July 18, 1939. E. FRESHMAN 2,166,350

DEVICE AND METHOD FOR ATTACHING CONTINUOUS ZIPPER OR SLIDE FASTENER TAPES TO CONTINUOUS STRIPS OF FABRIC

Filed Feb. 27, 1937 2 Sheets-Sheet 1

Fig. 1

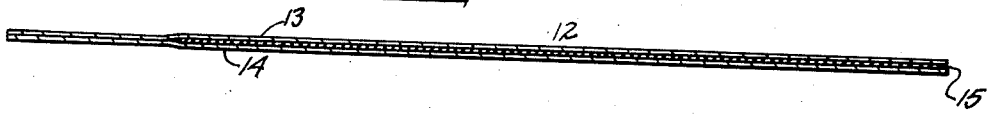

Fig. 4

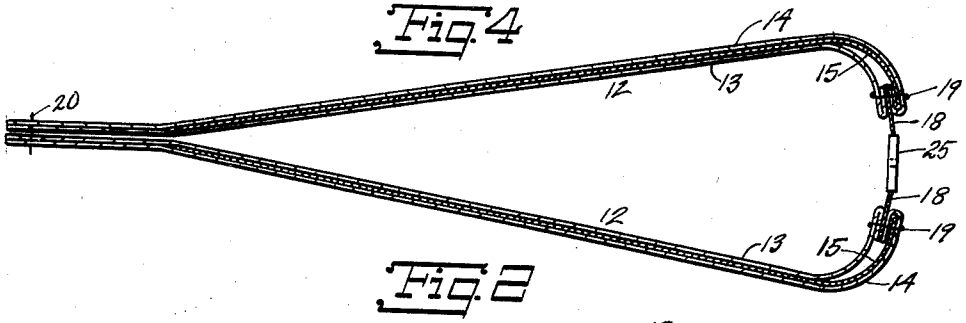

Fig. 2

Fig. 3

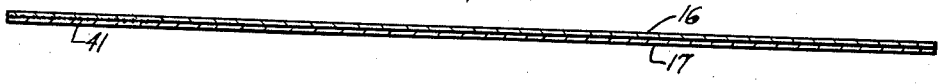

Fig. 5

Fig. 6

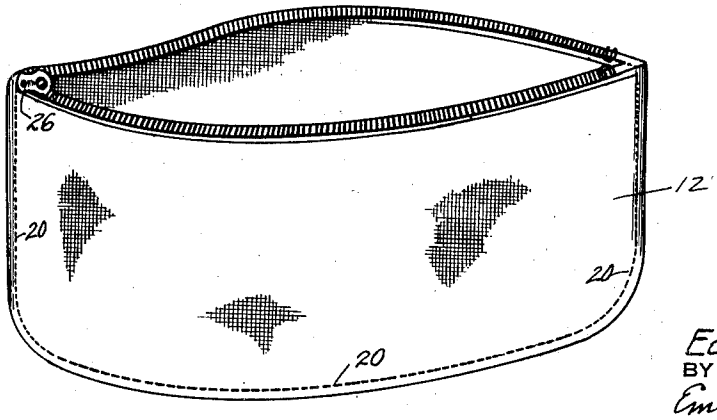

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Fig. 7

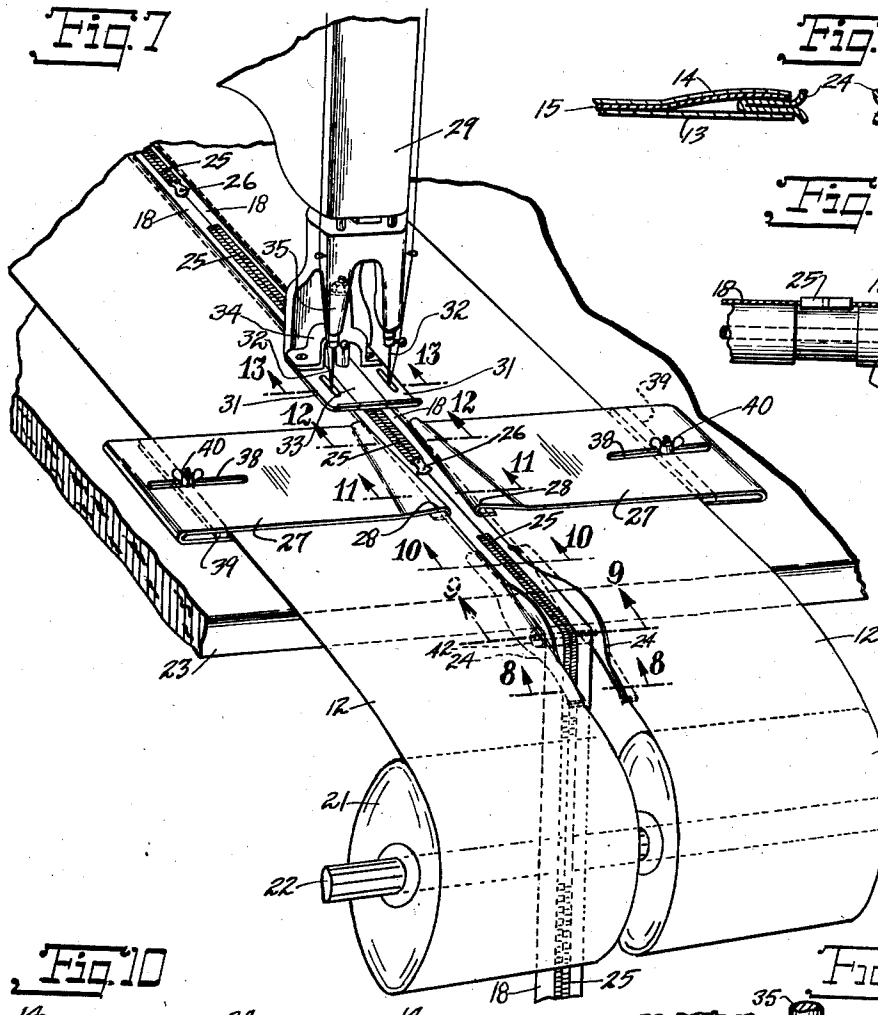


Fig. 8

Fig. 9

Fig. 10

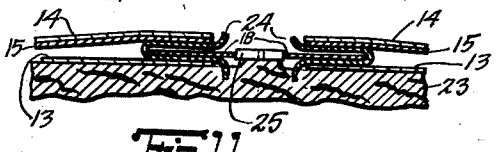


Fig. 11

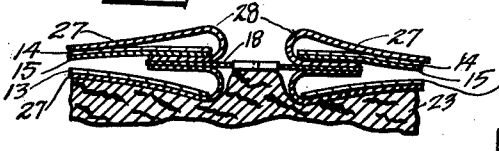


Fig. 12

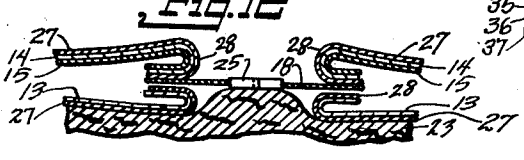


Fig. 13

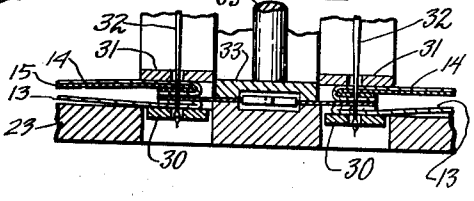
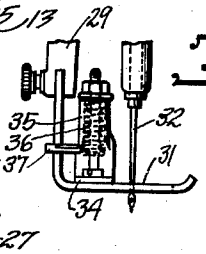


Fig. 14



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UNITED STATES PATENT OFFICE

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DEVICE AND METHOD FOR ATTACHING CONTINUOUS ZIPPER OR SLIDE FASTENER TAPES TO CONTINUOUS STRIPS OF FABRIC

Earl Freshman, Pottstown, Pa.

Application February 27, 1937, Serial No. 128,130

14 Claims. (Cl. 112—2)

This invention relates to a device and method for attaching a continuous "zipper" tape to a continuous strip of fabric. A single "zipper" tape may be attached to a single strip of fabric, or, as in my preferred form, two parallel strips of fabric may be joined together with mating "zipper" tapes in locking engagement. The fabric or material used is preferably one with multiple layers.

The term "zipper" is used for the well known "hookless" or slide fastener, now in common use, which comprises pieces in a row adapted to interlock with mating pieces in a row.

The fabric or material with "zipper" tape attached is termed "zipper" fabric herein.

The product of the herein described method and device forms the subject matter of my copending application Serial No. 128,129, filed Feb. 27, 1937.

The "zipper" fabric is used in ladies' handbags for forming "zipper" pockets or compartments in said handbags. "Zipper" pockets are also useful in other connections besides handbags.

Other objects and advantages will become apparent upon a further study of the description and drawings in which:

Fig. 1 is a section through the "zipper" fabric before attachment of the "zipper" tape.

Fig. 2 is a section through the "zipper" fabric before attachment of the "zipper" tape and shows one of the layers in separated position.

Fig. 3 is a modified form of "zipper" fabric before attachment of the "zipper" tape.

Fig. 4 is a section through a pocket made up of two strips of "zipper" fabric, stitched at one end and connected by the "zipper" at the other end.

Fig. 5 is a partial section through another modified form of "zipper" fabric.

Fig. 6 is a perspective view of a pocket made up of two rectangular strips of "zipper" fabric, stitched together on three sides and showing the "zipper" fasteners disconnected at the fourth.

Fig. 7 is a perspective view of a machine for continuously fastening "zipper" tapes simultaneously to two strips of "zipper" fabric.

Fig. 8 is a partial section, to an enlarged scale, taken along the line 8—8 of Fig. 7, showing the beginning of the guide for inserting the "zipper" tape between the layers of the "zipper" fabric.

Fig. 9 is a partial section taken along the line 9—9 of Fig. 7 showing the middle portion of the guide for inserting the "zipper" tape between the layers of the "zipper" fabric.

Fig. 10 is a partial section taken along the line 10—10 of Fig. 7 showing the end portion of the guide for inserting the "zipper" tape between the layers of the "zipper" fabric.

Fig. 11 is a partial section, to an enlarged scale, taken along the line 11—11 of Fig. 7 showing the beginning of the folding guides for folding over the edges of the "zipper" fabric.

Fig. 12 is a partial section to an enlarged scale taken along the line 12—12 of Fig. 7 through the folding guides toward their end.

Fig. 13 is a partial section to an enlarged scale taken along the line 13—13 of Fig. 7 with the needles in lowered position, the shuttle mechanism being omitted.

Fig. 14 is a partial elevation to an enlarged scale showing a view of a needle, and the needle and "zipper" presser feet.

The "zipper" fabric, denoted in its entirety by the numeral 12, is composed of an upper layer 13 and a lower layer 14. Said layers may be of leather or of other soft flexible material, preferably textile fabric, usually silk. Interposed between said layers, where they are very soft as with silk, is a stiffening layer 15, preferably of the paper commonly used in the women's handbag art. Layer 15 is pasted to one of the silk layers, the layer 14 for example as shown in the drawings. The adhesive used should be a flexible one, such as rubber cement. The pasting is done for the entire extent of layer 15. While layer 15 is secured to layer 14, it is free from layer 13, as can be readily seen in Fig. 2. Layers 13 and 14, which are preferably wider than layer 15, are pasted together at their portions of width beyond the edge of layer 15.

A modified form of "zipper" fabric is shown in Fig. 3, in which no filler or stiffening layer, such as layer 15 is used, the fabric layers 16 and 17 being free from each other except for the relatively small width at one end, where they are pasted together, as at 41 a width equal to the portions of the width of layers 13 and 14, Figs. 1 and 2, beyond layer 15.

As shown in Fig. 4, the free edges of the "zipper" fabric are folded back upon themselves and "zipper" tape 18 is fastened between the folds by stitching 19. Layers 14 and 15 which are pasted together are folded back together and layer 13 is separately folded back.

It is present practice in women's handbags to have a pocket inside the bag as a separate compartment, such a pocket being shown as made up of my "zipper" fabric, but without the bag proper, in Figs. 4 and 6. In these figures, the two pieces of "zipper" fabric 12 used, are cut

from a continuous strip and stitched together by means of stitching 20 along three edges, the stitching along the bottom edge being done through the portion of the fabric beyond the paper layer 15. A continuous strip of "zipper" fabric is shown in roll 21, Fig. 7. Of course the paper layer 15 could extend for a greater width than shown, in which case it would come between the outer fabric layers 13 and 14 where they are held together at one edge as shown in Fig. 5. This construction is not as desirable as that of Fig. 2 because it causes greater bulkiness where two lengths of the "zipper" fabric 12 are stitched together as in Fig. 4.

The fabric previously used for having the "zipper" tape stitched to an edge, ordinarily consisted of the outer silk layers, such as layers 13 and 14 and a paper layer such as 15 between them, but all three layers were pasted together throughout their extent, and the extent of layer 15 equaled that of the outer layers, instead of being shorter as shown in Figs. 1 and 2. Any two of the layers were separated for a short distance back from one edge of the strip and folded back after which the "zipper" tape was stitched between them. My fabric is especially constructed for making it suitable for use in a mechanism, such as shown in Fig. 7, which mechanism feeds two strips of "zipper" fabric with the two mating "zipper" tapes between them, folds over the edges of the two strips of fabric and stitches the tapes between said folded over edges. It has been found that "zipper" fabric in which the layers are seperated only a short distance back from one edge for the folding of the layers and the insertion and stitching of the "zipper" tape therebetween is not so suitable for the mechanism shown in Fig. 7. Said mechanism operates more successfully on "zipper" fabric of the type shown in Figs. 1 and 2, fabric in which one of the layers is separable from the other two for the greater part of its width. The fabrics of Figs. 3 and 5 are also suitable, the layers being separable for the greater part of their depth.

The description above refers to the use of my "zipper" fabric for pockets in ladies' handbags, but of course it will be understood my fabric is suitable for use in connection with "zipper" tapes in other types of pockets or sacks.

Referring now to Figs. 7 to 14 inclusive, which relate to the mechanism for fastening the "zipper" tapes to the "zipper" fabric, it will be seen that two rolls 21 of "zipper" fabric 12 are rotatably mounted on a shaft 22. The fabric 12 passes from rolls 21 onto table 23. In so passing, each strip of fabric 12 is caused to pass over "zipper" guides 24, Figs. 7, 8, 9 and 10. A guide 24 comes within each strip of fabric, separating layers 14 and 15 which are fastened together, from loose layer 13. The cross-section of the "zipper" guide 24 at its beginning where the fabric first is separated by it is shown in Fig. 8. Here the legs of the guide are folded together. They gradually separate toward the middle of the guide, assuming a substantially vertical position with the legs making an angle of 180 degrees with each other in the middle portion, bending back the "zipper" fabric, as seen in Fig. 9, far enough to allow the entrance of "zipper" tapes 18 between the opposing strips of fabric 12. "Zipper" tapes 18 pass over roller 42 at the edge of table 23 as they feed in. From 180 degrees, the legs of the guide fold toward each other again as the end of the guide is reached, Fig. 10, with "zipper" tape 18 between.

The two mating "zipper" tapes 18 locked together are fed into the "zipper" guides 24, Fig. 10. It is also to be noted that the "zipper" fasteners 25 are mounted in lengths on continuous tapes at spaced intervals for a purpose explained later. Each length of fasteners is provided with its closure member 26.

With the "zipper" tapes 18 inserted between their layers, the strips of "zipper" fabric 12 are led to U shaped folding guides 27. There are two such guides in the machine, Figs. 7, 11 and 12. Each guide consists of a flat plate bent over on itself with curled over ends 28 engaging the separated layers of the "zipper" fabric 12, engaging them in extended position as in Fig. 11, and as the fabric travels through the guides, curling and folding in the ends of the layers as in Fig. 12. The upper portion of the bent over plate comprising a guide 27 is provided with a slot 38 near its outer end. A guide bar 39 is inserted between the upper and lower portions of said bent over plate. A thumb screw 40 is attached to guide bar 39 and extends through slot 38. Thumb screw 40 and slot 38 provide means for adjustably setting bar 39 to suit the width of fabric strip 12. By properly setting bars 39, fabric strip 12 is held in curled over ends 28 of guides 27.

The two strips of fabric with their layers folded in and the "zipper" tapes between them are then led to the double needle sewing head 29, Figs. 7, 13 and 14. They are passed over the usual sewing feed dogs 30 and under the presser feet 31. Needles 32 are driven by well known sewing machine mechanism as well as feed dogs 30, which latter keep pulling the fabric and "zipper" tapes along as needles 32 produce the stitching. The shuttle mechanism is omitted from the drawing as its action and construction are well known to those versed in the sewing machine art. In addition to presser feet 31, there is a third presser foot 33 for the "zipper" tapes 18. This is carried on presser feet 31 by means of bracket 34 extending between said feet. Attached to the upper part of bracket 34 is a housing 35 in which there is a helical spring 36 holding down presser foot 33. A lip 37 is provided for manually lifting up presser foot 33 against the action of spring 36. Table 23 is suitably slotted out to provide space for the guides and stitching mechanisms.

The two continuous strips of fabric 12 are stitched to the joined continuous "zipper" tapes 18, forming a continuous strip of joined "zipper" fabric strips. The space provided between the lengths of "zipper" fasteners 25 on "zipper" tapes 18 permits of the cutting up of the continuous strip of joined "zipper" fabric strips into lengths suitable for applying stitching 20 to form a pocket such as shown in Figs. 4 and 6.

The fabric 12 may be marketed in several ways. It may be sold without the "zipper" tapes 18, as in Figs. 1, 2 and 3, to a bag manufacturer or others, who in turn will apply the "zipper" tapes. The mating "zipper" tapes may be sewn to the two strips of fabric simultaneously as by a machine such as shown in Fig. 7, or a single "zipper" tape 18 may be sewn to a single strip of fabric 12.

As shown in the drawings, the strips of "zipper" fabric 12 are fed from the rolls through the mechanism with the silk layer 14 and stiffening layer 15 topmost, but the machine would also work if the strips were fed with these layers bottommost.

While the drawings and description disclose two opposed strips of multiple layer fabric joined by mating "zipper" tapes locked together, it will

be readily understood that a single strip of multiple layer fabric with one of the mating "zipper" tapes attached can be produced as well.

I claim:

1. The method of attaching continuous mating "zipper" tapes to continuous strips of multiple layer material, which includes longitudinally feeding in spaced relation and opposite each other two strips of said material, separating layers of each strip at the edges thereof facing each other, feeding the "zipper" tapes joined together in locked engagement with each other into the space between the strips, the free edges of the joined tapes being caused to enter in between the layers of said strips where separated, and stitching through the layers of each strip with the tape between.

2. The method of attaching a pair of continuous mating "zipper" tapes, joined together in locking engagement, to a pair of continuous strips of multiple layer fabric, which includes longitudinally feeding in spaced relation and opposite each other said pair of strips, the clear distance between the strips being less than the width out to out of the joined pair of tapes, pushing aside the edges of one of said pairs to allow the joined "zipper" tapes to feed between the fabric strips, effecting said latter feeding, separating layers of each fabric strip at the edges thereof facing each other, causing the joined "zipper" tapes to have their free edges enter in between the layers of said strips where separated, and stitching through the layers of each strip with the tape between.

3. The method of attaching a pair of continuous mating "zipper" tapes joined together in locking engagement to a pair of continuous strips of multiple layer fabric, which includes longitudinally feeding in spaced relation and opposite each other said pair of strips, the clear distance between the strips being less than the width out to out of the joined pair of tapes, bending back and holding separate, layers of the fabric strips at the edges thereof opposing each other, said bending back widening the space between opposing layers of the strips, feeding in the joined pair of "zipper" tapes at said widened space, causing said tapes to have their free edges enter in between the layers of said strips where separated, and stitching through the layers of each strip and the tape between.

4. The method of producing mating pieces of multiple layer fabric, of predetermined length suitable for forming a pocket, attached to mating "zipper" tapes joined together in locking engagement, which includes longitudinally feeding in spaced relation and opposite each other two continuous strips of said fabric, said strips each having layers extending free from each other to a distance back from one edge, the strips feeding in with the free edges opposite each other, separating said layers of each fabric strip at its free edge, feeding said joined together "zipper" tapes in between the opposing strips, causing the free edges of the joined tapes to enter in between the layers of said strips where separated, said tapes having lengths of "zipper" fasteners thereon at spaced intervals, stitching through the layers of each strip and the tape between, and then cutting transversely through strips and tapes at the spaces between said lengths.

5. The method of attaching a pair of continuous mating "zipper" tapes joined together in locking engagement, to a pair of continuous strips of multiple layer fabric, which includes longitudinally feeding in spaced relation and opposite each other said pair of strips, the clear distance between the strips being less than the width out to out of the joined pair of tapes, bending aside the edges of one of said pairs to allow the joined "zipper" tapes to feed between the fabric strips, effecting said latter feeding, separating layers of each fabric strip at the edges thereof facing each other, causing the joined "zipper" tapes to have their free edges enter in between the layers of said strips where separated, folding in the edges of the layers at the edges of the strips facing each other, and stitching through the folded in layers of each strip and the tape between.

6. A device for attaching a pair of continuous mating "zipper" tapes, joined together in locking engagement, to a pair of continuous strips of multiple layer fabric, each strip having layers extending free from each other to a distance back from one edge, comprising stitching mechanism for sewing the free edges of the joined tapes to the strips at their edges with free layers, means for feeding the joined tapes and the strips to the stitching mechanism, said strips being fed with their edges with the free layers facing each other, means for each strip causing the free edges of its layers to be separated, and means for leading the free edges of the joined tapes between the layers of the strips where separated, the stitching mechanism sewing through the layers of each strip with a free edge of the tapes between.

7. A device for attaching a pair of continuous mating "zipper" tapes, joined together in locking engagement, to a pair of continuous strips of multiple layer fabric, each strip having layers extending free from each other to a distance back from one edge, comprising stitching mechanism for sewing the free edges of the joined tapes to the strips at their edges with free layers, means for feeding the joined tapes and the strips to the stitching mechanism, said strips being fed with their edges with the free layers facing each other, the clear distance between said latter edges being less than the width out to out of the joined pair of tapes, guide means causing the edges of one of said pairs, as it feeds to the stitching mechanism, to be pushed aside, guide means causing the pair of joined "zipper" tapes to feed between the strips, guide means for each strip causing the free edges of its layers to be separated and a free edge of the joined tapes to enter between as said tapes and strips are fed to the stitching mechanism, the stitching mechanism sewing through the layers of each strip with a free edge of the tapes between.

8. A device as claimed in claim 6 having a folder for each strip engaging the edge of the strip with the free layers, said folder folding in said edges, on their way to the stitching mechanism so that a free edge of the joined tapes lies in between the folded layers, the stitching mechanism sewing through the folded in layers of each strip and the tape between.

9. A device as claimed in claim 7 in which the guide means causing the edges of one of the pairs to be pushed aside, by its shape and location bends said edges outward and backward sufficiently for the joined zipper tapes to feed in between the strips.

10. A device for attaching a pair of continuous mating "zipper" tapes, joined together in locking engagement, to a pair of continuous strips of multiple layer material, each strip having layers extending free from each other to a dis-

tance back from one edge, comprising means for feeding in the free edges of the joined "zipper" tapes between the edges of the strips at the free layers and double-headed stitching mechanism for stitching through the layers of each strip at said latter edges, with a free edge of the tape between.

11. A device for attaching a pair of continuous mating "zipper" tapes, joined together in locking engagement, to a pair of continuous strips of multiple layer fabric, each strip having layers extending free from each other to a distance back from one edge, comprising means for feeding in the free edges of the joined "zipper" tapes between the edges of the strips at the free layers, a stitching head having two spaced reciprocable needles, each needle being for stitching through the layers of each strip at said latter edges with a free edge of the tape between, a presser foot for holding down the edge of the strip, with a free edge of the tape therein, at each needle, and a presser foot, between the needle presser feet, pressing down on the tapes on either side of their joined "zipper" fasteners.

12. A device for attaching a pair of continuous mating "zipper" tapes, joined together in locking engagement, to a pair of continuous strips of multiple layer material, each strip having layers extending free from each other to a distance back from one edge, comprising stitching mechanism, means for feeding in the free edges of the joined "zipper" tapes between the edges of the strips at the free layers, and means for folding in the free edges of the layers so that the "zipper" tapes reach the stitching mechanism with the free edges of the tapes between the folded in portions of the layers of the strips, said stitching mechanism stitching through the folded in layers of each strip with the tape between.

13. The method of attaching continuous mating joined together "zipper" tapes to continuous strips of multiple layer material, said strips each having layers extending free from each other for a distance back from one edge, which includes longitudinally feeding in spaced relation and opposite each other two of such strips with the free edges of the layers of one strip opposite the free edges of the layers of the other strip, feeding the joined "zipper" tapes between the strips, then causing the free edges of the joined tapes to enter in between the layers of the strips at their free edges and stitching through the layers of each strip with the tape between.

14. The method of attaching continuous mating joined together "zipper" tapes to continuous strips of multiple layer material, said strips each having layers extending free from each other for a distance back from one edge, which includes longitudinally feeding in spaced relation and opposite each other two of such strips with the free edges of the layers of one strip opposite the free edges of the layers of the other strip, feeding the joined "zipper" tapes between the strips, then causing the free edges of the joined tapes to enter in between the layers of the strips at their free edges, folding the layers of each strip at their free edges into an upper and lower hem, and stitching through the layers of each strip at their hems with the tape between.

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