June 17, 1952 B. LIEBOWITZ 2,601,037

METHOD OF INSERTING STAY STRIPS IN COLLARS

Filed March 24, 1951 2 SHEETS—SHEET 1

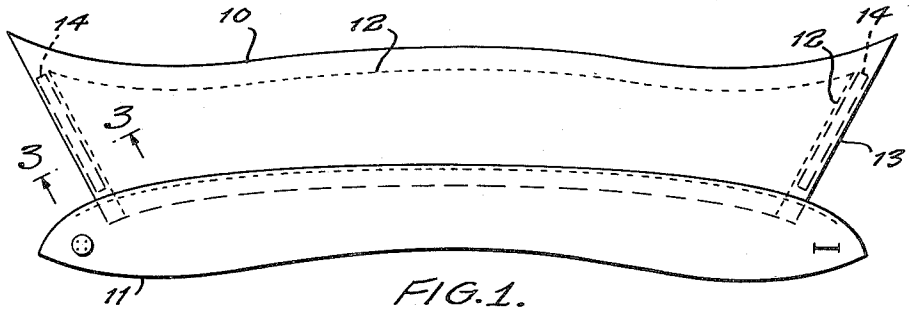


FIG. 1.

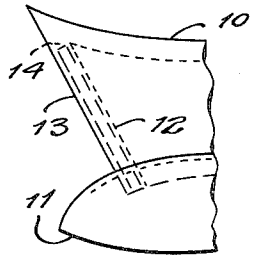


FIG. 2.

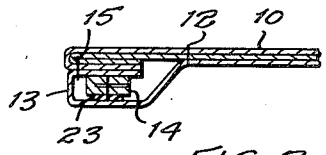


FIG. 3.

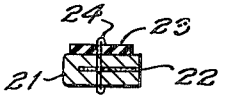


FIG. 4.

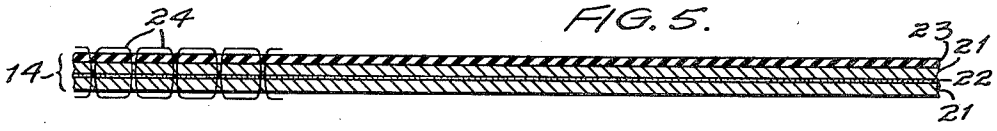


FIG. 5.

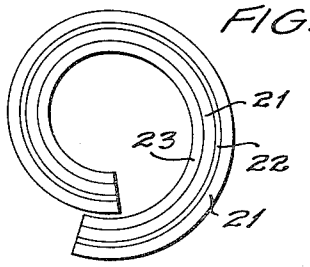


FIG. 6.

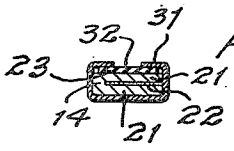


FIG. 7.

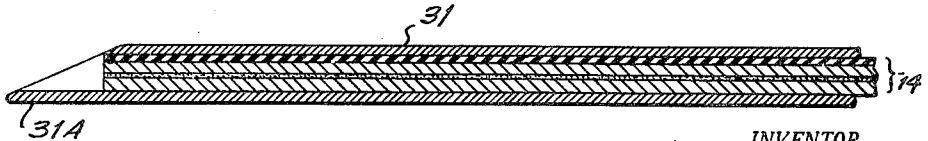


FIG. 8.

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METHOD OF INSERTING STAY STRIPS IN COLLARS

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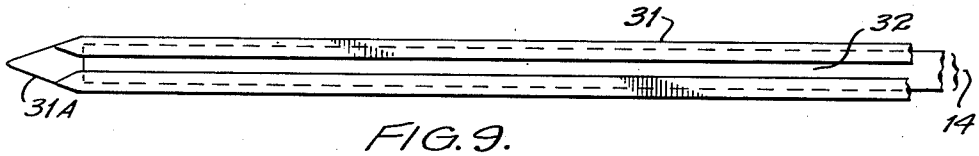


FIG. 9.

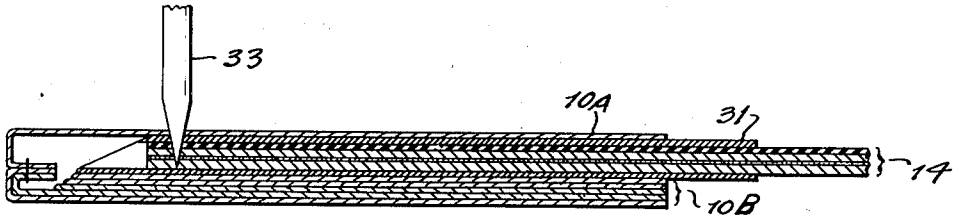


FIG. 10.

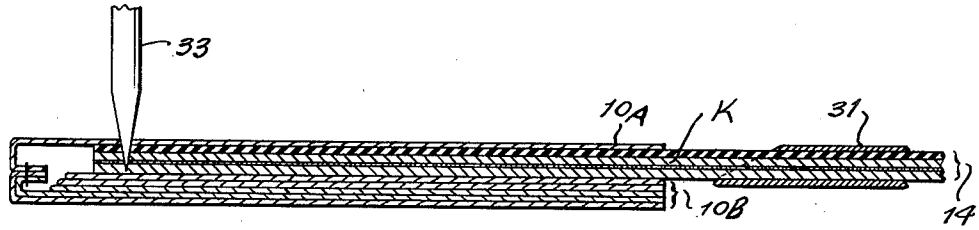


FIG. 11.

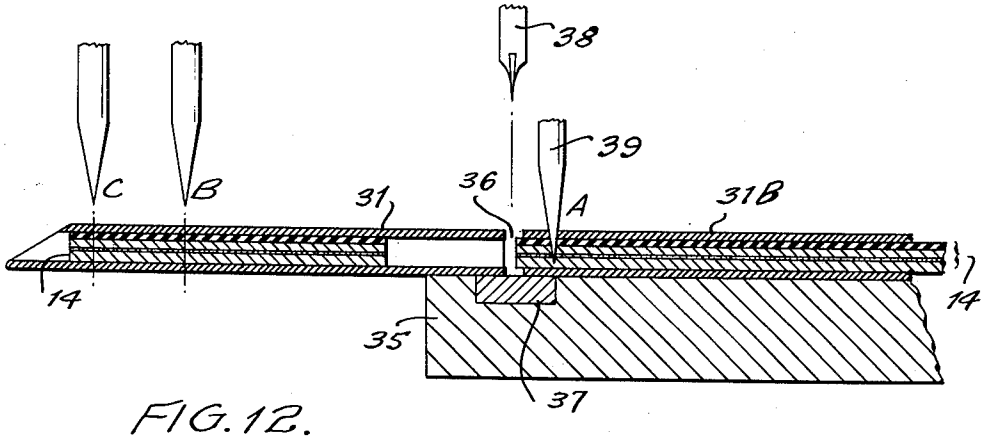


FIG. 12.

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2,601,037

UNITED STATES PATENT OFFICE

2,601,037

METHOD OF INSERTING STAY STRIPS IN COLLARS

Benjamin Liebowitz, New York, N. Y.

Application March 24, 1951, Serial No. 217,341

1 Claim. (Cl. 223—2)

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In my copending patent applications, Serial Numbers 190,092 and 199,317, I have disclosed a bi-elastic structure for producing a permanent curling tendency which may be applied, among other things, to collars on men's shirts for the purpose of opposing and thereby eliminating or minimizing the tendency of such collars to curl away from the body of the wearer.

The bi-elastic structure disclosed in these applications comprises a compression-resistant element and a stretched elastic element united to it by stitching or otherwise. The compression-resistant element may be made of fabric which may be permanently stiffened or temporarily stiffened, depending on circumstances. For example, in the application of this bi-elastic structure to fused collars on men's shirts, the compression-resistant member need be only temporarily stiffened if it is attached to a part that is ultimately permanently stiffened by the fusing operation. Such attachment may be made by stitching as described in patent application, Serial Number 190,092. For application to soft collars, as another illustration given in said patent application, the said compression-resistant element should be permanently stiffened so as to maintain its compression resistance after many launderings.

If, however, a permanently stiffened element is employed, it is not necessary to stitch it or otherwise attach it to the collar during the course of manufacture thereof but, instead, it may be inserted in a "pocket," as is well known in the industry, e. g., like a stay. In conventional collars, a convenient "pocket" for such stays has long been used, namely, in the space between the edge of the collar and the top stitching thereof. However, the bi-elastic strip is not easily inserted since it is a relatively flimsy and "curly" structure (compared to a stay) and, on that account, has proved difficult to insert—for example, in a completed collar-top.

The object of the present invention is to provide a rapid and convenient method for the insertion of such bi-elastic structures into pockets in a collar, and, in particular, the pocket formed naturally between the edge of the collar and the top stitching thereof.

My invention will be understood by reference to the accompanying drawings which are purely diagrammatic and distorted for clarity and which, in themselves, contain no quantitative information. In these drawings:

Fig. 1 is a plan view of a conventional collar

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structure in which the bi-elastic strips are indicated at the edges of the collar by dotted lines;

Fig. 2 is a fragmentary plan view showing a modification of Fig. 1;

Fig. 3 is a cross-section on the line 3—3 of Fig. 1;

Fig. 4 is a transverse cross-section and Fig. 5 is a side elevation of a bi-elastic strip in straightened condition;

Fig. 6 is a side elevation of a piece of said strip showing its natural tendency to curl;

Fig. 7 is a cross-section, Fig. 8 is a side elevation, and Fig. 9 is a plan view of a guide member for inserting said bi-elastic strip into a collar in a location such as shown in Fig. 1 and Fig. 2;

Fig. 10 is a cross-section showing the strip inserted into a pocket in a collar by means of the guide;

Fig. 11 is the same cross-section as Figure 10, but showing the guide removed and the strip left in place in the collar; and

Fig. 12 is a cross-section of a modified arrangement adapted to insert bi-elastic strips which are shorter than the pocket in the collar top which receives said strips.

In Fig. 1 a conventional collar is shown having a collar top 10, a collar band 11, into which the lower edge of the collar top is sewn. According to the usual practice, the collar top 10 is provided with "top stitching" 12. Between the top stitching 12 and the edge of the collar 13, a pocket is naturally formed as indicated in Figure 3, which is a cross-section on line 3—3 of Fig. 1. In Fig. 3 the usual "inside" or running stitch is shown at 15. The narrow rectangle indicated by 14 in Figs. 1 and 2 represents a bi-elastic strip which has been inserted in the said pocket formed between the edge of the collar 13 and the top stitching 12. In Fig. 1 the bi-elastic strip 14 does not extend to the end of the collar top but stops short before it reaches the band 11. In Fig. 2, which is a fragmentary view of a modification, the bi-elastic strip 14 is shown as extending all the way to the edge of the collar top, including the portion which extends into the band 11.

The bi-elastic strip itself comprises a stiffened tape 21 which may be made by longitudinally folding a tape of double width to which is first applied a layer of permanent stiffening adhesive material, e. g., cellulose acetate. The tape may be folded while cellulose acetate is in a tacky condition and then completely dried to permanently unite or paste the two parts of the tape

together. A thin layer cellulose acetate is thus formed as shown at 22. A stretched rubber strip shown at 23 is attached to the folded and stiffened tape, e. g., by means of stitches 24, as described in my copending application. The bi-elastic strip 14 is shown in straightened condition in Fig. 5; actually, a piece of such strip when left to itself will show a marked curling as indicated in Fig. 6. It is this natural curling of the bi-elastic structure which is used to oppose the outward curling tendency of the collar, thereby eliminating or minimizing the latter tendency.

In order to assist in visualizing the structure herein described, it may be remarked that the entire bi-elastic strip 14 may be of the order of ⅛'' wide, and roughly $\frac{1}{32}$'' thick; the rubber element thereof may be in the neighborhood of 0.010'' thick and may be stretched to something like 150% of its original length. The tape 21 may be originally ¼'' wide and woven so as to fold readily down the middle, thereby making a two-ply tape ⅛'' wide permanently held in the folded stiffened state by the layer of laundry-resistant adhesive material, such as cellulose acetate.

It will be readily understood, then, that it is not a simple or obvious matter to insert strips as shown in Fig. 6 expeditiously into a collar top 10 which has been completely manufactured and is ready for banding. Unless such insertion can be made rapidly and expeditiously, the insertion method here described would not be commercially practicable. I achieve such rapid and expeditious insertion by means of a guide 31 shown in transverse cross-section in Fig. 7 and in longitudinal cross-section in Fig. 8, and in plan in Fig. 9. As shown in these figures, the guide is an almost closed tube made of thin metal, e. g., steel or phosphorus bronze, perhaps 0.007'' thick and bent to a more or less rectangular form as shown in Fig. 7 so as to leave a longitudinal slot 32. The bi-elastic strip material 14 is inserted into the guide as shown in Figs. 7, 8, and 9, almost to the end thereof. The end of the guide itself has an extended tapered portion 31A designed to facilitate entry of the guide into the pocket of the collar. After the strip 14 has been inserted into the guide (see Fig. 8 and Fig. 9), the guide and with it the strip 14 are then inserted into the collar as indicated in cross-section in Fig. 10. It is to be noted that the stretched elastic member 23 of the strip 14 lies next to the bottom ply of the pocket in question (see Fig. 3) and that above the whole strip 14 there are usually five plies of collar material in the pocket, as shown in Fig. 3. The single bottom ply mentioned is shown in 10A in Figs. 10 and 11, and the five-ply as a group are indicated by 10B in Figs. 10 and 11. With this arrangement of the parts a maximum inward curling tendency is produced for a given bi-elastic structure, i. e. with given rubber, rubber stretch, stiffness of tape, etc.

After the guide 31 with a strip 14 contained therein is inserted into the pocket in the collar, a pin point shown at 33 in Figs. 10 and 11 is inserted into the strip 14 near its end. There is no difficulty in inserting the pin point at the proper place because the slot 32 can be seen or felt from the outside, since only one ply, namely 10A, lies above it as seen in Figs. 10 and 11. When the strip 14 has thus been engaged by pin 33, the whole guide 31 is withdrawn, leaving the strip 14 in the collar, as shown in Fig. 11. The strip can then be cut off at the point K. The portion of strip 14 then left extending beyond the guide 31 may then be withdrawn into the guide so that the end of the strip 14 again occupies the position shown, for example, in Figs. 8, 9, 10, and 11. The guide may now be inserted into the next pocket and the operation repeated.

The bi-elastic strip obtained in this way corresponds to the showing of Fig. 2, that is the bi-elastic strip extends all the way to the edge of the collar top where it extends into the band. More often than not, this length of bi-elastic strip is not desirable. A preferred form is that shown in Fig. 1, in which the bi-elastic strip stops short of the band. In order to illustrate how the form shown in Fig. 1 may readily be obtained, I show by the diagrammatic cross-section of Fig. 12 a method whereby the bi-elastic strip may be cut to suitable lengths shorter than the pocket or collar edge itself, so that when the act of insertion is completed, the said strip 14 will stop short of the band by any prescribed amount.

Referring to Fig. 12, the guide 31 is fastened to a block 35 which carries a similar guide 31B in alignment with 31. Between the two guides is a gap 36 which is wide enough to permit a knife of proper thickness to enter. Below the slot 36 is a cutting block, e. g. of hard fiber indicated at 37; cutting off may be performed by means of a knife which cuts the tape at the slot 36 by cooperation with the cutting block 37. For this purpose, an ordinary knife may be used or preferably a mechanically operated blade 38 may be forced under pressure against the strip 14 and block 37 by any well-known means which need not be shown. As a result of the previous cutting off, the end of the strip 14 will lie in the slot 36 as indicated in Fig. 12. A pin 39 shown at A is then inserted into the strip 14 just behind the slot 36 through the slot 32 (see also Fig. 7). By means of this pin shown at A, the strip 14 is drawn forward from guide 31B into the guide 31 until the pin A is at the position B. In this position the strip 14 is then cut at the slot 36 and then the pin at B is advanced to the position C of Fig. 12. This brings the cut-off piece of strip 14 into the position required for insertion into the collar and it is obvious that by proper choice of the distance from B to C and B to slot 36 any desired length of strip may be obtained.

The invention described above is partially disclosed in my U. S. patent application Serial No. 247,910, filed on September 24, 1951.

What I claim is:

Method of inserting a curl-inducing strip portion of predetermined length cut off from a continuous length of a curl-inducing strip into an elongated narrow pocket formed in a collar and having a length which is greater than the length of said curl-inducing strip portion so that the rear end of the inserted curl-inducing strip portion is spaced inwardly from the open end of the elongated narrow pocket, comprising the steps of placing two elongated rigid guiding members behind and spaced at a short distance from each other so that their inner ends face each other and their outer ends are located distant from each other; introducing into said guiding members a continuous length of said curl-inducing strip until said curl-inducing strip passes entirely through one of said guiding members and projects into the other of said guiding members a distance equal to the predetermined length of the curl-inducing strip portion to be inserted into the elongated narrow pocket formed in the collar; cutting the thus introduced continuous length of

strip between the inner ends of said rigid guiding members so that said other guiding member contains a strip portion of predetermined length; advancing said cut off strip portion of predetermined length in said other guiding member until its tip located in the neighborhood of said outer end of said guiding member and its rear end is spaced from the inner end of said guiding member; inserting said other guiding member with the cut off strip portion of predetermined length contained therein into an elongated narrow pocket formed in a collar and having a length which is greater than the length of said curl-inducing strip portion until the rear end of said curl-inducing strip portion in the inserted guiding member is spaced inwardly a predetermined distance from the open end of the pocket; engaging said cut off strip portion of predetermined length by means of an externally applied pin without holding the inserted guiding member;

withdrawing said inserted guiding member from the collar pocket while the strip is thus engaged, thereby leaving said strip portion in said pocket; and then disengaging said pin so that said cut off curl-inducing strip portion is located in said pocket with its rear end spaced inwardly a predetermined distance from the open end of said pocket.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,560,739	Starr	Nov. 10, 1925
2,066,294	Liebowitz	Dec. 29, 1936
2,186,356	Bihaly	Jan. 9, 1940
2,423,510	Liebowitz	July 8, 1947