March 24, 1936. J. L. ALBERTS 2,034,689

METHOD OF MAKING HOOK AND EYE TAPE

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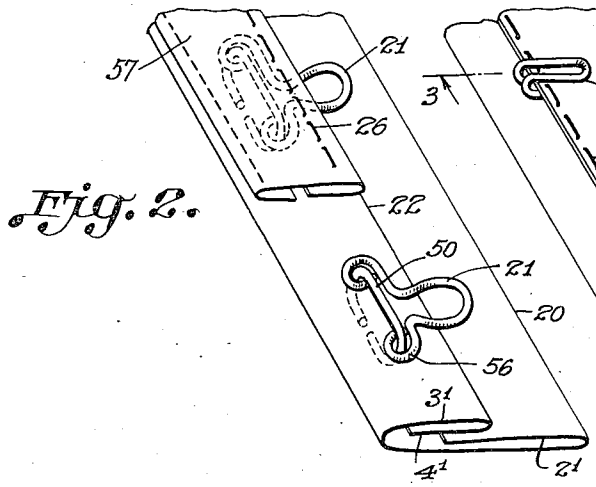


Fig. 2.

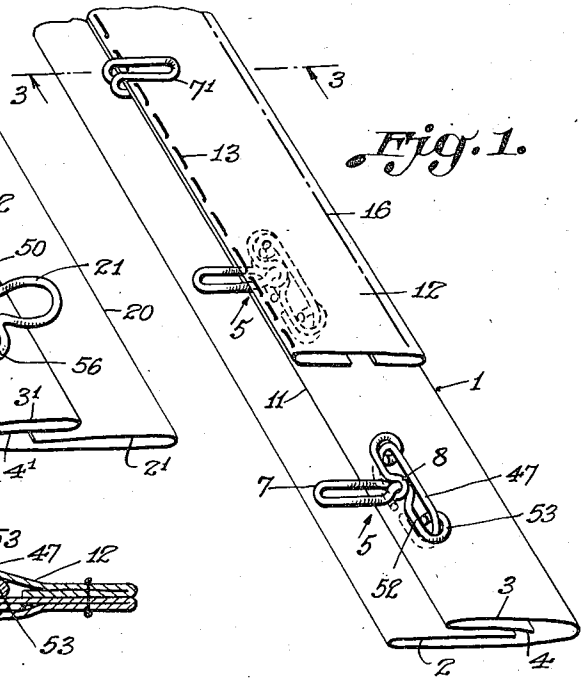


Fig. 1.

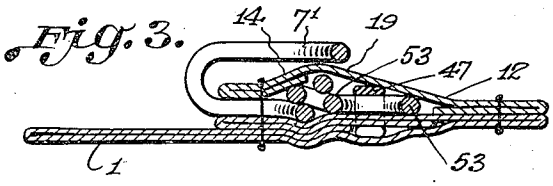


Fig. 3.

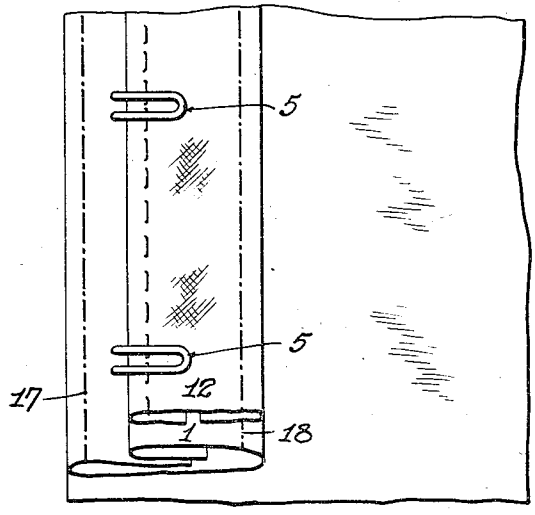


Fig. 4.

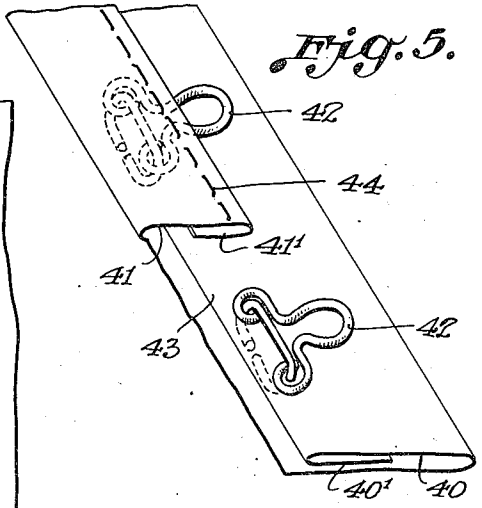


Fig. 5.

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METHOD OF MAKING HOOK AND EYE TAPE

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4 Claims. (Cl. 2—265)

This invention relates to the manufacture of hook-and-eye tapes, and its chief object is to provide an improved method of making hook-and-eye tape in which the fasteners will be held more securely in place therein and which will hold the garment together more durably than in the ordinary hook-and-eye tape, and which can be manufactured at a lower cost than heretofore.

Heretofore hook-and-eye tapes have been made in numerous ways. In some instances the hooks-and-eyes have been mounted on the tape entirely by stitching. In other cases the method of attachment has been by means of rivets or by means of prongs formed on the base portions of the hooks-and-eyes which were pushed through various thicknesses of the tape which in some cases was folded in such manner as to conceal or cover all portions of the hooks-and-eyes except those adapted to engage one another when the tape was attached to a garment. While a number of these prior devices have been successful they are all objectionable for one reason or another, and the present invention aims to so attach the hooks and eyes to the tape that the tape will withstand the pull or stress to which the hooks-and-eyes are subjected during use and at the same time be capable of manufacture at a remarkably low cost.

In making hook-and-eye tapes, one of the means by which the hooks and eyes are secured to the tape consists of a line of stitching which is run lengthwise of the tape in such manner as to cross over certain portions of the hooks or eyes, as the case may be. This line of stitching is sewed at high speed, and one of the serious problems in making hook-and-eye tapes has been that the mechanism of the sewing machine, particularly when operating at high speed, has a tendency to turn the hook or eye members to one side as the tape is fed through the machine, and thus interfere with their proper spacing on the tape. It will be understood that it is quite important that these hook-and-eye members be equally and regularly spaced along the length of the finished tapes.

By means of the present invention this problem of holding the hook-and-eye members in proper position during this high speed stitching operation is solved in a satisfactory manner. In accordance with my improved method of making these tapes, the hook or eye members (depending upon which kind of tape is to be made), provided with attachment eyes as is customary, are stapled in suitably spaced relation along the tape member by means of separate wire staples passing through the attachment eyes, and thereafter a line of stitching is run over the hook or eye members lengthwise of the tape between the eye where they are attached to the tape by the staples and the bill portions (in the case of hook tape) or the eye portions (in the case of eye tape). A cover strip may be added, if desired, and this may consist either of a cover member formed by an integral fold of the tape, or of a separate strip.

Further details of the invention will be brought out in connection with the accompanying drawing in which:

Fig. 1 is a perspective view of a portion of hook tape made in accordance with and illustrating the improved method of my invention;

Fig. 2 is a similar view of a piece of eye tape;

Fig. 3 is a transverse section taken on line 3—3 of Fig. 1;

Fig. 4 is a fragmentary plan view of a hook tape applied to the edge of the garment; and

Fig. 5 is a similar view of a piece of eye tape having a modified tape fold.

The tape shown in Figs. 1 and 2 of the drawing comprises an elongated rectangular sheet of flexible tape material 1 having the left edge turned on itself to form a fold 2, and having a wider fold 3 at the right side. The fold 3 is further folded and doubled under to form a fold 4 for a purpose hereinafter explained.

Each of the hook-members 5 consists of a single piece of wire—preferably brass—the wire being doubled on itself at its middle, with the legs thereby formed twisted around each other to simultaneously form the tenon portion 7 of the hook-member and also to form a knot 8, the purpose of which will be later described. The remaining portion of each leg is looped outwardly to form anchoring arms 52. At the ends of these arms are attachment loops or eyes 53 of the sort usually found on hooks and eyes. The hook-members 5 thus formed are flat, the bill or hook portions 7' have not yet been formed, and the tenon portions 7 lie in the same plane as the anchoring portions or arms 52. With the hook members 5 in this flat condition they are stapled to the tape member by means of wire staples 47. These staples are of a standard type consisting, in their unbent condition, of a U-shaped bar of relatively small gauge stiff wire. The sides, or legs, of the staples are inserted in the attachment loops 53 and then pushed through one or more folds of the tape 1,—for example, through folds 3 and 4,—and then bent toward one another against the inner surface of the innermost fold, as shown in dotted lines. The hook-members are

positioned at such a distance back of the edge 11 that about three-quarters of the tenon portion 7 projects out over the fold 2. It will be understood that the hook-members are applied in any desired spacing along the tape 1.

A strip 12 of a material preferably similar to the tape material 1, and of a width no greater than that of the fold 3 is now laid down flat over the hook-members 5 while they remain in their flat condition, and a line of comparatively strong stitching 13 is run down as close to the edge 11 as is consistent with good holding qualities. In making this stitching, at least one point of anchorage thereof is located in each loop 7 of the flat hook members. The stapling through the fold 3—4 of the fabric not only forms a part of the attachment of the hook-members to the tape, but also greatly facilitates the method of manufacture of the tape since by this means the hook-members are firmly held in position in the desired spaced relation along the tape during the stitching operation. Also the hook-members 5 can be stapled onto the tape with great rapidity by means of automatically operating stapling heads which simultaneously feed and apply to the folded tape a plurality of the hook-members. Any convenient number of the hook-members may be thus simultaneously stapled to the tape.

After the hook-members have been stapled to the tape 1 and the covering strip 12 stitched in place over the base or anchoring arms 52 of the hook-members, the tenon portions 7 of the hook-members are bent to the right as viewed in Fig. 1 around the edge 11 of covering strip 12 to form the bills or bill portions 7'. This completes the manufacture of the hook tape.

The purpose of the covering member or strip 12 and stitching 13 is to form, adjacent the outer edges of the anchoring arms 52, an abutment 14 of such height and strength that the strain ordinarily occurring in such garments as a pull outwardly on the hooks, will be resisted by the fabric 12 held in place against the anchoring arms 52 and the surface of tape 1 by the line of stitching 13. By this construction, the hooks are held firmly and in invariable alignment and registry with the corresponding eyes, so that not only are garments provided with this tape less likely to come open, but the fastening and unfastening of such garments is considerably facilitated.

The tape may be sold made as described above or if desired, a line of stitching 16 may be run down the other edge of the member 12. They are usually furnished, however, without this second stitching. To attach the ready-made tape to the garment, it is only necessary, as shown in Fig. 4, to run a row of stitches 17 down one edge and through the garment, and a row of stitches 18 on the opposite edge and through the garment.

The twist or knot 8, as shown in Fig. 1, strengthens the tenon portion 7 and at the same time forms a hump or projection 19 in the upper surface of the member 12, beneath the gooseneck or bill 7' of the hook. This hump is of sufficient size to prevent the eye from backing out of the hook, which it has a tendency to do when the garment is slackened. It does not, however, hamper the easy unfastening of the hook from the eye, since the bill portion 7' possesses a sufficient degree of flexibility for this purpose, and the fabric covering over the twist 8 also gives to a certain extent. The stitching in making the tape can be done on a sewing machine of standard type, and the completed tape can also be attached to a garment by an ordinary sewing machine.

Fig. 2 illustrates the present invention applied to an eye tape, and it will be noted, that this tape embodies similar structural features to the hook tape. In this figure, a piece of tape material 20 is folded in a manner similar to the material in Fig. 1, that is, with folds, 2', 3', and 4', and has a plurality of eyes 21 distributed equidistantly along it near the edge 22. The eye members 21 are of a standard type having attachment loops 56 through which the legs of staples 50 are inserted and then pushed through one or more folds of the tape 20 and crimped toward one another, as shown in dotted lines. A covering strip 57 is then applied as before described in connection with Fig. 1 and a line of stitching 26 is run along close to the edge 22, care being taken to have at least one loop of stitching pass around each leg of the eye.

This form of tape is also capable of manufacture by automatic machinery, and any convenient number of eyes can be simultaneously stapled to the tape by providing the machine with a plurality of stapling heads. The eye members are fed to the stapling heads simultaneously with the attaching staples, the legs of the staples being held in registry with the attachment eyes and substantially simultaneously pushed through these eyes, through the fold of the tape, and then crimped by mechanically actuated means. As in the method of making hook tape, the stapling of the eye members to the tape secures them firmly thereon so that they are not displaced from their proper position and properly spaced relation when run through the sewing machine to apply the line of stitching.

In Fig. 5 there is shown a modification of the embodiment shown in the preceding figures. In this modification the separate covering strip 12 is obviated by the manner in which the tape is folded.

The eye tape member shown in this figure consists of a piece of tape material having main portions 40 and 41, folded oppositely towards each other, the fold 41 being narrower than the fold 40. Each fold, 40, 41, has a secondary fold 40', 41', under it. Eye fasteners 42, identical with those previously described, are distributed equidistantly along the inner edge 43 of the fold 40, and have staples 50 which are stapled through the folds 40, 40' in the manner previously described. The fold 41 is then laid over anchorage portions of the eyes, and a line of stitching 44 is run along the tape in the mode already described. The eye-tape is then ready to be attached to a garment. It will be understood that hook tape may be made in a similar manner, hook fastener members 5 being used in place of the eye members 42.

If desired, in place of the twisted form of hook-member shown in Fig. 1, a hook-member which is substantially identical in form with the standard type of hook-member now in every day use may be employed. These hook-members are attached to the tape in the manner just described in connection with hook members 5.

The stapling of the hook-members to the tape in accordance with the method of my present invention is of great importance in lowering the cost of manufacture of hook-and-eye tape inasmuch as it provides a method by means of which the hooks and eyes can be accurately positioned on the tape prior to the stitching of the cover member over the anchorage portions of the

hooks and eyes. The fastener members are so firmly secured in place by this means that the lines of stitching 13, 26, 55, and 67 can be run at extraordinarily high speed without displacing the hook or eye members from the accurately spaced position on the tape. This stitching operation is accomplished in sewing machines of standard arrangement which are arranged to prevent the needle from being broken by engagement with the metal of the hooks or eyes in stitching directly over them. In addition to the advantages of low cost of manufacture afforded by my present invention, the combination of stapling means and the abutment afforded by the lines of stitching 13, etc. with their associated fabric folds, firmly anchors the hooks and eyes to the tape in such manner as to effectively prevent displacement.

It is to be understood that the term "cover member" as used herein and particularly in the appended claims includes a cover member formed by an integral fold of the tape as well as a cover member which is applied to the tape as a separate strip.

I claim:

1. The method of making hook or eye tape which comprises stapling hooks or eyes having attachment eyes in spaced relation along a textile tape member by means of separate wire staples passing through the attachment eyes, and thereafter passing a line of stitching over said hook or eye members between the point where they are attached to the tape member by the staples and the bill or eye portions, said staples holding the hooks or eyes in spaced relation during the stitching operation.

2. The method of making hook or eye tape which comprises stapling hooks or eyes having attachment eyes in spaced relation along a textile tape member by means of separate wire staples passing through the attachment eyes, applying a cover member over at least a portion of said hooks or eyes and securing said cover member to the tape member by a line of stitching which passes over the hooks or eyes between the attachment eyes and the bill or eye portions, said staples holding the hooks or eyes in spaced relation during the stitching operation.

3. The method of making hook or eye tape which comprises stapling hooks or eyes having attachment eyes in spaced relation along a textile tape member by means of separate wire staples passing through the attachment eyes, folding one side of said tape member over at least a portion of said hooks or eyes and securing said upper fold to a nether fold by a line of stitching which passes over the hooks or eyes between the attachment eyes and the bill or eye portions, said staples holding the hooks or eyes in spaced relation during the stitching operation.

4. The method of making hook tape which comprises stapling hook members having attachment eyes and incompletely formed bill portions in spaced relation along a textile base member by means of separate wire staples passing through the attachment eyes, placing a cover member over a portion of said hooks, including the attachment eyes, the edge of said cover member being spaced from the outer ends of the tenon portions of said hook members, stitching said cover member to the base member by a line of stitching which passes over the hook members between the attachment eyes and the outer ends of the tenon portions, said staples holding the hook members in spaced relation during the stitching operation, and then bending the tenon portions of said hooks over the edge of said cover member to form the bill portions of said hooks.

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