Feb. 18, 1958 R. I. PRUPIS ET AL 2,823,388

SLIDE FASTENERS

Filed May 11, 1954 4 Sheets-Sheet 1

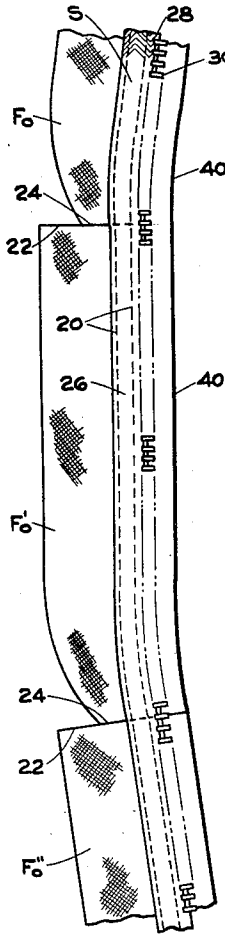


FIG. 1

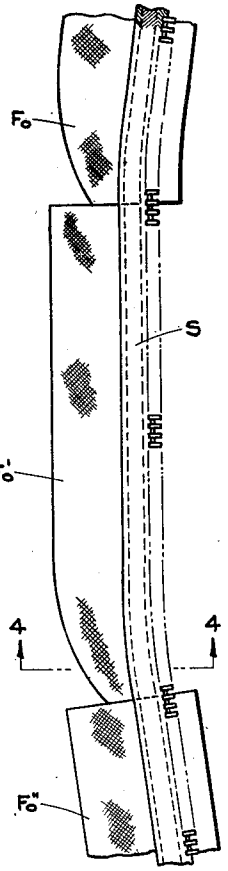


FIG. 2

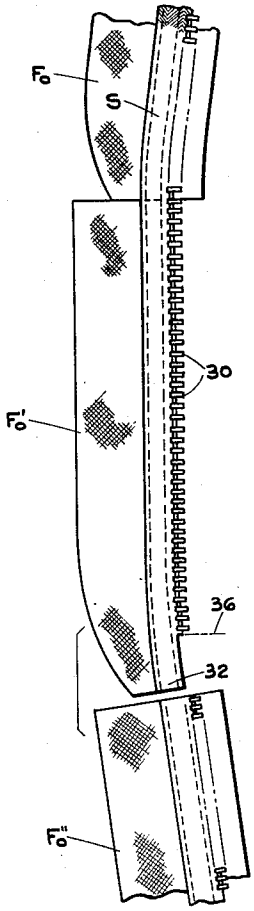


FIG. 3

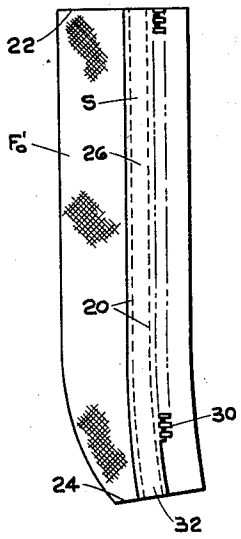


FIG. 5

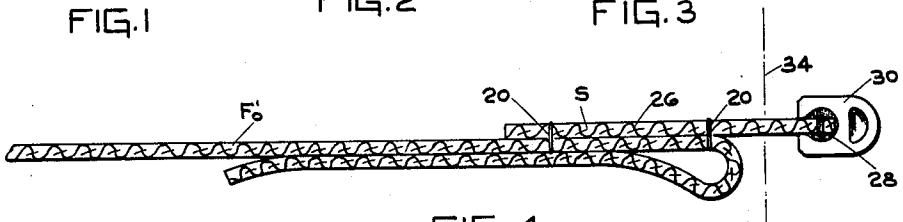


FIG. 4

INVENTORS
ROBERT I. PRUPIS AND
ALBERT BASHOVER
BY
James and Franklin
ATTORNEYS

Feb. 18, 1958 R. I. PRUPIS ET AL 2,823,388

SLIDE FASTENERS

Filed May 11, 1954 4 Sheets-Sheet 2

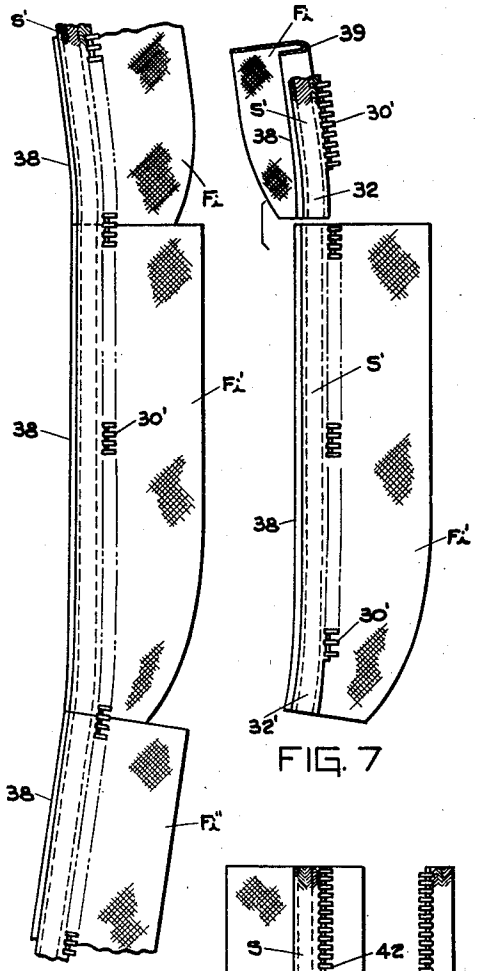


FIG. 6

FIG. 7

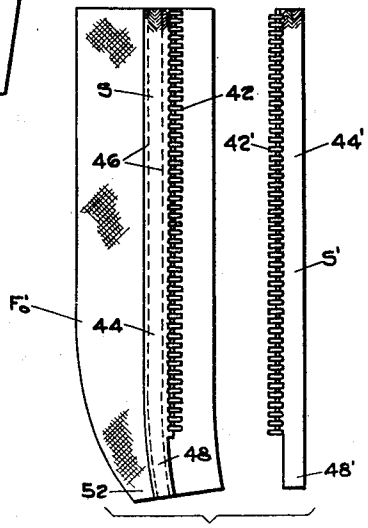


FIG. 10

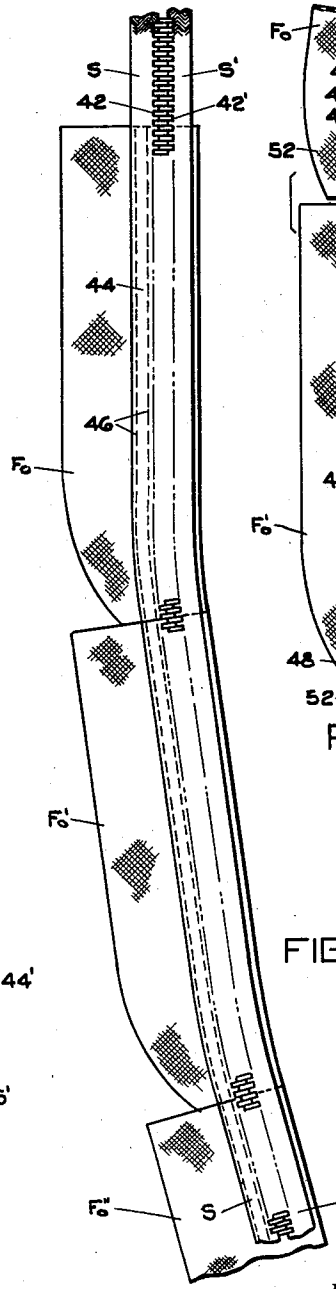


FIG. 8

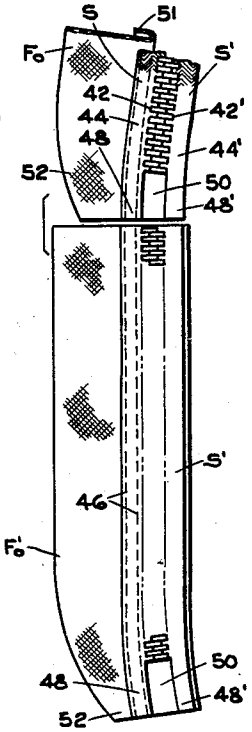


FIG. 9

INVENTORS
ROBERT I. PRUPIS AND
ALBERT BASHOVER
BY
James and Franklin
ATTORNEYS

Feb. 18, 1958 R. I. PRUPIS ET AL 2,823,388

SLIDE FASTENERS

Filed May 11, 1954 4 Sheets-Sheet 3

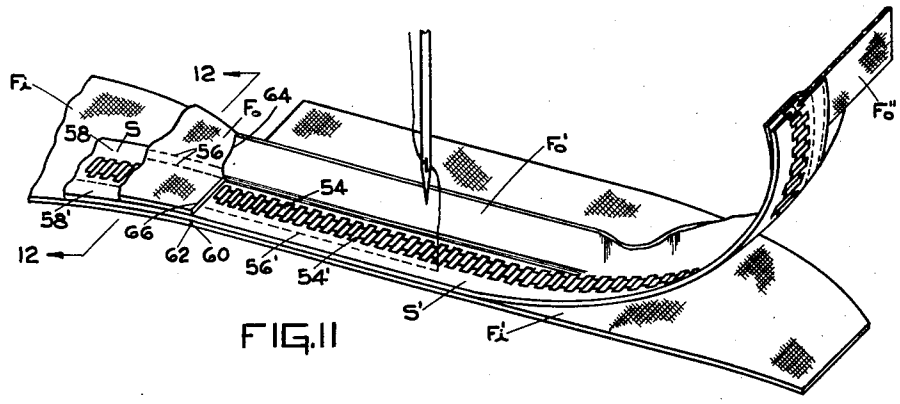


FIG. 11

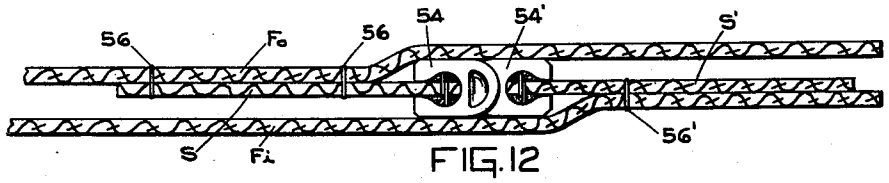


FIG. 12

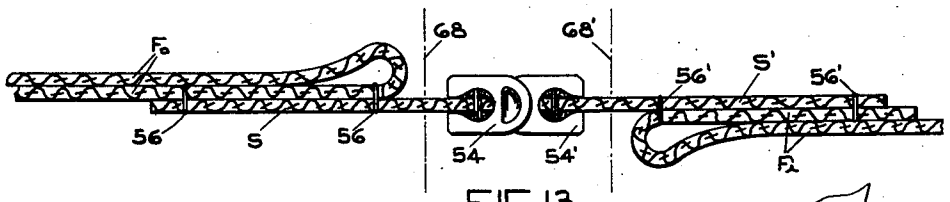


FIG. 13

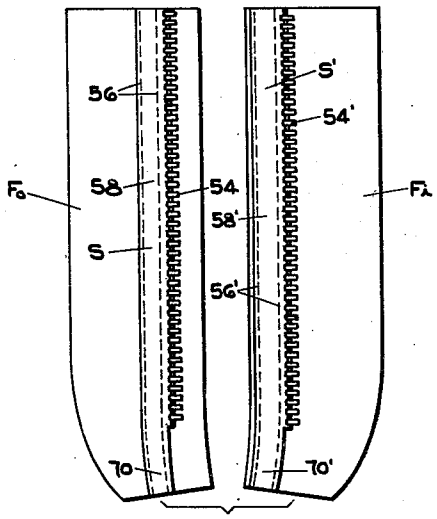


FIG. 14

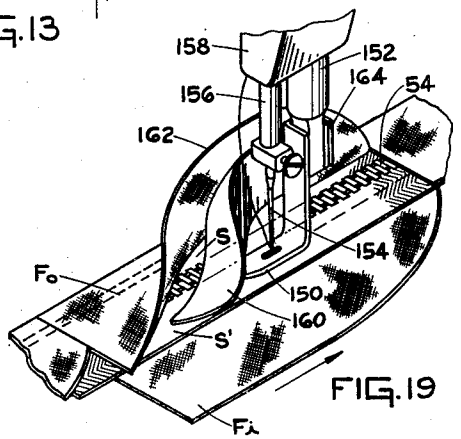


FIG. 19

INVENTORS
ROBERT I. PRUPIS AND
ALBERT BASHOVER
BY
James and Franklin
ATTORNEYS

Feb. 18, 1958 R. I. PRUPIS ET AL 2,823,388

SLIDE FASTENERS

Filed May 11, 1954 4 Sheets-Sheet 4

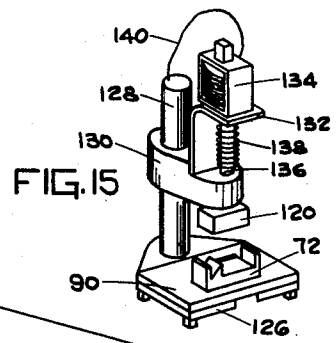


FIG. 15

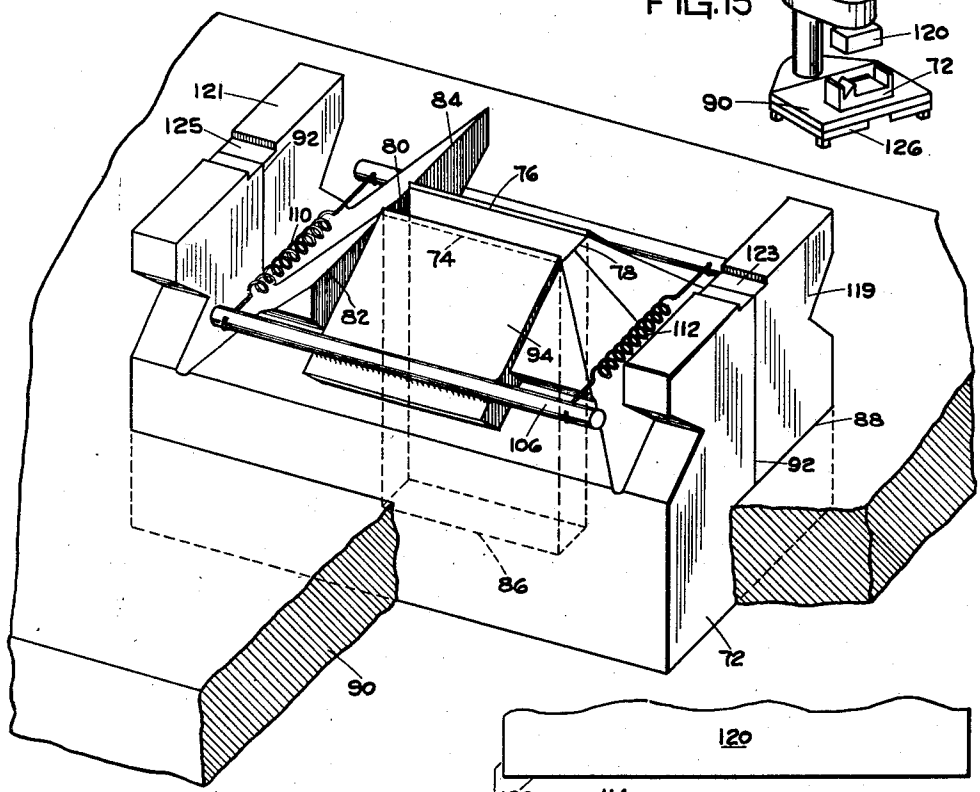


FIG. 16

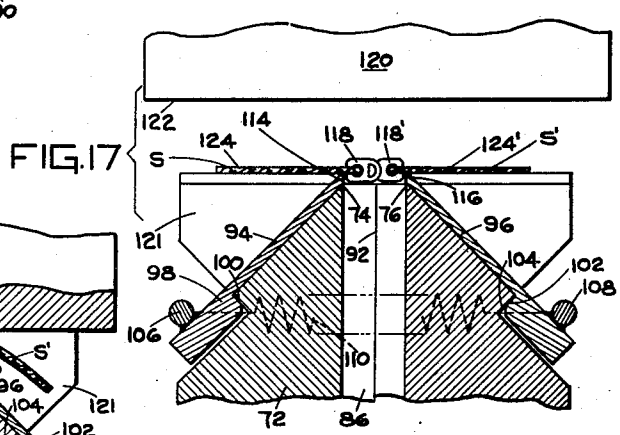


FIG. 17

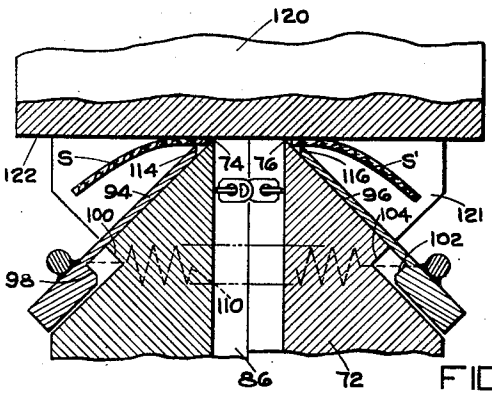


FIG. 18

INVENTORS
ROBERT I. PRUPIS AND
ALBERT BASHOVER
BY James and Franklin
ATTORNEYS

United States Patent Office

2,823,388

Patented Feb. 18, 1958

2,823,388

SLIDE FASTENERS

Robert I. Prupis, West Orange, and Albert Bashover, Livingston, N. J., assignors to Conmar Products Corporation, Newark, N. J., a corporation of New Jersey

Application May 11, 1954, Serial No. 428,902

2 Claims. (Cl. 2—234)

This invention relates to the application of slide fasteners to garment closures.

One of the methods commonly employed in applying slide fasteners to garments having closures, such as fly fronts in trousers, is shown in U. S. Letters Patent to Markin Number 2,155,795, granted April 25, 1939. The garment manufacturer purchases pre-cut or individual slide fasteners, with the sliders separate or off the stringers. The slide fasteners each comprise a pair of stringers of standard length, the fastener elements of which are interlocked or meshed. The stringers are stripped apart, one stringer being sewn to an inner fly strip and the second stringer being sewn to an outer fly strip. A pair of the fly strips with attached stringers are then sewn to the left and right halves of the trousers, after which a slider is attached to the stringers to mesh the elements. The lower ends of the stringers are then stapled, or otherwise connected together.

This method has a number of limitations and disadvantages. The garment manufacturer has to keep a large stock of slide fasteners on hand to meet his needs. It is the standard practice of slide fastener manufacturers to produce fasteners in lengths having one-half inch multiples; that is, seven inches, seven and one-half inches, eight inches, etc. The garment manufacturer must be ready for variance in length of the fly fronts from lot to lot and therefore must stock many lengths. Moreover, many trouser fly fronts require slide fasteners having lengths to tolerance as close as one-eighth or even one-sixteenth of an inch. In such case the purchased slide fasteners must be cut down to the exact length required. This is time consuming, involves additional labor, and is costly.

Because of the foregoing it has been suggested that instead of attaching a pre-cut stringer to a fly strip, a continuous or substantially endless length of slide fastener stringer or chain ("chain" is used to refer to a pair of meshed or interlocked stringers) be attached or sewn to a series of similar fly strips. The fly strips could be arranged end to end in substantially abutting relationship as they are fed into the sewing machine, so that the continuous length of stringer or chain would connect the fly strips together. The continuous length of stringer or chain could be cut transversely between adjacent strips so that each fly strip would have its own appropriate length of stringer attached thereto. Only the required length of stringer for a particular length of fly strip would have to be used. It no longer would be necessary for the garment manufacturer to stock the many different standard pre-cut lengths of fasteners. Furthermore, the additional labor required to shorten a standard length of fastener to the exact length required would be no longer necessary.

However, the problem is not so easily solved, because there is a need for tape ends devoid of fastener elements. With separate stringers sewn to fly strips as first described above, each stringer is provided with a tape end, that is to say, a section of the stringer opposite the bottom portion of a fly strip is devoid of fastener elements. The need for this arises from the practice of stitching across the bottoms of the fly strips when the strips are sewn to the trouser front halves. If the lowermost fastener elements were directly sewn down to the trouser fronts, the slider could not be added to the stringers in a subsequent operation. Heretofore, tape ends have been provided by "gap spacing" the stringer as it is made on the "scoop machine" in the slide fastener manufacturing process.

Now when using continuous stringer or chain as proposed, instead of using individual pre-cut stringers, there are no tape ends devoid of fastener elements, and the proposal therefore has not been found useable in the industry. Indeed, the proposed process is completely unworkable and worthless without tape ends.

In accordance with our invention, tape ends are provided by removing a group of fastener elements from the gap-less stringer or chain after the stringer or chain in continuous length form has been sewn to the fly strips. Preferably, the formation of the tape ends is accomplished by a simple cutting or chopping operation through the tape near the edge to which the fastener elements are secured. We have provided a simple but effective means for removing fastener elements to provide the tape ends. Preferably, the means for removing the segment of fastener elements is also combined with means for simultaneously cutting the continuous stringer or chain across its entire width, in order to form a fly strip having an appropriate length of attached stringer with a desired length of tape end.

To accomplish the foregoing objects, and other objects which will hereinafter appear, our invention resides in the novel method and means for providing slide fastener closures for garments as are hereinafter more particularly described in the following specification, and sought to be defined in the claims. The specification is accompanied by drawings in which:

Figs. 1, 2 and 3 are plan views illustrating steps in a method for providing a plurality of outer fly strips with appropriate lengths of attached stringer from a continuous or substantially endless length of stringer;

Fig. 4 is a greatly enlarged cross-section taken approximately in the plane of line 4—4 of Fig. 2;

Fig. 5 is a plan view of a finished fly strip having a stringer of appropriate length sewn thereto, said stringer being provided with a tape end;

Figs. 6 and 7 illustrate the steps in the method for providing inner fly strips with appropriate lengths of attached stringer and tape ends from a continuous length of stringer;

Figs. 8 and 9 show another form of the invention, wherein the fly strips are provided with appropriate lengths of stringer from continuous chain, that is, a meshed pair of stringers;

Fig. 10 is a plan view of an outer fly strip having an appropriate length of stringer sewn thereto in accordance with the method illustrated in Figs. 8 and 9, the second stringer having been prepared for attachment to an inner fly strip;

Fig. 11 is a perspective view showig still another form of the invention wherein both the inner and outer fly strips have stringers attached thereto from continuous chain;

Fig. 12 is a greatly enlarged cross-section taken approximately in the plane of line 12—12 of Fig. 11;

Fig. 13 is a view similar to Fig. 12 showing how tape ends are provided for the stringers attached to the fly strips;

Fig. 14 is a plan view of both the inner and outer fly strips having attached thereto appropriate length stringers with tape ends, resulting from the method illustrated in Figs. 11, 12 and 13;

Fig. 15 is a perspective view of a device for providing

tape ends, or removing fastener elements, said device also including means for transversely cutting the fastener;

Fig. 16 is a partial perspective view of the die constituting a part of the device shown in Fig. 15;

Fig. 17 is a side elevation, partly in section, showing the manner in which a slide fastener is positioned in the die preparatory to the removal of a segment of fastener elements;

Fig. 18 is a view similar to Fig. 17 showing the manner in which the fastener elements are removed to provide the desired tape end; and

Fig. 19 is a perspective view showing a sewing machine modified to practice that form of the invention shown in Figs. 11, 12 and 13.

In all forms of the invention generically, the tape of a slide fastener stringer S of continuous length (which may also be one of a pair of interlocked stringers S and S') is attached to a series of similar fly strips (generally designated F with modifiers) to thereby connect the strips in substantially end to end relation. The stringer is cut transversely intermediate adjacent fly strips, and a segment of fastener elements is removed from the stringer opposite the bottom portion of each fly strip to provide a tape end on the attached stringer.

Referring now more particularly to Figs. 1 to 4, a slide fastener stringer S of continuous or substantially endless length is attached to a series of similar fly strips F, as by a line or lines of stitching **20**. The continuous stringer S is unwound from a roll, or taken up from a container, which is kept adjacent the sewing machine (not shown), and fed into the sewing machine over the fly strips. The operator feeds the fly strips, those illustrated being outer fly strips and designated *Fo, Fo', Fo''*, etc., into the machine so that the top edge **22** of a second fly strip immediately follows the bottom edge **24** of a preceding fly strip. The fly strips are connected to each other in substantially abutting or end to end relation by means of the unbroken line or lines of stitching **20** through the continuous length of stringer and the adjoining fly strips.

The slide fastener stringer S may be of any well-known variety, and comprises a tape **26** having a beaded edge **28** (Fig. 4) about which the interlockable fastener elements **30** are clamped or secured in spaced relation. The beaded edge **28** may be formed by sewing cords upon opposite edges of the tape **26**, or the beaded edge may be formed in the process of weaving the tape, as is well-known in the art. The fastener elements **30** are disposed on the tape edge of the stringer S throughout its length without any gap spaces between groups of elements. If the tape is made of a thermoplastic or heat-sealable material, the continuous stringer may be attached to the fly strips by a heat-sealing device or roller.

After a suitable run of fly strips now connected to each other by means of the continuous stringer S, the stringer S is cut transversely between each pair of adjoining fly strips. Thus, each fly strip is provided with a matching length of stringer attached thereto. To provide the requisite tape ends on each stringer attached to a fly strip, the bottom portion of each fly strip is folded back (meaning downward and outward to the left as shown in Figs. 2 and 3), and a short segment of the fastener elements **30** (approximately three-quarters of an inch in length in common practice) is removed from the edge of the tape **26** to provide a tape end **32**.

In the preferred form of the invention, the removal of fastener elements to provide the desired tape end is accomplished by cutting through the tape **26** longitudinally along a line **34** (Fig. 4) near that edge of the tape carrying the fastener elements. The cut is made closely behind the legs of the fastener elements. A short transverse cut also is made along a line **36**, shown in Fig. 3, which extends from the extreme beaded edge of the tape to the cutting line **34**. The cutting operation removes a small group of fastener elements together with the section of the beaded edge carrying the same.

Instead of removing the small group of fastener elements after the continuous stringer has been transversely cut between adjacent fly strips, the elements may be removed prior to the transverse cutting with its consequent sveparation of the fly strips. If they are done separately, either may be done first. It is preferred, however, to simultaneously remove the fastener elements and to separate the fly strips, both being done in a single cutting operation. In this manner the transverse cut across the entire width of the tape between fly strips serves also to complete the line of cutting, parallel to the cutting line **36**, required to remove the segment of fastener elements. This is best shown in Fig. 3.

As a result of the described procedure, each outer fly strip is provided with a matching length of tape attached thereto, said tape having fastener elements substantially along the entire length of the tape, except at the bottom portion thereof where just a tape end **32** is provided. This product, which is shown in Fig. 5, is then ready to be sewn to a trouser front.

The same procedure outlined above is carried out to provide the opposite or inner fly strips with appropriate lengths of stringer having the desired tape ends. This is illustrated in Figs. 6 and 7, the successive strips being designated *Fi, Fi', Fi''*, etc. Since the procedure is essentially the same as described with respect to the outer flies, a more detailed illustration of the steps in the method is believed unnecessary. The only difference between processing the inner and outer fly strips resides in the orientation of the stringer as it is sewn to the series of strips. With the inner fly strips, the fastener elements **30'** of the stringer S' are disposed away from the substantially straight edges **38** of the strips; whereas, with the outer fly strips, the stringer S is disposed so that the fastener elements **30** are facing or adjacent the substantially straight longitudinal edges **40** of the strips. The folding back of the fly at the time of the cutting operation is illustrated at **39** in Fig. 7.

Another form of the invention is illustrated in Figs. 8 and 9. In this example, instead of using a single stringer, the slide fastener is applied in the form of continuous chain; that is, a pair of stringers S and S' the elements of which, **42** and **42'**, are in interlocking or meshing engagement. As shown, the tape **44** of the stringer S is sewn to a series of fly strips by a line or lines of stitching **46**, the fly strips illustrated being outer fly strips designated *Fo, Fo', Fo''*, etc. After the series of fly strips are connected to each other in abutting relationship by the unbroken line or lines of stitching **46**, the chain may be cut transversely between adjacent fly strips.

Both stringers, S and S', are provided with tape ends **48** and **48'** by removing a segment **50** (Fig. 9) of fastener elements from both stringers opposite the bottom portion **52** of each fly strip. Preferably, the segment **50** is removed by cutting or punching directly through the tapes **44** and **44'** in substantially the same manner as previously described with respect to Figs. 1 to 4. When removing the segment **50**, the underlying portion of the fly strip must, of course, be folded back from under the fastener elements, as shown at **51** at the top of Fig. 9, in order not to damage the underlying fly strip.

Instead of removing the fastener elements after or before the continuous chain has been transversely cut between adjacent fly strips, it is preferred to accomplish both these cutting operations simultaneously. A suitable device for performing both operations simultaneously is shown in Figs. 15–18, and is described later.

The product resulting from the described method is shown to include the strip *Fo'* in Fig. 9. The stringer S is sewn to the strip *Fo'*, the unsewn stringer S' being in meshing engagement with the stringer S, but having no fly strip as yet. Both stringers, however, are already cut to the desired length, and both stringers are provided with tape ends **48** and **48'**. The unsewn stringer S' may be stripped or unmeshed from the stringer S, as shown

in Fig. 10, whereupon the stringer S' may be sewn to an opposite or inner fly strip. If desired, the stringer S' may be left in meshing engagement with the sewn stringer S, and in this condition the stringer S' of the assembly may be sewn to the inner fly strip. The meshed stringers are stripped apart preparatory to sewing the stringer-bearing fly strips to the trouser front halves. This latter variation possesses the advantage of keeping corresponding work pieces together during most of the stages of processing prior to sewing the stringer-bearing fly strips to the trouser front halves.

Still another form of the invention is shown in Figs. 11, 12 and 13. A continuous length of chain comprising a pair of stringers S and S' having their fastener elements **54** and **54'** in meshing engagement is sewn to a series of both inner and outer fly strips before the chain is cut between strips. The stringer S is attached to a series of fly strips, as by means of a line or lines of stitching **56** passing through the stringer's tape **58**. The fly strips may be the outer fly strips, designated Fo, Fo', etc. (just as in the case of Fig. 8). The chain-connected series of outer fly strips is then fed into a sewing machine over the inner fly strips, designed Fi, Fi'. etc. As illustrated in Fig. 11, the inner fly strips are fed into the sewing machine in abutting end to end relation, the top **60** of one strip immediately adjacent the bottom **62** of the preceding strip. Also, the top and bottom edges **60** and **62** of each inner fly strip are aligned with the top and bottom edges, **64** and **66**, of the outer fly strips so that one pair of outer and inner strips are sewn to the same section of the continuous chain. In sewing the endless meshed stringer S' to the inner fly strips Fi, Fi', etc., the outer fly strips are individually folded back out of the path of the machine's needle as the work passes beneath the presser foot of the sewing machine, so that the line of stitching **56'** will not also pass through the overlying outer fly strips. The resulting product consists of a series of outer fly strips sewn to the chain's stringer S and a series of inner fly strips sewn to the chain's stringer S', with the stringers of the chain in meshing engagement, and with each corresponding pair of inner and outer fly strips attached to the same section of the continuous chain.

Referring now to Fig. 19, we there show a sewing machine modified to fold back the outer fly strip as the work passes beneath the presser foot and needle, as above described. The sewing machine may be generally conventional including the usual presser foot **150** carried by a post **152**, and a needle **154** carried by a needle bar **156**, all at the end **158** of a typical sewing machine arm, not shown. In accordance with our invention a deflector or plow **160** is shaped to overlie the stringer S' and fly F1 at a point ahead of the presser foot **150**. The deflector then curves upward and outward to raise and move aside the free edge **162** of the fly Fo. The stringer S remains meshed with the stringer S' and lies flat over the bed of the sewing machine. The upper end of the deflector **160** is secured to the post **152** as indicated at **164**. In effect it forms a part of a presser foot assembly. This has the advantage that when the presser foot is raised preparatory to starting new material in the sewing machine, the deflector **160** is simultaneously raised.

In the preferred form of the invention, the outer and inner fly strips are provided with tape ends by removing a segment of fastener elements adjacent the bottom portions of each pair of fly strips while the fastener elements are in interlocking or meshing engagement. This may be accomplished, as shown in Fig. 13, by first folding back the portions of fly strips which overlie and underlie the fastener elements at those areas where it is desired to provide the tape ends, and then cutting the tapes **58** and **58'** longitudinally along the lines **68** and **68'** and transversely across the chain between the lines **68** and **68'**, the transverse cuts being spaced apart a distance equal to the length of tape ends desired. In other words a segment like the segment **50** in Fig. 9 is punched out, both flies being folded outward to leave only the meshed chain at the center during the punching step. The mechanism of Figs. 15–18 preferably is employed, the punching operation being accompanied by a simultaneous severance of the chain across its entire width between the successive pairs of fly strips. The fastener elements are then disengaged or unmeshed, whereupon the outer and inner fly strips are provided with appropriate lengths of attached stringers having tape ends **70** and **70'**, as shown in Fig. 14.

It will be understood, of course, that whether the outer or inner fly strips are first attached to a continuous stringer is a matter of choice. If one series of similar fly strips is attached to one stringer, the other and opposite series of fly strips is attached to the other stringer.

Figs. 15 to 18 show the mechanism used in the methods of Figs. 8 to 14. This is designed to remove a segment of meshed fastener elements from a continuous length of chain and to simultaneously sever the chain across its entire width.

As shown in Fig. 16, a stationary die **72** is provided with a pair of spaced parallel cutting edges **74** and **76**. The cutting edges **74** and **76** are spaced apart a distance slightly greater than the width of the meshed fastener elements in the chain being processed. A cutting edge **78** is provided between and connecting the cutting edges **74** and **76**. They are preferably at right angles. A fourth cutting edge **80** is provided between the cutting edges **74** and **76** and substantially parallel to the cutting edge **78**. The distance between the cutting edges **78** and **80** is substantially equal to the length of the tape and desired, a common dimension being three-fourths of an inch. The cutting edges **74**, **76**, **78** and **80** are all in the same horizontal plane.

When it is desired to sever the chain transversely across its entire width simultaneously with the removal of fastener elements, the die is formed with additional cutting edges **82** and **84** extending laterally on each side of the cutting edge **80** and in the same horizontal plane. The total length of the cutting edge portions **82**, **80** and **84** is slightly greater than the width of the chain, (that is, the two stringers as meshed). The die block **72** is provided with an aperture **86** leading from the cutting edges **74**, **76**, **78** and **80** down through the die block to facilitate the disposal of the successive segments being removed from the chain. To simplify the grinding of the die block **72**, which is set in an opening **88** of a plate **90**, the die block preferably is made in two halves, the split line being indicated at **92**, **92**.

A pair of work locating members or blades **94** and **96** (Fig. 17) are provided, one on each side of the cutting edges **74** and **76**, respectively. The locating blades **94** and **96** extend lengthwise of, and parallel to the cutting edges **74** and **76**. The blades are resiliently mounted on the die blocks to engage, hold and properly position the fastener elements which are to be removed from the continuous length of slide fastener.

The blade **94** is in the form of a small plate thickened at its lower end to provide an abutment **98** on its underside adapted to engage a shoulder **100** formed on the die block. Similarly, the blade **96** is formed with an abutment **102** adapted to engage a shoulder **104** on the other side of the die block. The blade **94** is provided with a lateral extension on each side, which may take the form of a rod **106** secured to its outer face, as by welding. The extensions or rod **106** is substantially parallel to the cutting edge **74**. The locating blade **96** is likewise provided with an extension providing member **108**. The members **106** and **108** each may be provided with apertures near their ends to receive the ends of a pair of connecting springs **110** and **112**. The springs urge the abutments **98** and **102** into engagement with the shoulders **100** and **104**, respectively, as shown in Figs. 16 and 17, because the outside walls of the die slope toward one

another, and the blades assume the same slope. In this inner position, the edges **114** and **116** of the blades are disposed a little above the plane of the cutting edges, and they resiliently engage, locate and hold the fastener elements **118** and **118'** of the pair of meshed stringers S and S'.

After positioning a segment of chain between the locating blades **94** and **96**, as shown in Fig. 17, a movable punch, which may be a block **120** having a simple flat bottom face **122**, is moved downwardly against the die **72**. The punch engages the fastener elements and depresses the locating blades, as shown in Fig. 18. The tapes **124** and **124'** of the stringers S and S' then are exposed to the cutting edges **72**, **74**, **76** and **80**, which act to cut or chop out a segment of meshed elements. At the same time, in response to the punch action, the additional cutting edges **82** and **84** sever the tapes **124** and **124'** transversely across their widths. In this manner, the chain is completely severed at the same time that the segment of fastener elements is being cut out of the chain.

If a fastener element is nicked or cut by the cutting edge **78** and **80**, no harm is done to the finished product. The segment of fastener elements thus cut or chopped from the chain drops down through the aperture **86** where it is received in a suitable container (not shown). When the punch **120** is raised, the springs **110** and **112** cause the locating blades **94** and **96** to move back to their upper locating and holding position, the flanges **98** and **102** engaging the shoulders **100** and **104** to limit the movement of and properly position the blades for work-engaging position.

As an added refinement to further aid in positioning the chain in the die, the die may be provided with vertically disposed guide members **119** and **121** at each end of the cutting portions of the die. The members **119** and **121** are formed with locating grooves or tracks **123** and **125**, respectively, dimensioned to receive the meshed fastener elements. The members are spaced apart further than the length of the punch **120**, and do not interfere with the punch action.

A suitable press assembly for the described die block and punch is illustrated in Fig. 15. The block and punch must be relatively movable, and in the present case the block is stationary and the punch is moved. The plate **90** in which the die block **72** is set is secured by any suitable means to a pedestal **126**. The pedestal acts as a base for a hollow vertical standard **128**, upon which is supported a horizontal arm **130**. The arm may be so attached to the standard **128** as to afford vertical adjustment. The arm **130** has secured thereto a bracket **132** upon which is set a solenoid **134**. The lower end of the core (not shown) of the solenoid is connected to the upper end of the shank **136** of the punch block **120**. An aperture is provided in the horizontal arm **130** to slidably receive the shank **136**. A restoring spring **138** may be disposed around the punch shank, one end bearing against the top of the arm **130** and the other end bearing against an insulated flange on the solenoid core. The compression spring **138** thus serves to quickly return the punch block to its upraised position. The solenoid is connected to a suitable source of current (not shown) by means of a power cord **140** extending between the solenoid and the source of current, the cord preferably passing through the hollow standard **128**. A foot pedal switch (not shown) may be provided to actuate the solenoid which, in turn, causes the punch to strike downwardly against the die.

For clarity in illustration, only the meshed stringers have been shown in Figs. 17 and 18, the outwardly folded fly strips being omitted. It will be understood, of course, that a series of fly strips is first sewn to one or both stringers as the chain is processed, the attached fly strips being folded out from beneath or over the fastener elements, as shown in Figs. 9 and 13.

It is believed that our improvements in the attaching of stringers (or chain) to fly strips and providing tape ends for the stringers, as well as the advantages resulting from said improvement, will be apparent from the foregoing detailed description. Closures are prepared for garments in a greatly improved manner, and the necessity for stocking large quantities of standard length, pre-cut fasteners is eliminated. The desired sequence of fly strips is maintained by means of the continuous stringer (or chain) and the work of the sewing machine operator whose task it is to prepare fly strips with closures, preliminary to incorporation into a garment, is greatly simplified.

It will be apparent that while we have shown and described our invention in several preferred forms, changes may be made without departing from the scope of the invention as sought to be defined in the following claims. The method disclosed in connection with Figs. 1–10 and also the method of Figs. 11–14 with a particular way of removing the fastener elements, are not claimed herein, being claimed in our parent application Serial No. 195,652, filed November 14, 1950, now Patent No. 2,697,227, of which the present application is a continuation-in-part. The apparatus shown in Figs. 15–18 is not claimed herein, it being claimed in application Serial No. 423,452, filed April 15, 1954, now Patent No. 2,777,517, which application is a division of the aforesaid parent application Serial No. 195,652, now Patent No. 2,697,227. The present application is directed to the method of Figs. 11–14, without limitation to a particular way of removing the fastener elements.

We claim:

1. In the manufacture of garments having an opening closure therefor provided with a slide fastener of the type comprising stringers formed of tape having spaced, interlockable fastener elements secured to an edge thereof, the method comprising attaching the tape of one of a pair of interlocked slide fastener stringers of continuous length to a series of fly strips, said fly strips thereby being connected to each other in substantially end to end relation by said continuous attached stringer, attaching a series of opposite fly strips to the tape of the second stringer while said stringers are interlocked with each other, cutting both of said stringers intermediate the fly strips and removing a segment of interlocked fastener elements from said stringers opposite the bottom portion of each of said fly strips.

2. In the manufacture of garments having an opening closure therefor provided with a slide fastener of the type comprising stringers formed of tape having spaced, interlockable fastener elements secured to an edge thereof, the method comprising attaching the tape of one of a pair of interlocked slide fastener stringers of continuous length to a series of similar fly strips, said fly strips thereby being connected to each other in substantially abutting end to end relation by said continuous attached stringer, attaching a series of opposite fly strips to the tape of the second stringer while said stringers are interlocked with each other, cutting both of said stringers intermediate the fly strips and simultaneously removing a segment of interlocked fastener elements from said stringers opposite the bottom portion of each of said fly strips.

References Cited in the file of this patent

UNITED STATES PATENTS

2,301,064	Meitner	Nov. 3, 1942
2,612,949	McDaniel	Oct. 7, 1952
2,623,214	Yaffe	Dec. 30, 1952
2,697,227	Prupis et al.	Dec. 21, 1954

OTHER REFERENCES

Men's Clothing, published by the Anglo-American Council on Productivity (page 25, paragraph 280 cited), June 1950.