No. 870,543. PATENTED NOV. 12, 1907.

F. H. CHILTON.

SEWING MACHINE.

APPLICATION FILED MAY 31, 1906.

4 SHEETS—SHEET 1.

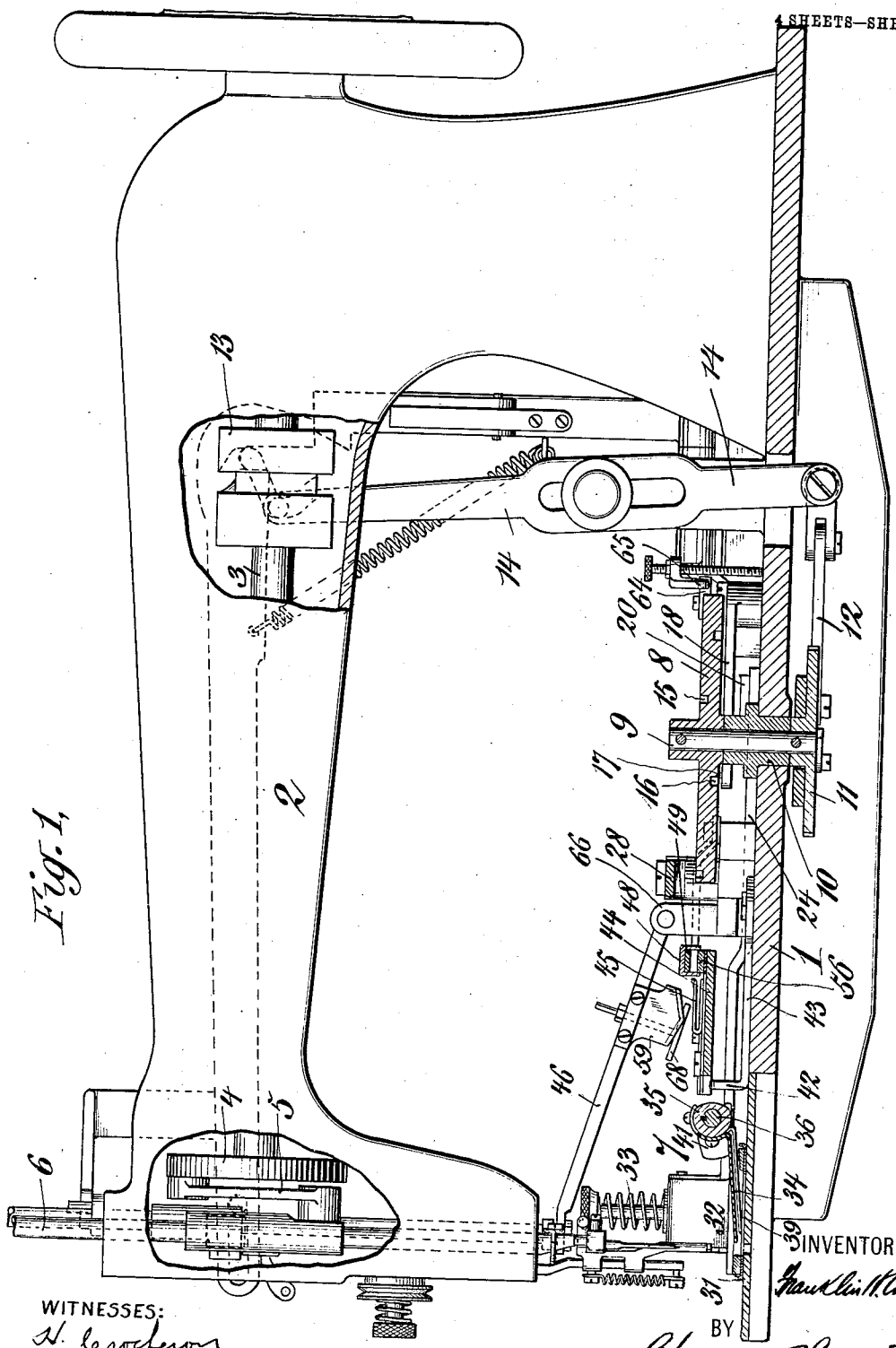


Fig. 1.

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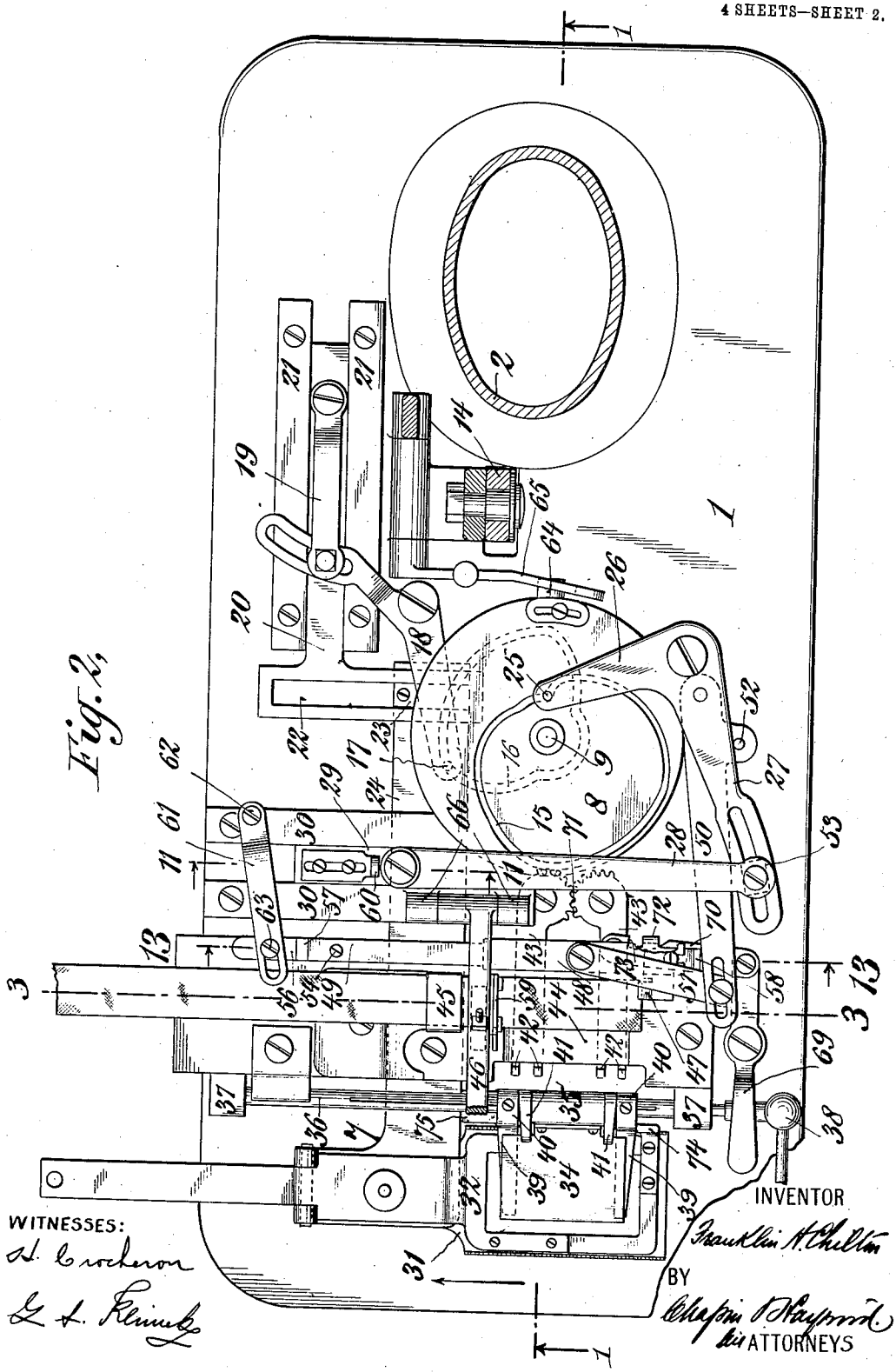
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 3.

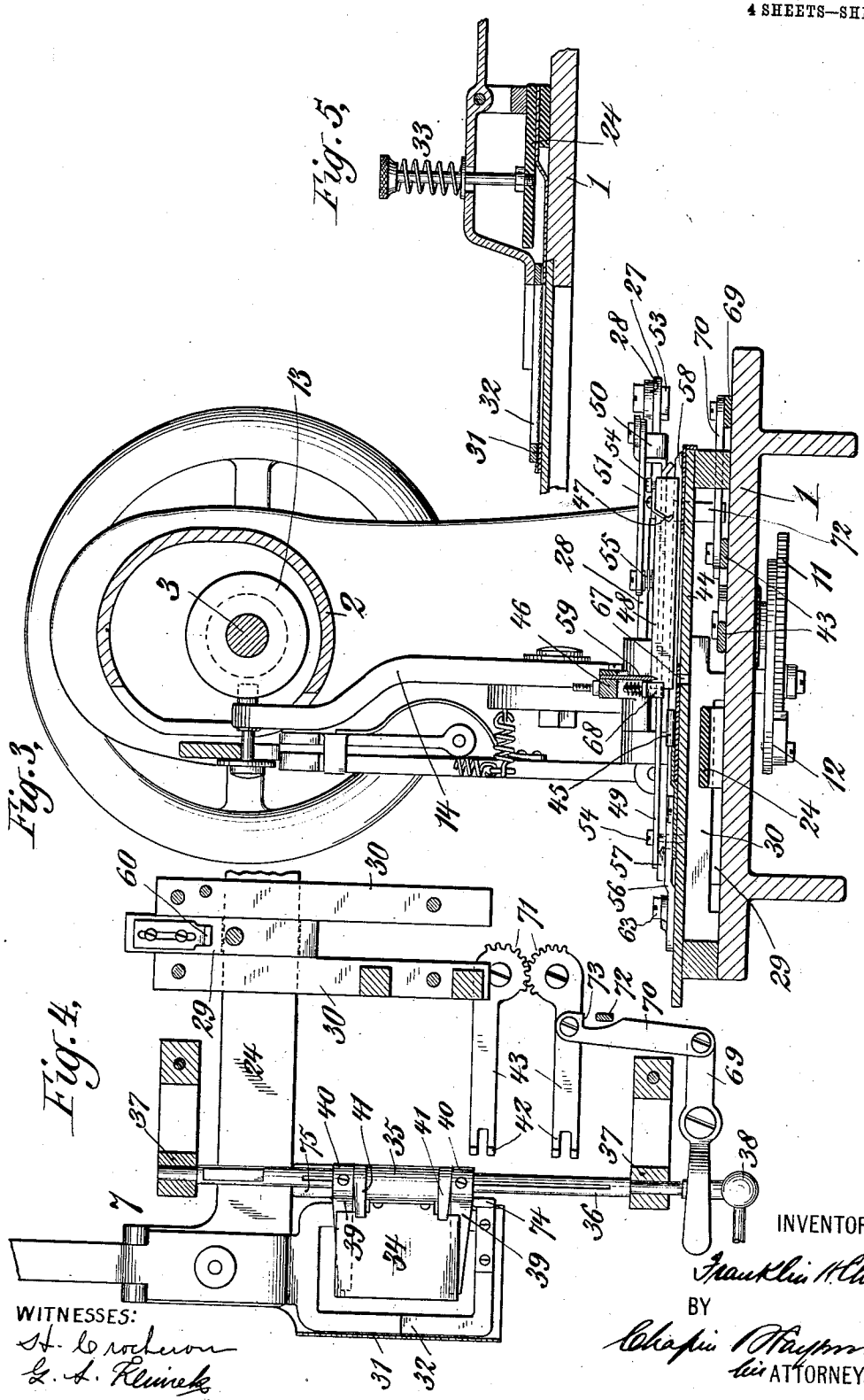


Fig. 4.

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4 SHEETS—SHEET 4.

Fig. 11.

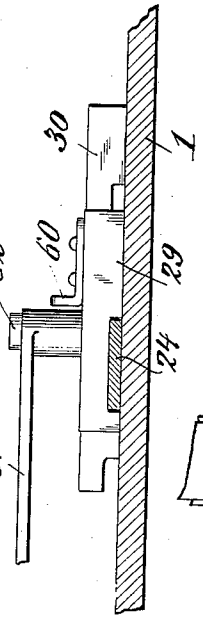


Fig. 12.

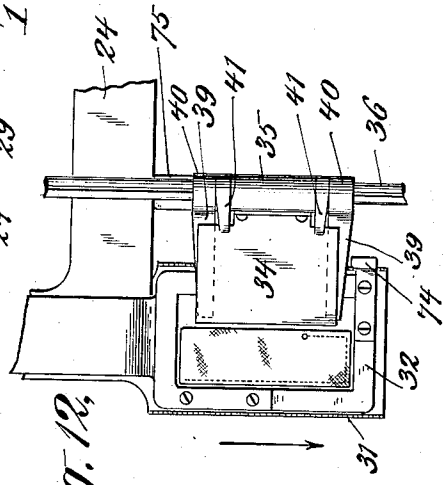


Fig. 13.

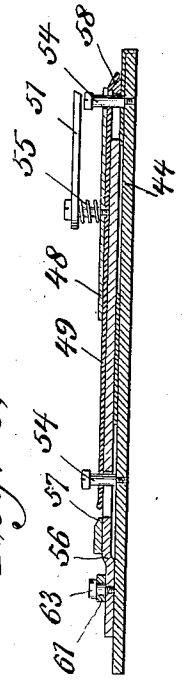


Fig. 6.

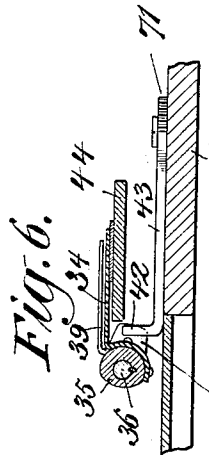


Fig. 7.

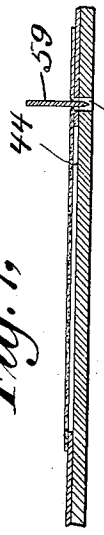


Fig. 8.

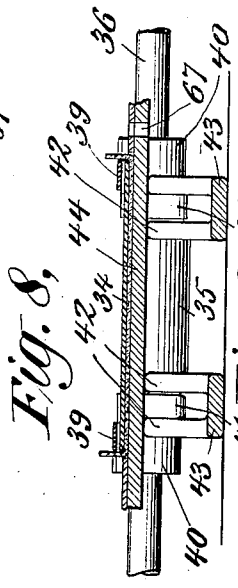


Fig. 9.

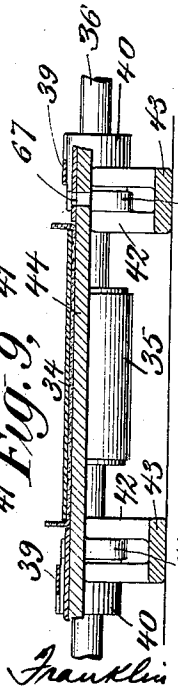


Fig. 10.



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UNITED STATES PATENT OFFICE.

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SEWING-MACHINE.

No. 870,543. Specification of Letters Patent. Patented Nov. 12, 1907.

Application filed May 31, 1906. Serial No. 319,428.

To all whom it may concern:

Be it known that I, FRANKLIN HOWARD CHILTON, a citizen of the United States of America, and a resident of Union City, county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in sewing machines, and particularly to machines adapted to the sewing on of labels.

It is customary at the present time to provide labels of the class designed to be sewn onto garments such as shirt waists and the like, in the form of long strips from which the individual labels may be severed. The labels thus severed have two selvage edges, and two unfinished edges along the lines of severance which must be folded over in order to present a neat appearance when the label is attached and to prevent raveling. After the edges of the labels are thus folded over they are sewn onto the goods by a line of sewing all around same, that is, along all four of their edges.

It has been customary in the past to perform all of the foregoing operations except that of sewing the label to the goods, by hand.

It is the purpose of my present invention to provide a sewing machine in which the various operations of feeding the label strip, severing the label, folding the severed edges over, presenting the label thus folded for stitching, and then stitching all around same, may be carried out by suitable mechanism.

To these ends my invention consists in means for intermittently feeding a strip of labels adjacent the point at which they are to be sewn, means for severing the individual labels from the strip, means for folding over the severed edges of the label, means for presenting the folded label to the stitching mechanism, and feeding means for feeding the folded label along successive lines at right angles to each other (or otherwise, according to the shape of the label), which, acting in combination with the stitching mechanism, will produce lines of sewing around the label to secure same to the goods.

My invention also consists in certain novel details of construction and combination of parts such as will be hereinafter set forth.

In order that my invention may be fully understood I will describe in detail a machine embodying my invention, having reference to the accompanying drawings illustrating same, and will then point out the novel features in the claims.

In the drawings: Figure 1 is a view in partial side elevation and partial vertical longitudinal section along the plane of the line 1—1 of Fig. 2 through a machine embodying my invention, certain parts being broken away in order to show other parts at the rear thereof. Fig. 2 is a top view with the overhanging arm removed. Fig. 3 is a view in transverse vertical section through the plane of the line 3—3 of Fig. 2. Fig. 4 is a top view of certain parts including the work clamp, the label supporting and folding means, and other correlated parts, showing the same in different positions from which they are shown in Fig. 2. Fig. 5 is a detail sectional view through the cloth clamp. Fig. 6 is a detail view in transverse section through a label platform, label supporting means, and certain correlated parts. Fig. 7 is a detail view in longitudinal section through the label platform, showing a cutter in the act of severing a label from the strip. Figs. 8 and 9 are longitudinal sectional views through the label platform and the label supporting and folding means, showing the latter in the operation of folding the severed label. Fig. 10 is a sectional view through the label platform and supporting means, showing the label with its ends folded over. Fig. 11 is a detail sectional view substantially upon the plane of the line 11—11 of Fig. 2. Fig. 12 is a detail top view of a part of the work clamp and the label supporting means, with the clamp moved laterally away from the label supporting means and the label shown as partly open. Fig. 13 is a detail sectional view substantially upon the plane of the line 13—13 of Fig. 2.

The sewing machine comprises the usual bed plate 1 and overhanging arm 2, in which latter is mounted the drive shaft 3 from which the various parts derive their motion. At the forward end of the drive shaft a crank disk 4 and pitman 5 connect with the needle bar 6 for the purpose of imparting reciprocatory movements thereto, all in a manner well known.

A work clamp, designated as a whole by the reference character 7, is provided for the purpose of presenting the work for stitching, and for moving the work horizontally with respect to the needle bar to effect the required feed. The feed in this particular machine is designed to be in four lines forming a rectangular figure, and the movements of the work clamp for this purpose are produced by mechanism which I will now describe. Mounted just above the bed plate 1 to rotate about a vertical axis disposed about centrally thereof, is a cam wheel 8. This cam wheel 8 is secured to a central shaft 9, which has a bearing 10 in the bed plate 1, penetrating therethrough to the under side of the said bed plate. Beneath the bed plate a ratchet feed wheel 11 is secured to the said shaft 9, so that the feed wheel 11 and cam wheel 8 will positively move together. An intermittent feeding movement is imparted to the feed wheel 11 by means of a feed plate and pawl 12, to which reciprocation is given by means of a shift cam 13 upon the shaft 3 through the intermediation of a rocking lever 14. The cam wheel 8 has two cam grooves therein, one a cam groove 15 in the upper side thereof, and the other a cam groove 16 in the under

side thereof. The cam groove 16 in the under side is engaged by a cam follower 17 at the end of a lever 18, the opposite end of which lever is connected by means of a link 19 with a slide piece 20 mounted to slide longitudinally with the machine between guideways 21. The slide piece 20 has a slotted yoke 22, in which is received a lug 23, which uprises from the base-plate 24 of the work clamp 7. The action of the cam groove 16 will then, through the parts above described, produce longitudinal movements of the work clamp, while, at the same time, transverse movements thereof, *i. e.* movements at right angles of the clamp thereto, will not be opposed, because of the slotted connection 22 with the member 23. These transverse movements are produced by means of the upper cam groove 15, which receives a cam follower 25 mounted in one arm 26 of a bell crank lever, the other arm 27 of which is connected by means of a link 28 with a slide piece 29 mounted to slide transversely of the machine between guideways 30. The slide piece 29 is recessed on its under side to receive the base-plate 24 of the work clamp 7, so that transverse movements of the slide piece 29 produced by the operation of the cam 15 will produce corresponding transverse movements of the work clamp 7. The connection of the slide piece 29, however, with the base-plate 21 will not prevent free longitudinal movements of the same such as are produced by the cam 16 in the manner above stated, because the base piece 24 will slide freely in the recessed portion of the slide piece 29, as will be well understood. By properly forming the cams 15 and 16, any desired movements may then be imparted to the work clamp, as will be well understood. In the present instance the two cams have respectively active and dwell portions arranged complementary to each other, so that, while one cam is operating on an active portion, the other cam will be moving through a dead portion. By this means the desired stitching along lines forming a rectangular or other figure are simply and effectively produced.

The work clamp 7 comprises, in addition to the base-plate 24 above described, a work supporting member 31 carried thereby, and a pivoted clamping member 32, provided with a spring 33 for pressing the members toward each other. The clamping jaws of the members 31 and 32 are arranged in such a way as to freely receive a label to be sewn within them, while supporting the goods to which the label is to be secured between them around the said label.

The label supporting means is a part independent of the work clamp, though it partakes of the transverse movements thereof in a manner to be presently described. This label supporting means comprises a plate 34 secured to a hub 35, which is mounted upon a shaft 36. The hub or sleeve 35 is arranged to slide freely along the said shaft 36, but is splined thereto so as to partake of its rotative movement. The said shaft 36 is mounted in stationary bearings 37, and is provided at the forward end with an operating handle 38. Folder blades 39, provided with hubs 40, are mounted upon the said shaft 36 immediately adjacent the edges of the label supporting plate 34, the said hubs being likewise free to move longitudinally with respect to the shaft 36, but splined thereto so that it will partake of the rotary movements thereof. The hubs 40 of the folder blades have laterally projecting fingers 41, which, when the parts are in their initial positions (being the positions in which they are shown in Fig. 2) will be opposite jaws 42 of operating levers 43. When the parts are in their said initial positions, as shown in Fig. 2, the shaft 36 may be given a half turn by means of the operating handle or lever 38, so as to move the label supporting plate from a position within the work clamp to a position away therefrom, resting upon a platform 44, as shown in Fig. 6. The platform 44 constitutes a main support for the label strip as the same is fed forward, the said strip being introduced into the machine beneath a guide 45 and a cutter bar 46. The feeding means for the strip of labels comprises a gripper 47 attached to a slide 48, which is arranged to move freely transverse of the machine along a bar 49. Movements are imparted to the slide 48 by means of a lever 50 pivoted to the arm 27 of the bell crank lever 27, 26, and connected at its other end with the said slide by means of a link 51. An uprising pin 52 from the lever 50 engages the said arm 27 of the bell crank lever in one direction, while a dependent stud 53 from the said arm 27 engages the lever 50 while moving in the other direction. This permits a certain lost motion between the parts so that movement in either direction of the slide 48 will not commence until after a certain amount of movement has taken place of the arm 27 of the bell crank lever, the length of the lever 50 being, however, sufficient to impart the required throw to effect the proper feeding movement. The bar 49, which supports the slide 48, is secured to the platform 44 by means of two pins or studs 54. These pins or studs are headed, but the heads are arranged at such a distance away from the bar 49 as to permit limited vertical movement thereof against the resistance of a light coil spring 55 between the link 51 and the slide 48 at the point at which the said link is pivoted thereto. Arranged longitudinally beneath the bar 49 is a cam bar 56 having cam portions 57 and 58 near its opposite ends. This cam bar is disposed between the bar 49 and the platform 44, but is slotted where it engages the studs or pins 54, so that limited longitudinal movement thereof (transverse, however, of the machine) is permitted. When the cam bar 56 is in one position, *i. e.* the position in which it is shown in Fig. 3 of the drawings, the cam portions 57, 58 thereof will have acted against the ends of the bar 49 so as to have lifted the said bar, as will readily be understood by reference to the drawings. The lifting of the bar effects also the lifting of the slide 48, and with it the gripper claw 47. The said bar is arranged to be lifted when the slide 48 and gripper carried thereby is being moved in a direction toward the cutter jaws to the left, as viewed in Fig. 3. This is for the purpose of causing the gripper to clear the platform during this part of its movement. The gripper is moved in this direction, which we will call a forward movement, a distance sufficient to bring the same just beyond a cutter blade 59 supported by the said cutter bar 46. As it approaches the limit of its movement in this direction, a detent 60, which is carried by the slide piece 29, will have engaged a lever 61, pivoted at 62 to one of the guides 30, the opposite end of which lever is pivotally connected, as at 63, to the cam bar

56, and the completion of the movement of the said slide piece will have caused a movement of the said lever 61 and hence of the bar 56 sufficient to disengage the cam portions 57, 58 from the bar 49 to permit its return to its initial position. Thus, when the gripper gets to the limit of its forward movement, it will be snapped down upon the end portion of the label strip supported upon the platform behind the cutter 59. During the return movement of the slide 48, the bar 49 will be in its lowermost position, so that the gripper will press firmly all the time upon the label strip, drawing the said strip rearward with it so as to feed the same a distance between two labels.

At about the moment the gripper is brought to the limit of its rearward movement, so that the feeding of the label strip is completed, mechanism will be thrown into operation by means of a cam projection 64 to cause the cutter bar 46 to be engaged by the needle bar, so that, in the next downward movement of the needle bar, the said cutter bar will be depressed. I will not describe this mechanism in detail, as it is well known in sewing machines, particularly in buttonhole sewing machines. It is fully shown and described, for instance, in the Osterhout & Hallenbeck patent No. 402,610, of May 7th, 1889. It is sufficient for the present purposes to understand that, when the cam piece 64 strikes the tripping lever 65, the cutter lever 46 is reciprocated synchronously with the needle bar during one of its upward and downward movements. The lever 46 is pivoted to a stationary support 66, and carries a cutter blade 59 secured thereto above an opening 67 in the platform 44. Preferably a spring stripper 68 is provided to propely strip the material from the cutter, so as to prevent the material from being lifted with the cutter. This cutting operation, which, as before stated, takes place about the time the feeding movement of the label has been completed, and at which time also the work clamp will have been moved to its position nearest the front of the machine and the right hand end (all the parts being just about in the position in which they are shown in Fig. 2) may be considered to be the completion of a cycle of operation of the machine, the work clamp being then in a position ready to receive new work, the label supporting device being in a position to be turned over upon the platform 44, as above set forth, and a label having been fed onto the place on the platform immediately opposite to the said label supporting plate, and severed. The machine under ordinary conditions will be brought to rest at this point, and will be prepared for a new piece of work. The operator, at this time, by manipulation of the handle or lever 38, will turn the label supporting device over upon the platform 44, the said platform being slightly recessed to receive the plate 34, upon which, it will be remembered, is now a label, In Fig. 7 I have shown the platform with the label lying loosely thereon, the same having just been severed by the cutter 59, while in Fig. 8 I have shown the label supporting plate as having been turned over onto the label, pressing same down into the recess in the platform. The effect of this will be to turn up the edges of the label, as is shown in said figure. A lever 69 will now be manipulated while the said label supporting plate is in the latter position. This lever is connected by means of a link 70 with one of the operating levers 43. The two said operating levers are, however, connected together by means of gear sectors 71, as will be seen more particularly by reference to Fig. 4. A movement of the said operating lever 69 will first move the jaws 42 of the lever 43 outwardly, and, as the jaws will at this time be in engagement with the fingers 41 of the folded blades 39, the said folder blades will be moved outwardly to the position shown in Fig. 9. Return movement of the operating lever 69 will bring the levers 43 back to their normal positions, bringing the folder blades 39 back again, as shown in Fig. 10, but, in so moving back, they will fold over the ends of the label, as shown in said Fig. 10, and, in folding over the said ends of the label, will securely attach same to the plate 34. This same operation will also re-set the cam bar 56, the said cam bar being provided with a dependent lug 72, which is engaged by a shouldered portion 73 of the link 70, which connects the lever 69 with one of the levers 43. Thus the outward movement of the link 42, upon the manipulation of the lever 69, will, by its engagement with the lug 72, move the bar 56 in a direction to cause the cam portions 57, 58 thereof to engage and lift the bar 49, so that, when the machine starts up again, the slide 49 will be in its lifted position to cause the gripper 47 to clear the platform. In fact, the parts will preferably be so arranged that the resetting operation just described will be effected sufficiently in advance of the movement of the folded blades to cause the gripper to clear the rear folded blade in its movement. After the lever 69 has been thus manipulated, the handle 38 may be turned over to cause the label carrying device, with the label secured thereto, to be moved over to a position within the cloth clamp, as shown in Fig. 2. The label strip will be fed in upside down, so that, as the label carrying device is turned over, the label will then be presented the right way up for sewing. The label will be arranged to overhang the outer edge of the plate 34, so that it will be presented immediately beneath the line of sewing of the needle, so that, directly the machine is started up, the sewing will take place through the label. The goods to which the label is to be attached will have been previously placed within the cloth clamp between the members 31 and 32, so that the machine may now be started up to commence the sewing. The cloth clamp, during the first portion of the sewing, will move in the direction of the arrow, Fig. 2, so as to sew the label with the goods along the outer edge thereof, such edge being one of the selvage edges. The label supporting device will be moved with the cloth clamp by reason of the engagement of the lugs 74 with the hub portion 40 of one of the folder blades. The hub portion of the other folder blade is provided with a projection 75, which engages the edge of the base plate 24 of the cloth clamp, whereby the label carrying device is compelled also to partake of the movements of the cloth clamp in the direction opposite to the arrow in Fig. 2. It will be noted that, when the label carrying device is turned over upon the platform 44 to fetch another label, the same is moved entirely clear of such lateral engagement with the cloth clamp, so that the proper movements may be imparted to the folder plates in the manner and for the purpose above specified. After one edge of the label has been sewed and the cloth clamp

has reached a point where the needle is adjacent the opposite end of the plate 34, the work clamp, by means of the mechanism described above, will be moved at right angles to the arrow of Fig. 2 in a direction toward the left from the point of view of Fig. 2. The cloth clamp, with the goods firmly held therein, being moved to the left, the label will be gradually withdrawn from the label supporting means, as the latter said means has no such movement, and a line of sewing will be performed along the front folded edge so as to attach this edge to the goods beneath same. The clamp is moved such a distance that the label will be entirely withdrawn from the label holding means, substantially as shown in Fig. 12 of the drawings, when the movement of the clamp will be again changed to a movement at right angles to the last movement, such movement being parallel with the first movement, but in a direction exactly opposite thereto. This will effect a line of sewing along the third edge of the label, the label, however, being firmly held in position upon the goods by the first two lines of sewing which have just been effected. When this line of sewing is completed, the movement of the work clamp is again changed, and the fourth line of sewing is effected, the machine being finally brought back to the position with the parts as shown in Fig. 2 of the drawings. During this last movement of the cam plate, the label will pass readily beneath the label supporting device, being firmly held to the goods by the three lines of sewing already completed.

It will be understood that, during the various movements of the work clamp and sewing mechanism above set forth, the feeding movements for another label will have been operating, so that, when the cycle of movement is completed, a new label will have been fed into position, and, just at the last minute prior to the stopping of the machine, a cutting operation will have been effected, so that the same will be ready to be received and operated upon by the label supporting device.

What I claim is:

1. A sewing machine comprising stitch forming mechanism, work feeding means, a label support, comprising means for receiving and supporting labels composed of yielding flexible material, means for feeding labels to the support, and means for moving the support to present labels to the stitching mechanism whereby they will partake of the work feeding movements and be stitched to the goods so fed.

2. A sewing machine comprising stitch forming mechanism, means for feeding a strip of labels and for severing individual labels from the strip, a label support for receiving a severed label, and means for moving the support to present the labels so severed to the stich forming mechanism.

3. A sewing machine comprising stitch forming mechanism, a label support, means for folding over the edges of a label over the support, and means for moving the support to present the label so folded to the said mechanism for stitching.

4. A sewing machine comprising stitch forming mechanism, means for feeding a strip of labels and for severing individual labels from the strip, means for folding over the edges of a label so severed, and means for presenting the label so folded to the stitching mechanism.

5. A sewing machine comprising stitch forming mechanism, means for feeding a strip of labels and for severing individual labels so fed forward, means for folding over the edges of a label so severed, a work clamp, and means coöperating with the work clamp for presenting the label so folded to the stitch forming mechanism.

6. A sewing machine comprising stitch forming mechanism, a work clamp, a label support, means for moving the label support into and out of operative engagement with the work clamp, and means for simultaneously operating the work clamp and the label support.

7. A sewing machine comprising stitch forming mechanism, a work clamp, means for imparting horizontal movements to the work clamp in directions at right angles to each other, a label support, means for moving the label support into and out of operative engagement with the work clamp, said label support adapted to partake of the movements of the work clamp in one direction.

8. A sewing machine comprising stitch forming mechanism, a work clamp, a label support pivotally mounted at the side of the work clamp, means for imparting feeding movements to the work clamp, and means whereby the label support may be moved longitudinally of its pivotal axis to partake of feeding movements of the work clamp.

9. A sewing machine comprising stitch forming mechanism, a work clamp, means for imparting feeding movements thereto, a shaft mounted adjacent said work clamp, a label support splined upon said shaft, and means for imparting rotative movements to said shaft to move the label support into and out of engagement with the said work clamp, substantially as specified.

10. A sewing machine comprising stitch forming mechanism, a work clamp comprising upper and lower plates 31, 32, having jaws with an open central portion, means for imparting feeding movements to said work clamp, a shaft 36 mounted contiguous said work clamp, a label support comprising a hub 35 splined upon said shaft 36, and a plate 34 projecting therefrom, said plate arranged to be received within the open portion of said work clamp, and an operating member for imparting rotative movements to the said shaft 36.

11. A sewing machine comprising stitch forming mechanism, a platform, means for feeding labels over said platform, a work clamp, a label support, and means for moving the label support from a position adjacent said platform to a position adjacent said work clamp.

12. A sewing machine comprising stitch forming mechanism, label feeding means, a work clamp, a label support movable from a position in line with the feeding means to a position adjacent the clamp, and folding means for the edges of the label.

13. A sewing machine comprising stitch forming mechanism, a work clamp, a label support, label folding means coöperating with said label support, and means for moving the label support with the folded label thereon into and out of operative position with the work clamp.

14. A sewing machine comprising stitch forming mechanism, a label support comprising a thin plate, folding blades mounted adjacent the edges of the said plate, means for operating the said folder blades, and means for moving the said plate and the said folder blades into and out of position to present the label for stitching.

15. A sewing machine comprising stitch forming mechanism, a platform, means for feeding a label thereon, a label support adapted to be moved to a position engaging the label on the platform, folding means for folding the edges of the label around the label support, and means for moving the label support with the label so folded thereon to a position to present the label to the stitching mechanism.

16. A sewing machine comprising stitch forming mechanism, a platform, means for feeding labels over said platform, a work clamp a label support pivotally mounted between said platform and said work clamp, and folding means coöperating with said label support.

17. A sewing machine comprising stitch forming mechanism, a platform, a work clamp, a label support pivotally mounted between the said platform and work clamp, folder blades adapted to coöperate with the label support, means for moving the label support about its pivotal axis from a position adjacent the platform to a position adjacent the work clamp, and means engaging the folder blades to operate them when the label support is adjacent the said platform.

18. A sewing machine comprising stitch forming mech-

anism, a platform, a work clamp, a shaft mounted between the platform and work clamp, a label support splined upon the said shaft, folder blades also splined upon the said shaft adjacent the opposite edges of the said label support, levers 43 for engaging the folder blades when the label support is in one position, and operating means for reciprocating the said levers to operate the folder blades.

19. A sewing machine comprising stitch forming mechanism, a label feed comprising a reciprocating gripper, a label support adapted to be moved between positions adjacent the label feed and adjacent the stitch forming mechanism, and means for throwing the gripper out of operative position during the return portion of its reciprocating movement.

20. A sewing machine comprising stitch forming mechanism, a platform, a reciprocating gripper arranged to travel over said platform to feed labels across same, a label support adapted to be moved to a position over said platform and to a position adjacent said stitching mechanism, and means for lifting the gripper clear of said platform upon the return portion of its reciprocating movement.

21. A sewing machine comprising stitch forming mechanism, a platform, a work clamp, a reciprocating gripper adapted to travel over said platform, a label support pivotally mounted between said platform and said work clamp, folder blades mounted adjacent said label support, means for operating said folder blades when the label support is in a position adjacent said platform, and means for lifting the gripper at such times clear of the path of movement of the folder blade adjacent same.

22. A sewing machine comprising stitch forming mechanism, label feeding mechanism, means for folding over the edges of a label, and means for presenting the label so folded to the stitching mechanism.

FRANKLIN H. CHILTON.

Witnesses:
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JAMES A. MARTIN.