

May 3, 1932.

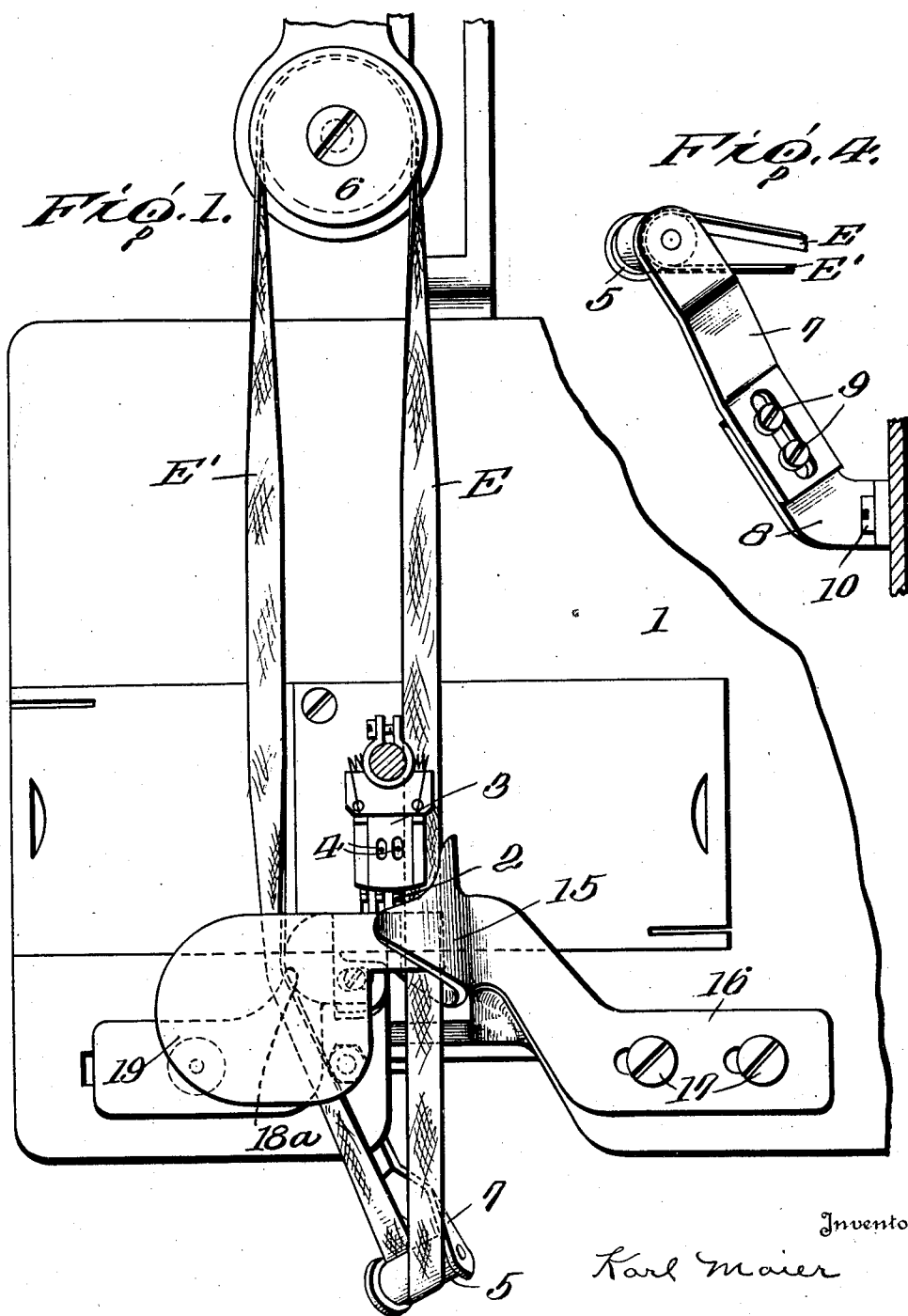
K. MAIER

1,857,058

SEWING MACHINE FOR INSERTING ELASTIC BANDS IN STITCHED ARTICLES

Filed May 1, 1930

3 Sheets-Sheet. 1



Inventor

Karl Maier

By

Stewart Mason

Attorney

May 3, 1932.

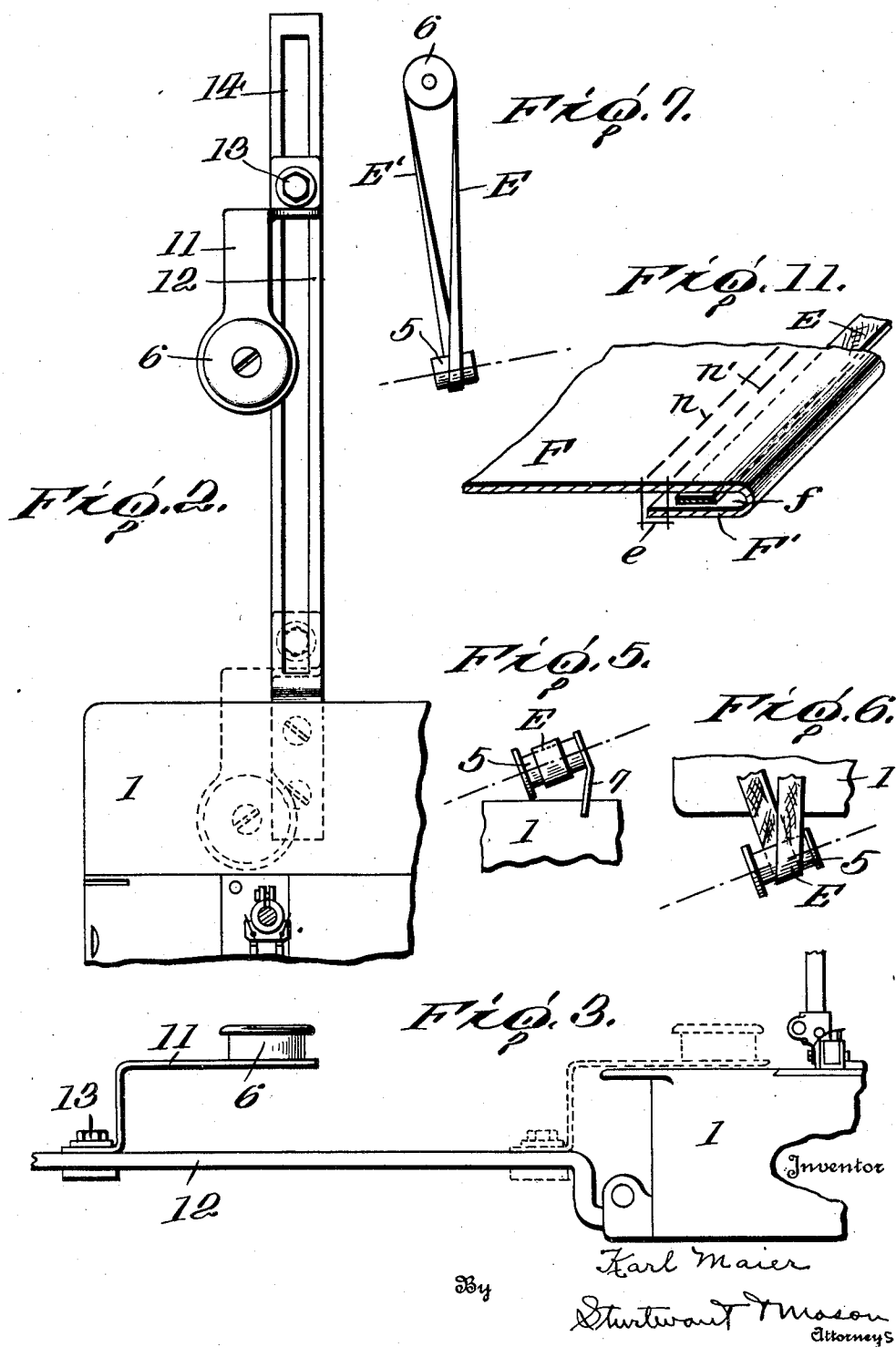
K. MAIER

1,857,058

SEWING MACHINE FOR INSERTING ELASTIC BANDS IN STITCHED ARTICLES

Filed May 1, 1930

3 Sheets-Sheet 2



May 3, 1932.

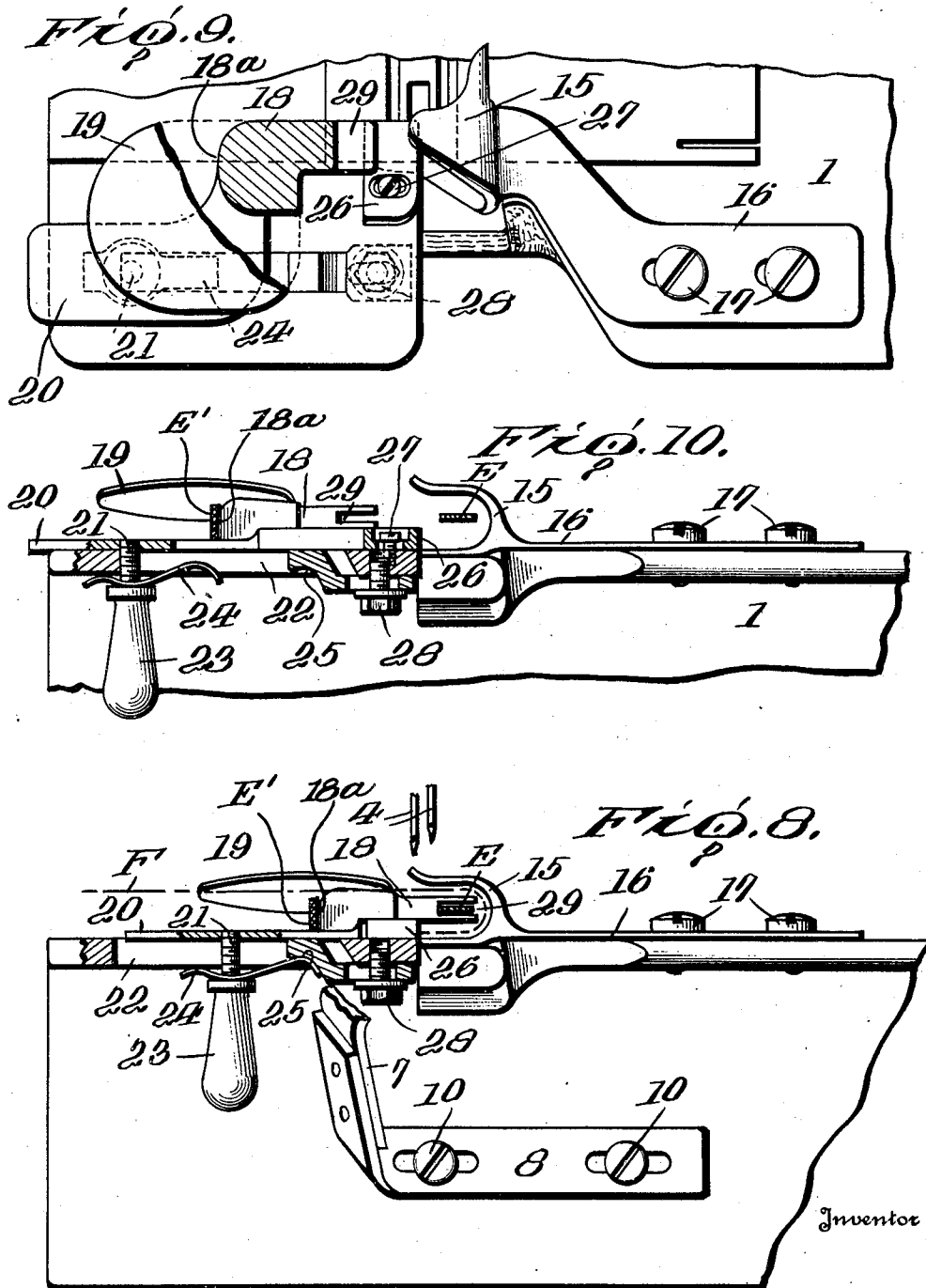
K. MAIER

1,857,058

SEWING MACHINE FOR INSERTING ELASTIC BANDS IN STITCHED ARTICLES

Filed May 1, 1930

3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

KARL MAIER, OF STUTTGART, GERMANY, ASSIGNOR TO UNION SPECIAL MASCHINEN-FABRIK, G. M. B. H., OF STUTTGART, GERMANY

SEWING MACHINE FOR INSERTING ELASTIC BANDS IN STITCHED ARTICLES

Application filed May 1, 1930, Serial No. 448,957, and in Germany October 29, 1929.

The invention relates to new and useful improvements in a sewing machine, and more particularly to a sewing machine for inserting an endless elastic band in a stitched article.

An object of the invention is to provide a sewing machine having a stitch forming mechanism and a hem folder for inturning the edge of a fabric section, with means for guiding an endless elastic tape into the hem pocket, which guiding means is so constructed that the elastic tape is disposed wholly above the plane of the work support whereby a machine having a flat bed may be equipped with the guiding means for the elastic tape.

A further object of the invention is to provide a machine of the above type with means whereby the guiding devices over which the elastic tape passes may be shifted so as to receive and direct endless tapes of different lengths.

A further object of the invention is to provide a machine of the above type with a hem folder which is provided with means for directing the elastic tape as well as forming the hem fold in the fabric.

A still further object of the invention is to provide a machine of the above type wherein the inner member of the folder and the guide for the elastic tape may be withdrawn from engagement with the hem pocket and the tape so as to permit the closing of the hem pocket in the stitching of a circular article.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings which show by way of illustration one embodiment of the invention:—

Figure 1 is a view partly in plan and partly in section showing a sewing machine having improvements applied thereto.

Fig. 2 is a view of a portion of the machine showing the supporting means for the guiding roller in rear of the stitching mechanism.

Fig. 3 is a side view of the parts shown in Fig. 2.

Fig. 4 is a detail showing in perspective the supporting bracket for the front guiding roller.

Fig. 5 is a front view showing more or less diagrammatically the position of the front guiding roller and the elastic tape running over the same.

Fig. 6 is a plan view of the parts shown in Fig. 5.

Fig. 7 is a diagrammatic view showing the relative positions of the guiding rollers and the elastic tape running over the same.

Fig. 8 is a view partly in front elevation and partly in section showing the folder with the parts in position for forming the hem pocket and guiding the elastic tape.

Fig. 9 is a plan view of the parts shown in Fig. 8, but with the inner portions of the folder withdrawn to permit the closing of the hem pocket.

Fig. 10 is a view similar to Fig. 8, but with the parts withdrawn for the closing of the hem pocket.

Fig. 11 is a sectional perspective view of the seam.

The invention is shown applied to a sewing machine having a work support 1 over which the material is fed by a feed dog 2. The material is held on the work support by a presser foot 3 and is stitched by a suitable stitch forming mechanism which includes two needles 4, 4. The purpose of the present invention is to insert an endless elastic tape in a hem pocket formed in a circular article. The article as indicated in Fig. 11 includes a fabric F having the portion F' folded underneath to form a hem pocket f. The elastic tape is indicated at E and is disposed in this hem pocket. The inner edge of the portion F' is secured and covered by the stitching mechanism which includes needle threads n, n', which are formed into loops and pass down through the fabric section, one of said rows of needle loops passing through the infolded portion of the fabric and the other outside thereof. These needle thread loops are joined by looper thread loops e. The elastic tape which is enclosed in the hem pocket as indicated at E passes beneath the presser foot and into the hem pocket as it is formed.

This elastic tape passes over a guiding roller 5 at the front of the machine and a guiding roller 6 at the rear of the machine. The

return stretch E' of the elastic tape passes over the work support so that the elastic tape is disposed entirely above the plane of the work support.

5 The roller 5 over which the elastic tape is directed is carried by an arm 7 on which it is mounted for free rotation. The arm 7 is adjustably carried by a bracket 8. Screws 9, 9 pass through slots in the arm 7 and are threaded into the bracket 8. The bracket 8 is 10 attached to the apron of the work support by screws 10, 10 which pass through slots in the bracket and thus it is that the bracket may be adjusted in a direction substantially at right angles to the line of feed.

15 The arm 7 is adjusted in an angular direction relative to the plane of the work support and permits of the raising and lowering of the guiding roller 5. The guiding roller 6 is carried by an arm 11 on which it is mounted 20 for free rotation. The arm 11 is adjustably attached to a bracket 12 fixed to the work support and extending rearwardly therefrom in a direction substantially parallel with the line of feed. The arm 11 is secured 25 to the bracket by a screw 13. The bracket has a long slot 14 therein which permits of a wide range of adjustment of the arm 11.

30 In Fig. 2 the roller 6 is shown in full lines as positioned some distance in rear of the stitching point and in broken lines it is shown as overhanging the work support and disposed immediately in rear of the presser foot. The arm 11 is so constructed as to overhang 35 the work support so as to permit the roller to be placed close to the presser foot. The roller 6 is mounted so as to rotate about a vertical axis, while the roller 5 is mounted so as to rotate about an axis which is inclined to the 40 plane of the work support.

The elastic tape after it leaves the roller 5 passes in substantially a flat horizontal position beneath the presser foot. After leaving the presser foot it is turned to a vertical position so as to pass about the roller 6. The 45 roller 6 is provided with flanges which prevent the elastic tape from running off from the roller. After leaving the roller 6, the return stretch of the elastic tape turns to substantially horizontal position, and thence 50 to a position inclined to the vertical where it contacts with the surface 18a, and thence passes underneath the roller 5 and over the top of the roller, from which it passes in substantially horizontal position to the presser 55 foot. This half twist of the elastic tape aids in the directing of the tape and the maintaining of the same on its guiding rollers and the proper positioning of the tape beneath 60 the presser foot and in the folder.

65 The hem folder consists of an outer folding member 15 which is carried by a shank 16 adjustably secured by screws 17, 17 to the cloth plate 1. The folder also includes an inner folding member 18 and a fabric sup-

porting part 19. The inner member of the folder is carried by a shank 20 which is secured to the cloth plate by means of a bolt 21 passing through a slot 22 in the cloth plate and threaded into the shank 20. This 70 bolt 21 is provided with a handle 23. There is also a spring finger 24 rigidly attached to this bolt 21. The cloth plate is provided with a depression 25 into which the free end of the finger 24 snaps when the inner 75 member of the folder is moved into position within the outer member of the hem folder so as to guide the fabric section and infold the edge portion thereof.

Mounted on the work support is an edge 80 guide 26 which can be shifted and held in adjusted positions by a screw 27. The portion having the depression 25 therein is adjustably secured to the cloth plate and held in adjusted positions by a screw 28. This 85 portion serves as a stop to limit the inward movement of the inner portion of the folder.

The inner folding member 18 is provided with a recess 29 which is adapted to receive the elastic tape. This recess is open at its 90 right hand side, as viewed in Figs. 8, 9 and 10. When the inner member of the folder is moved laterally so as to withdraw it from the hem pocket, the elastic tape is then withdrawn from this recess. It will readily be 95 seen that the position of the folder may be adjusted so as to vary the size of the hem pocket, and the position of the elastic tape in the hem pocket may also be adjusted. The elastic tape is positively directed as it 100 passes through the folder, and may, therefore, be directed so as not to be engaged by the lines of stitching. On the other hand it may be positioned so as to be stitched to the fabric, if desired. Whatever the set position of the elastic tape may be, it will be 105 directed positively in this set position. When a circular article is being finished, the inner part of the folder through the aid of the handle 23 may be moved laterally so as 110 to be withdrawn from the hem pocket and at the same time the elastic tape will be released so that it is free and the hem pocket may be closed. The return stretch of the elastic tape passes beneath the supporting 115 plate 19 for the fabric, and therefore beneath the fabric, as it is directed to the roller 5. After the hem pocket has been formed about the tape it can pass back beneath the fabric section which is being led in and over the 120 roller 5 so that the pocket may be closed without removing the tape from either of the guiding rollers. On the other hand, the tape may be quickly released from the guiding roller 5, if desired, at the time of finishing 125 or closing the hem pocket.

It is obvious that minor changes in the details of construction may be made without departing from the spirit of the invention as set forth in the appended claims.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination of a work support, a stitch forming mechanism, a folder located in front of the stitch forming mechanism for inturning the edge portion of a fabric to form a hem pocket, and means for guiding an endless elastic tape with the plane of the face of the tape horizontal through the folder and into the hem pocket, said means including guiding rollers located one in front and the other in rear of the stitch forming mechanism and with their axes positioned so that the return stretch of the elastic tape passes over the work support.

2. The combination of a work support, a stitch forming mechanism, a folder located in front of the stitch forming mechanism for inturning the edge portion of a fabric to form a hem pocket, said folder including inner and outer members with means for supporting the inner member so that it may be withdrawn from the outer member, and means for guiding an endless elastic tape with the plane of the face of the tape horizontal through the folder and into the formed hem pocket, said means including guiding rollers located one in front and the other in rear of the stitch forming mechanism and with their axes positioned so that the return stretch of the endless elastic tape passes over the work support.

3. The combination of a work support, a stitch forming mechanism, a folder located in front of the stitch forming mechanism for inturning the edge portion of a fabric to form a hem pocket, and means for guiding an endless elastic tape through the folder and into the hem pocket, said means including guiding rollers disposed relative to the work support so that the return stretch of the elastic tape passes over the work support, one of said rollers being disposed in front of the stitch forming mechanism and mounted on an inclined axis for directing the elastic tape horizontally as it passes into the folder.

4. The combination of a work support, a stitch forming mechanism, a folder located in front of the stitch forming mechanism for inturning the edge portion of a fabric to form a hem pocket, and means for guiding an endless elastic tape with the plane of the face of the tape horizontal through the folder and into the hem pocket, said means including guiding rollers disposed relative to the work support so that the return stretch of the elastic tape passes over the work support, one of said rollers being located in rear of the stitch forming mechanism for rotation about a vertical axis while the other roller is located in front of the stitch forming mechanism with its axis positioned for receiving and directing the elastic tape horizontally as it passes into the folder.

5. The combination of a work support, a

stitch forming mechanism, a folder located in front of the stitch forming mechanism for inturning the edge portion of a fabric to form a hem pocket, and means for guiding an endless elastic tape with the plane of the face of the tape horizontal through the folder and into the hem pocket, said means including guiding rollers disposed relative to the work support so that the return stretch of the elastic tape passes over the work support, one of said rollers being located in rear of the stitch forming mechanism for rotation about a vertical axis while the other roller is located in front of the stitch forming mechanism with its axis positioned for receiving and directing the elastic tape horizontally as it passes into the folder, and means for adjusting said roller in rear of the stitch forming mechanism toward and from the said stitch forming mechanism.

6. The combination of a work support, a stitch forming mechanism, a folder located in front of the stitch forming mechanism for inturning the edge portion of a fabric to form a hem pocket, and means for guiding an endless elastic tape with the plane of the face of the tape horizontal through the folder and into the hem pocket, said means including guiding rollers disposed relative to the work support so that the return stretch of the elastic tape passes over the work support, one of said rollers being located in front of the stitch forming mechanism for rotation about an inclined axis, and means for raising and lowering said roller and for adjusting the same laterally.

7. The combination of a work support, a stitch forming mechanism, a folder located in front of the stitch forming mechanism for inturning the edge portion of a fabric to form a hem pocket, and means for guiding an endless elastic tape through the folder and into the hem pocket, said means including guiding rollers located one in front and the other in rear of the stitch forming mechanism and with their axes positioned so that the return stretch of the elastic tape passes over the work support, said folder having an outer folding member and an inner folding member forming said hem pocket for the elastic tape, said inner folding member being independent of the tape guiding means and having a guiding recess within the outer folding member for directing the elastic tape.

8. The combination of a work support, a stitch forming mechanism, a folder located in front of the stitch forming mechanism for inturning the edge portion of a fabric to form a hem pocket, and means for guiding an endless elastic tape through the folder and into the hem pocket, said means including guiding rollers located one in front and the other in rear of the stitch forming mechanism and with their axes positioned so that the return stretch of the elastic tape passes over the

work support, said folder having an outer
folding member and an inner folding member
forming said hem pocket for the elastic tape,
said inner folding member being independ-
5 ent of the tape guiding means and having a
guiding recess within the outer folding mem-
ber for directing the elastic tape, said guid-
ing recess having an opening at the inner
side thereof, and means whereby said inner
10 member may be withdrawn laterally from the
hem pocket to permit the closing of the hem
pocket.

In testimony whereof I affix my signature.
KARL MATER.

15

20

25

30

35

40

45

50

55

60

65