drawing, therefore, is submitted merely as showing the preferred exemplification of the invention.

Referring in detail to the drawing, 10 denotes a pad embodying the invention. The same may

be of any suitable size and shape and is herein illustratively shown as a shoulder pad. For this purpose it may be of generally polygonal form, with one axis being longer than the other, and the side edges being convexed.

To contain the filler, hereinafter described, the pad 10 may comprise a casing 11 of any suitable material and construction. This casing 11 may be formed, for example, by marginally stitching together two pieces of cloth as shown at 12 to provide a continuously closed filler compartment 13.

An important principle of the invention is that the top wall 14 of the casing 11 is stretchable whereas the bottom wall 15 thereof is non stretching. The particular reason for this is that the top wall shall be capable of yielding as the pad 10 is bent or convexed to the position shown in Figs. 4 and 5. This facilitates proper conforming action of the filler and serves to prevent the top wall from offering a resistance to the permanently self conforming action of the filler hereinafter defined. Satisfactory results are obtained by cutting the top wall 14 across the bias, so that the yield of the fabric is due to the bias arrangement. This has the advantage of permitting any cheap textile to be used, the cost of the pad being an important item in its marketability.

If a textile fabric is subjected to bias stretch, it tends to return to its original condition relatively slowly. If the stretch is prolonged and then released, the fabric assumes a permanent set condition for a substantial portion of the deformation produced by the stretch; that deformation can afterward be produced with less tension than before. If the fabric be subjected to steaming and ironing in its stretched condition, as occurs in the pressing of garments, then the full deformation becomes relatively permanent. However, in the instant case, there is an additional factor provided by the permanently conforming filler which engages the casing fabric frictionally or otherwise so as to maintain the top wall 14 in its stretched, deformed condition and to counteract any latent tendency in the fabric to return to its original shape and to distort the filler from its self conforming position. All this will be apparent hereinafter.

The bottom wall 15 may consist of the same cloth as the wall 14, but cut on the straight. The purpose for this is to afford a firm anchorage of the shoulder pad 10 to the garment. The difficulties in handling bias cut fabrics in sewing

operations and the like are well known. The bias-cut fabric responds easily to the slightest pull and becomes readily distorted. Hence if the bottom wall were also bias cut, the pad as a whole would be seriously lacking in workability. For the quantity production of garments, the pad must be capable of rough handling as the operator pulls its edges into desired position. The resultant deformation of the pad may prevent proper fitting of the garment and may produce effects departing from the standard sought. And in the wearing of the garment and in subsequent ironing operations the pad is subjected to strains and abuse tending to pull it out of its desired shape. All this is prevented by the non-stretching wall 15, and in particular it confines the margins of the stretchable wall 14 so that the yield of the latter is confined within predetermined limits.

The top and bottom walls 14 and 15 further cooperate in that if a pull occurs on the bias of the wall 15, such a pull is along the weave of the stretchable top wall 14, whereby the latter prevents undesired distortion of the shoulder pad, especially because the edges of both walls are secured in a common seam as at 12.

If an intermediate wall 16 be employed the same may also be bias cut like the top wall 14 and secured in the common seam 12.

The novel principle of the invention resides in the nature or composition of the filler 17, which can be used in various casings, but the advantages of which are realized in the highest degree by the casing 11. This filler comprises a fibrous material such as to afford sufficient internal friction in the filler to cause the latter to substantially maintain a given shape to which it has been bent or folded. Jute and sisal are illustrations of such materials. The fibers of sisal are much longer and coarser than those of jute. The internal friction of a mass of sisal fiber is therefore higher than that of a mass of jute, but the tough fibers of sisal have more resilience than those of jute and hence tend to return to initial position after a deformation for a short period of time; if the deformation is prolonged, the return of the sisal is less. Nevertheless this resilience of the sisal would constitute a difficulty in working the shoulder pad into a garment if sisal alone were used as the filler. While jute stays put more readily, it lacks the desirable body-quality of sisal, and is perhaps too easily deformed. A shoulder pad whose filler were to consist of jute only would not afford the strength of supporting body for the shoulders and sleeves of a garment which is desirable for a permanently good fit of the garment. Wool and hair are not self conforming in character as jute and sisal are; they are so soft that when a mass thereof is bent or folded it tends to directly return to initial condition. They lack internal friction but are desirable for felting, and to produce some softness in the pad.

The most desirable results are obtained by combining jute and sisal in suitable proportions according to the characteristics of each which are required in the pad. In general there should be at least about four times as much jute used as sisal, and the sisal should constitute at least 10 per cent of the jute. These two materials after being properly cleaned should be worked and pounded together into a substantially homogeneous mass for the filler. Hence their fibers will be intertwined and when the pad is bent or curved to a desired shape as in Figs. 4 and 5, the internal friction of the filler will be sufficient to cause that

form to be retained. The internal friction of the jute will be materially increased by the sisal fibers acting as an interlacing reinforcement or fabric, the jute serving to lock the sisal fibers in position, and the sisal increasing the resistance and strength of the filler in the curved position. All this will occur because the various fibers become rearranged when the filler is curved and the internal friction prevents return to initial position unless caused by a force more powerful than anything that occurs in the handling of the garment. Fibers other than jute or sisal but having the same characteristics or the equivalent character of both may be employed.

The best results are obtained by incorporating into the filler a substantial quantity of hair, wool, or India cotton, preferably animal hair as it is much cheaper than wool and softer than cotton. This material may be worked in simultaneously with the jute and sisal, as above described. Not only is suitable softness of the pad produced but the filler becomes much easier to work into a tapered cross section. It is to be understood that the filler may be made from flat sheet stock of uniform thickness, cut to form sections shaped like the filler. Then each section must be tapered all around down to the margin as indicated in the drawing. This is best accomplished by combing away material from a point adjacent to the center toward the margins. For example, a motor driven brush, or other high speed means may be used. The presence of the hair permits a much more uniform removal of filler material in tapering without tearing away too much fiber or forming holes in the filler. Thereafter the filler is placed in the casing 11 to complete the pad.

Another advantage of the use of hair or the like is to permit a more thorough interlacing of the jute and sisal fibers, because the soft hair acts somewhat like a lubricant. Bending will prevent release of rough spots in the jute or of hard fibers or points of the sisal, and peculiarly the hair appears to enhance the self conforming character or internal friction of the filler, apparently because it permits more thorough interlacing of the jute and sisal and because it permits relative movement or slip between such fibers when a new shape of the shoulder pad is desired, and because it interposes a relatively inert body resisting return movement. The hair may be used in any suitable amount, between two and six times as much as the sisal.

Good results are obtained by using in parts by weight

Sisal	5 to 15
Jute	20 to 70
Hair or the like	15 to 75

Best results have been obtained by using in parts by weight

Sisal	10
Jute	40
Animal hair	50

Where an internal partition 16 is used, the same may serve as a body forming member, and the filler sections 17 may be identical. Sometimes it is advantageous that the upper section be thinner than the lower section for conforming more easily.

In the modified pad 18, the only difference is that the partition 16 is omitted.

It is desirable to anchor the filler to the casings 11 and 19 as by loose basting stitching shown at

20, 21 in Fig. 1 and by identical stitching shown at 22, 23 in Fig. 3. The stitching 21 and 23 is used for marginal reinforcement and anchorage of the pad; the stitching 20 and 22 is used to prevent any relative side slip of portions of the filler, and the stitching is sufficiently loose to permit the convexing of the filler as described, and as indicated in Figs. 4 and 5, wherein a convexed shoulder shape is schematically or suggestively shown. The basting stitches cannot restrain relative movement of the fibers when the pad is forcibly deformed into the convex shape, but they serve to anchor and restrain the fibers against return movement under normal conditions of use of the shoulder pad.

I claim:

1. A shoulder pad having a filler of cushioning material, and a casing therefor having opposed walls, one of said walls being cut on the bias and the other being cut with the weave, the direction of the weave in one wall being at an angle to that of the other wall, so that the first mentioned wall is stretchable and the other wall is relatively non stretching.

2. A shoulder pad having a filler pad of intertwined fibrous material, and a casing thereof having opposed upper and lower walls consisting of a textile fabric, the upper wall being cut on the bias, the lower wall being cut with the weave, the direction of the weave in one wall being at an angle to that of the weave of the other wall, and means marginally interconnecting said walls.

3. A shoulder pad having a fibrous filler and a closed casing therefor of greater length than width, said casing having opposed top and bottom walls each extending to the edges of the casing, and each consisting of a textile fabric, the top wall being cut on the bias and the bottom wall being cut with the weave, the direction of the weave of the bottom wall being in the length of the casing and the direction of weave of the top wall being at an angle to the length of the casing, whereby the shoulder pad can be downwardly convexed with its top wall lengthwise of the casing and any bias pull on the bottom wall is in the direction of the weave of the top wall so as to be resisted thereby.

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