

Feb. 12, 1952

J. GALKIN

2,585,307

ATTACHMENT FOR BLINDSTITCH SEWING MACHINES

Filed June 22, 1949

5 Sheets-Sheet 2

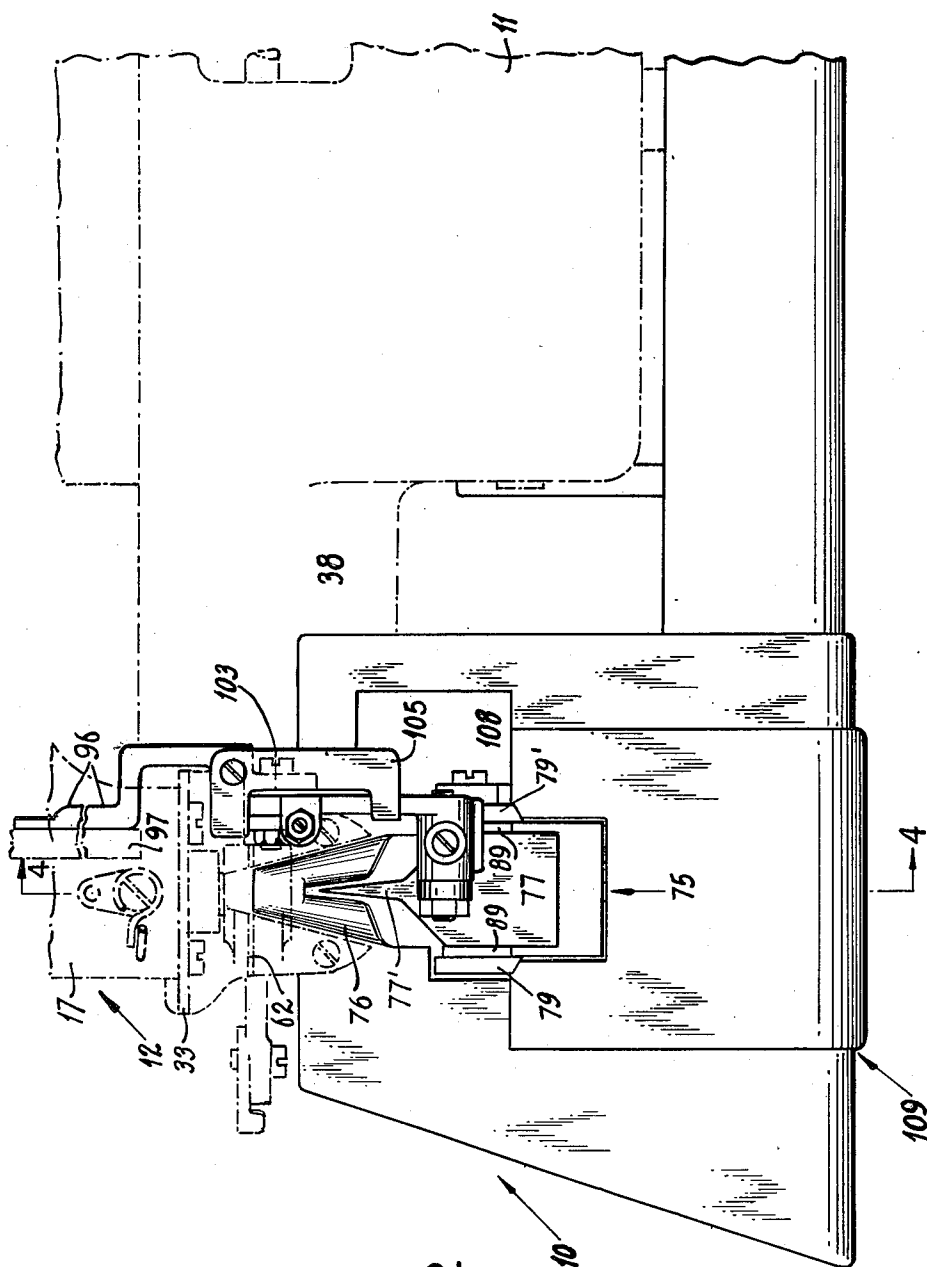


FIG. 2

JOSEPH GALKIN
INVENTOR

BY *Joseph Blacker*
ATTORNEY

Feb. 12, 1952

J. GALKIN

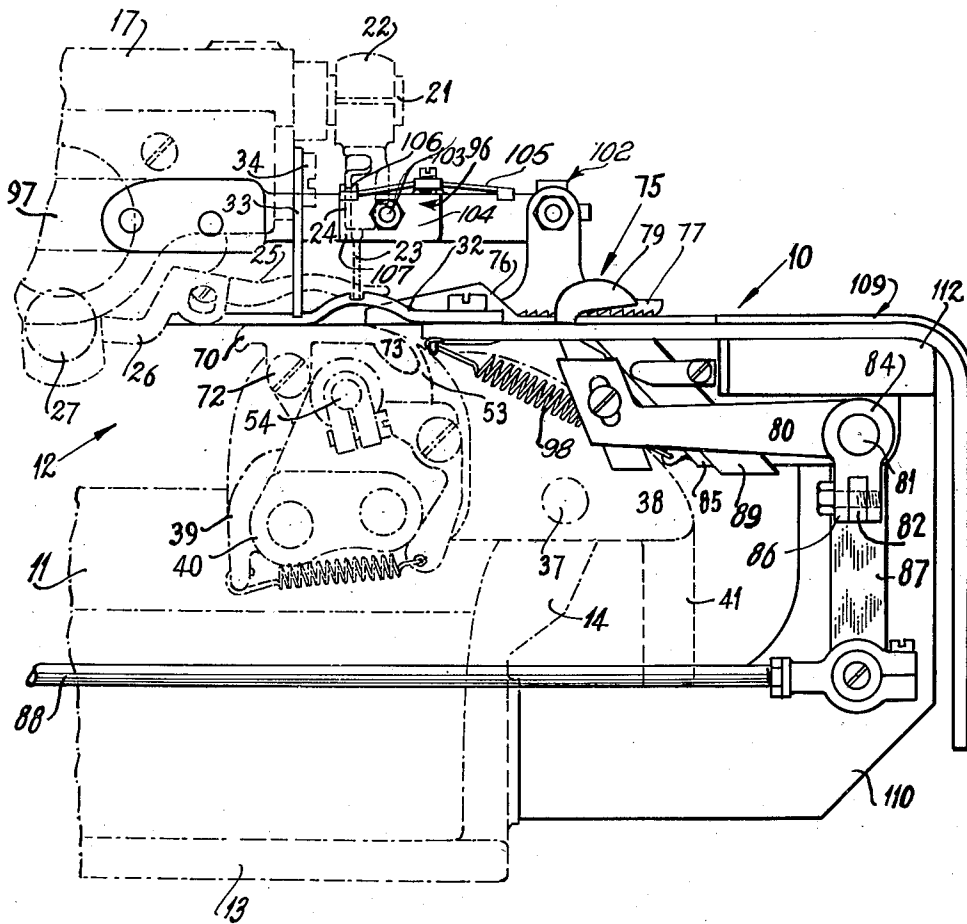
2,585,307

ATTACHMENT FOR BLINDSTITCH SEWING MACHINES

Filed June 22, 1949

5 Sheets-Sheet 3

FIG. 3



JOSEPH GALKIN
INVENTOR

BY *Joseph Blacker*
ATTORNEY

Feb. 12, 1952

J. GALKIN

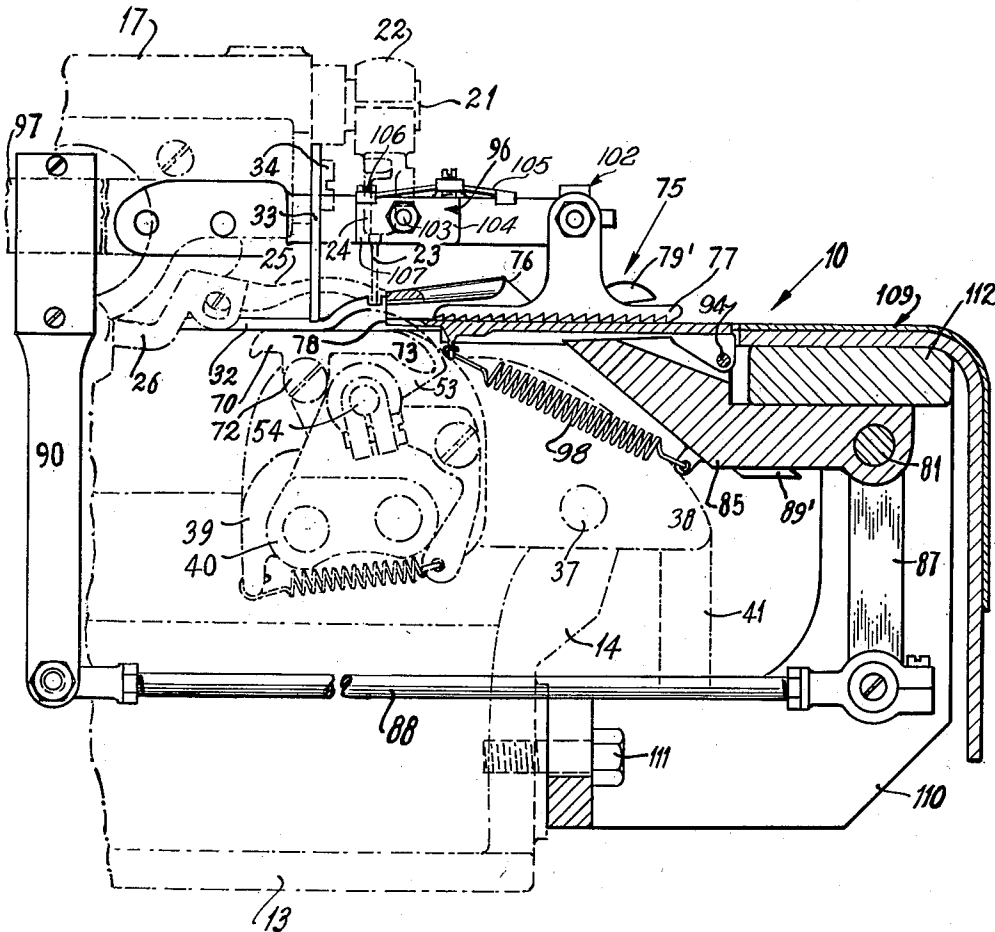
2,585,307

ATTACHMENT FOR BLINDSTITCH SEWING MACHINES

Filed June 22, 1949

5 Sheets-Sheet 4

FIG. 4



JOSEPH GALKIN
INVENTOR

BY *Joseph Blacker*

ATTORNEY

Feb. 12, 1952

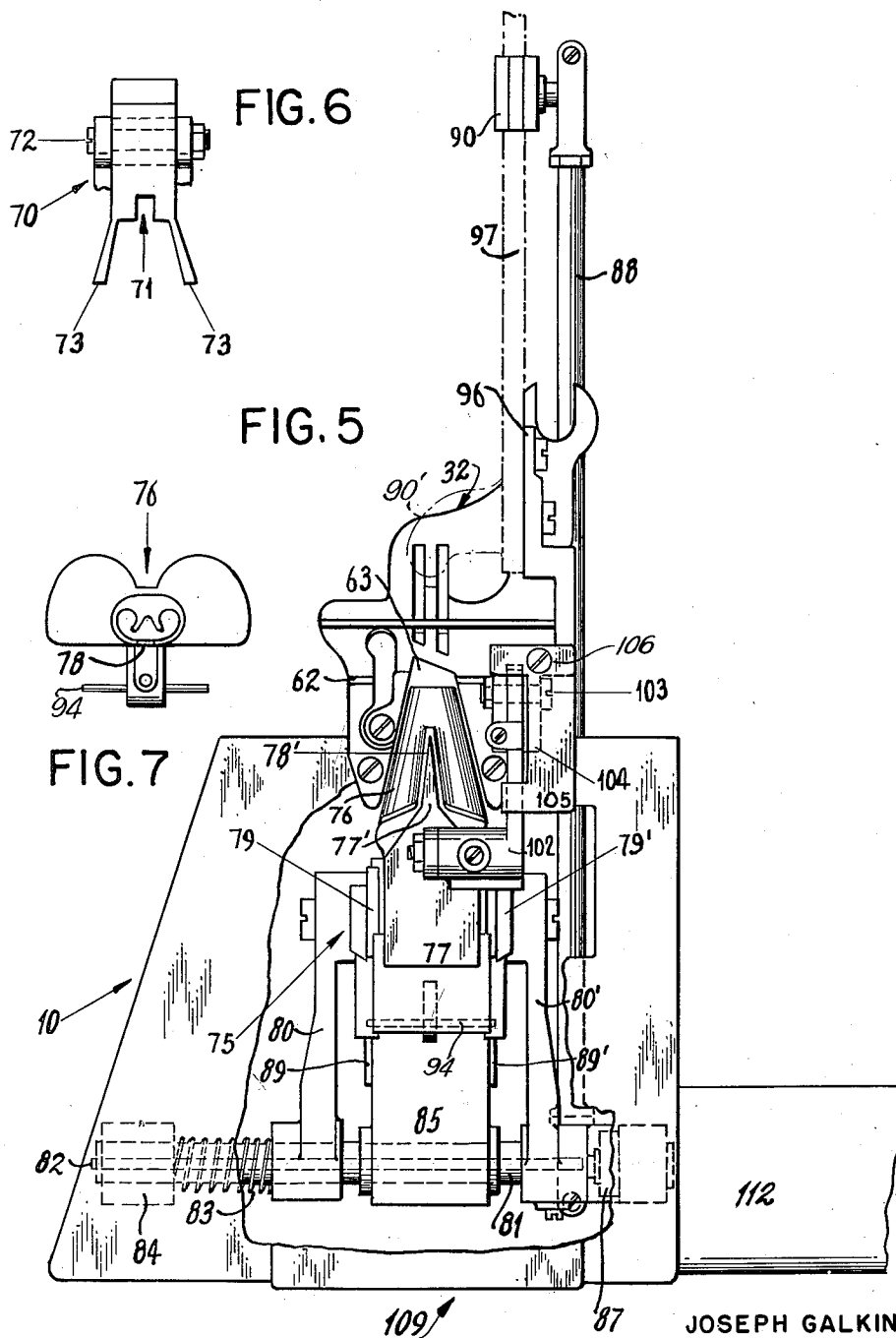
J. GALKIN

2,585,307

ATTACHMENT FOR BLINDSTITCH SEWING MACHINES

Filed June 22, 1949

5 Sheets-Sheet 5



JOSEPH GALKIN
INVENTOR

BY *Joseph Blacker*
ATTORNEY

UNITED STATES PATENT OFFICE

2,585,307

ATTACHMENT FOR BLINDSTITCH SEWING MACHINES

Joseph Galkin, New York, N. Y.

Application June 22, 1949, Serial No. 100,554

7 Claims. (Cl. 112—2)

1

This invention relates to an attachment for blindstitch sewing machines and has for its object to provide a fully automatic attachment that will be easily attachable to the sewing machine and will trim both edges of a section of fabric and top-feed and finish a blindstitched belt loop having both edges of the fabric folded into contacting relation and concealed internally of the belt loop to prevent ravelling of the edges of the fabric.

This application relates particularly to improvements over the form of mechanism for producing blindstitch belt loops shown in my co-pending patent application, Serial No. 751,573, filed May 31, 1947.

In the said patent application I have disclosed a fully automatic mechanism for making blindstitch belt loops without any assistance from the operator to feed the fabric into the folder. This mechanism, however, required two front top feed dogs for feeding the fabric to and through the folder and the outlet end of the folder was far removed from the needle.

An object of this invention is to provide a simplified attachment which can be readily attached to a blindstitch sewing machine without modifying the sewing machine and which will produce blindstitched belt loops while using a single top feed dog in front of the needle and the outlet end of the folder placed directly at the needle. This new arrangement results in the production of a superior product at a very highly increased rate of production.

With the above and other objects in view, the invention will be hereinafter more particularly described, and the combination and arrangement of parts will be shown in the accompanying drawings and pointed out in the claims which form part of this specification.

Reference will now be had to the drawings, wherein like numerals of reference designate corresponding parts throughout the several views, in which:

Figure 1 is a top plan view of a blindstitch sewing machine having my belt loop making attachment applied thereto.

Figure 2 is a fragmentary top plan view of the work supporting base of the blindstitch sewing machine shown in Figure 1, on an enlarged scale, the belt loop making attachment being shown in solid lines.

Figure 3 is a side view of a fragmentary portion of the machine shown in Figures 1 and 2.

Figure 4 is a cross-sectional view taken on line 4—4 in Figure 2.

Figure 5 is a top plan view showing the presser

2

foot, the pivotally mounted folder, the front top feed-dog and the support therefor in assembled relation.

Figure 6 is a top plan view of a work clamp or work support finger.

Figure 7 is a rear view of the folder.

In the illustrated embodiment of the invention, the attachment 10 is shown in associated relation with the frame 11, of a blindstitch sewing machine 12. The sewing machine 12 comprises a base 13 having a standard 14 extending upwardly along the front end of the base 13, and a post 15 which extends upwardly from the rear right hand corner of the base. A horizontal arm 16 extends laterally from the upper end of the post 15 and overhangs the left hand edge of the base 13. A horizontal arm 17 extends forwardly from the overhanging end of the arm 16.

The forward end of the arm 17 terminates at a point considerably in the rear of the standard 14. The horizontal arms 16 and 17 and the supporting post 15 are hollow.

Journaled in the horizontal arm 16 is a rotary main shaft 19 usually having a combined driving pulley and hand wheel fixed to its right hand end portion (not shown). Journaled in the forwardly extending horizontal arm 17 is an oscillatory needle shaft 21.

The needle shaft 21 is oscillated from the main shaft 19 by an eccentric on the main shaft which drives a vibratory connection on the needle shaft, as is well known in the art.

As shown in Figure 4 the shaft 21 extends forwardly beyond the free end of the arm 17. Fixed to the projecting end of the shaft 21 is a needle arm 22 to which a curved needle 23 is attached by a clamp 24.

Cooperating with the needle 23 to form a line of single thread blind stitches, is a looper 25 which is fixed to a looper bar 26 pivotally supported as at 27 on the arm 17. The looper bar 26 is actuated from the main shaft 19 by a connection comprising a universal joint on the looper bar and a crank pin angularly positioned at one end of the main shaft (not shown).

A stationary presser foot 32 is disposed below the needle 23 and also below the looper 25. The presser foot is detachably connected to the arm 17 through the medium of a fork 33 which is formed on the presser foot and which is secured by screws 34 to the end face of the arm 17.

Journaled on a horizontal pivot 37 at the upper end of the standard 14 is a work holder or support 38 which is normally disposed in a substantially horizontal plane. The work holder or support 38 has a straight rear edge 39 which is disposed

in parallelism to the axis of the pivot 37. The work holder or support 38 is formed at its left rear corner with a reduced extension 40 which projects towards and under the presser foot 32.

In order to yieldably retain the work holder or support 38 in a substantially horizontal plane, and also to provide means for adjusting the plane of the support 38 relative to the presser foot 32 there is provided the following mechanism:

The work holder or support 38 is provided at its front face with a downwardly extending flange 41 which is positioned in front of the standard 14 of the frame 11, as shown in Figure 3.

The flange 41 carries an adjusting screw which extends into contacting relation with the frame 11 and maintains the upper surface of the pivoted holder or support 38 in a horizontal plane against the pull of a spring (not shown).

The sewing machine comprises means for projecting a ridge of fabric upwardly through the stationary presser foot 32 into needle penetrating position during each cycle of operation.

The ridge of fabric is projected by an oscillatory finger 53 fixed to a rock shaft 54 which is suitably journaled in bearings in the work holder or support 38. The rock shaft 54 is oscillated from the main shaft 19 through the medium of a driving eccentric 55 fixed to the main shaft 19. A strap link 56 has one end fitting around the eccentric 55 and the other end pivotally connected to the lower end of an arm 57 fixed to the rock shaft 54.

The needle 23 oscillates in a fixed path of travel in a needle groove 62 above an opening 63 formed in the presser foot 32. The oscillatory finger 53 projects into the opening 63 of the presser foot when forming and positioning the ridge of the fabric upwardly into the path of the needle.

Figure 6 is a top plan view of a work clamp or work support finger 70 which cooperates with the bottom of the presser foot 32 to clamp the ridge of fabric therebetween. The ridge projects upwardly through a slot 71 in the work clamp 70 and through the opening 63 in the presser foot. It is to be noted that the work clamp 70 is carried by the pivoted support 38.

The work clamp 70 is pivotally mounted on a screw 72 and moves up and down at its free forward end and holds the fabric against the thrust of the needle. The work clamp 70 has two side bars 73 forming a passageway therebetween for the oscillating finger 53.

The invention is particularly directed to a combination of mechanisms operating upon sections or scraps of cloth for fully automatically forming in a single operation blindstitched belt loops, each having edge portions which are concealed internally of the belt loop to prevent ravelling of the edges of the cloth. The invention comprises a trimming mechanism 75 for trimming two fabric edges so as to prepare a strip of predetermined width, and a folder 76 for folding the strip into belt loop form and directing the same to the stitching mechanism for stitching the belt loop.

The invention also provides a front top feed-dog 77 having a forward portion of rectangular form for feeding the strip through the trimming mechanism, and having an integral rear portion 77' of triangular form for feeding the cut strip to and through an opening 78' extending the major portion of the length of the folder 76 and to the sewing machine needle 23.

The forward portion of the front top feed-dog

77 feeds the fabric to and through movable shear blades 79, 79' held in carriers 80, 80'. The movable blade carriers are slidably mounted on a rock shaft 81. The carriers 80, 80' are slidably mounted on the shaft 81 by a key 82 and are resiliently pressed by a single coil spring 83 in the direction of the stationary shear blades 89, 89'.

The spring 83 reacts against a clamp 84 fixedly mounted on the shaft 81. The stationary shear blades 89, 89' are held in properly spaced cutting relation by being held in a support and blade carrier 85 of the desired width. The movable shear blades 79, 79' thus cooperate with the stationary shear blades 89, 89' to cut a fabric strip of predetermined width.

The movable shear blades 79, 79' are given substantially vertical movements by the carriers 80, 80'. The carriers slidably engage the key 82. The key is held in fixed parallel relation with the rock shaft 81 by a bifurcated arm 83 extending from the clamp 84. An arm 87 is fixed to one end of the shaft 81, and is pivotally connected to a vibrating connection 88. The rear end portion of the vibrating connection 88 is pivotally connected to an upright arm 90 which is fixed at its upper end to the sewing machine feed bar 97. The rock shaft 81 actuates the movable shear blades 79, 79' once for each revolution of the main shaft 19.

An extension feed bracket 96 is secured to the sewing machine feed-bar 97 which is given four-motion feeding movements through a mechanism (not shown) but which is well known in the art.

The front top feed-dog 77 for feeding the scrap or strip fabric between the movable shear blades 79, 79' is pivotally mounted on a screw 103 passing through the forward portion 104 of the feed bracket 96. The front top feed-dog 77 is secured to a carrier 102 which is pivotally mounted on the screw 103 in the forward portion 104 of the extension feed bracket 96. A spring 105 is secured at one end by a screw 106 against a portion 107 of the feed bracket 96 and is in tensioned engagement at the other end against the carrier 102. The spring 105 serves to press the front top feed-dog 77 against the upper surface of the folder 76, and in pressure contact with the work. The upper surface of the blade carrier 35 is at the level of a work table 109 in front of the work support 38.

It is to be noted that the forward end of the folder 76 is pivotally mounted at 94 on the support 85. A tension coil spring 98 has one end fixed to the rear end of the folder and has its other end fixed to the support 85.

The spring functions to force the outlet end of the folder downward in direction of the node former 53. The downward movement of the folder is arrested by the upper rear edge of the support 85. This arrangement positions the folded fabric in the folder in relation to the needle 23 to cause the needle to pass only partly through the folded portions of the belt loop. The bottom surface of the rear portion of the folder 76 has an opening 78 to permit the oscillatory finger or node former 53 to enter partly into the folder.

It is to be noted that the attachment 15 comprises a bracket 110 which is fixed to the base 13 of the sewing machine 12 by bolts 111.

The bracket 110 has a horizontal plate 112 to which the work table 109 is suitably secured. The support 85 for the folder 76 and the station-

5

ary shear blades 89, 89' is fixed to the plate 112 and carries the rock shaft 81. The feed arm 97 of the sewing machine actuates the front top feed-dog 77 and the rock shaft 81. The usual feed-dog rearwardly of the needle 23, is identified by the numeral 90', and is carried by the feed bar 97.

An opening 108 is provided in the work table 109 through which the trimmed edge portions of the fabric worked upon falls down below the table. The sewing machine herewith shown is substantially that shown in Patent No. 1,926,644.

In accordance with the patent statutes I have described and illustrated the preferred embodiment of my invention, but it will be understood that various changes and modifications can be made therein without departing from the spirit of the invention as defined by the appended claims.

I claim:

1. A belt loop making attachment for a blindstitch sewing machine for top feeding and simultaneously trimming both edges of a section of fabric and finishing a blindstitch belt loop having both edges of the fabric folded into contacting relation and concealed internally of said belt loop, said sewing machine having a frame, a curved needle, a feed arm carrying a top feed-dog in the rear of said needle and means for forming blindstitch stitching; said attachment comprising a bracket having a work supporting base and means for attachment to said frame, a top feed-dog attachable to said feed arm for four-motion work-advancing feeding movements in front of said needle and means for pivotally mounting and resiliently downpressing said front top feed-dog on said work-supporting base, a blade support carrying two stationary shear blades, reciprocatory shear blades respectively positioned on opposite sides of said front top feed-dog and adapted for cutting a section of fabric to a predetermined width, a triangularly shaped folder having its outlet end positioned directly at and in front of said needle and having two curved side edges adapted for folding both side edges of said cut strip of fabric into equally extended relation above said strip, said folder having a rearwardly converging passage, said top feed-dog having a rectangular front portion for feeding fabric to said shear blades and having a triangular rear portion for feeding the cut strip through said folder.

2. An attachment for a blindstitch sewing machine for top feeding and simultaneously trimming both edges of a section of fabric and finishing a blindstitch belt loop having both edges of the fabric folded into contacting relation and concealed internally of said belt loop, said sewing machine having a frame, a curved needle, a feed arm carrying a top-feed dog in the rear of said needle and means for forming blindstitch stitching; said attachment comprising a bracket having a work supporting base and means for attachment to said frame, a top feed-dog attachable to said feed arm for four-motion work-advancing feeding movements in front of said needle and means for pivotally mounting and resiliently downpressing said front top feed-dog on said folder extension, reciprocatory shear blades respectively positioned on opposite sides of said front top feed-dog and adapted for cutting a section of fabric to a predetermined width, a folder having two curved side edges adapted for folding both side edges of said cut strip of fabric into equally extended relation above said strip,

6

said folder having a rearwardly converging passage, a stationary blade carrier, said reciprocatory shear blades coacting with stationary blades secured to opposite faces of said stationary blade carrier, said folder having an opening in its upper face, said top feed-dog having a rectangular front portion for feeding fabric to said shear blades and having a triangular rear portion movable in said folder opening for feeding the cut strip through said folder.

3. A belt loop making attachment for a blindstitch sewing machine for simultaneously trimming both edges of a section of fabric and top feeding and blindstitching a belt loop having both edges of the fabric folded and concealed internally of said belt loop, said sewing machine having a frame, a needle, a feed arm carrying a top feed-dog in the rear of said needle and means for forming blindstitch stitching; said attachment comprising a bracket having a support and means for attachment to said frame, a triangularly shaped folder pivotally mounted on said support, a top feed-dog attachable to said feed arm for four-motion work-advancing feeding movements in front of said needle, means for pivotally mounting and resiliently downpressing said front top feed-dog on said folder, stationary blades fixed to said support, reciprocatory shear blades respectively positioned on opposite sides of said front top feed-dog and adapted for cutting a section of fabric to a predetermined width, said folder being positioned in front of said needle, said folder having two curved side edges for equally folding both side edges of said cut strip of fabric above said strip, said folder having a rearwardly converging passage, said top feed-dog having a rectangular front portion for feeding fabric between said shear blades and having a triangular rear portion for feeding the cut strip through said folder.

4. A belt loop making attachment for a blindstitch sewing machine for simultaneously trimming both edges of a section of fabric and top feeding and finishing a blindstitch belt loop having both edges of the fabric folded and concealed internally of said belt loop, said sewing machine having a frame, a curved needle, a feed arm carrying a top feed-dog in the rear of said needle and means for forming blindstitch stitching; said attachment comprising a bracket having a support and means for attachment to said frame, a triangularly shaped folder pivotally mounted on said support, a top feed-dog attachable to said feed arm for four-motion work-advancing feeding movements in front of said needle, means for pivotally mounting and resiliently downpressing said front top feed-dog on said folder, stationary blades fixed to said support, reciprocatory shear blades respectively positioned on opposite sides of said front top feed-dog and adapted for cutting a section of fabric to a predetermined width, said folder being positioned in front of said needle, said folder having two curved side edges for equally folding both side edges of said cut strip of fabric above said strip, said folder having a rearwardly converging passage, said reciprocatory shear blades coacting with said stationary blades, said folder having an elongated opening in its upper face, said top feed-dog having a rectangular front portion for feeding fabric between said shear blades and having a triangular rear portion movable in said folder opening for feeding the cut strip through said folder.

5. A belt loop making attachment for a blind-

stitch sewing machine for top feeding and simultaneously trimming both edges of a section of fabric and finishing a blindstitch belt loop having both edges of the fabric folded and concealed internally of said belt loop, said sewing machine having a frame, a curved needle, a feed arm carrying a top feed-dog in the rear of said needle and means for forming blindstitch stitching; said attachment comprising a bracket having a support and means for attachment to said frame, stationary blades fixed to said support, reciprocatory shear blades respectively positioned on opposite sides of said stationary blades and adapted for cutting a section of fabric to a predetermined width, a folder having its outlet end positioned directly in front of said needle and having two curved side edges adapted for folding both side edges of said cut strip of fabric into equally extended relation above said strip, said folder having a rearwardly converging folding passage, a top feed-dog and a carrier therefor attachable to said feed arm for four-motion work-advancing feeding movements in front of said needle, said carrier having means for pivotally mounting and resiliently downpressing said front top feed-dog on said folder, said folder having an elongated opening in its upper face, said top feed-dog having a rectangular front portion for feeding fabric to said shear blades and having an elongated rear portion movable in said folder opening for feeding the cut strip through the major portion of the length of said folder.

6. A belt loop making attachment for a blindstitch sewing machine for top feeding a section of fabric to a duplex trimming mechanism and simultaneously trimming both edges of the section of fabric and folding and blindstitching a belt loop having both edges of the fabric folded and concealed internally of said belt loop, said sewing machine having a frame, a curved needle, a feed arm carrying a top feed-dog in the rear of said needle, an oscillating node former and means for forming blindstitch stitching; said attachment comprising a bracket having a support and means for attachment to said frame, reciprocatory shear blades respectively positioned on opposite sides of said front top feed-dog and adapted for cutting a section of fabric to a predetermined width, a folder having its outlet end positioned directly in front of said needle and having two curved side edges for equally folding both side edges of said cut strip of fabric above said strip, said folder having a rearwardly converging passage, stationary blades, said reciprocatory shear blades coacting with said stationary blades, said folder having an elongated opening in its upper face, a top feed-dog attachable to said feed arm for four-motion work-advancing feeding movements in front of said needle and means for pivotally mounting and resiliently downpressing said front top feed-dog on said folder, said top feed-dog having a rectangular

front portion for feeding fabric between said shear blades and having an elongated rear portion movable in said folder opening for feeding the cut strip through said folder, said folder being pivoted at its front portion to said support and being resiliently urged downwardly to permit the rear end of said folder to follow the up and down movements of said node former to cause said needle to pass only partly through the exposed surfaces of said folded loop.

7. A belt loop making attachment for a blindstitch sewing machine for top feeding a section of fabric to a duplex trimming mechanism and simultaneously trimming both edges of the section of fabric and folding and blindstitching a belt loop having both edges of the fabric folded and concealed internally of said belt loop, said sewing machine having a frame, a curved needle, a feed arm carrying a top feed-dog in the rear of said needle, an oscillating node former and means for forming blindstitch stitching; said attachment comprising a bracket having a support and means for attachment to said frame, reciprocatory shear blades driven by a rock shaft mounted in said bracket, respectively positioned on opposite sides of said front top feed-dog and adapted for cutting a section of fabric to a predetermined width, a folder having its outlet end positioned directly in front of said needle and having two curved side edges for equally folding both side edges of said cut strip of fabric above said strip, said folder having a rearwardly converging passage, stationary blades, said reciprocatory shear blades coacting with said stationary blades, said folder having an elongated opening in its upper face, a top feed-dog attachable to said feed arm for four-motion work-advancing feeding movements in front of said needle and means for pivotally mounting and resiliently downpressing said front top feed-dog on said folder, said top feed-dog having a rectangular front portion for feeding fabric between said shear blades and having an elongated rear portion movable in said folder opening for feeding the cut strip through said folder, said folder being pivoted at its front portion to said support and being resiliently urged downwardly to permit the rear end of said folder to follow the up and down movements of said node former to cause said needle to pass only partly through the exposed surfaces of said folder loop, said front top feed-dog and said rock shaft being driven by said sewing machine feed arm.

JOSEPH GALKIN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,157,032	Strobel	May 2, 1939
2,262,547	Galkin	Nov. 11, 1941