R. R. HUGHES, JR.

SEWING MACHINE.

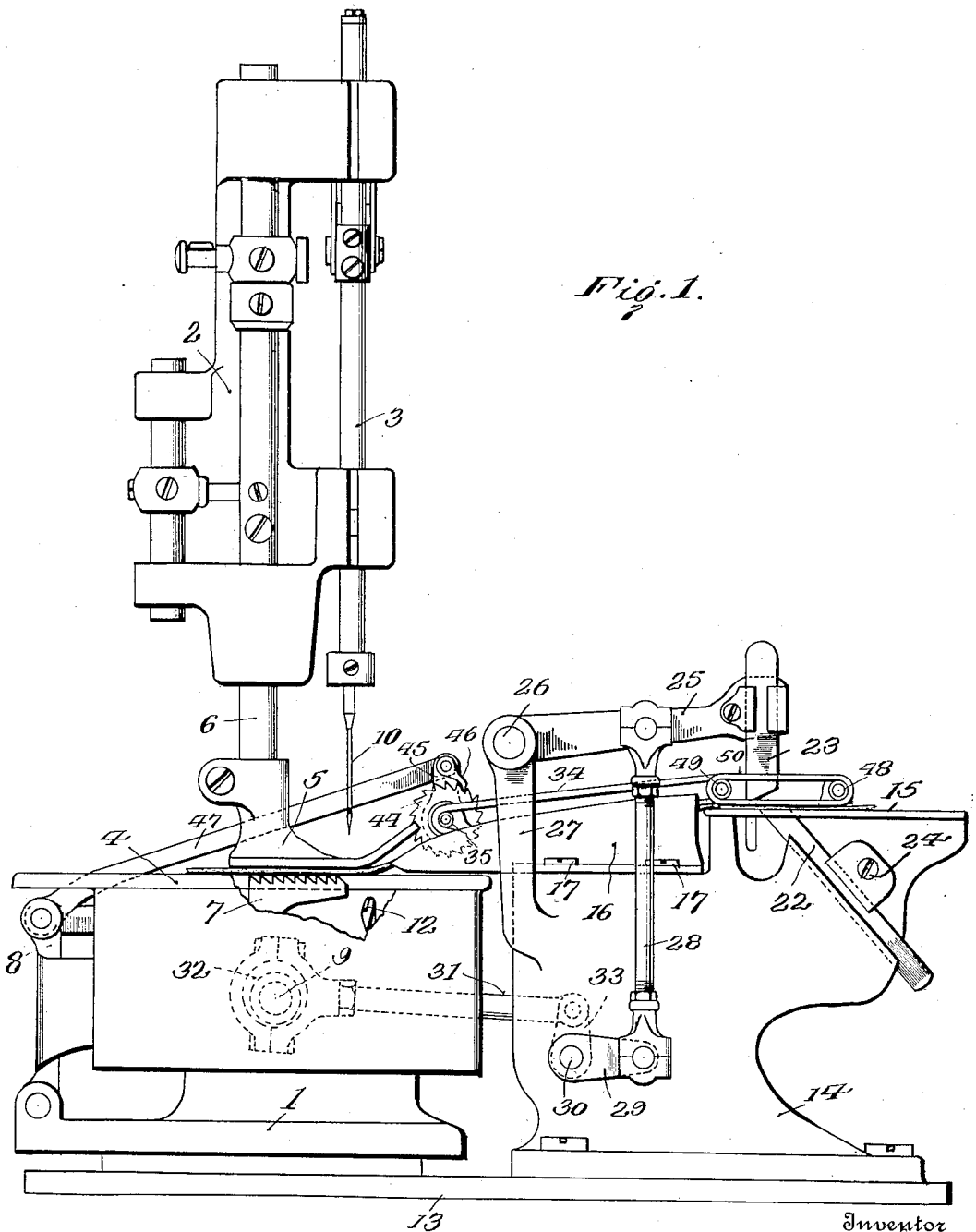
APPLICATION FILED JUNE 18, 1918.

1,376,623.

Patented May 3, 1921.

3 SHEETS—SHEET 1.

Fig. 1.



Witness

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3 SHEETS—SHEET 2.

Fig. 2.

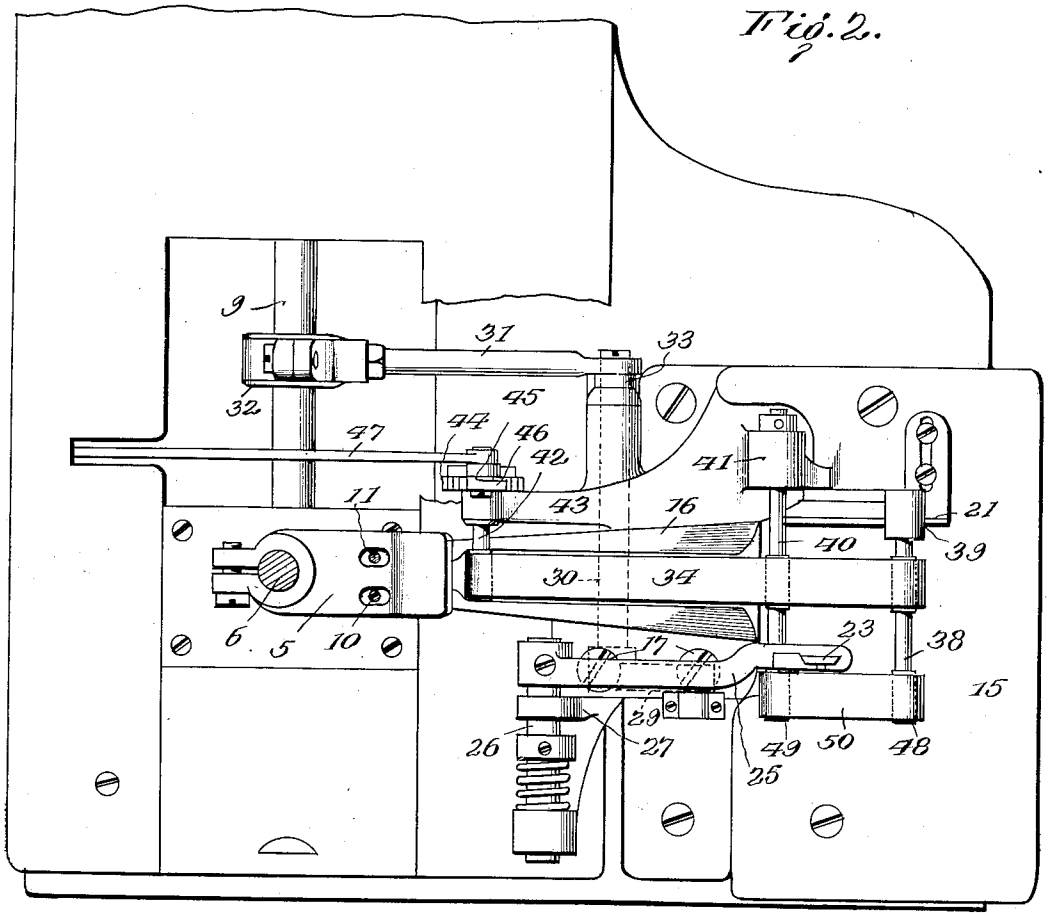


Fig. 5.

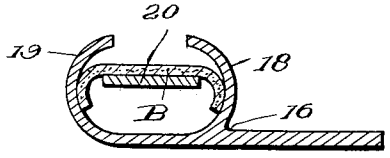
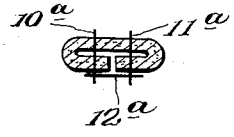


Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 3.

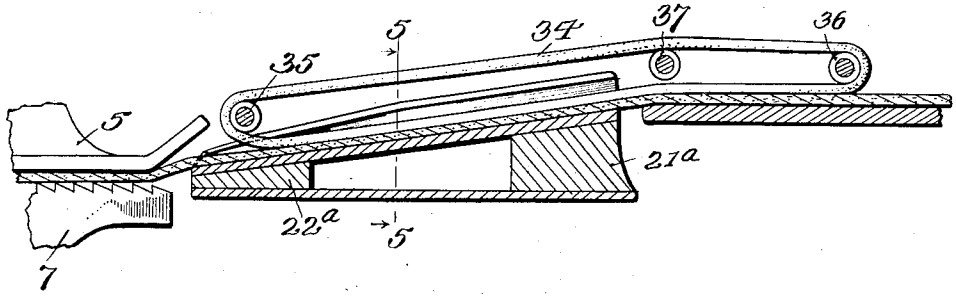


Fig. 4.

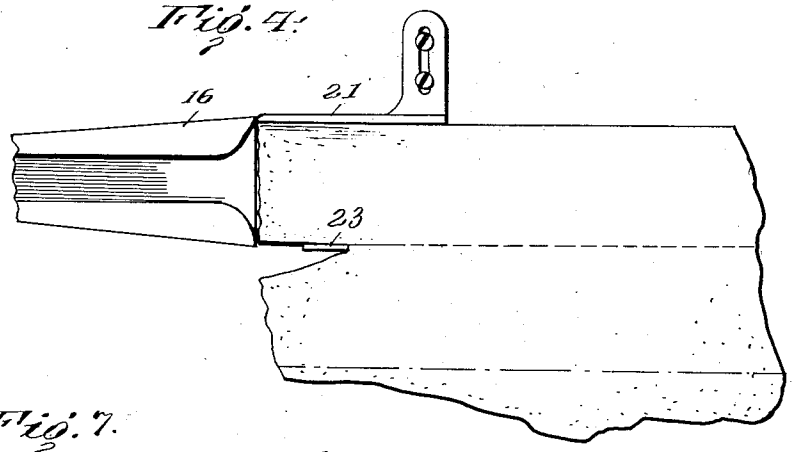
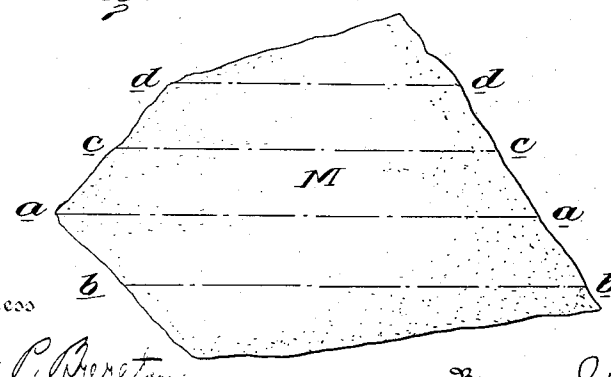


Fig. 7.



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UNITED STATES PATENT OFFICE.

ROBERT R. HUGHES, JR., OF NAPERVILLE, ILLINOIS, ASSIGNOR TO UNION SPECIAL MACHINE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

SEWING-MACHINE.

1,376,623. Specification of Letters Patent. Patented May 3, 1921.

Application filed June 18, 1918. Serial No. 240,571.

To all whom it may concern:

Be it known that I, ROBERT R. HUGHES, Jr., a citizen of the United States, residing at Naperville, in the county of Dupage, State of Illinois, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a description, reference being had to the accompanying drawing, and to the figures of reference marked thereon.

The invention relates to new and useful improvements in sewing machines and more particularly to an improvement in a sewing machine for stitching belt loops of the character shown and described in the patent to Hinderer, April 13, 1915, Number 1,135,691.

An object of the invention is to provide a machine of the above character with means coöperating with the stitching and feeding mechanism of the sewing machine for feeding the strips which form the belt loops to and through the folder to the stitching mechanism.

A further object of the invention is to provide a machine of the above character with means for guiding one edge of the strip as it passes through the folder and for cutting the other edge of the strip so as to prepare a strip of predetermined width as it passes to the folder.

A still further object of the invention is to provide means of the above character with devices for engaging the strip for feeding the same to and through the trimming mechanism, to and through the folder and to the stitching mechanism.

Still another object of the invention is to provide a device of the above character with means also for feeding the material at the opposite side of the trimmer from the strip as it is severed from the body portion of the material.

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 an end view showing more or less diagrammatically a sewing machine with my improved attachment for preparing and feeding the strips to the sewing mechanism when forming the belt loops;

Fig. 2 is a view partly in section and partly in top plan of the same;

Fig. 3 is a longitudinal sectional view through the support for the strip as it is being trimmed through the folder and at one side of the feeding device for feeding the strip;

Fig. 4 is a detail showing in plan the folder, the strip guide and the trimmer;

Fig. 5 is a sectional view on the line 5—5 of Fig. 3, the feed belt being omitted;

Fig. 6 is a view showing in section and more or less diagrammatically the finished belt loop and the relation of the stitches thereto; and

Fig. 7 is a view showing a scrap of material from which belt loops are to be made and with the lines indicated thereon from which the strip is to be cut.

The invention is particularly directed to a combination of mechanisms operating upon scraps of material for forming belt loops therefrom. The invention consists broadly in a stitching mechanism for stitching the belt loop after it has been shaped and folded, a folder for folding the belt loop and directing the same to the stitching mechanism and a combined guiding and trimming mechanism for guiding one edge of a strip and simultaneously trimming the other so as to prepare a strip of predetermined width as it passes to the folder. The invention also contemplates broadly the use of means for feeding the strip to and through the trimming mechanism, then to and through the folder and then to the stitching mechanism. The feeding mechanism for feeding the strip is operated from the feeding mechanism of the sewing machine proper, so as to operate in timing therewith. The trimming mechanism is operated from the main shaft of the sewing machine.

Referring more in detail to the drawings, I have shown my invention as applied to a sewing machine having a bed plate 1 carrying an overhanging arm indicated at 2 in the drawings, in which a needle bar 3 reciprocates. Carried by the folding bed 1 is a work support 4. The material is held on the work support by a presser foot 5 carried by a presser bar 6. The material is fed across the work support by a feed dog 7 which is moved back and forth by a feed rocker 8 operated from the main shaft indicated in dotted lines at 9 in Fig. 1 of the drawings. Carried by the needle bar 3 are two needles

10 and 11 and coöperating with the needles beneath the work support is a single looper 12. The needles form two rows of needle loops and the looper preferably joins these needle loops beneath the work support. The sewing machine is of the usual construction and has been indicated more or less diagrammatically in the drawings.

The sewing machine is mounted on a supporting plate 13. Also attached to this supporting plate is a bracket 14. The bracket 14 has an auxiliary work support 15. This bracket 14 also carries a folder indicated at 16. The folder is attached to the bracket 14 by suitable screws 17. Said folder has upwardly extending side members 18 and 19 and a central supporting tongue 20. The supporting tongue 20 is mounted on lugs 21^a and 22^a. The lug 22^a is relatively thin so as to permit the edges of the belt loop to be folded underneath the tongue as it passes through the folder. In Fig. 5 of the drawings, I have shown the belt loop at B. The belt loop is passing over the central tongue 20 and the side members 18 and 19 are folding the edges of the belt loop underneath the central or body portion thereof. In Fig. 6 of the drawings, I have shown a finished belt loop and it is noted that the sides of the strip from which the belt loop is formed are folded underneath and their edges are brought approximately together. The needle thread of the needle 10 is indicated at 10^a while the needle thread of the needle 11 is indicated at 11^a. The looper thread is indicated at 12^a. It will be seen that these folded in side edges are stitched down by the needle threads and the meeting edges covered by the looper thread which locks the needle loops.

The construction of the folder and the method of forming and stitching the belt loop is the same as that shown in the patent to Hinderer above referred to.

My invention is particularly designed for forming belt loops from scraps of material. The scrap of material is indicated in Fig. 7 of the drawings at M. This scrap of material is preferably cut first on the line *a—a* by shears or otherwise which forms a straight edge which is to become one side of the strip formed into the belt loop. The strip of material is then placed on the auxiliary support 15 with the cut edge thereof against the edge guide 21. This edge guide 21 is set so as to properly direct the strip into the folder 16. At the opposite side of the folder from the guide 21 is the trimming mechanism, which as herein shown, consists of a fixed blade 22 and a movable blade 23. This trimming mechanism is positioned relative to the folder so as to cut a strip from the scrap of material M of a predetermined width, that is the desired width for forming the belt loop. The fixed blade 22 of the trimming mechanism is secured to the bracket 14 and is clamped in place by a clamping screw 24. The movable blade 23 is fixed to a lever 25 which is pivoted at 26 to an arm 27 formed integral with the member 14. The lever 25 is oscillated on its pivot by a link 28 which is connected at its lower end to an arm 29 mounted on a shaft 30, the shaft 30 being mounted in suitable bearings in the bracket 14. An eccentric strap 31 coöperates with an eccentric 32 on the shaft 9. This eccentric strap is connected to an arm 33 on the shaft 30. As the shaft 9 rotates, the lever 25 will be oscillated and this will cause the movable trimming blade to coöperate with the fixed blade 22 in cutting the fabric in the manner above described.

The auxiliary support 15 terminates just in front of the central tongue 20 of the folder 16, so that the severed strip passes off from the auxiliary support 15 on to the central tongue into the folder and from the folder underneath the presser foot where it is stitched.

As a means for feeding the strip across the auxiliary support to and from the stitching mechanism and through the folder, I have provided a feed belt 34. This feed belt 34 runs over a suitable pulley or roller 35 adjacent the presser foot 5 and over a suitable pulley or roller 36 located in front of the trimming mechanism. At the inner end of the auxiliary support 15 there is a third roller 37 which engages the belt 34. The belt 34 is substantially the same width as the distance between the side edges of the folder. The belt engages the strip and carries it across the auxiliary support and into the folder as above stated. The roller 36 is carried by a shaft 38 which is mounted in a suitable bearing 39. The shaft is supported wholly at one end thereof so that the other end is free. The roller 37 is carried by the shaft 40 which is supported solely at one end by a bearing 41. The roller 35 is mounted on a shaft 42 which is mounted in a bearing at the outer end of an arm 43 carried by the bracket 14. On the extreme outer end of the shaft 42 there is a ratchet wheel 44. Also freely mounted on the shaft 42 is an arm 45 which carries a pawl 46 adapted to engage the ratchet wheel. A link 47 is pivoted to the arm 45 and also pivoted to the feed rocker 8. As the feed rocker 8 oscillates, the arm 45 will be vibrated and through the pawl 46 will turn the shaft 42 step by step and in timing with the feed movements of the sewing machine. This insures that the feed belt will travel in timing with the feeding mechanism of the sewing machine and while it feeds the strip to the folder, it is accomplished without any crowding or gathering of the strip.

On the outer end of the shaft 38 there is

a second roller 48 and on the outer end of the shaft 40 there is a second roller 49. A feed belt 50 passes over these rollers 48 and 49 and engages the section of the material which is trimmed off. This insures the feeding of the material on both sides of the trimming mechanism. The lower portion of the scrap indicated at M as it passes through the trimming mechanism will be cut along the line *b*—*b*. The upper section of the scrap of material is reversed end for end and first cut along the line *c*—*c* and then along the line *d*—*d*.

From the above it will be apparent that scraps of materials may be very quickly and very accurately cut and formed into belt loops. If one scrap of material is well started under the feed belts the operator is free to prepare and insert another scrap thus greatly facilitating the formation of the belt loops.

While I have described my improved mechanism as especially adapted for forming belt loops, it will be understood of course that it may be used for other purposes. It will be further understood that the stitching mechanism may be varied to other types, the essential feature being that the strip shall be attached as it passes from the folder so as to complete the article being operated upon. It will be also understood that the feeding mechanism may be used in connection with the folder without the use of the trimming mechanism, as such a feeding mechanism would greatly facilitate the feeding of strips to form belt loops even though they be prepared by hand before they are presented to the folder. It is obvious that minor changes in the details of construction of the devices illustrated may be made without departing from the spirit of the invention as set forth in the appended claims.

It will be understood, of course, that while we have illustrated a stitch-forming mechanism wherein a single looper coöperates with both needles and joins the rows of needle loops by a looper thread, that two independent lines of stitches may be used, either the single chain stitch type or of the two thread double lock stitch type, such as shown for example in the patent granted to Dewees April 23, 1889, No. 401,776.

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

1. The combination of stitch forming mechanism, feeding mechanism for presenting the material to the stitching mechanism, a folder disposed in front of the stitching mechanism for folding a strip and delivering the same to the stitching mechanism, an auxiliary support in front of the folder for directing the strip to the folder, and a feeding device extending along said auxiliary support and into said folder for feeding the strip from the auxiliary support into the folder.

2. The combination of stitch forming mechanism, feeding mechanism for presenting the material to the stitching mechanism, a folder disposed in front of the stitching mechanism for folding a strip and delivering the same to the stitching mechanism, an auxiliary support in front of the folder for directing the strip to the folder, a feeding device for feeding the strip from the auxiliary support to the folder, and a guide carried by the auxiliary support for directing a strip to the folder.

3. The combination of stitch forming mechanism, feeding mechanism for presenting the material to the stitching mechanism, a folder disposed in front of the stitching mechanism for folding a strip and delivering the same to the stitching mechanism, an auxiliary support in front of the folder for directing the strip to the folder, a feeding device for feeding the strip from the auxiliary support to the folder, a guide carried by the auxiliary support for directing a strip to the folder, and a trimming mechanism operating upon the strip for shaping the same prior to the delivery of the strip to the folder.

4. The combination of stitch forming mechanism, feeding mechanism for presenting the material to be stitched to the stitching mechanism, a folder disposed in front of the stitching mechanism for folding a strip and delivering the same to the stitching mechanism, an auxiliary support in front of the folder for directing the strip to the folder, a feeding device for feeding the strip from the auxiliary support to the folder, and a trimming mechanism operating to prepare a strip of predetermined width as it is presented by the feeding devices to the folder.

5. The combination of stitch forming mechanism, feeding mechanism for presenting the material to be stitched to the stitching mechanism, a folder disposed in front of the stitching mechanism for folding a strip and delivering the same to the stitching mechanism, an auxiliary support in front of the folder for directing the strip to the folder, a feeding device for feeding the strip from the auxiliary support to the folder, and a trimming mechanism operating to prepare a strip of predetermined width as it is presented by the feeding devices to the folder, said feeding devices including means for engaging the strip at opposite sides of the trimming mechanism.

6. A sewing machine including in combination stitching mechanism, an intermittent feeding mechanism for feeding the material to and from the stitching mechanism, a folder in advance of the stitching mechanism for folding and delivering a strip to the stitching mechanism, said folder having

a central supporting tongue, a feed belt engaging the material on said tongue, and devices for operating the feed belt step by step in timing with the feeding mechanism of the sewing machine.

7. A sewing machine including in combination stitching mechanism, an intermitt t feeding mechanism for feeding the material to and from the stitching mechanism, a folder in advance of the stitching mechanism for folding and delivering a strip to the stitching mechanism, said folder having a central supporting tongue, a feed belt for engaging the material on said tongue and devices for operating the feed belt step by step in timing with the feeding mechanism of the sewing machine, and a trimming mechanism for preparing the strip of predetermined width as it is fed to the folder.

8. A sewing machine including in combination a stitching mechanism, an intermittent feeding mechanism for feeding the material to and from the stitching mechanism, a folder in advance of the stitching mechanism for folding and delivering a strip to the stitching mechanism, an auxiliary support in advance of the folder, said folder having a supporting tongue for the material, the receiving end of which is adjacent the delivery end of the auxiliary support, a feed belt for engaging the strip on the supporting tongue and on the adjacent support, and means for operating the feed belt intermittently in timing with the feeding mechanism of the sewing machine.

9. A sewing machine including in combination a stitching mechanism, an intermittent feeding mechanism for feeding the material to and from the stitching mechanism, a folder in advance of the stitching mechanism for folding and delivering a strip to the stitching mechanism, an auxiliary support in advance of the folder, said folder having a supporting tongue for the material, the receiving end of which is adjacent the delivery end of the auxiliary support, a feed belt for engaging the strip on the supporting tongue and on the adjacent support, means for operating the feed belt intermittently in timing with the feeding mechanism of the sewing machine, a trimming mechanism including trimming blades for trimming the strip of predetermined width as it passes to the folder, and a guide coöperating with said trimming blades.

10. A sewing machine including in combination a stitching mechanism, an intermittent feeding mechanism for feeding the material to and from the stitching mechanism, a folder in advance of the stitching mechanism for folding and delivering a strip to the stitching mechanism, an auxiliary support in advance of the folder, said folder having a supporting tongue for the material, the receiving end of which is adjacent the delivery end of the auxiliary support, a feed belt for engaging a strip on the supporting tongue and on the adjacent support, means for operating the feed belt intermittently in timing with the feeding mechanism of the sewing machine, a trimming mechanism including trimming blades for trimming a strip of predetermined width as it passes to the folder and a guide coöperating with said trimming blades, and a second feed belt operating in unison with the first feed belt and located on the opposite sides of the trimming blades from said first feed belt.

11. The combination of a stitch forming mechanism and a feeding mechanism cooperating therewith, an edge guide disposed in front of the stitch forming mechanism, a trimming mechanism operating in front of said stitch forming mechanism and in spaced relation to said edge guide for forming a strip, and a folder disposed in rear of the trimming mechanism and edge guide and intermediate the same for receiving and folding said strip.

12. The combination of a stitch forming mechanism and a feeding mechanism cooperating therewith, an edge guide disposed in front of said stitch forming mechanism, a trimming mechanism operating in front of said stitch forming mechanism and in spaced relation to said edge guide, a folder disposed in rear of the trimming mechanism and the edge guide and in advance of the stitch forming mechanism, and an auxiliary feeding mechanism for feeding a piece of material past the trimming mechanism, and thence through the folder to the stitch forming mechanism and its coöperating feed mechanism.

13. The combination of stitch forming mechanism, feeding mechanism for presenting the material to the stitch forming mechanism, a folder disposed in front of the stitch-forming mechanism for folding a strip and delivering the same to the stitch forming mechanism, and feeding devices for feeding the strip into the folder and through the folder to the stitch forming mechanism.

14. The combination with a sewing machine including a work support, feeding mechanism and stitch forming mechanism, of a supporting bracket connected to the sewing machine, an auxiliary support mounted on said bracket, and a folder mounted on said bracket for receiving a strip of material from the auxiliary support and for folding and delivering said material to the stitch forming mechanism of the sewing machine.

15. The combination with a sewing machine including a work support, feeding mechanism and stitch forming mechanism, of a supporting bracket connected to the sewing machine, an auxiliary support mounted on said bracket, a folder mounted

on said bracket for receiving a strip of material from the auxiliary support and for folding and delivering said material to the stitch forming mechanism of the sewing machine, a guide on said auxiliary support for directing the strip to the folder, and a trimming mechanism coöperating with the guide for forming a strip of predetermined width which is to be presented to the folder.

16. The combination with a sewing machine including a work support, feeding mechanism and stitch forming mechanism, of a supporting bracket connected to the sewing machine, an auxiliary support mounted on said bracket, a folder mounted on said bracket for receiving a strip of material from the auxiliary support and for folding and delivering said material to the stitch forming mechanism of the sewing machine, a guide on said auxiliary support for directing the strip to the folder, a trimming mechanism coöperating with the guide for forming a strip of predetermined width which is to be presented to the folder, and a feeding mechanism for feeding the strip to the trimming mechanism and through the folder to the stitching mechanism.

In testimony whereof, I affix my signature, in the presence of two witnesses.

ROBERT R. HUGHES, Jr.

Witnesses:
C. McNeil,
Henry A. North.