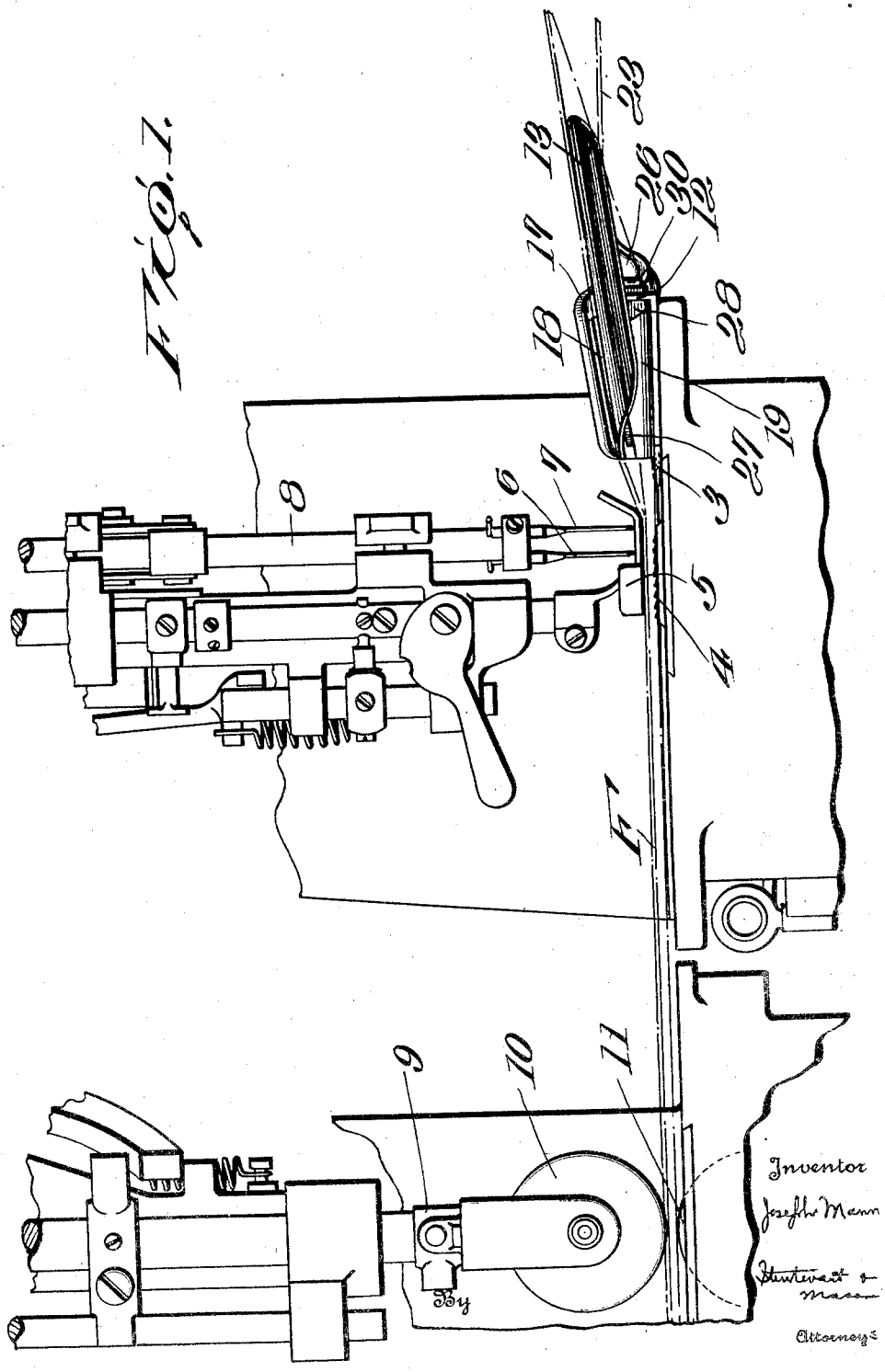
Dec. 31, 1929. J. MANN 1,741,866

COMBINED HEM FOLDER AND STRIP GUIDE

Filed March 6, 1925 3 Sheets-Sheet 1



Dec. 31, 1929. J. MANN 1,741,866

COMBINED HEM FOLDER AND STRIP GUIDE

Filed March 6, 1925 3 Sheets-Sheet 2

Fig. 2.

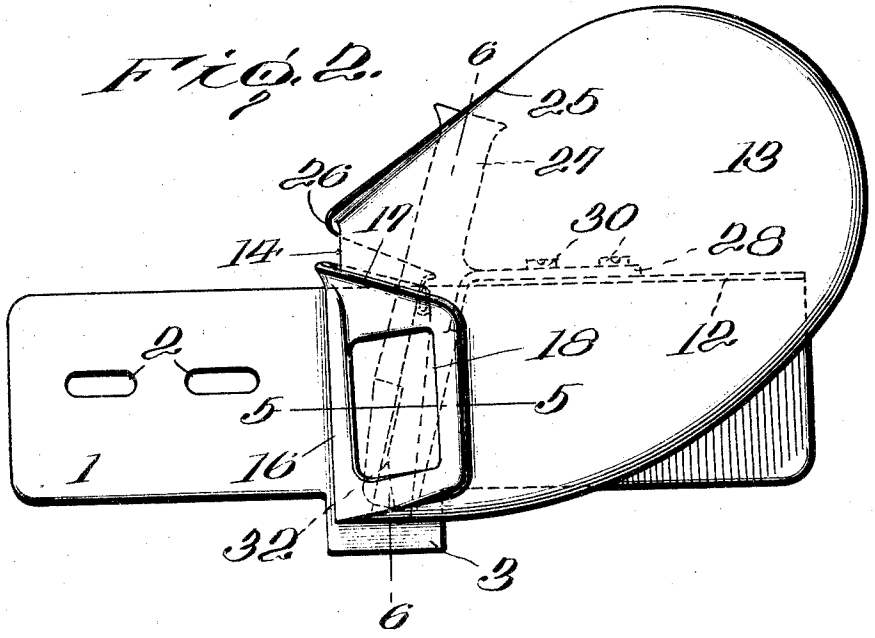


Fig. 3.

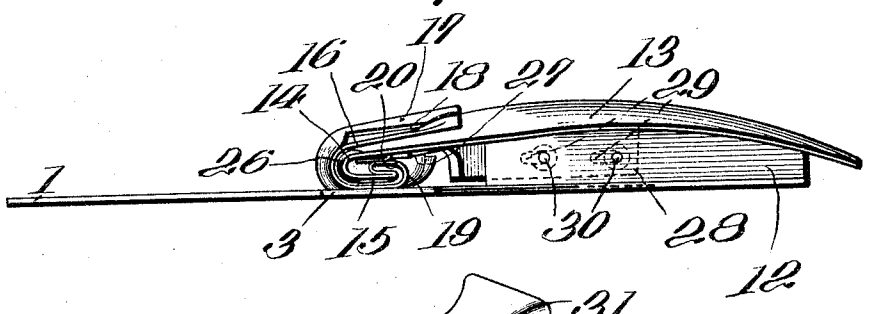
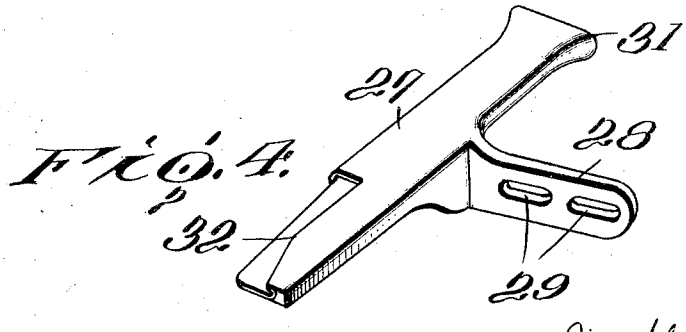


Fig. 4.



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Dec. 31, 1929. J. MANN 1,741,866

COMBINED HEM FOLDER AND STRIP GUIDE

Filed March 6, 1925 3 Sheets-Sheet 3

Fig. 5.

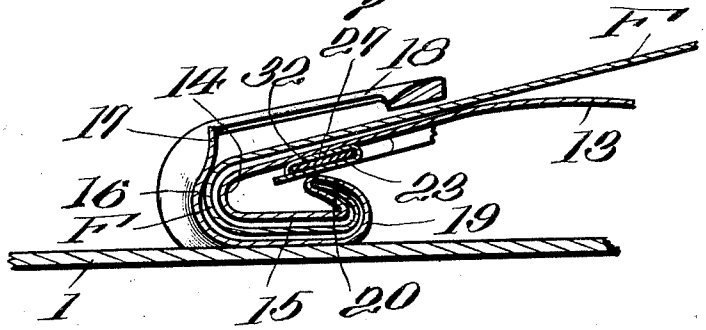


Fig. 6.

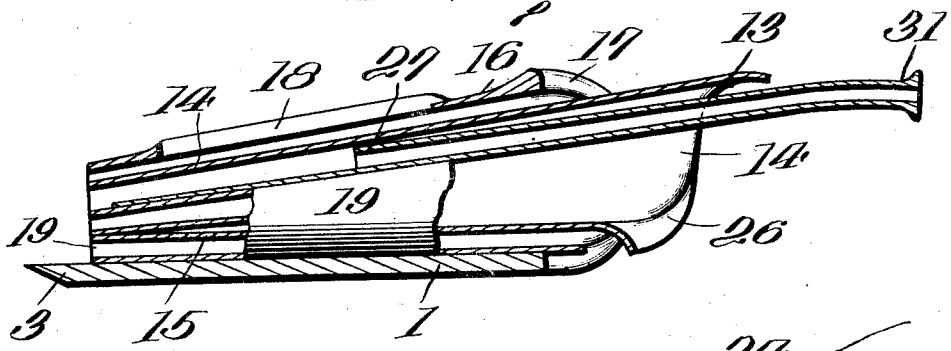


Fig. 7.

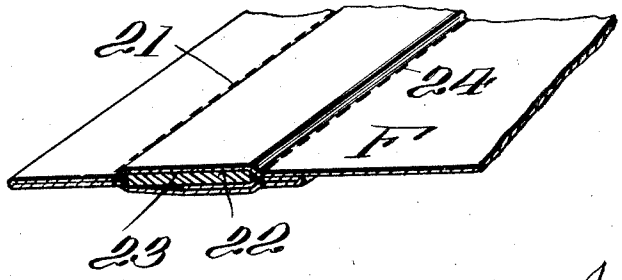
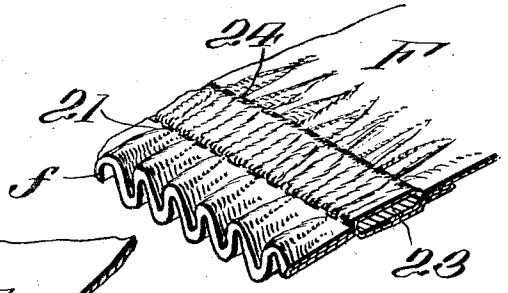


Fig. 8.



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Patented Dec. 31, 1929

1,741,866

UNITED STATES PATENT OFFICE

JOSEPH MANN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

COMBINED HEM FOLDER AND STRIP GUIDE

Application filed March 6, 1925. Serial No. 13,456.

The invention relates to new and useful improvements in combined hem folders and strip guides, and more particularly to a folder of the above type wherein a pocket is formed in the material, and an elastic strip is inserted and secured in said pocket as it is formed.

An object of the invention is to provide a folder and strip guide of the above type with means for directing the elastic strip into the pocket formed by turning the hem and providing means whereby said strip guide may be adjusted transversely of the pocket forming members of the folder so that said elastic strip may be enclosed in said pocket between the lines of stitching forming the pocket, or positioned so that one of said lines of stitches penetrates the elastic strip during the forming of the pocket.

Another object of the invention is to provide a folder of the above type with means at the entrance end of the hem forming portion of the folder which is adapted to engage and uncurl the edge of the material which is being formed into a hem pocket.

A further object of the invention is to provide a machine using a folder of the above type with a four-motion feed dog for feeding the fabric as it is stitched to form a pocket, and with a rotating feed located in rear of the presser foot for feeding the elastic strip and the fabric after the pocket has been formed in the fabric and enclosed about said elastic strip.

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 of a folder and strip guide embodying my improvements shown applied to a sewing machine having a four-motion feed dog and a rotating puller feed located in rear thereof;

Fig. 2 is a plan view of my improved folder;

Fig. 3 is an end view of the folder as viewed from the delivery end thereof;

Fig. 4 is a perspective view of the guide for the elastic strip, said guide being removed from the folder;

Fig. 5 is a sectional view on the line 5—5 of Fig. 2;

Fig. 6 is a sectional view on the line 6—6 of Fig. 2;

Fig. 7 is a section of a fabric formed into a pocket and enclosing the strip, the elastic strip being stretched and the fabric lying flat and smooth, and

Fig. 8 is a similar view, but showing the elastic released and the manner in which the elastic strip will gather the fabric which houses the same.

The invention is directed broadly to a combined folder for forming the hem fold and strip guide for placing the strip in the pocket formed by said hem fold. The hem folder, to a great extent, is of the usual construction. It is positioned in front of the stitching mechanism of a sewing machine, and folds the edge of a fabric strip passing therethrough underneath the body portion of the strip, and inturns the inner edge thereof so as to form a pocket which is free from raw edges. This hem folder is so located relative to the stitching mechanism, that preferably two lines of stitches are formed through the inturned portion and body fabric, thus forming a pocket within which the elastic strip or tape may be inserted. This is done during the forming of the hem pocket. This elastic strip is guided by a tube or guide which is secured to the folder and is capable of being adjusted laterally of the folder. This adjustment of the guiding tube for the elastic strip is really a set adjustment, that is to say, the guide is set in one position or in another. There is no means for shifting it, but there is means for securing it to the folder which permits it being adjusted laterally of the folder when the securing means is released. This cannot be done, however, during the operation of the machine. When a strip guide is once set, it remains in said set position, and the tape passing therethrough will be entirely clear of the needles, or the strip guide may be set so that one of the needles will pass therethrough. At the entrance end of this hem folder there is an outturned portion which is very useful

in uncurling the edge of the fabric which is formed into a hem pocket. This folder is placed in front of the stitching mechanism of a sewing machine having two or more needles, preferably two, and is so related to the two needles that the hem fold is stitched by the needles and the elastic strip to be put in the pocket formed in the hem fold is guided between the needles, or so as to be entered by one needle only. The fabric and the elastic strip are fed into the machine by a four-motion feed dog cooperating with the usual presser foot. The elastic strip is intended to be entirely free from tension or to be under tension during the entire operation of stitching the hem pocket. There is no means capable of actuation by the operator for changing the tension on the elastic strip or releasing the tension. The machine is preferably provided with a puller feed which is an intermittently rotated feed.

Referring more in detail to the drawings, my improved folder and strip guide consists of a base portion 1 which is secured to the cloth plate of the machine by screws passing through slots 2, 2 in the base. This base portion has a forwardly projecting part 3 which is directly in front of the presser foot and is so shaped as to direct the material up on to the feed dog of the machine, which is illustrated at 4 in Fig. 1 of the drawings. Cooperating with this feed dog, which is a four-motion feed dog, is the presser foot 5. These parts are of the usual construction and the feed dog operates to intermittently feed the fabric section and the elastic strip to the stitching mechanism which is shown as consisting of two needles 6 and 7 carried by a needle bar 8. These needles 6 and 7 are set in a diagonal line relative to the feed, so that each needle can operate in conjunction with a separate looper, and thus two independent lines of stitching are formed. In rear of the sewing machine there is a puller mechanism indicated at 9 which consists of an upper intermittently rotating feed roller 10 and a lower intermittently rotating feed roller 11. This puller feed may be of the construction shown in the patent to Dudley S. Seymour, No. 1,189,007, granted June 27, 1916.

Returning again to the folder, my improved folder has an upstanding bracket 12. Mounted on this bracket 12 is the fabric supporting plate 13, the left-hand edge of which as shown in Figures 2 and 3, is bent downwardly at 14 and thence backwardly underneath the portion 13 as indicated at 15. This forms one wall of a guiding recess which is adapted to fold the edge of the fabric strip passing through the folder. Mounted on the base plate 1 is the outer member 16 of the folder which is located a distance from the parts 13, 14 and 15, and which operates to guide the fabric through the hem folder. This portion 16 is rigidly mounted on the base plate 1. The entrance end of the member 16 flares outwardly at 17 so as to aid in the passing of the material underneath the same. It is also provided with the opening 18 through which the material may be reached by the finger of the operator to aid in the passing of the material into the folder. Said member 16 is bent upwardly at 19 and thence inwardly at 20, where it is curved down and joined to the portion 15 of the plate 13. It will thus be seen that the folder has a guiding channel for the fabric strip which will turn the edge portion thereof underneath the body portion of the fabric and turn in the inner edge of said body portion so as to conceal the raw edge thereof. Thus it is that the hem pocket is formed in the fabric. In Fig. 5 of the drawings, the fabric is indicated at F, and is shown as passing into this guiding channel which has just been described, and the free edge thereof inturned so as to be concealed when the pocket is stitched. The needles 6 and 7 are so disposed that one of the needles forms the line of stitching 21 which passes through the fabric F and the inturned portion thereof, and forms one side of a pocket 22 in which the elastic strip 23 is adapted to be placed. The other needle forms the line of stitching 24 which goes through the body portion of the fabric F and through the underturned portion and also the inturned portion, thus joining the fabric parts and forming the other side of the pocket and also concealing the raw edge of the inturned portion of the fabric section.

The fabric supporting plate 13 has its front edge 25 inclined to the longitudinal path of travel of the fabric into and through the folder. This front edge 25 flares outwardly as indicated at 26. This flared portion extends around to the extreme under edge of the portions 14 and 15. The purpose of this outturned edge 26 is to uncurl the rolled edge of the fabric as it enters the folder. When working upon artificial silk, circular flat spring needle fabric, or balbriggan fabric, the nature of the material is such that the edge where it is cut rolls up into a very hard curl, which is very difficult to uncurl. My improved folder, however, in the uncurler just described, will straighten out this curled portion of the edge and thus form a very neat and uniformly laid pocket. Located within the folder is a strip guide 27. Said strip guide is carried by a bracket arm 28 provided with openings 29, 29. This arm is adapted to be secured to the bracket 12 above described by means of screws 30, 30. The strip guide 27 is tubular in form with an outwardly flared portion 31 at the receiving end thereof and with a cut away portion 32 at the delivery end of said guide. The purpose of cutting away this guide at the delivery end thereof, is to permit the free passage of the elastic tape

through the guide and into the pocket formed by the turned hem in the body fabric. This strip guide 27 can be adjusted laterally of the folder by loosening the screws 30, 30, and set in its various adjusted positions. It will be understood, of course, that these screws do not afford any means for shifting the guide, but merely a means which permits the guide to be shifted by hand, and of course, the guide cannot be shifted except when the machine is stopped. The purpose of shifting the guide is to set said guide so that the elastic tape will pass between the needles, if so desired, or pass so that one needle will enter the same. The elastic tape is often made of cheap material, and the rubber is likely to break under use. For this poor grade of material, it is always better to set the guide so that one needle will penetrate the casing for the rubber forming the elastic tape, all the time during stitching. Then, if the rubber should break at one point, as the stitches which form the hem, go through the casing of the tape, the broken part will be bridged over and preserve the elasticity of the strip as a whole. Then again, sometimes a manufacturer desires to have the tape penetrated throughout the whole length, so as to prevent said elastic tape from twisting, and this can be readily done by adjusting the guide. The elastic tape is led from a suitable supply spool, and is preferably passed through a tension device which puts a continuous tension on the tape during the forming of the pocket and the inserting of the tape therein. There is no means, however, desired for releasing this tension, as my improved folder and tape guide is intended to be used in conjunction with the guiding of elastic tape which is entirely free from tension or is under tension during the entire stitching operation.

The tape and the fabric which forms the pocket for the tape, are drawn through the folder by the feed dog 4. This is the ordinary four-motion feed, and will move the parts being stitched a certain extent, and then return for another gripping hold on the parts and feed the same along. In order to prevent the piling up of the stitched pocket and the tape therein after it leaves the presser foot 4, we prefer to use a puller feed including intermittently rotated feed rollers. These rollers have an intermittent movement, nevertheless, they have a continuous pull on the elastic. This maintains a tension on the elastic tape directly back of the presser foot and prevents the fabric from drawing against the rear of the feed dog and becoming twisted or plaited. The tape and fabric are therefore maintained under constant and uniform tension between the puller rollers and the presser foot. The fabric and the tape as they pass under the puller, will be released from tension at timed intervals, and thus a perfect ruffle is formed through the contraction of the rubber in the elastic tape, and the movement of the fabric therewith, by reason of the frictional grip of the fabric on the elastic tape in case the lines of stitching do not pass through the tape and by the positive connection of the elastic tape with the fabric when one line of stitches passes therethrough.

The use of the puller also greatly increases the output of the machine.

In Fig. 7 of the drawings, the fabric is shown as plain and ungathered while the elastic tape is stretched. This is the condition of the fabric passing from the presser foot to the puller rollers.

In Fig. 8, however, the elastic tape is shown as released and contracted to gather the fabric, the gathers being indicated at *f*.

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

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is—

1. The combination of stitch forming mechanism having spaced needles for forming independent lines of stitching, a hem folder located in front of said needles and having means for forming a hem pocket in the edge portion of a fabric and directing the same to said needles whereby a pocket is formed between the lines of stitching, a tubular guide for guiding an elastic strip, said guide being mounted on said hem folder and extending into the same to a point adjacent the delivery end thereof so as to deliver the elastic strip into the pocket formed by the needles, and means whereby said guide may be moved transversely of the folder from one set position to another, so that said elastic strip may be properly positioned relative to the line of stitching.

2. The combination of stitch forming mechanism having spaced needles for forming independent lines of stitching, a hem folder located in front of said needles and having means for forming a hem pocket in the edge portion of a fabric and directing the same to said needles, whereby a pocket is formed between the lines of stitching, a tubular guide for guiding an elastic strip, said guide being mounted on said hem folder and extending into the same so as to deliver the elastic strip into the pocket formed by the needles, means whereby said guide may be moved transversely of the folder from one set position to another, so that said elastic strip may be properly positioned relative to the line of stitching, said tubular guide at the delivery end thereof being cut away for a distance back from said end so as to enable the strip to run freely through the guide.

3. The combination of a stitching mechanism including a pair of spaced needles, a

hemmer located in advance of said needles for forming a hem pocket in the edge portion of a fabric and inturning the free edges thereof, said hem folder being so positioned relative to the needles that a line of stitching is formed through said hem pocket adjacent the inturned edge thereof, and also through said hem pocket at a distance back from said edge, a strip guide carried by the folder and extending into said folder to a point adjacent the delivery end thereof so as to direct an elastic strip into the hem pocket formed by the folder and between the lines of stitches, means for mounting said guide so that it may be moved laterally from one set position to another for properly positioning the tape so that said tape is secured in said pocket by the frictional grip of the fabric and is free from penetration by the lines of stitches.

4. A hem folder including a base portion having means for turning underneath and inturning said underneath turned portion for forming a hem pocket, a tubular guide having an arm extending laterally therefrom provided with elongated slots, a bracket carried by the hem folder and adapted to receive screws passed through said slots, said tubular guide having its delivery end cut away on the upper face thereof and for a distance back from the delivery end thereof, said tubular guide being positioned in said hem folder so as to direct an elastic strip into the pocket formed by the folder.

5. A hem folder for sewing machines including in combination, a base plate, a supporting plate carried by said base plate and having the inner portion thereof inturned beneath the body of said plate, and means cooperating therewith carried by the base plate for forming a guiding passage for inturning the edge portion of a fabric, said supporting plate having the edge thereof of the inturned portion flared outwardly and operating to uncurl the edge of the fabric in which the hem fold is being formed.

6. A hem folder for sewing machines including in combination, a base plate, a supporting plate carried by said base plate and having the inner portion thereof inturned beneath the body of said plate, means cooperating therewith carried by the base plate for forming a guiding passage for inturning the edge portion of a fabric, said supporting plate having the edge thereof of the inturned portion flared outwardly and operating to uncurl the edge of the fabric in which the hem fold is being formed, and a strip guide located beneath said supporting plate and extending into said hem turning portion thereof for guiding an elastic strip into the hem pocket formed by the folder.

7. A hem folder for sewing machines comprising a base plate having a supporting bracket, a guiding plate carried by the supporting bracket and bent downwardly and inwardly and thence upwardly and around which a hem pocket may be formed, an outer member carried by the base plate and spaced from said inner member, said outer member extending upwardly and thence over said inner member for cooperating with said plate in forming a hem pocket, said inner member having the front edge thereof inclined and flared outwardly along the portion thereof which is bent downwardly and thence inwardly, so as to provide means for uncurling the edge of the fabric which is formed into a hem pocket.

8. A hem folder for sewing machines including in combination, a plate having the inner portion thereof inturned beneath the body of the plate, and means extending about the inturned portion of the plate for forming a guiding passage for inturning the edge portion of the fabric, said supporting plate having the edge of the inturned portion thereof flared outwardly for uncurling the edge of the fabric in which the hem fold is being formed.

9. A hem folder for sewing machines including in combination, a plate having the inner portion thereof inturned beneath the body of the plate, means extending about the inturned portion of the plate for forming a guiding passage for inturning the edge portion of the fabric, said supporting plate having the edge of the inturned portion thereof flared outwardly for uncurling the edge of the fabric in which the hem fold is being formed, and a strip guide located within the inturned portion of the plate and extending substantially to the delivery end of the hem folder for guiding an elastic strip into the hem pocket formed by the folder.

10. The combination of stitch forming mechanism including a needle, a hem folder located in front of said needle including a fabric supporting plate having the inner portion thereof underturned beneath the body of the plate and means cooperating therewith for forming a passage for guiding a fabric section, underturning the edge portion thereof and forming a hem pocket therein, means located beneath the body portion of the supporting plate within the underturned portion thereof and terminating substantially at the delivery end of the folder for guiding an elastic strip into the hem pocket formed by the folder.

11. The combination of stitch forming mechanism including a needle, a hem folder located in front of said needle including a fabric supporting plate having the inner portion thereof underturned beneath the body of the plate and means cooperating therewith for forming a passage for guiding a fabric section, underturning the edge portion thereof and forming a hem pocket therein, means located beneath the body portion of the supporting plate within the underturned portion

thereof and terminating substantially at the delivery end of the folder for guiding an elastic strip into the hem pocket formed by the folder and means supported by the plate and projecting across the path of travel of the fabric into the guiding passage for uncurling the edge of the fabric in which the hem fold is to be formed.

12. The combination of stitch forming mechanism including a needle, a hem folder located in front of said needle including a fabric supporting plate having the inner portion thereof underturned beneath the body of the plate and means cooperating therewith for forming a passage for guiding a fabric section, underturning the edge portion thereof and forming a hem pocket therein, means located beneath the body portion of the supporting plate within the underturned portion thereof and terminating substantially at the delivery end of the folder for guiding an elastic strip into the hem pocket formed by the folder, said strip guide being mounted whereby the same may be adjusted from one set position to another for properly positioning the elastic strip relative to the lines of stitches.

13. The combination of stitch forming mechanism including a needle, a hem folder located in front of said needle including a fabric supporting plate having the inner portion thereof underturned beneath the body of the plate and means cooperating therewith for forming a passage for guiding a fabric section, underturning the edge portion thereof and forming a hem pocket therein, means located beneath the body portion of the supporting plate within the underturned portion thereof and terminating substantially at the delivery end of the folder for guiding an elastic strip into the hem pocket formed by the folder and means supported by the plate and projecting across the path of travel of the fabric into the guiding passage for uncurling the edge of the fabric in which the hem fold is to be formed, said strip guide being tubular and having the delivery end thereof adjacent the fabric forming the hem fold cut away for a distance back from said end so as to permit the strip to run freely through the strip guide.

14. The combination of stitch forming mechanism including a needle, a hem folder located in front of said needle including a fabric supporting plate having the inner portion thereof underturned beneath the body of the plate and means cooperating therewith for forming a passage for guiding a fabric section, underturning the edge portion thereof and forming a hem pocket therein, means located beneath the body portion of the supporting plate within the underturned portion thereof and terminating substantially at the delivery end of the folder for guiding an elastic strip into the hem pocket formed by the folder, said strip guide being disposed in a vertical plane inclined to a vertical plane parallel with the line of feed.

15. A combination of stitch forming mechanism including a pair of spaced needles, a hemmer located in advance of said needles for forming a hem pocket in the edge portion of the fabric and inturning the free edge thereof, said hem folder being so positioned relative to the needles that a line of stitching is formed through said hem pocket adjacent the inturned edge thereof and also through said hem pocket at a distance back from the edge, a strip guide carried by the folder and extending into said folder so as to direct an elastic strip into the hem pocket formed by the folder and between the lines of stitches, a feed dog having an intermittent fabric feeding motion, a presser foot cooperating with said feed dog, a roller feed located in the rear of the presser foot and continuously gripping the formed hem pocket and elastic tape, said feed roller operating intermittently in timing with the feed dog to feed the fabric passing through the same and also operating to hold the tape stretched between the presser foot and the roller feed.

16. A hem folder for sewing machines including in combination a plate having the inner portion thereof inturned beneath the body of the plate, means extending about the inturned portion of the plate for forming a guiding passage for inturning the edge portion of the fabric and means carried by the plate and projecting into the path of the fabric leading to the guiding passage at the receiving end of the folder for engaging said fabric and uncurling the edge in which the hem fold is to be formed.

17. A hem folder for sewing machines including in combination a plate having the inner portion thereof inturned beneath the body of the plate, means extending about the inturned portion of the plate for forming a guiding passage for inturning the edge portion of the fabric and means carried by the plate and projecting into the path of the fabric leading to the guiding passage at the receiving end of the folder for engaging said fabric and uncurling the edge in which the hem fold is to be formed, and a strip guide located beneath said plate and within the inturned portion thereof and terminating substantially at the delivery end of the hem folder for guiding an elastic strip into the hem pocket formed by the folder.

In testimony whereof, I affix my signature.

JOSEPH MANN.