E. B. ALLEN AND A. R. WOOD.

LABEL STITCHING MACHINE.

APPLICATION FILED MAR. 29, 1915.

1,319,450.

Patented Oct. 21, 1919.

7 SHEETS—SHEET 1.

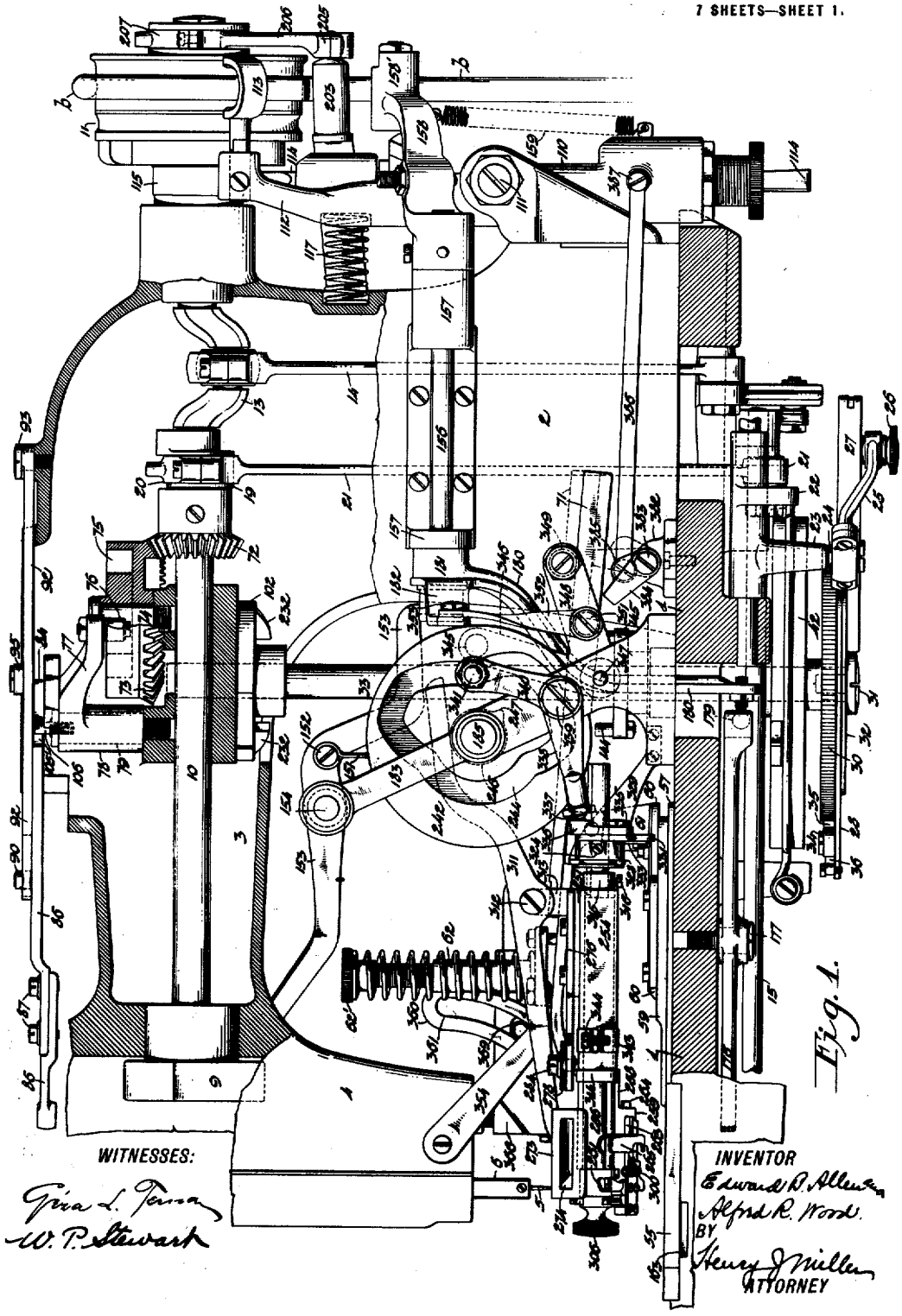


Fig. 1.

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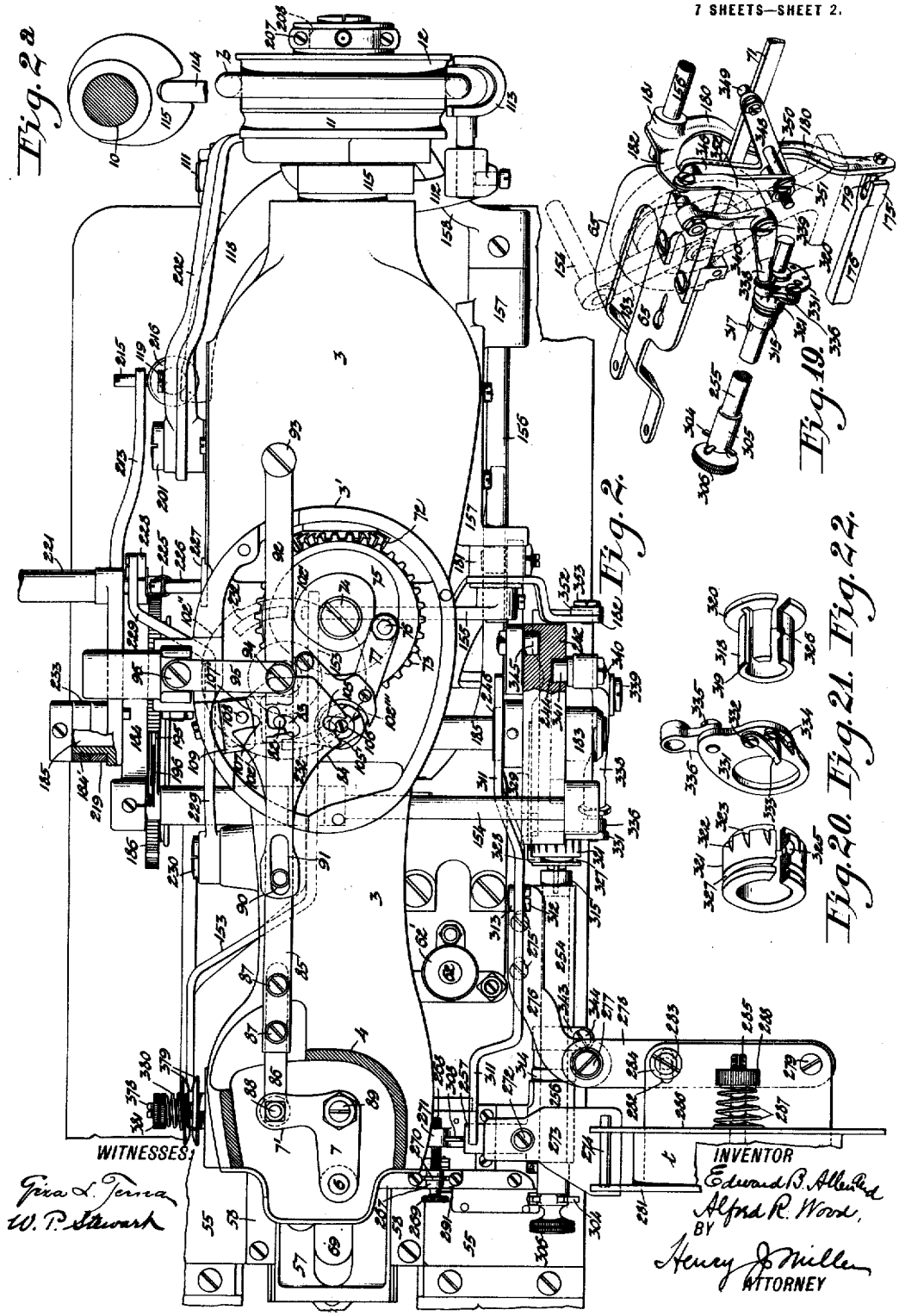


Fig. 2a

Fig. 2.

Fig. 19.

Fig. 20. Fig. 21. Fig. 22.

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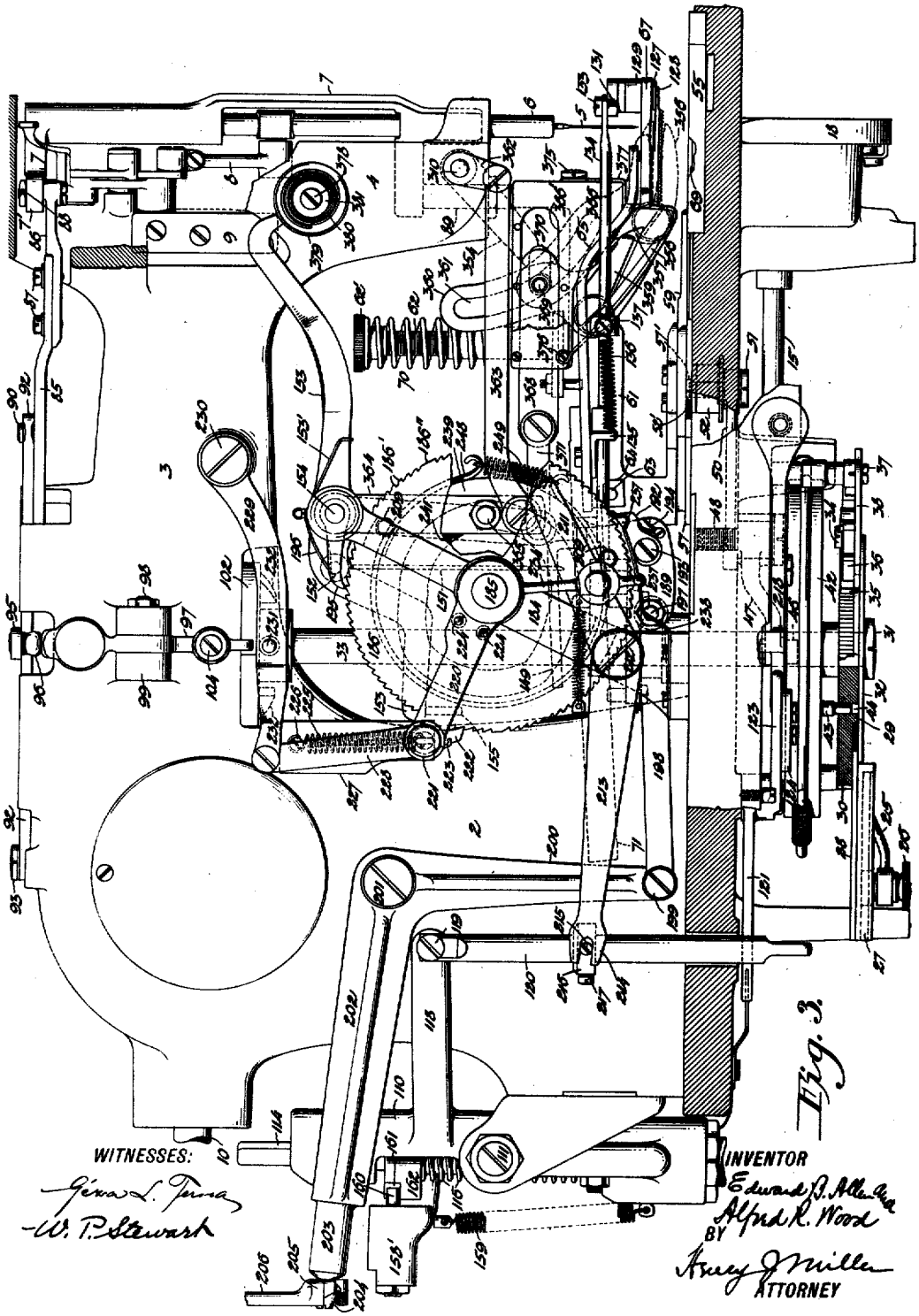


Fig. 3.

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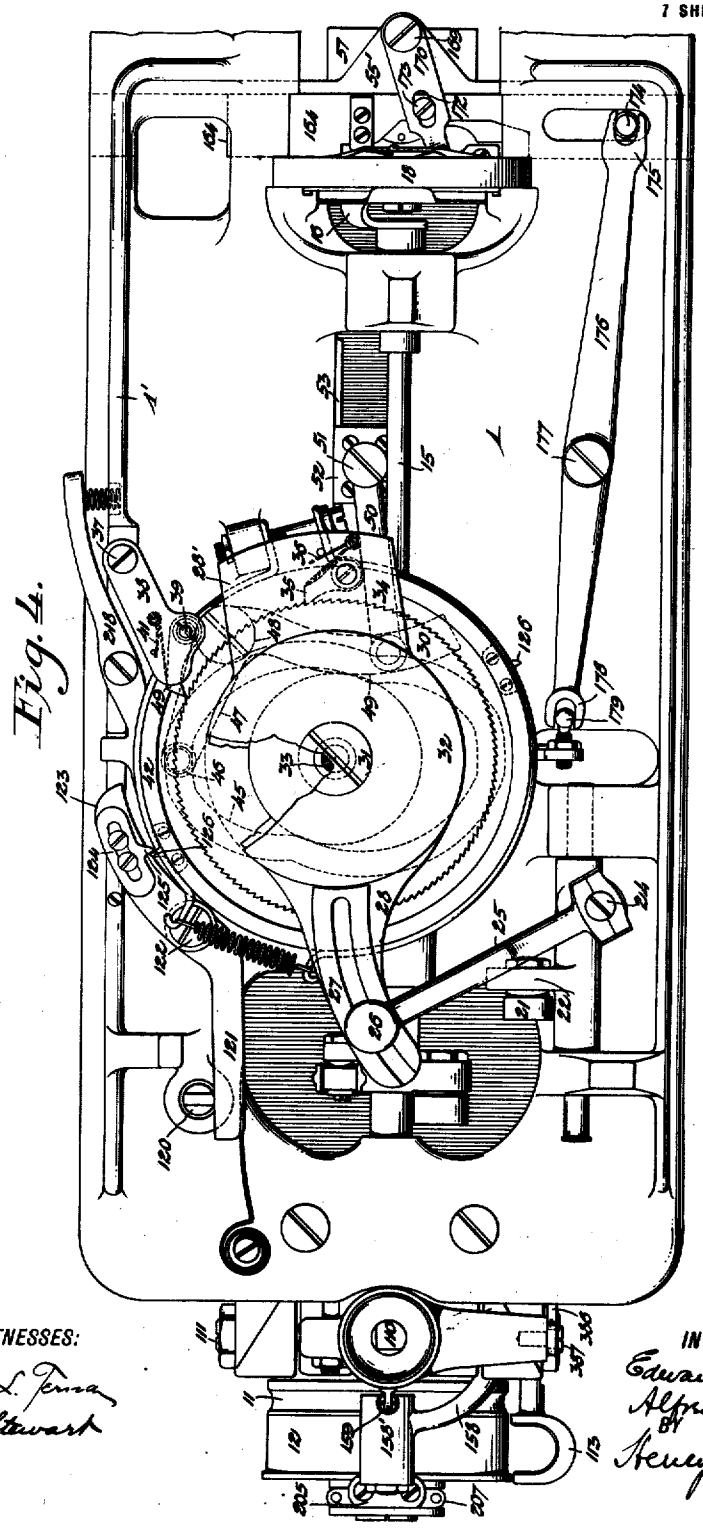
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7 SHEETS—SHEET 4.

Fig. 4.



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Fig. 24.

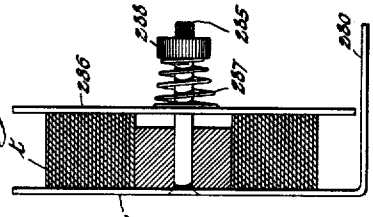


Fig. 25.

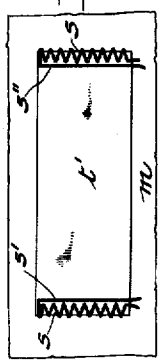


Fig. 5.

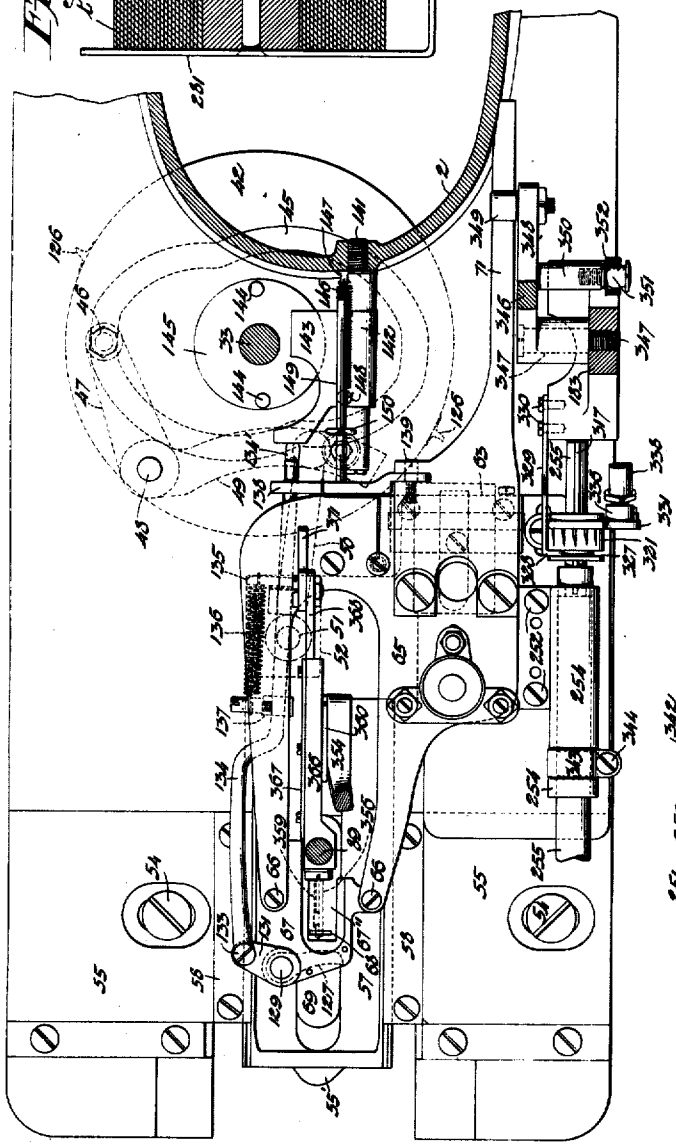
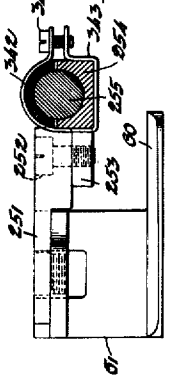


Fig. 23.



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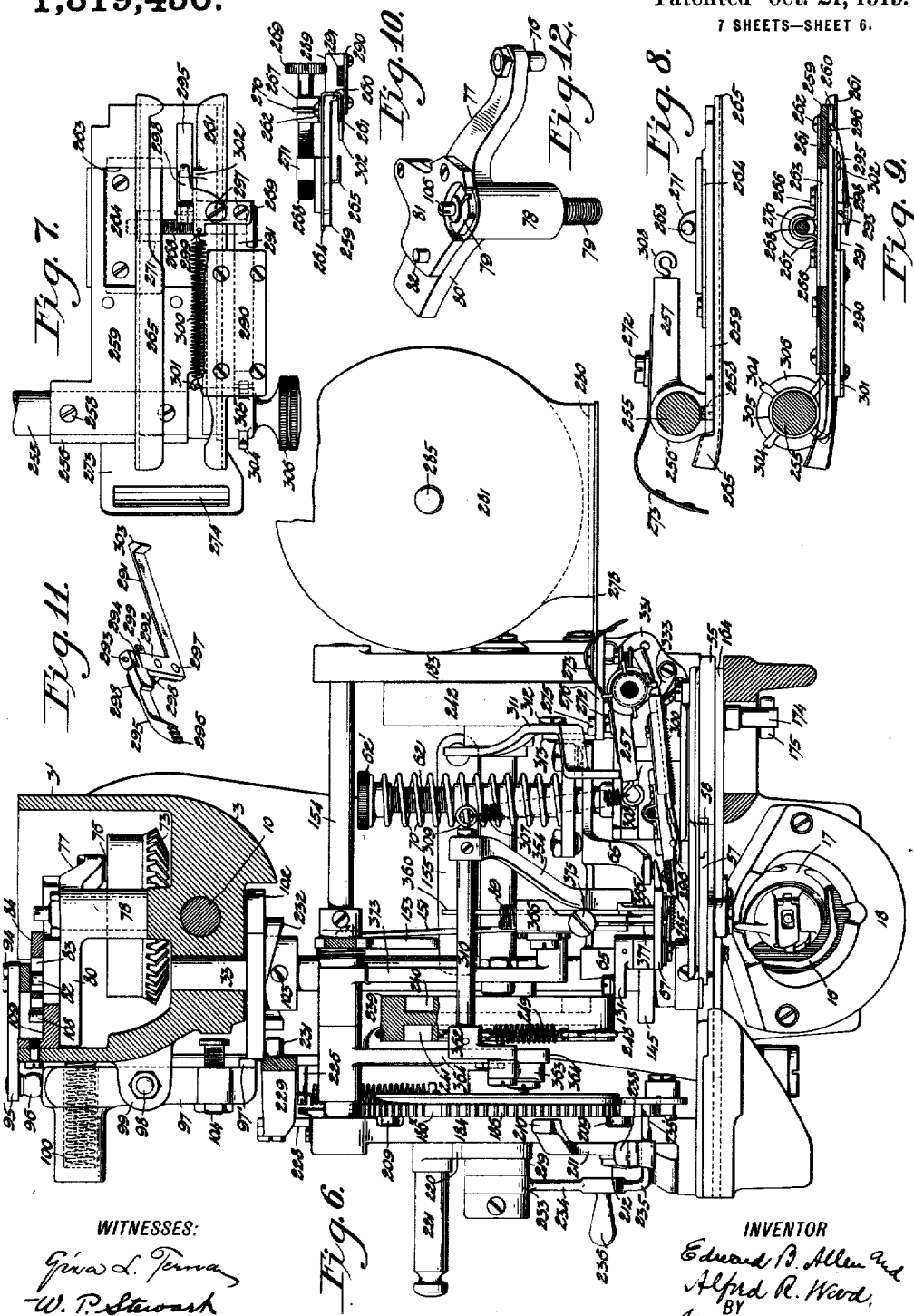


Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.

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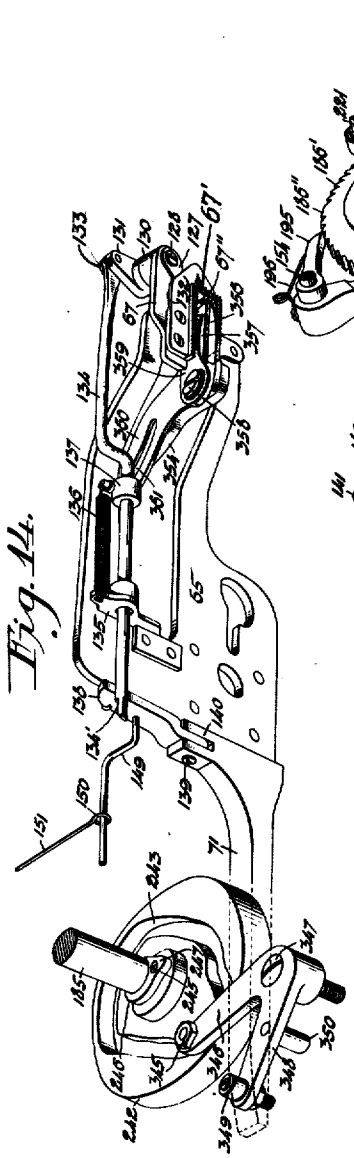


Fig. 14.

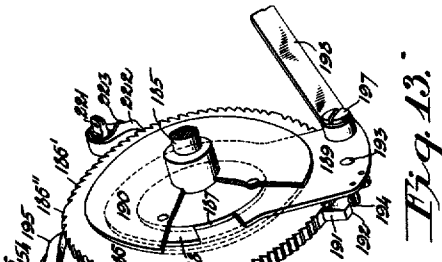


Fig. 13.

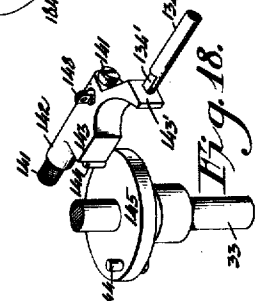


Fig. 18.

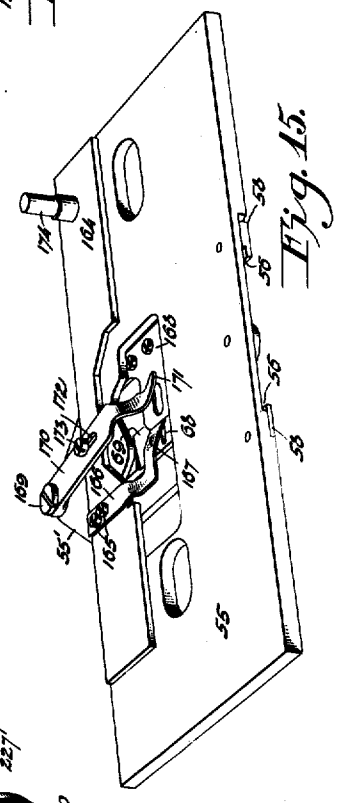


Fig. 15.

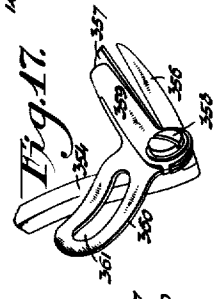


Fig. 17.

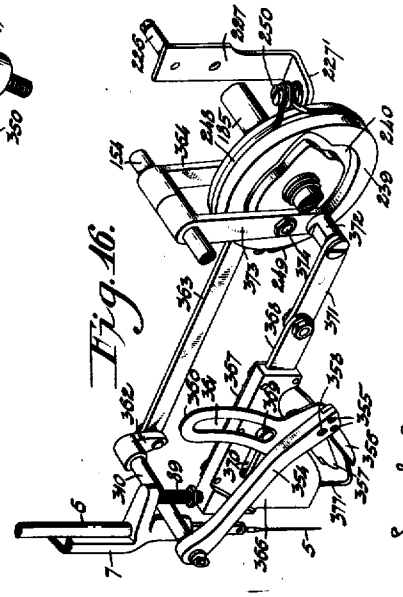


Fig. 16.

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LABEL-STITCHING MACHINE.

1,319,450. Specification of Letters Patent. Patented Oct. 21, 1919.

Application filed March 29, 1915. Serial No. 17,596.

To all whom it may concern:

Be it known that we, EDWARD B. ALLEN and ALFRED R. WOOD, citizens of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Label-Stitching Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has for its primary object to provide means for effectively and securely fastening to a body fabric a label or section of tape with its ends stitched upon the fabric and its intermediate portion disconnected therefrom so as to form a strap or hanger which shall be adapted not only to bear the name or trademark of the manufacturer of the garment but to afford means for hanging up the garment when not in use. It has for a further object to provide means whereby the tape sections may be severed from a long length of tape with the label matter printed thereon or woven therein accurately positioned within their respective lengths, so as to compensate for the usual variations in the spacing apart of such matter in the process of manufacture of the tape.

In its preferred form the improvement is embodied in an organized machine provided with over-seaming stitch-forming mechanism including a reciprocating and laterally jogging needle and feeding mechanism comprising a traveling work-clamp, such mechanisms being controlled in their periods of action by a stop-motion. The stop-motion preferably includes fast and loose pulley-wheels upon the main-shaft of the machine and adapted to be alternately embraced by a continuously running belt from the source of power.

The work-clamp or holder preferably sustains a tape-guiding channel directed between its work-engaging elements and a tape reel from which the label-tape is led through said guide within the work-clamp in which it is superposed upon a garment or body fabric to which a section thereof is to be secured. A normally retracted shear-cutter for severing label-sections from the tape is adapted to advance and sever the tape crosswise of the guide-channel and intermediate the work-clamping elements subsequent to the stitching of the first end of the label and prior to the final stitching operation of the cycle.

The loose belt-driven pulley-wheel has an operative connection with and imparts reciprocatory movements to an actuating pawl normally engaging a ratchet-wheel fixed upon a rotary cam-shaft carrying a plurality of cam-wheels, these several rotary parts constituting a cam-member which controls the timing of action of various parts of the mechanism. The cam-member has operative connections with the work-clamp, the stop-motion and the tape-cutter to effect successively the closing of the work-clamp, the actuation of the stitch-forming and feeding mechanisms for the production of two groups of fastening stitches with an intermediate period in which the clamp is opened to permit the manual shift of the work having one end of the tape stitched thereto, the severing of the tape preparatory to the production of the final group of fastening stitches, and the reclosing of the clamp followed by the final stitching operation.

In the initial position of the parts, the extremity of the unsevered tape lies within the range of action of the stitch-forming mechanism, and the body fabric having been introduced, the initial group of fastening stitches is applied thereto without movement of the tape otherwise than in the normal feeding action. After the tape-severing action, and before the clamp is reclosed upon the work, the cut end of the supply tape is retracted from the range of action of the stitch-forming mechanism by means actuated by said cam member, and the final stitching operation is thereafter effected, at the completion of which suitable tape-feeding means within the channel is actuated to advance the cut end of the supply tape within the range of action of the stitch-forming mechanism for the next tape-fastening operation. In order to insure the requisite interval between the two stages of the stitching operation in which the initial and final groups of stitches respectively are applied to the label, automatically acting means are provided to interrupt the action of the several trains of mechanism, and manually op-

erated means are provided for setting them again in operation after the work has been shifted to draw off the requisite length of tape for the label partially stitched to the fabric by the previous stitching operation.

Provision is preferably made whereby the needle is given lateral jogging movements for production of a line of zigzag stitches covering the end of the label succeeded by a parallel line of straightaway stitches slightly spaced therefrom and extending across the label back from its edge. To this end, means are provided for not only interrupting the jogging movements of the needle alternately in opposite lateral positions so as to bring the line of straightaway stitches upon the appropriate side of the zigzag stitches and back from the respective cut end of the label, but for imparting to the needle a slightly increased lateral throw beyond the adjacent normal zigzag stitching position. The machine is preferably provided with a needle-thread cutting and nipping device traveling with the work-clamp and actuated at the completion of each group of fastening stitches by a connection with the stop-motion; while provision is made for severing the lower or shuttle-thread by a knife disposed beneath the work-holder and actuated by a connection with the interruptedly driven cam-member.

The invention will be understood by reference to the accompanying drawings, in which Figure 1 is a front side elevation, with the frame partly in section, representing a sewing machine embodying the present improvements, and Fig. 2 is a plan of the same. Fig. 2^a is a detail view of the stopping cam and the upper portion of the coöperating plunger-bar. Fig. 3 is a rear side elevation of the machine, and Fig. 4 is a bottom plan thereof. Fig. 5 is a plan of the forward portion of the bed-plate of the machine and certain of the parts, including the work-clamp, carried thereby, and Fig. 6 is a front end elevation of the machine with certain parts, including the bracket-arm, in transverse section. Fig. 7 is a bottom plan, Fig. 8 a side elevation, and Fig. 9 a longitudinal sectional elevation of the tape-guide and the feeding device, and Fig. 10 a view of the delivery end of the tape-guide. Fig. 11 is a perspective view of the tape-feeding element and its carrier. Fig. 12 is a perspective view of a portion of the needle-frame controlling device. Fig. 13 is a perspective view of the cam-shaft ratchet-wheel with a portion of its operating means. Fig. 14 is a perspective view of the under face of the upper work-clamping member and needle-thread cutting device with portions of their operating means. Fig. 15 is a perspective view of the under side of the work-plate and the lower-thread cutting and pull-off device sustained thereby. Fig. 16 is a perspective view of the tape-cutting device and its actuating means, and Fig. 17 a similar view of the tape-cutting shears detached from their actuating means. Fig. 18 is a perspective view of a portion of the needle-thread cutter actuating mechanism. Fig. 19 is a perspective view of a portion of the tape-feeding and work-clamp operating mechanisms. Figs. 20, 21 and 22 are perspective views of parts of the tape-feeding mechanism, and Fig. 23 is an enlarged sectional detail view representing another part of said mechanism. Fig. 24 is a sectional elevation of the tape-reel. Fig. 25 is a plan view of a piece of fabric having a section of tape or label-strip attached by means of the mechanism of the present improvement.

In general constructive features, the machine represented in the accompanying drawings is similar to that of the United States Patents No. 806,231, of December 5, 1905 and No. 885,310, of April 21, 1908, and is constructed with a frame comprising the bed-plate 1 from which rises the hollow standard 2 with lateral tubular arm 3 terminating in the head 4.

As herein represented, the stitch-forming mechanism comprises the eye-pointed needle 5 carried by the needle-bar 6 mounted in the usual horizontally swinging frame 7 and deriving its vertical reciprocating movements from a link connection 8 with a crank on the segmental disk 9 at the forward end of the main-shaft 10 which carries upon its rearward end the fast and loose grooved pulleys 11 and 12 adapted to be embraced alternately by a continuously running driving belt *b* from the source of power. The shaft 10 is formed with an actuating crank 13 connected by a pitman 14 and suitable connections beneath the bed-plate with the shuttle-actuating rock-shaft 15 having the driver 16 for imparting operative movements to the oscillating shuttle 17 mounted in the shuttle-race 18.

The main-shaft carries also an eccentric 19 embraced by the strap 20 of a pitman-rod 21 connected beneath the bed-plate with the lateral arm 22 of a rocker having a depending arm 23 carrying a ball-stud 24. The ball-stud 24 is embraced by a strap at one end of the pitman 25 whose opposite end is secured adjustably by means of the screw 26 to the segmentally grooved arm 27 of the pawl-carrying plate 28 apertured to embrace the hub portion 29 of the feed ratchet-wheel 30 (Figs. 3 and 4) which is secured by means of the fastening screw 31 and disk 32 upon the lower end of the vertical feed-wheel shaft 33. Upon the lateral extension 28′ of the plate 28 is mounted by means of the stud-pin 34 the feed-pawl 35 normally pressed in engagement with the peripheral teeth of the ratchet-wheel by means of the spring 36. Secured by means

of the screw 37 to the depending flange 1′ of the bed-plate is a plate 38 upon which is pivotally mounted by means of the screw-stud 39 the holding pawl 40 pressed by means of spring 41 into operative engagement with the ratchet-wheel 30.

Mounted upon the shaft 33 above the ratchet-wheel 30 is the feed-wheel 42 having a depending pin 43 whose reduced lower portion enters an aperture 44 of the ratchet-wheel whereby they are caused to perform step-by-step rotary movements in unison. The feed-wheel 42 is provided in its upper face with a feed cam-groove 45 entered by the roller-stud 46 upon one arm 47 of a bellcrank fulcrumed at 48 and provided with a second segmental arm 49 to which is adjustably connected one end of the link 50 whose other end is connected by means of the screw-stud 51 with the slide-block 52 moving in the slideway 53 of the bed-plate 1.

Secured by means of screws 54 within a transverse seat formed in the top of the bed-plate is a cross-plate 55 provided with a longitudinally extending slideway 56 within which is fitted the clamp slide-plate 57 which is confined within its slideway by means of the gibs 58. The slide-plate 57 is formed in its lower side with a recess 57′ entered by a projection 52′ of the slide-block 52 through which connection it derives its traveling movements from the cam-wheel 42. Upon the clamp slide-plate is secured the laterally extending base-plate 59 upon which is secured the foot 60 of the overhanging bracket 61 which supports the post 62.

Pivotally mounted upon the bracket 61 by means of the pin 63 are the depending lugs 64 of the upper clamping arm 65 upon the downwardly offset and forked forward portion of which is mounted by means of the screws 66 the substantially U-shaped clamp-check 67 having the serrated lower operative face 67′ and formed with a longitudinal recess 67″ embracing the needle-path and disposed in register with the needle-aperture 68 of the stationary needle-throat 69 which is sustained by the cross-plate 55 and affords a support upon which the work is gripped by the traveling clamp-check. The post 62 is surrounded by the usual pressure-spring 70 interposed between the nut 62′ and the top of the clamping arm 65 for normally pressing the clamp-check upon the work, and such clamping arm is provided with the backwardly projecting extension 71 by means of which the clamping arm may be rocked upon its fulcrum-pin 63 for release of the work.

The main-shaft 10 has secured thereon the bevel pinion 72 meshing with the larger bevel wheel 73 journaled upon the fixed screw-stud 74 and provided in its hub portion with the cam-groove 75 entered by the roller-stud 76 upon one arm 77 of a rocker having its hub portion 78 journaled upon the stud-screw 79 and provided with a second arm 80 upon which is secured the angular plate 81 carrying the stud-pin 82. The rocker 77, 80, derives through its described connections with the main-shaft rocking movements of one-half the frequency of the rotations of said shaft, which are communicated to the stud-pin 82.

The stud-pin 82 is normally closely embraced by the transverse middle portion of an angular slot 83 having oppositely extending clearance portions on opposite sides thereof, said slot being formed centrally of the enlarged end portion or head 84 of a link-bar 85 having secured thereto by means of screws 87 an adjustable section 86 of the bar 85 which is pivotally connected by means of the stud-screw 88 with an arm 7′ of the needle-frame 7 which is pivoted upon the center-screws 89 sustained within the head 4 of the bracket-arm.

The link-bar 85 carries intermediate its ends the roller-stud 90 which enters a longitudinal slot 91 in the outer end of the swinging lever 92 whose apertured opposite end is fulcrumed upon the stud-screw 93 tapped into the top of the bracket-arm 3. The lever 92 carries the screw-stud 94 embraced by one end of a link 95 whose apertured other end is pivotally connected by means of the ball-stud 96 with the upper end of the rock-lever 97 which is fulcrumed by means of the pin 98 upon lateral ears 99 upon the arm 3.

The upper arm of the lever 97 is provided with a socket to receive the spring 100 interposed between the same and the curb 3′ of the arm 3, whereby the nose 97′ at the lower end of the rock-lever is maintained yieldingly in engagement with the plural-stepped cam-disk 102 whose hub is secured upon the feed-wheel shaft 33 by means of the set-screw 103. The lower arm of the rock-lever 97 carries a stop-screw 104 whose operative end is adapted to contact with the seat formed therefor upon the arm 3 to determine one of the extreme positions of the rock-lever.

The periphery of the cam-disk 102 is stepped (as represented in dotted lines in Fig. 2) to form diametrically opposite longer intermediate concentric portions 102′ between which are the shorter outer and inner concentric portions 102″ and 102‴. When the nose of the rock-lever 97 engages the concentric portions 102′ of the cam-disk the lever 92 is maintained in intermediate position wherein its stud and slot connection with the link-bar 85 causes the head of the latter to be so positioned that the operative shoulders of the slot 83 embrace between them the stud-pin 82 as represented in Fig. 2, whereby the link-bar receives endwise reciprocating movements which are

transmitted through the needle-frame to the needle-bar whose lateral jogging movements cause zigzag stitching to be produced in conjunction with the normal feed of the work.

When the nose of the rock-lever 97 rides up the intermediate shoulder upon the outer cam portion 102′, the rock-lever is tilted upon its fulcrum 98 and through the link connection 95 the lever 92 is shifted toward the front of the machine. The lever 92 carries laterally with it the link-bar 85 so as to bring the lateral notch 105 in the head 84 into engagement with the stop-pin 106 tapped into the head of the fulcrum-pin 79. The encounter of the inner cam portion 102‴ by the rock-lever 97 causes the latter to act through its spring 100 to draw the lever 92 backwardly and thereby shift the link-bar 85 into its rearward position wherein the lateral notch 107 is brought into engagement with the fixed stop-pin 108 sustained by a bracket-piece 109 of the curb 3′. The notches 105 and 107 have upon opposite sides thereof the inclined cam edges 105′ and 107′ to produce flaring mouths for initial engagement of the respective stop-pins by which the link-bar 85 is caused by the one to be moved forwardly and by the other to be moved backwardly slightly beyond normal extreme jogging positions, whereby the needle when not receiving jogging movements is positioned slightly beyond and at one side or the other of the range of its jogging movements. As will be observed by reference to Fig. 2 the enlargements or clearance portions at the ends of the slot 83 and upon opposite sides of its operative walls serve to receive the stud-pin 82 in the extreme opposite positions of the link-bar 85 and to permit such stud-pin to move idly therein without effective en-engagement with the link-bar which is maintained stationary by its engagement with either of the pins 106 or 108.

The stop-motion of the present machine is of well known construction, comprising the tilting lever 110 mounted upon the fulcrum-screws 111 sustained by the machine frame and provided with an arm 112 carrying the belt-shipping fork 113. The lever 110 has journaled therein the endwise movable plunger-bar 114 adapted for engagement with the notched periphery of the stopping cam 115 in engagement with which it is pressed endwise by means of the spring 116, being thrust laterally into operative relation with said cam by means of the spring 117 interposed between the bracket-arm standard 2 and the lever 110.

The lever 110 has a forwardly extending arm 118 pivotally connected by means of the screw-pin 119 with the apertured upper end of the pull rod 120 extending downwardly through the bed-plate and laterally notched to receive the rearwardly extending arm 121 of a spring-pressed latch-lever fulcrumed beneath the bed-plate at 122 and provided with a forwardly extending arm 123 carrying the adjustable plate 124 with the lateral projection 125. The projection 125 is maintained normally in the path of movement of the tripping points 126 secured upon the feed-wheel at diametrically opposite points and adapted for engagement with the latch-lever for release of the pull-rod 120 when the stop-lever 110 is in retracted or running position to permit it to assume stopping position with the plunger-bar 114 in operative relation with the cam 115.

The needle-thread cutting and nipping device is similar in general construction to that of the said Patent No. 885,310. It comprises a cutting and nipping blade 127, preferably formed of two thin overlapping plates, secured by a fastening screw 128 upon the lower end of a rocking pin 129 journaled in a bearing boss 130 of the work-clamping foot or check 67 and provided at its upper end with the crank-arm 131. The blade 127 works within a slot 132 parallel with the work-engaging face of the foot and provided with coöperating thread-cutting and nipping shoulders.

The crank-arm 131 has pivotally attached thereto by means of the screw-pin 133 (Fig. 14) the apertured forward end of a bent rod 134 passing through an aperture in and guided by the bracket-piece 135 sustained by the clamping arm 65. The rod 134 is normally retracted to throw the blade 127 into operative or nipping and cutting position by means of the spring 136 having one end attached to the bracket-piece 135 and the other to the collar 137 upon said rod. The top of the rod 134 is provided at its rearward end with a notch 134′ adapted to be entered by the spring-pressed latch 138 pivoted by means of the screw-pin 139 within a lateral fork 140 of the clamping arm extension 71.

Slidingly mounted upon a stud-pin 141 is a sliding sleeve 142 having a lateral wing 143 affording a shoulder lying normally in the path of movement of two diametrically opposite tappet-pins 144 upon a disk 145 fixed upon and adapted to rotate with the feed-wheel shaft 33. The wing 143 is provided with a forward extension 143′ also affording an abrupt shoulder adapted for engagement with the extremity of the rod 134. The sleeve 143 is yieldingly maintained in retracted position adjacent the bracket-arm standard 2 by means of a spring 146 attached at one end to a stud 147 upon the standard and at the opposite end to a stud 148 upon the sleeve.

In the longitudinal travel of the work-clamp relatively to the needle in the production of stitches, it is requisite that the blade 127 be retracted from thread-nipping posi-

tion promptly in order to provide for the normal action of the thread-cutter at the completion of a seam of minimum length. Instead, therefore, of providing a fixed abutment for engagement with the end of the cutter-actuating rod 134 for the gradual retraction of the blade under the traveling movement of the work-clamp, the sleeve 142 is caused by engagement with one of the tappet-pins 144 to perform a rapid advance to meet the rod 134 and thrust the same forwardly in opposition to the travel of its carrying work-clamp, thereby effecting the prompt retraction of the cutter in readiness for a nipping and cutting action in which position it is retained by the snapping of the latch 138 into the notch 134′ of the rod 134.

The latch 138 has projecting from one side thereof the bent pin 149 which enters an eye 150 in the lower end of a wire 151 whose opposite end is formed with an eye through which passes the fastening screw 152 which is tapped into the tension release rock-lever 153 mounted upon a fixed fulcrum 154. The rearwardly and downwardly extending arm of the lever 153 normally rests within the range of movement of a crank-arm 155 whose hub is fixed upon the forward end of a rock-shaft 156 mounted in a bearing bracket 157 upon the bracket-arm standard 2 and having fixed upon its rearward end the hub of a laterally and rearwardly extending crank-arm 158 formed with a transverse socket 158′. The arm 158 is normally drawn down by means of a spring 159 attached to the same at one end and at the opposite end to the stop-lever 110. The socket 158′ has fitted within it a spring-pressed plunger-pin 160 adapted for engagement with a shoulder afforded by the notch 161 in the upper and rearward portion of a collar 162 secured upon the plunger-bar 114.

When the stop-lever 110 is rocked to throw the driving belt upon the fast pulley and shift the plunger-bar out of the range of action of the stopping cam 115 the collar 162 is disengaged from the plunger-pin 161, but when the stop-motion is tripped the rearward face of the collar first presses the plunger-pin backwardly, but in the depression of the plunger-bar 114 by the eccentric periphery of the stopping cam, the pin 160 snaps outwardly above the shoulder of the notch 161, and the subsequent rise of the bar 114 within the stopping notch of the cam 115 engages the collar with the pin 161 and thereby rocks the shaft 156 and with it the rock-lever 153. The rock-lever 153, by this movement, draws upwardly the wire 151 and lifts the latch 138 to disengage it from the cutter-operating rod 134, whereupon the spring 136 acts to throw such rod forwardly and cause the cutter 127 to sweep across the forward end portion of the clamp-check recess, and to thereby engage the thread leading through the same to the needle and to successively nip and sever the same within the knife-blade slot of the clamp-check.

Within a suitable transverse slideway 163 in the bed-plate beneath the cross-plate 55 is mounted a slide-bar 164 to which is secured by screws 165 the shank or stem 166 of an L-shaped spring-blade whose laterally and upwardly offset portion 167 is provided at its extremity with a knife edge adapted to contact yieldingly with the bottom of the needle-throat 69, the edge of the needle-hole 68 farthest from the knife-edge coöperates with the latter in shearing off the lower thread close to the material. This action is insured by the spring-plate 168 secured to the under side of the plate 55 and receiving between its outer end and the throat-plate the operative edge of the thread-cutting knife.

The plate 55 is formed with an extension 55′ upon which is fulcrumed by means of the stud-screw 169 one end of the pull-off lever 170 whose opposite end is formed with the curved and upwardly offset pull-off blade 171. Intermediate its ends the pull-off lever 170 is provided with a longitudinal slot 172 embracing the shank of a stud-screw 173 tapped into the slide-bar 164, whereby the movement of the slide-bar in severing the lower or shuttle-thread actuates the blade 170 for initial engagement with the thread to draw off a supply for the succeeding stitch preparatory to the severing action.

The slide-bar 164 is provided at one end with a depending stud 174 passing through an aperture beneath the bed-plate and embraced by the forked forward end 175 of a rock-lever 176 fulcrumed at 177 on the bottom of the bed-plate and having a rearwardly extending arm also provided with a fork 178 embracing a ball-stud 179 upon the lower end of the depending bent lever 180 having its hub 181 loosely mounted upon the rock-shaft 156 and provided with a lateral arm 182 to which means, hereinafter to be described, are applied for operating the lower thread pull-off and cutting device.

Secured upon the bed-plate 1 adjacent the forward and rearward edges of the same are the bearing standards 183 and 184 provided with bearing bosses in which are journaled the opposite end portions of the cam-shaft 185. This cam-shaft has secured thereon adjacent its rearward end the mutilated ratchet-wheel 186 which is provided upon one face with a projecting boss 187 upon which is fitted the apertured hub portion 188 of the radially extending pawl-carrying plate 189, which is confined thereon by means of the disk 190 secured to the boss

187. The wheel 186 is formed with segmental series of peripheral ratchet-teeth 186′ with intermediate concentric or dead portions 186″, the ratchet-teeth being normally engaged by the wedge-shaped extremity 191 of an actuating pawl 192 pivotally mounted by means of the screw-stud 193 upon the plate 189 and normally pressed upon the periphery of the ratchet-wheel by a spring 194.

At their upper extremities, the standards 183 and 184 are provided with apertured bosses to receive the cross-rod 154 upon the reduced rearward end portion of which is mounted the holding pawl 195 which is pressed in contact with the periphery of the cam-wheel by means of the spring 196.

The pawl-plate 189 carries a stud-screw 197 embraced by the apertured forward end of a link 198 which is pivotally connected by means of the screw-pin 199 with the depending arm 200 of an elbow-lever mounted upon the fulcrum-stud 201 upon the bracket-arm standard and provided with a rearwardly extending arm 202 whose laterally offset end portion 203 is provided with the ball-stud 204. The stud 204 is embraced by a strap 205 at the lower end of a pitman 206 whose opposite end is provided with a strap 207 which embraces an actuating eccentric 208 formed upon or secured to the loose belt-wheel 12.

By the means described, the acuating pawl 192 is reciprocated continuously as long as the driving belt is upon the loose pulley and while the stich-forming and feeding mechanisms remain idle, the ratchet-wheel and cam-shaft deriving therefrom step-by-step rotary movements until the pawl encounters a dead point or gap between the ratchet-teeth, when it continues to reciprocate idly or ineffectively, the holding pawl coöperating therewith in preventing retrograde movement of the ratchet-wheel.

The ratchet-wheel is provided upon its rearward face and near its periphery with the roller-studs 209 adapted for engagement with the forwardly offset extremity 210 of the forwardly extending arm 211 of a rock-lever mounted upon the fulcrum-stud 212 sustained by the standard 184 and provided with a rearwardly extending arm 213 formed at its rearward extremity with the fork 214 embracing the stud-pin 215 projecting from the collar 216 adjustably secured upon the pull-rod 120 by means of the set-screw 217. In the rotation of the ratchet-wheel, the encounter of the rock-lever arm 211 by either of the studs 209 causes the tilting of the rock-lever and the drawing down of the pull-rod 120 for shifting the stop-lever to set the stitch-forming and feeding mechanisms in operation, the pull-rod being locked in such position by the latch-lever arm 121 for subsequent automatic release by means of one of the tripping points 126 of the feed-wheel 42 or by the manually operable tripping lever 218.

The ratchet-wheel has four dead points 186″ upon which the actuating pawl 192 becomes ineffective and the ratchet-wheel ceases to move. In order to advance the ratchet-wheel to expose an adjacent series of teeth to said pawl, auxiliary actuating means are provided.

Loosely mounted upon the exterior of the bearing boss 184′ of the standard 184 is the apertured hub 219 of a swinging arm 220 carrying at its outer end the pin 221 upon the reduced inner end of which is mounted the auxiliary feed-pawl 222 pressed upon the periphery of the ratchet-wheel by means of the spring 223. The arm 220 has projecting from its inner face adjacent its hub the studs 224 adapted for engagement respectively with the parts of the standard 184 above and below its bearing boss to limit the operative movements of said arm which is normally maintained in its upper position by means of the spring 225 of which one end is connected with the apertured extremity of the pin 221 (Figs. 3 and 13) and the other end is attached to a stud 226 projecting from a bracket-plate 227 secured upon the bracket-arm standard.

The outer end of the arm 220 is connected with one end of a link 228 whose opposite end is pivotally attached to a swinging arm 229 fulcrumed upon the screw-stud 230 tapped into the bracket-arm 3 and carrying upon its inner face the roller-stud 231 intermediate its ends. The stud 231 is adapted for engagement with either of the cam projections 232 upon the lower face of the cam-disk 102 rotating with the feed-wheel, whereby the arm 220 is automatically turned upon its fulcrum and the auxiliary pawl 222 moved in opposition to the spring 225 a distance exceeding the length of one of the dead-points 186″ for exposure of a new series of ratchet-teeth to the action of the actuating pawl 192. To initiate the operation of the cam-shaft, the rearwardly extending portion of the pin 221 may be drawn down by the hand of the operator or by means of a suitable connection with a treadle below the base of the machine to impart an operative movement to the auxiliary pawl 222.

Loosely mounted upon the bearing boss 184′ is the hub 233 of a depending arm 234 having an inwardly extending finger 235 with the outer portion of its lower face flattened at 235′ and adapted for movement intermediate the periphery of the ratchet-wheel and the curved adjacent edge of the actuating pawl 192. The arm 234 is provided with a knob 236 by which it may be shifted. The finger 235 is yieldingly embraced by pockets 237 formed in a spring

238 secured upon the foot of the standard 184 and adapted to maintain the arm 234 in either of two positions wherein the finger 235 is respectively retracted from the pawl 192 (as represented in Fig. 3) or its engagement therewith for maintaining it disengaged from the ratchet-wheel. The object of this device is to enable the attendant to insure against the accidental starting of the mechanism by actuation of the auxiliary pawl 222 when the use of the machine is to be discontinued for any length of time, as at the end of a day's work.

The cam-shaft 185 has fixed thereon the cam-disk 239 having in opposite faces respectively the tape-cutter actuating cam-grooves 240 and 241 and the cam-disk 242 formed in its opposite faces with the cam-grooves 243 and 244 for actuating respectively the work-clamp operating means and lower thread cutting device and the label-tape feeding device. The hub of this cam-wheel has also adjustably applied to its inner face by means of the fastening screw 245 the circularly adjustable cam-disk 246 having the projecting nose 247 for depressing the tape-guiding channel.

The cam-disk 239 has a peripheral groove in which is fitted the brake-band 248 comprising sections having hooked adjacent extremities connected together by means of the spring 249 and opposite eyed extremities which are secured together by means of the stud-screw 250 tapped into the lateral lug 227′ of the bracket-plate 227. The brake-band serves to prevent overthrow of the cam-shaft under the action of the actuating pawl 192 upon the ratchet-wheel 186.

Upon the overhanging portion of the bracket 61 is secured a laterally extending plate 251 (Figs. 1 and 23) to which is secured by means of screws 252 a lateral flange 253 of the tubular bearing sleeve 254 in which is fitted the tape-feed shaft 255 disposed parallel with the direction of feed of the work-clamp. This shaft has journaled thereon near its forward end a sleeve 256 formed with the lateral flange 257 and having rigidly fastened to its flattened lower side by means of screws 258 the plate 259 formed at one edge with the depending rib 260.

The ribbed edge of the plate 259 is embraced by the U-shaped tape-guiding channel-member 261 having the upper limb thereof secured by screws 262 upon the top of said plate. The plate 259 is formed intermediate its ends with a transverse aperture 263 and is provided at the edges thereof with a transverse guideway to which are fitted the edges of a slide-plate 264 having a rigid connection extending through said aperture with the laterally adjustable tape-guiding channel-member 265 constituting in conjunction with the member 261 a channel to receive and guide the tape between the upper work-clamping member 67 of the traveling work-holder and the throat 69.

Secured by means of screws 266 upon the upper limb of the channel member 261 overlapping the plate 259 is a strap 267 arched to embrace the adjusting screw 268 provided with the knurled head 269 and having thereon the flange 270 embraced within a slot formed in said strap by means of which said screw is held against endwise movement within its bearing afforded by the strap. The screw 268 is fitted within a threaded aperture of a block 271 formed upon the slide-plate 264. By the means described, the channel-member 265 may be adjusted toward and from the channel-member 261 by turning the adjusting screw 268 by means of its knurled head, so as to receive and guide the edges of tapes of different widths.

Secured upon the top of the flange 257 by the screw 272 is an arched plate 273 extending forwardly above the sleeve 256 and having in its downwardly inclined forward portion the transverse guide-slot 274 through which the tape is led into the mouth of the guide-channel. Secured adjustably in position upon the plate 251 by means of screws 275 is a bracket-plate 276 upon which is mounted by means of the clamp-srcew 277 a supporting plate 278.

Upon the plate 278 is pivotally secured by means of the screw 279 one end of a lateral flange 280 of the stationary reel-disk 281, said flange being provided with a transverse slot 282 to receive the shank of a screw 283 tapped into the plate 278 and having interposed between its head and the flange a washer 284, whereby the lateral position of the reel-disk may be adjusted relatively to the guide-aperture 274 of the plate 273. The disk 281 is provided with a reel-pin 285 upon which is mounted the loose reel-disk 286 which is normally pressed upon the reel of tape t sustained by the pin 285 by means of a spring 287 surrounding said pin and interposed between the disk 286 and a nut 288 applied to the threaded outer portion of such pin.

The plate 259 has at one side a thickened portion 289 formed in its lower face with a longitudinal channel closed upon the bottom by means of the plate 290. Within such channel is fitted the slide-bar 291 having at one end a cross-member 292 provided with a forked extremity in which is pivoted by means of the pin 293 a tongue 294 at the rearward end of the tape-feeding arm 295 formed with the serrated operative face 296. Upon the cross member 292 is secured by screws 297 a flat spring 298 bearing upon the arm 295 and adapted to press it upon the upper wall of the tape-channel afforded by the bottom of the plate 259.

The spring 298 has a perforated lug 299

to which is attached one end of a spring 300 whose opposite end is attached to a hooked lug 301 projecting from the plate 290, by means of which the slide-bar 291 and its attached feeding element 295 are normally retracted. A feeder lifting pin 302 projects inwardly from the bottom of the channel member 261 for engagement with the arched under face of the arm 295, by means of which the feeder in its retractive movement is disengaged from the tape intermediate the same and the plate 259. The end of the slide-bar opposite the feeder is formed with a lug 303 for engagement by each of a series of radial tappet-arms 304 projecting from a collar 305 fixed upon the forward end of the tape-feed shaft and provided with a knurled head 306 by means of which said shaft may be manually turned. The intermittent rotation of the shaft effects the engagement of the arms 304 successively with the lug 303 to move the feeding element 295 for advance of the tape through its guide-channel.

The delivery end of the tape-channel is normally maintained elevated above the lower work-clamping member and beneath one side of the clamp-check by means of a spring 307 connected at one end to an eye 308 upon the flange 257 and at the other end to an eye 309 extending from the end of the tape cutter rock-shaft 310 journaled in the lower portion of the bracket-arm head 4. The tape-channel is adapted to be depressed in opposition to said spring by the closing of the work-clamp, or in advance thereof by engagement wth the flange 257 of the forwardly extending arm of a rock-lever 311 fulcrumed by means of the stud-screw 312 upon an upwardly projecting lug 313 of the bracket-plate 276. The rearward arm of the lever 311 extends within the range of movement of and is adapted for engagement with the cam 246 upon the shaft 185 by means of which it is tilted once for each rotation of said cam-shaft to depress the mouth of the tape-channel in advance of the closing of the work-clamp.

The shaft 255 is confined against endwise movement within its bearing 254 moving with the work-clamp between a spacing ring 314 interposed between the sleeve 256 and said bearing and a collar 315 secured thereon by means of a set-screw 316. The rearward portion of this shaft is reduced in diameter and provided with the feather 317 and has slidingly fitted thereon the bushing 318 formed with the key-way 319 embracing said feather and with the annular flange 320.

Upon the bushing 318 is loosely mounted the collar 321 formed in one end with peripheral notches 322 to afford ratchet-teeth, adjacent which it has a boss 323 of smaller diameter with its extremity abutted against the bushing flange 320. The collar 321 is secured upon the bushing 318 by means of a fastening screw 324 passing through an aperture 325 in said collar and entering the threaded aperture 326 in said bushing. The collar 321 is further provided with the angular groove 327 for reception of a holding fork 328 formed upon the plate 329 which is secured by screws 330 upon the foot of the bearing standard 183 by means of which the collar 321 and the attached bushing 318 are maintained against travel with the shaft 255 and its supporting work-clamp.

Mounted loosely upon the boss 323 intermediate the body of the collar 321 and the flange 320 of the bushing 318 is a pawl-carrying plate 331 carrying the screw-pin 332 upon which is mounted the pawl 333 pressed yieldingly in engagement with the adjacent portion of the periphery of the sleeve 321 for engagement of its ratchet-teeth by means of the spring 334 (Figs. 1, 6 and 19 to 22 inclusive.) The plate 331 carries the screw-stud 335 embracing the lower apertured end of a link 336 whose apertured upper end embraces a ball-stud 337 upon the lateral arm 338 of a rock-lever fulcrumed upon the stud-screw 339 tapped into the bearing standard 183 and provided with an upwardly extending arm 340 carrying a roller-stud 341 entering the cam-groove 244 of the cam-disk 242.

The tape-feed shaft 255 receives through the described connections step-by-step rotary movements which are transmitted by the tappet-arms 304 to the tape-feeder 295. As represented more particularly in Figs. 1 and 23, the sleeve 254 is formed with a notch in its upper side to expose the top of the shaft 255 upon which is placed a friction-pad 342, of soft material such as raw hide, which is pressed thereon by means of a strap 343 terminating in lateral ears which are drawn together by means of the clamp-screw 344 (Figs. 1 and 23), so as to impose a yielding and regulated pressure upon the pad 342 to produce sufficient friction upon the shaft to prevent overthrow under the action of its actuating ratchet mechanism.

The cam-groove 243 of the disk 242 is entered by a roller-stud 345 carried by the upwardly extending arm 346 of an elbow-lever mounted upon the fulcrum-stud 347 sustained by the bearing standard 183 and having a lateral arm 348 carrying the roller-stud 349 adapted for engagement with the clamp-arm extension 71. The rocking of this elbow-lever by the action of the cam element 243 obviously causes the tilting of the clamp-arm 65 and the opening and closing of the work-holder for introduction, shifting and removal of the work.

The arm 348 of the elbow-lever is pro-

vided with a stud 350 in which is tapped the shank of the ball-stud 351 embraced by the apertured lower end of the twisted link 352 pivotally connected at its upper end by means of the screw-pin 353 with the arm 182 projecting from the hub 181 mounted upon the rock-shaft 156. Through the connections thus described, the elbow-lever 346 348 is caused to impart operative movements to the bent lever 180 from which are derived the operative movements of the lower-thread pull-off and cutting elements 171 and 167, respectively.

The rock-shaft 310 has fixed upon one end the depending arm 354 upon which is rigidly secured by means of screws 355 the lower blade 356 of the tape-cutter whose upper blade 357 is pivotally mounted upon said lever by means of the screw-pin 358 intermediate the hub of which and the blade is interposed the flat spring 359 by means of which the pivoted blade is pressed into shearing relation with the rigid blade. The knife-blade 357 is constructed with an angularly extending arm 360 formed with the segmental cam-slot 361 concentric with the rock-shaft 310 when the cutter is open, as represented in Figs. 16 and 17.

Upon the end of the rock-shaft 310 opposite the arm 354 is fixed the hub of a crank-arm 362 pivotally connected with one end of a link 363 whose opposite end is pivotally attached to a swinging arm 364 which is fulcrumed upon the cross-pin 154 and carries a roller-stud 365 entering the cam-groove 241 of the cam-disk 239. The swinging movements imparted by the cam element 241 to the arm 364 obviously communicate to the tape-cutting elements through the described connections bodily movements in a direction inclined to the operative faces of the work-clamping elements and toward and from the needle-path in a direction crosswise of the tape-guiding channel.

The lower center-screw 89 for the needle-frame 7 has rigidly connected therewith the flat bearing plate 366 arranged parallel with the path of movement of the swinging arm 354 and provided in one face near the upper edge with a slideway 366′ which is closed laterally by a cover-plate 367. Within the slideway of the bearing plate is fitted the slide-bar 368 carrying upon one face the roller-stud 369 passing through a clearance slot 370 therefor in the bearing plate and entering the cam-slot 361 of the knife-arm 360. The slide-bar 368 is connected by means of the link 371 with a stud 372 upon the lower end of a swinging arm 373 which is fulcrumed upon the cross-rod 154 and carries a roller-stud 374 entering the cam-grove 240 of the cam-disk 239. The swinging movement of the arm 373 transmits through its described connections with the roller-stud 369 and arm 360 operating movements to the upper knife-blade for opening and closing the cutter when swung into operative position by the operative movements of the supporting arm 354.

The cutter remains open while in retracted position, as represented in Figs. 3 and 16, and also while advancing to operative position within the longitudinal recess 67 of the clamp-check where it is closed upon the tape and again opened before retiring to initial position. In order to prevent the catching of the points of the shear-blades upon a body fabric to which the label-tape is applied, the bearing plate 366 has secured thereto by means of fastening screws 375 and 376 a depending bent wire shield 377 shaped at the forward end to avoid the clamp-check in its opening and closing movements and rearward thereof to conform substantially with the curved path of movement of the lower shear-blade.

Upon the rear face of the bracket-arm head 4 is the usual stud 378 to which are applied the separable tension-disks 379 pressed together by means of the spring 380 interposed between the outer disk and the nut 381 applied to the threaded outer portion of the stud 378. The down-turned outer extremity of the rock-lever 153 is wedge-shaped, and in the rocking of the lever in opposition to its spring 153′ under the action of the stop-motion device the tension-disks are automatically separated in a well-known manner as represented in Fig. 2, to relieve the tension upon the needle-thread.

The machine is represented in Figs. 1 to 6 of the drawings with its operative parts in the positions which they assume at the completion of a stitching operation, the driving belt embracing and imparting rotary movement to the loose pulley-wheel 12 from which the actuating pawl 192 derives its normal reciprocatory movements, the work-clamp being open to receive the work, the feed-claw occupying its advance position wherein the cut end of label-tape *t* is extended within the range of lateral jogging movement of the needle, and the tape-cutter is retracted. In this initial position of the parts, the cam-shaft 185 is at rest, the point of the actuating pawl 192 moving idly upon one of the dead-points 186″ intermediate the interrupted series of teeth 186′ of the ratchet-wheel 186.

The garment or other body fabric *m* being interposed between the upper and lower members of the work-clamp beneath the mouth of the tape-guide, the pin 221 is manually drawn down in opposition to the spring 225, thereby advancing the ratchet-wheel by the action of the auxiliary pawl 222 and causing it to be picked up by the actuating pawl 192 for continuous step-by-

step movement until the encounter by said pawl of a succeeding dead-point 186''. The partial rotation of the cam-shaft thus effected causes the lowering of the clamp-check upon the work, depressing with it the delivery end of the tape-guide channel, by means of the described connections with the cam-groove 243.

Immediately after the clamping of the work, the engagement of one of the roller-studs 209 upon the ratchet-wheel with the forward arm of the rock-lever 211 213 causes the shifting of the stop-lever 110 to throw the driving belt from the loose to the fast pulley and the disengagement of the plunger-bar 114 from the cam 115, thereby initiating the stitch-forming and feeding operations, the actuating pawl 192 thus coming to rest while engaging one of the dead points 186''. The arrest of the ratchet-wheel 186 occurs just as the stud 209 reaches the outer extremity of the rock-lever arm 211.

In the advance of the work-holder under the action of the feed-cam 42 a line of zigzag stitches *s* is formed through the body fabric and over the initial end of the label-tape, as indicated at the left in Fig. 25, at the end of which and prior to the retrograde feeding movement, the shift-cam 102 causes the lateral throw of the link-bar 85 toward the stop-pin 106 whose engagement with the inclined edge 105' of the notch 105 causes the link-bar to move slightly forward of its extreme inner jogging position, whereby in the succeeding retrograde feeding movement a line of straightaway stitches *s'* is laid inside of the edge-covering zigzag-stitch seam, the two lines being connected by an intermediate cross-stitch resulting from the final auxiliary shift of the needle-bar to straightaway stitching position, as represented at the left in Fig. 25.

In the rotation of the cam-wheel 102 with the feed-wheel, one of the cam-projections 232 thrusts downwardly the arm 229 and thereby acts through the auxiliary pawl 222 to advance the feed-wheel sufficiently not only to expose to the action of the pawl 192 a new series of ratchet-teeth, but to carry the roller-stud 209 beyond the extremity of the rock-lever arm 211 so as to free the stop-motion for the subsequent tripping action at the completion of the stitch-forming cycle.

At the end of the straightaway stitching operation, one of the tripping points 126 upon the feed-wheel 42 tilts the latch-lever 121 123 and thus effects the release of the pull-rod 120 which causes the movement of the stop-lever 110 under the action of the spring 117 for arrest of the main-shaft 10, the driving belt being returned to the loose pulley which resumes its rotation. The rise of the plunger-bar 114 within the peripheral notch of the stopping cam 115 acts through the described connections to lift the crank-arm 155 for tilting the rock-lever 153 to open the tension device and simultaneously lift the connected latch 138 for disengagement from the rod 134 and consequent actuation of the nipping and cutting blade 127 by the spring 136 in nipping and severing the needle-thread.

The further partial rotation of the cam-shaft under the action of the pawl 192 upon the ratchet-wheel 186 causes the lifting of the clamp-check 67 and simultaneous actuation of the lower-thread pull-off and cutter by reason of their respective connections with the cam element 243, the tape-feeder 295 being at this time retracted and disengaged from the tape by contact of the inclined under face of the element 295 with the lifting pin 302. The cam-shaft thereupon comes to rest by reason of the encounter of a dead point 186' by the actuating pawl 192.

The work-clamp now being open and the tape *t* being freely movable, the work is shifted by the operator transversely of the direction of feed and away from the mouth of the channel to a point wherein the usual division line between the adjacent sections of tape is within the plane of action of the tape-cutter, whereupon the pin 221 is again depressed for the second stage of the label-fastening operation. While the tape-reel is represented in the drawings as sustained by the traveling work-holder so as to permanently maintain its operative relation with the tape-guide, it will be readily understood that such reel may be supported by a pin extending from the bracket-arm head, as is common to machines for stitching tapes to fabrics. The tape-cuttting shears now move forwardly and downwardly for engagement of the lower cutter-blade 356 with the lower face of the tape extending from the mouth of the tape-guide-beneath the clamp-check. In the advance of the downwardly inclined blade into cutting position, the tape is lifted slightly above the lower face of the clamp-check, in case the latter in its elevated position is below the cutting edge of said blade when in operative position. The unsevered tape, which has been previously fastened to the work at its initial end, is now severed by the closing of the upper cutting blade upon the lower blade.

While the cutter-blades remain closed, or at least before their retraction from cutting position, the lever 311 is tilted by engagement therewith of the nose 247 of the cam 246 so as to depress the mouth of the channel, thereby moving the cut extremity of the body-tape downwardly around the tape-feed shaft 255 as a fulcrum in an arc inclined to the direction of the needle-thrusts, which effects a slight retraction of such extremity

clear of the needle-path. The clamp-check is immediately lowered and seated upon the severed tape-section, with the adjacent end of the body-tape thus slightly retracted therefrom, but sufficiently to remain out of the range of action of the stitch-forming mechanism in the succeeding stitching operation. The cutter-blades having been opened and retracted to initial position, the stop-motion is a second time actuated by the second of the roller-studs 211 to set the stitch-forming and feeding mechanisms in action for the final stitching period.

The operation of the stitch-forming and feeding mechanims now causes the production of a line of zigzag fastening stitches *s* embracing the second end of the tape-section or label *t'*; but by the shifting of the link-bar 85 into engagement with the stop-pin 108, and its slight endwise retractive movement by engagement of such pin with the inclined edge 107' with the notch 107, the needle is thrown inwardly beyond the zigzag stitches, whereby a connected transverse line of straightaway stitches *s''* is formed slightly spaced from the stitches *s*, as represented at the right in Fig. 25. The severed tape-section or label, as thus secured to the body-fabric, is shown and described more fully in the Patent No. 1,115,649, of November 3, 1914, to Edward B. Allen.

At the completion of this second stitching operation, the stop-motion is tripped to arrest the stitch-forming and feeding mechanisms, the needle-thread being simultaneously cut and the tension released as before. The ratchet-wheel 186 is again picked up by the actuating pawl 192 and the rotation of the cam-shaft resumed, the clamp-check being thereafter lifted and the lower thread cut through the operation of the cam element 243, after which the tape-feeder 295 is actuated through its connection with the cam-groove 244 to advance the cut end of the body-tape across the range of movement of the stitch-forming mechanism, the cam-shaft thereafter coming to rest by reason of the encounter of a final dead-point 186'' of the ratchet-wheel 186 by the still reciprocating pawl 192, thus completing a full rotation of the controlling cam-shaft.

It is to be understood that in the complemental partial rotations of the feed-wheel shaft 33 within a complete cycle of operation of the machine the cam-disk 102 exposes to the nose 97' of the rock-lever 97 one or the other of the intermediate concentric segments 102' at the completion of each stitching operation, thereby causing the link-bar 86 to assume its normal intermediate position wherein the actuating stud-pin 82 is embraced between the transverse walls of the slot 83. In this return movement from either extreme position, the link-bar is shifted from straightaway stitching position by the camming action of the rounded pin 82 upon the adjacent angle in the wall of the slot 83.

Beneath the clamp-arm extension 71 is disposed a bearing bracket 382 sustained by the bed-plate and provided with the fulcrum screw-stud 383 upon which is mounted the stop-arm 384 having connected to a lateral lug 385 thereof one end of a link 386 whose opposite end is attached by means of a screw-pin 387 to a lateral stud upon the stop-lever 110. As represented in Fig. 1, the lever 110 is in stopping position wherein the plunger-bar 114 is in engagement with the cam 115 and the stop-arm 384 is in its forwardly inclined position wherein it is out of operative relation with the clamp-arm extension 71; but while the stop-lever 110 is in running position to maintain the plunger-bar 114 out of the range of action of the cam 115, the stop-arm 384 automatically assumes, through its connection with the stop-lever, the position represented in dotted lines in said figure, wherein it effectively prevents the accidental lifting of the clamp-check while the stitching is in progress.

Heretofore, all attempts to handle a label tape by machine have been seemingly prohibitively defective in the absence of provision for forming label sections not only of different normal lengths but involving variations in length of consecutive label sections woven in or printed upon a continuous body tape, these variations being due, among other things, to atmospheric conditions involving the stretching or shrinking of the tape in the process of manufacture. According to the present improvement in one of its chief characteristics, the presenting of the label to the stitch-forming mechanism and the actual stitching operation are performed automatically, excepting in the determination of the length of each particular label section severed from the body tape, which is effected by the manual shifting of the garment or body fabric having one end of the advance label section stitched thereto, thereby insuring that the division line between such section and the one succeeding it may be brought exactly into stitching position, regardless of variations in the lengths of the individual sections due to defects in the manufacture of the label tape.

It is of course unessential, in the broader aspect of the present invention, that the cutting of the tape be effected actually within the range of action of the stitch-forming mechanism, for the reason that in case the severing should be performed otherwise and before the manual shift of the work, the second end of the tape could be as readily positioned manually to receive the second group of fastening stitches.

While it is preferable, to insure speed in

the handling of the work, to employ a cam-member operative while the stitch-forming and feeding mechanisms are inactive, in order to automatically open and close the work-clamp, operate the tape-cutter and retract the cut end of body tape, the present invention includes within its scope means for effecting manually these operations intermediate stitching periods.

Having thus set forth the nature of the invention, what we claim herein is:—

1. In a sewing machine, the combination with stitch-forming mechanism, feeding mechanism including a traveling work-holder, and controlling means whereby said stitch-forming and feeding mechanisms are maintained in operation for predetermined periods for production of independent groups of stitches, of a tape-guide disposed adjacent and directed toward said work-holder, a cam member, actuating means for imparting thereto operative movements including excursions from an initial position each embracing a plurality of stitching periods including interrupted groups of stitch-forming cycles, an operative connection between said cam member and the controlling means for setting the stitch-forming and feeding mechanisms in operation, and an operative connection between said cam member and the work-holder for opening said holder intermediate said stitching periods to permit the manual shift of the work with an attached tape preparatory to the succeeding stitching period.

2. In a sewing machine, the combination with stitch-forming mechanism, feeding mechanism including a traveling work-holder, and controlling means whereby said stitch-forming and feeding mechanisms are maintained in operation for predetermined periods for the production of independent groups of stitches, of a tape-guide disposed adjacent and directed toward said work-holder, a tape-cutting device, a cam member, actuating means for imparting thereto operative movements including excursions from an initial position each embracing a plurality of stitching periods including interrupted groups of stitch-forming cycles, an operative connection between said cam member and the controlling means for setting the stitch-forming and feeding mechanisms in operation, means including an operative connection between said cam member and the work-holder for opening and closing said holder intermediate said stitching periods to permit the manual shift of the work with an attached tape after an initial stitching period, and actuating means for imparting to said cutting device operative movements to cut the tape intermediate the opening and closing movements of the work-holder.

3. In a sewing machine, the combination with stitch-forming mechanism, feeding mechanism including a traveling work-holder, and controlling means whereby said stitch-forming and feeding mechanisms are maintained in operation for predetermined periods for the production of independent groups of stitches, of a tape-guide disposed adjacent and directed toward said work-holder, a tape-cutting device, a cam member, actuating means for imparting thereto operative movements including excursions from an initial position each embracing a plurality of stitching periods including interrupted groups of stitch-forming cycles, an operative connection between said cam member and the controlling means for setting the stitch-forming and feeding mechanisms in operation, and operative connections between said cam member and the tape-cutting device and the work-holder, respectively, for opening said holder intermediate said stitching periods to permit the manual shift of the work with an attached tape after an initial stitching period, for actuating the tape-cutting device to sever the tape, and to thereafter close said holder preparatory to the succeeding stitching period.

4. In a sewing machine, in combination, stitch-forming mechanism, a tape-guide directed toward the range of action of the same, feeding mechanism including a work-holder with means for imparting thereto consecutive rectilinear feeding movements in the same direction and transversely of the tape-guide, controlling means whereby said stitch-forming and feeding machanisms are maintained in operation for predetermined periods for production of interrupted groups of stitches, a cam member, actuating means for imparting thereto operative movements, a connection between said cam member and the controlling means for setting the stitch-forming and feeding mechanisms in operation successively during each excursion of said cam from an initial position, and means for opening said work-holder intermediate the periods of action of the stitch-forming and feeding mechanisms to permit the shifting of the work after an initial stitching period and thereafter closing the same for the succeeding stitching period.

5. In a sewing machine, in combination, stitch-forming mechanism, a tape-guide directed toward the range of action of the same, a tape-cutting device adapted for operation adjacent the stitch-forming mechanism, feeding mechanism including a work-holder with means for imparting thereto consecutive rectilinear feeding movements in the same direction and transversely of the tape-guide, controlling means whereby said stitch-forming and feeding mechanisms are maintained in operation for predetermined

periods for production of interrupted groups of stitches, a cam member, actuating means for imparting thereto operative movements, a connection between said cam member and the controlling means for setting the stitch-forming and feeding mechanisms in operation successively during each excursion of said cam from an initial position, means for opening said work-holder intermediate the periods of action of the stitch-forming and feeding mechanisms to permit the shifting of the work after an initial stitching period and thereafter closing the same for the succeeding stitching period, and means for actuating the tape-cutting device between the opening and closing of the work-holder.

6. In a sewing machine, in combination, stitch-forming mechanism, a tape-guide directed toward the range of action of the same, a tape-cutting device comprising coacting elements bodily movable crosswise of the tape-guide into and out of but normally retracted from the range of action of the stitch-forming mechanism, feeding mechanism including a work-holder with means for imparting thereto consecutive reciprocal rectilinear feeding movements in the same direction and transversely of the tape-guide, controlling means whereby said stitch-forming and feeding mechanisms are maintained in operation for predetermined periods for production of interrupted groups of stitches, a cam member, actuating means for imparting thereto operative movements, a connection between said cam member and the controlling means for setting the stitch-forming and feeding mechanisms in operation successively during each excursion of said cam from an initial position, means for opening said work-holder intermediate the periods of action of the stitch-forming and feeding mechanisms to permit the shifting of the work after an initial stitching period and thereafter closing the same for the succeeding stitching period, and means operative intermediate the opening and closing of the work-holder for advancing the cutting device into the range of action of the stitch-forming mechanism, then operating it to sever the tape and finally moving it to retracted position.

7. In combination, a sewing machine frame, a shaft journaled therein, driving means applied to said shaft, stitch-forming mechanism, means for periodically connecting it with said driving means with intermediate periods of disconnection, a cam-element, actuating means by which said cam-element is connected with the driving means independently of and alternately with the connection of the stitch-forming mechanism therewith, a tape-guide directed toward the range of action of the stitch-forming mechanism, a work-holder, a tape-cutting device adjacent thereto, and independent connections between the cam-element and the work-holder and tape-cutting device, respectively, whereby said holder is opened, the cutter is actuated, and the holder is reclosed intermediate consecutive stitching periods.

8. In a sewing machine, in combination, stitch-forming mechanism, a traveling work-holder having a recess formed transversely of its direction of travel, a tape-guide directed toward said work-holder, a tape-cutting device comprising coacting elements bodily movable into and out of said recess of the work-holder and transversely to its direction of travel, and actuating means for said cutting device whereby it is caused to move from initial retracted position into the recess of the work-holder, to perform its tape-severing operation and to return to retracted position during an interval of rest of the work-holder.

9. In a sewing machine, in combination, stitch-forming mechanism, a traveling work-holder having a recess formed transversely of its direction of travel, means for imparting interrupted traveling movements to the work-holder, a tape-guide directed toward said work-holder, a tape-cutting device comprising coacting elements bodily movable into and out of said recess of the work-holder and transversely to its direction of travel, and actuating means for said cutting device whereby it is caused to move from initial retracted position into the recess of the work-holder, to perform its tape-severing operation and to return to retracted position during an interval of rest of the work-holder.

10. In a sewing machine, in combination, stitch-forming mechanism, a traveling work-holder having a recess formed transversely of its direction of travel, means for imparting interrupted traveling movements to the work-holder, means for opening and closing the work-holder during the interruption of its travel, a tape-guide directed toward said work-holder, a tape-cutting device comprising coacting elements of which one is bodily movable into and out of said recess of the work-holder and transversely to its direction of travel, and actuating means for said cutting device whereby it is caused to move from initial retracted position into the recess of the work-holder, to perform its tape-severing operation and to return to retracted position during an interval of rest of the work-holder and while the latter remains open.

11. In a sewing machine, in combination, stitch-forming mechanism, a traveling work-holder, means for imparting thereto interrupted traveling movements, means for opening and closing the work-holder during the interruption of its travel, a tape-guide directed toward said work-holder, a tape-

cutting device comprising coacting elements bodily movable into and out of tape-severing position with one of its cutting edges moving intermediate the planes of the work-engaging faces of the work-holder, and actuating means for imparting to the operative elements of the tape-cutting device bodily movements toward and from cutting position and closing movements intermediate the same.

12. In a sewing machine, in combination, stitch-forming mechanism, work-holding means comprising a work-support and a cooperating clamping member, means for imparting interrupted traveling movements to the work through said holding means, means for raising and lowering said clamping member during the interruption of the travel of the work, a tape-guide directed toward the stitch-forming mechanism with its mouth arranged above the face of said work-support, a tape-cutting device comprising coacting elements bodily movable into and out of cutting position adjacent and above said work-support, and actuating means for imparting to said cutting device to-and-fro bodily movements and cutting movements for severing a tape intermediate the operative faces of said work-support and clamping member.

13. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods for production of independent groups of stitches, a cam member, tape-presenting means carried by said work-holder, actuating means for said cam member, connections between said cam member and said controlling means whereby the stitch-forming and feeding mechanisms are set in operation, and a connection between said cam member and said work-holder whereby the latter is opened and closed between stitching periods.

14. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods for production of independent groups of stitches, a cam member, tape-presenting means carried by said work-holder, actuating means for said cam member, connections between said cam member and said controlling means whereby the stitch-forming and feeding mechanisms are set in operation, a connection between said cam member and said work-holder, and manually actuated means for setting said cam member in operation.

15. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods for production of independent groups of stitches, tape-presenting means carried by said work-holder and including a guide-channel directed toward said work-holder and means for adjusting the width of said guide-channel, a cam-member, actuating means therefor, connections between said cam-member and said controlling means for initiating the operation of the stitch-forming and feeding mechanisms, and a connection between said cam-member and work-holder for effecting the opening and closing of the latter between stitching periods.

16. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, a tape-guide directed toward said work-holder, a tape-cutting device, and controlling means whereby the work-holder is closed upon the work, a group of stitches is produced and the work-holder is thereafter opened to permit the shift of the work, after which the cutter is actuated, the work-holder closed, a second group of stitches is produced and the work-holder finally opened.

17. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, a tape-guide directed toward said work-holder, a tape-cutting device, controlling means whereby the work-holder is closed upon the work, a group of stitches is produced and the work-holder is thereafter opened to permit the shift of the work, after which the cutter is actuated, the work-holder closed, a second group of stitches produced and the work-holder finally opened, automatically acting driving means for said controlling means with provision for rendering them ineffective at the completion of each stitch of a cycle of operation terminating with the opening of the work-holder succeeding a stitching period, and manually operated means for rendering said actuating means again effective.

18. In a sewing machine, in combination, a shaft, fast and loose pulleys mounted thereon, a driving belt, means for shifting it from one to the other of said pulleys, stitch-forming mechanism, feeding mechanism including a traveling work-holder, operative connections between said stitch-forming and feeding mechanisms and said shaft, a cam-member, driving means therefor connected with said loose pulley, and an operative connection between said cam-member and the work-holder whereby the latter is opened and closed intermediate operations of the stitch-forming mechanism.

19. In a sewing machine, in combination, stitch-forming mechanism, feeding mecha-

nism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a cam-member, actuating means therefor, tape-presenting means, a tape-cutting device, connections between said cam-member and said controlling means whereby the stitch-forming and feeding mechanisms are set in operation, a connection between said cam-member and the work-holder from which the latter derives opening and closing movements between stitching periods, and a connection between said cam-member and the tape-cutting device from which the latter derives operative cutting movements of less frequency than the stitching periods.

20. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a cam-member, actuating means therefor, a tape-guide directed toward said work-holder, a tape-cutting device, an operative connection between said cam-member and the tape-cutting device, and connections between said cam-member and said work-holder and tape-guide whereby the work-holder is opened and closed between stitching periods and the cut extremity of the tape presented by said guide is retracted from the severed tape section after each cutting action.

21. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a cam-member, actuating means therefor, a tape-guide directed toward said work-holder, a tape-cutting device, an operative connection between said cam-member and the tape-cutting device, and independent connections between said cam-member and the work-holder and the tape-guide, respectively, whereby the work-holder is opened and closed between stitching periods and the cut extremity of the tape presented by said guide is retracted from the severed tape section after each cutting action.

22. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a cam-member, actuating means therefor, a tape-guide sustained by and movable with said work-holder, tape-advancing means sustained by said tape-guide, an operative connection between said cam-member and the tape-advancing means, and a connection between said cam-member and the work-holder whereby the latter is opened and closed between stitching periods.

23. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a cam-member, actuating means therefor, a tape-guide sustained by and movable with said work-holder, tape-advancing means sustained by said tape-guide, a tape-cutting device, an operative connection between said cam-member and the tape-cutting device whereby the latter is actuated after each alternate stitching period, an operative connection between said cam-member and the tape-advancing means whereby the latter is actuated after the stitch-forming period next following a cutting action, and a connection between said cam-member and the work-holder whereby the latter is opened and closed preparatory to each stitching period.

24. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a cam-member, actuating means therefor, a tape-guide directed toward said work-holder, a tape-cutting device, actuating means therefor connected with said cam-member, means connected with said cam-member and acting after each tape-cutting action and before the succeeding stitching period whereby the cut end of the body tape is retracted from the severed tape-section, means connected with said cam-member for advancing the body tape intermediate said stitching period and the succeeding stitching period, and an operative connection between said cam-member and the work-holder for effecting the opening and closing of the latter preparatory to each stitching period.

25. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a cam-member, actuating means therefor, a tape-guide directed toward said work-holder, a tape-cutting device comprising coacting elements bodily movable into and out of cutting position crosswise of the direction of travel of the work-holder, actuating means for the tape-cutting device connected with said cam-member, means connected with said cam-member for effecting the retraction of the cut end of the body tape after a cutting action, means connected with said cam-member independently of the retracting means for advancing the cut end of said body-tape across the path of bodily movement of the tape-cutting device, and an operative connection between said cam-member and the work-holder for effect-

ing the opening and closing of the latter preparatory to each stitching period.

26. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a cam-member, actuating means therefor, tape-presenting means sustained by and movable with said work-holder, a tape-cutting device sustained independently of said work-holder, an operative connection between said cam-member and the tape-cutting device whereby the latter is actuated, and a connection between said cam-member and the work-holder whereby the latter is opened and closed between stitching periods.

27. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a cam-member, actuating means therefor, tape-presenting means sustained by and movable with said work-holder, a tape-cutting device comprising coacting elements sustained independently of and bodily movable relative to the travel of the work-holder, operative connections between said cam-member and the tape-cutting device whereby the latter is moved bodily into and out of cutting position and is actuated while in cutting position to cut the tape, and a connection between said cam-member and the work-holder whereby the latter is opened and closed between stitching periods.

28. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operative relation for predetermined periods for production of groups comprising series of stitches respectively of different character, a tape-guide directed toward said work-holder, means for opening and closing the work-holder after each stitching period, and means for changing the relative lateral positions of the stitch-forming mechanism and the work-holder whereby the series of stitches of the group produced in each stitching period are disposed in different relation to corresponding series of an adjacent group.

29. In a sewing machine, in combination, stitch-forming mechanism, feeding mechanism including a traveling work-holder, controlling means whereby said mechanisms are maintained in operation for predetermined periods for production of groups comprising series of stitches respectively of different character, a tape-guide directed toward said work-holder, means for opening and closing the work-holder after each stitching period, and means connected with the stitch-forming mechanism for changing the arrangement of the component series of stitches of the respective groups produced in consecutive stitching periods.

30. In a sewing machine, in combination, stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism relative feeding movements, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a tape-guide directed toward said work-holder, means for opening and closing the work-holder after each stitching period, and means whereby the needle is maintained in intermediate lateral working position during a portion of each stitching period and is shifted to opposite sides thereof, respectively, in stitching periods consecutive therewith.

31. In a sewing machine, in combination, stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism relative feeding movements, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a tape-guide directed toward said work-holder, means for opening and closing the work-holder after each stitching period, means whereby the needle is maintained in intermediate lateral working position during a portion of each stitching period and is shifted to opposite sides thereof, respectively, in stitching periods consecutive therewith, and means for imparting to the needle lateral jogging movements while in said intermediate working position.

32. In a sewing machine, in combination, stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism series of feeding movements alternately in opposite directions, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a tape-guide directed toward said work-holder, means for opening and closing the work-holder after each stitching period, and means connected with the stitch-forming mechanism for imparting to the needle lateral jogging movements during said feeding movements in one direction and for holding the same against lateral movement during said feeding movements in the opposite direction.

33. In a sewing machine, in combination,

stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism relative feeding movements, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a tape-guide directed toward said work-holder, means for opening and closing the work-holder after each stitching period, means for confining the needle in opposite extreme lateral working positions, means for imparting to the needle lateral jogging movements while in intermediate position, and means for shifting the working position of the needle from intermediate to opposite extreme positions, respectively, in successive stitching periods.

34. In a sewing machine, in combination, stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism relative feeding movements, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a tape-guide directed toward said work-holder, means for opening and closing the work-holder after each stitching period, means for imparting to the needle lateral jogging movements within an intermediate working position, means for confining the needle in opposite extreme lateral working positions at opposite sides of and beyond said intermediate working position, and means for shifting the working position of the needle from intermediate to opposite extreme positions, respectively, in successive stitching periods.

35. In a sewing machine, in combination, feeding mechanism including a traveling work-holder, stitch-forming mechanism acting in conjunction with said feeding mechanism to produce independent groups of stitches each comprising successively formed parallel lines of zigzag and straightaway stitches, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a tape-guide directed toward said work-holder, a tape-cutting device, thread-cutting means, means for opening and closing the work-clamp after each stitching period, means for actuating said tape-cutting device intermediate alternate work-holder opening and closing actions, and means for actuating said thread-cutting means at the completion of each stitching period and preparatory to the succeeding opening of the work-holder.

36. In a sewing machine, in combination, feeding mechanism including a traveling work-holder, stitch-forming mechanism including a reciprocating needle and acting in conjunction with said feeding mechanism to produce independent groups of stitches each comprising successively formed parallel lines of zigzag and straightaway stitches, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a tape-guide directed toward said work-holder, a tape-cutting device, a needle-thread cutting and nipping device, means for opening and closing the work-clamp after each stitching period, means for actuating said tape-cutting device intermediate alternate work-holder opening and closing actions, and an operative connection between said controlling means and the needle-thread cutting and nipping device whereby the latter is actuated at the completion of each stitching period.

37. In a sewing machine, in combination, stitch-forming mechanism including upper and lower thread-handling devices, feeding mechanism, controlling means for determining the period of action of said mechanisms, a cam-member, tape-presenting means carried by said work-holder, actuating means for said cam-member operative while the stitch-forming mechanism is inoperative, an upper-thread cutting device timed in its action by said controlling means, and a lower-thread cutting device operatively connected with and timed in its action by said cam-member.

38. In a sewing machine, in combination, stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism relative feeding movements, a stop-motion and actuating means therefor, and means whereby the needle is maintained in intermediate lateral working position after each actuation of the stop-motion and is shifted laterally in one direction beyond said intermediate position prior to each actuation of the stop-motion and in the opposite direction beyond said position prior to the next succeeding actuation of the stop-motion.

39. In a sewing machine, in combination, stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism relative feeding movements, controlling means whereby said mechanisms are maintained in operation for predetermined stitching periods, means whereby the needle is maintained in intermediate lateral working position during a portion of each stitching period and is shifted laterally thereof to extreme position in every stitching period but in opposite directions respectively in consecutive stitching periods, and means for

imparting to the needle lateral jogging movements intermediate the ranges of action of the needle in said extreme positions while in said intermediate working position.

40. In a sewing machine, in combination, stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism series of feeding movements alternately in opposite directions, controlling means whereby said mechanisms are maintained in operation for predetermined periods, and means connected with the stitch-forming mechanism for imparting to the needle lateral jogging movements during said feeding movements in one direction and for holding the same against lateral movement during said feeding movements in the opposite direction.

41. In a sewing machine, in combination, stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism relative feeding movements, controlling means whereby said mechanisms are maintained in operation for predetermined stitching periods, means for confining the needle in opposite extreme lateral working positions, means for imparting to the needle lateral jogging movements in intermediate position, and means for shifting the working position of the needle from intermediate to one only of said opposite extreme positions, in a given stitching period.

42. In a sewing machine, in combination, stitch-forming mechanism including a laterally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism relative feeding movements, controlling means whereby said mechanisms are maintained in operation for predetermined periods, means for imparting to the needle lateral jogging movements within an intermediate working position, means for confining the needle in opposite extreme lateral working positions at opposite sides of and beyond said intermediate working position, and means for shifting the working position of the needle from intermediate to opposite extreme positions, respectively, in successive stitching periods..

43. In a sewing machine, the combination with stitch-forming mechanism, feeding mechanism including a traveling work-holder, and controlling means whereby said stitch-forming and feeding mechanisms are maintained in operation for a predetermined period in the production of groups comprising a plurality of series of stitches of which the individual stitches of the respective series are of different character, of means for producing relative lateral shift movements between said mechanisms whereby the component series of stitches are positioned in groups arranged side by side.

44. In a sewing machine, in combination, stitch-forming mechanism, a work-holder, means for producing between them series of relative step-by-step traveling movements in opposite directions, jogging means for producing between them relative lateral jogging movements for forming a line of zigzag stitches with automatically acting controlling means for rendering the same ineffective for forming a line of straightaway stitches parallel with the first-named line of zigzag stitches, and automatically acting means for producing between them relative side-shift movements to dispose the consecutive lines of zigzag and straightaway stitches in reverse arrangement.

45. In a sewing machine, in combination, stitch-forming mechanism, a work-holder, means for producing between them series of relative step-by-step traveling movements in opposite directions, jogging means for producing between them relative lateral jogging movements during the period of said traveling movements in one direction only and ineffective during the period of said traveling movements in the opposite direction for forming consecutive lines of zigzag and straightaway stitches, and automatically acting means for producing between the stitch-forming mechanism and the work-holder relative side-shift movements to space apart said lines of zigzag and straightaway stitches and to position them consecutively in different relations.

46. In a sewing machine, in combination, stitch-forming mechanism including a reciprocating needle, a work-holder, means for imparting to the work-holder series of relative step-by-step traveling movements in opposite directions, needle-jogging means effective upon the needle during the period of traveling movements of the work-holder in one direction, controlling means for rendering said needle-jogging means ineffective during the period of traveling movements of the work-holder in the opposite direction, and automatically acting means for producing between the stitch-forming mechanism and the work-holder relative side-shift movements respectively in opposite directions succeeding consecutive periods of successive stitching periods.

47. In a sewing machine, in combination, stitch-forming mechanism including a reciprocating needle, a work-holder, means for imparting to the work-holder series of relative step-by-step traveling movements in opposite directions, needle-jogging means

effective upon the needle during the period of traveling movements of the work-holder in one direction, and controlling means for producing a side-shift of the needle to a position beyond its range of jogging movements and for thereafter rendering said needle-jogging means ineffective during the period of traveling movements of the work-holder in the opposite direction.

48. In a sewing machine, the combination with stitch-forming mechanism, feeding mechanism including a traveling work-holder, and controlling means whereby said stitch-forming and feeding mechanisms are maintained in operation for a predetermined period in the production of groups each comprising a plurality of series of stitches respectively of different character, of means for producing relative lateral shift movements between said mechanisms whereby the component stitches of the series composing the groups are positioned differently in consecutive groups, and means for cutting the thread at the completion of each group of stitches.

49. In a sewing machine, in combination, feeding mechanism including a traveling work-holder, stitch-forming mechanism acting in conjunction with said feeding mechanism to produce independent groups of stitches each comprising successively formed parallel lines of zigzag and straightaway stitches, a tape-guide directed toward said work-holder, thread-cutting means, automatically acting means for opening the work-clamp after the production of each group of stitches, and means for actuating said thread-cutting means at the completion of each group of stitches.

50. In a sewing machine, in combination, stitch-forming mechanism, automatic means for controlling its period of action, a work-holder, feeding mechanism for producing relative stitch-positioning movements between said stitch-forming mechanism and work-holder in the sewing of a group of tacking stitches, a tape-guide directed toward said work-holder, a tape-cutting device comprising coacting elements bodily movable into and out of register with said work-holder and transversely to its direction of travel, and actuating means for said cutting device whereby it is caused to move from initial retracted position into register with the work-holder to perform its severing operation and to return to retracted position during an interval of rest of the work-holder.

51. In a sewing machine, in combination, stitch-forming mechanism, a work-holder, a tape-guide formed with a channel directed toward said work-holder, feeding mechanism for producing relative traveling movements between the stitch-forming mechanism and the work-holder, means for controlling the period of operation of the stitch-forming and feeding mechanisms, said traveling movements being confined to a path transverse to said channel of the tape-guide, a tape-cutting device normally occupying a retracted position at one side of the work-holder and movable into register therewith crosswise of said channel, tape-feeding means, and means for opening and closing the work-holder after each period of operation of the stitch-forming and feeding mechanisms.

52. In a sewing machine, in combination, a shaft, fast and loose pulleys mounted thereon, a driving belt, means for shifting it from one to the other of said pulleys, stitch-forming mechanism, feeding mechanism including a traveling work-holder, operative connections between said stitch-forming and feeding mechanisms and said shaft, and automatically acting means operatively connected with said loose pulley for opening and closing the work-holder intermediate operations of the stitch-forming mechanism.

53. In a sewing machine, in combination, stitch-forming mechanism including a latally movable reciprocating needle, a work-holder, mechanism for producing between the work-holder and the stitch-forming mechanism relative feeding movements, controlling means whereby said mechanisms are maintained in operation for predetermined periods, a tape-guide directed toward said work-holder, means for opening and closing the work-holder after each stitching period, and means for producing between the stitch-forming mechanism and the work-holder relative lateral movements whereby a succession of stitches of one character is laid during the relative feeding movements in one direction and a succession of stitches of a different character is laid during the relative feeding movements in the opposite direction.

54. In a sewing machine, in combination, stitch-forming mechanism including a reciprocating needle, a work-holder, means for producing between the work-holder and the needle series of relative step-by-step traveling movements in opposite directions, means for producing between the work-holder and the needle relative lateral jogging movements effective during the period of relative traveling movements in one direction, and controlling means for rendering said jogging means ineffective during the period of said traveling movements in the opposite direction.

55. In a sewing machine, in combination, stitch-forming mechanism including a reciprocating needle, a work-holder, means for imparting to the work-holder series of rel-

ative step-by-step traveling movements in opposite directions, needle jogging means effective upon the needle during the period of traveling movements of the work-holder in one direction, and controlling means for rendering said needle jogging means ineffective during the period of traveling movements of the work-holder in the opposite direction.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EDWARD B. ALLEN.
ALFRED R. WOOD.

Witnesses:
STANLEY N. SMITH,
HAROLD C. FALKNER.

Corrections in Letters Patent No. 1,319,450.

It is hereby certified that in Letters Patent No. 1,319,450, granted October 21, 1919, upon the application of Edward B. Allen and Alfred R. Wood, of Bridgeport, Connecticut, for an improvement in "Label-Stitching Machines," errors appear in the printed specification requiring correction as follows: Page 6, line 33, for the word "acuating" read *actuating;* same page, line 36, for the compound word "stich-forming" read *stitch-forming;* page 7, line 95, for the compound word "clamp-srcew" read *clamp-screw;* page 9, line 74, for the reference-numeral "67" read *67";* page 18, line 120, claim 46, strike out the words "successive stitching periods" and insert the words *action of said jogging means;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 9th day of December, A. D., 1919.

[SEAL.]

M. H. COULSTON,
Acting Commissioner of Patents.

Cl. 112—2.