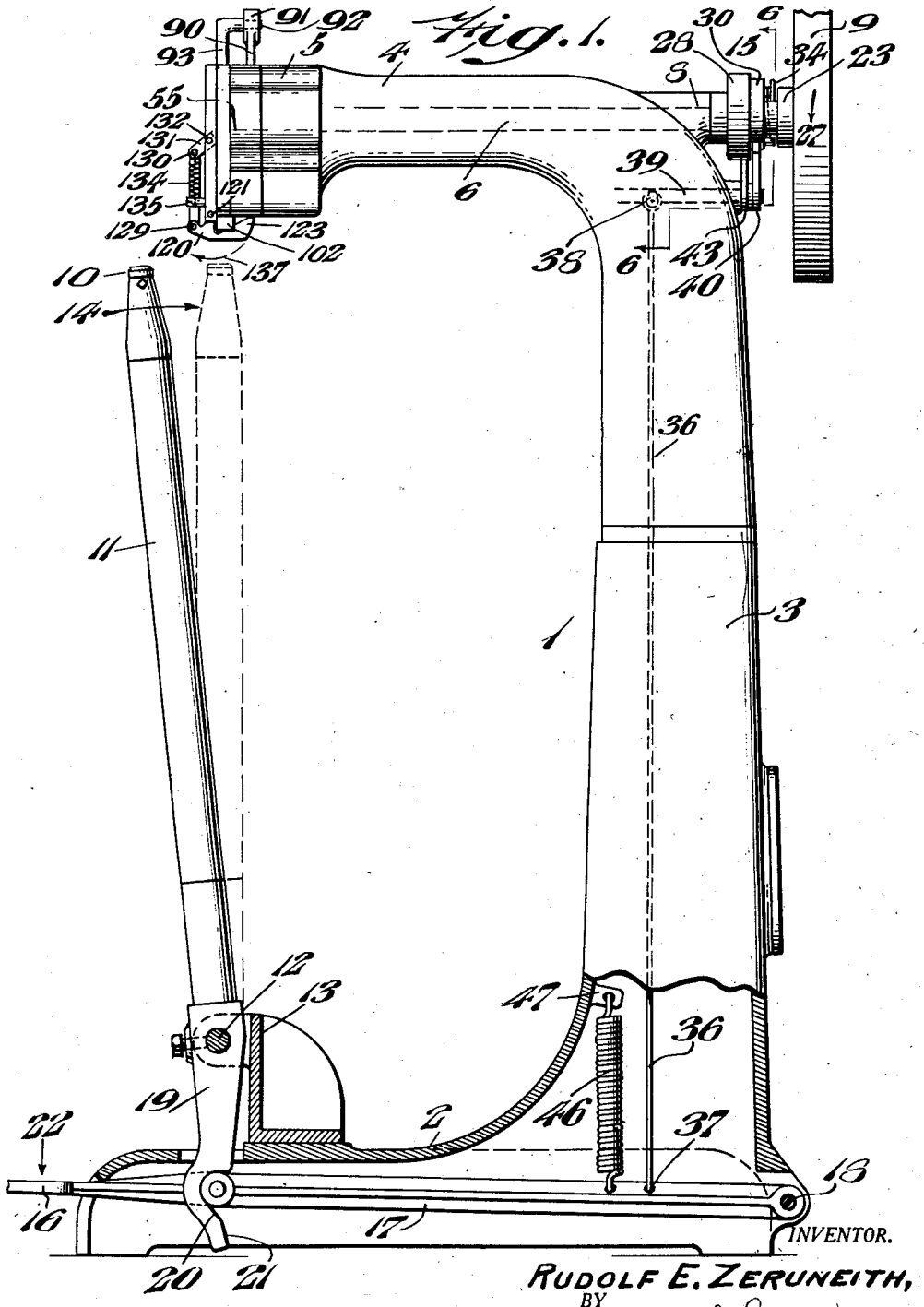
April 19, 1932. R. E. ZERUNEITH 1,855,162

WIRE STAPLING MACHINE

Filed Aug. 17, 1928 5 Sheets-Sheet 1

Fig. 1.



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WIRE STAPLING MACHINE

Filed Aug. 17, 1928 5 Sheets-Sheet 2

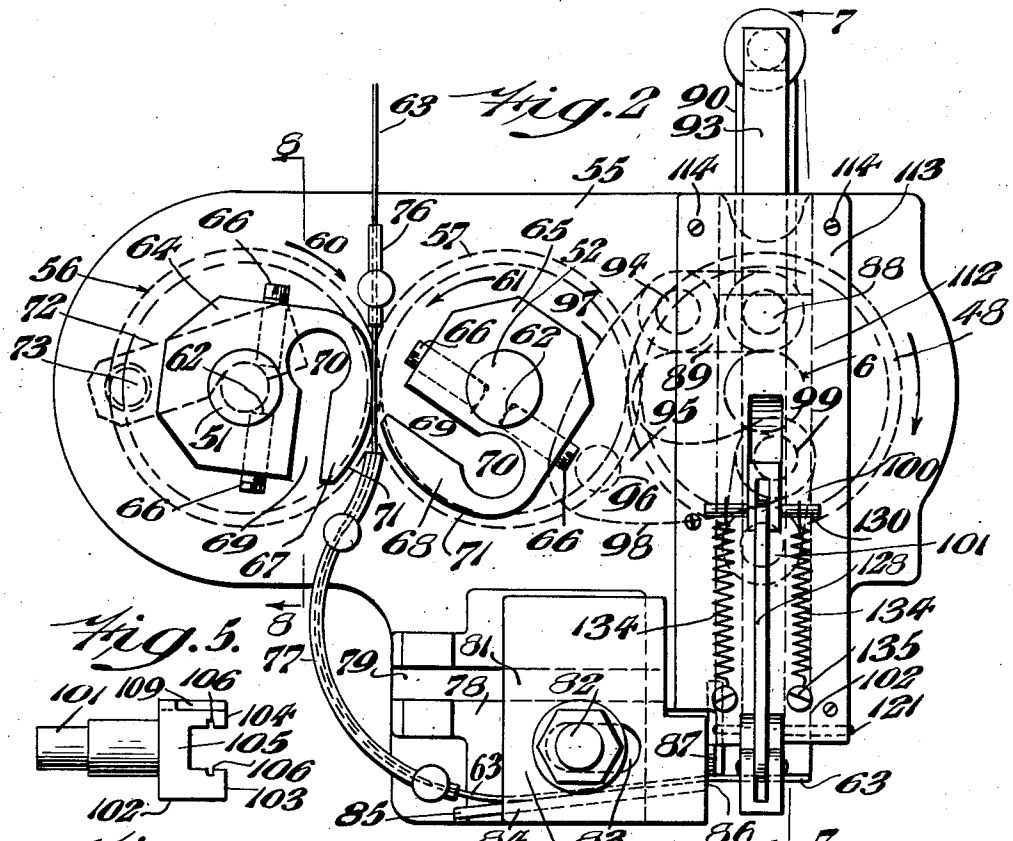


Fig. 2.

Fig. 5.

Fig. 4.

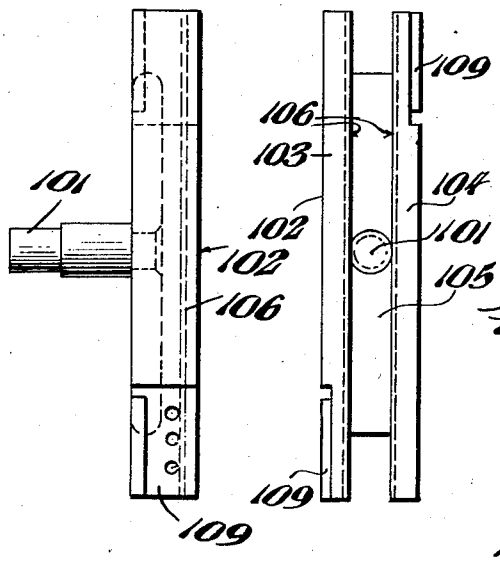


Fig. 3.

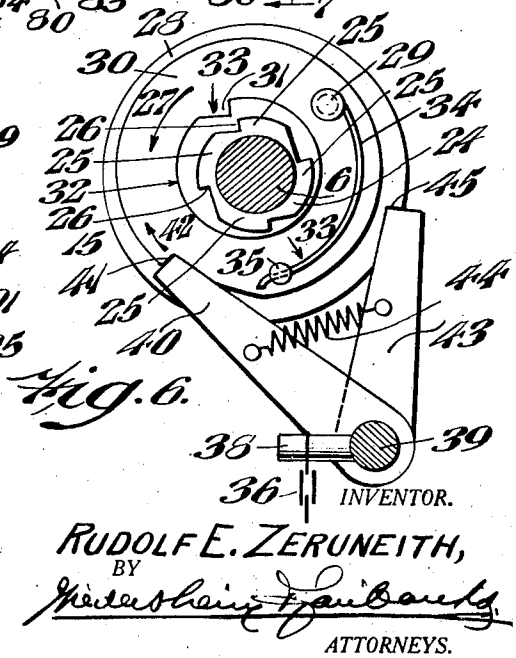


Fig. 6.

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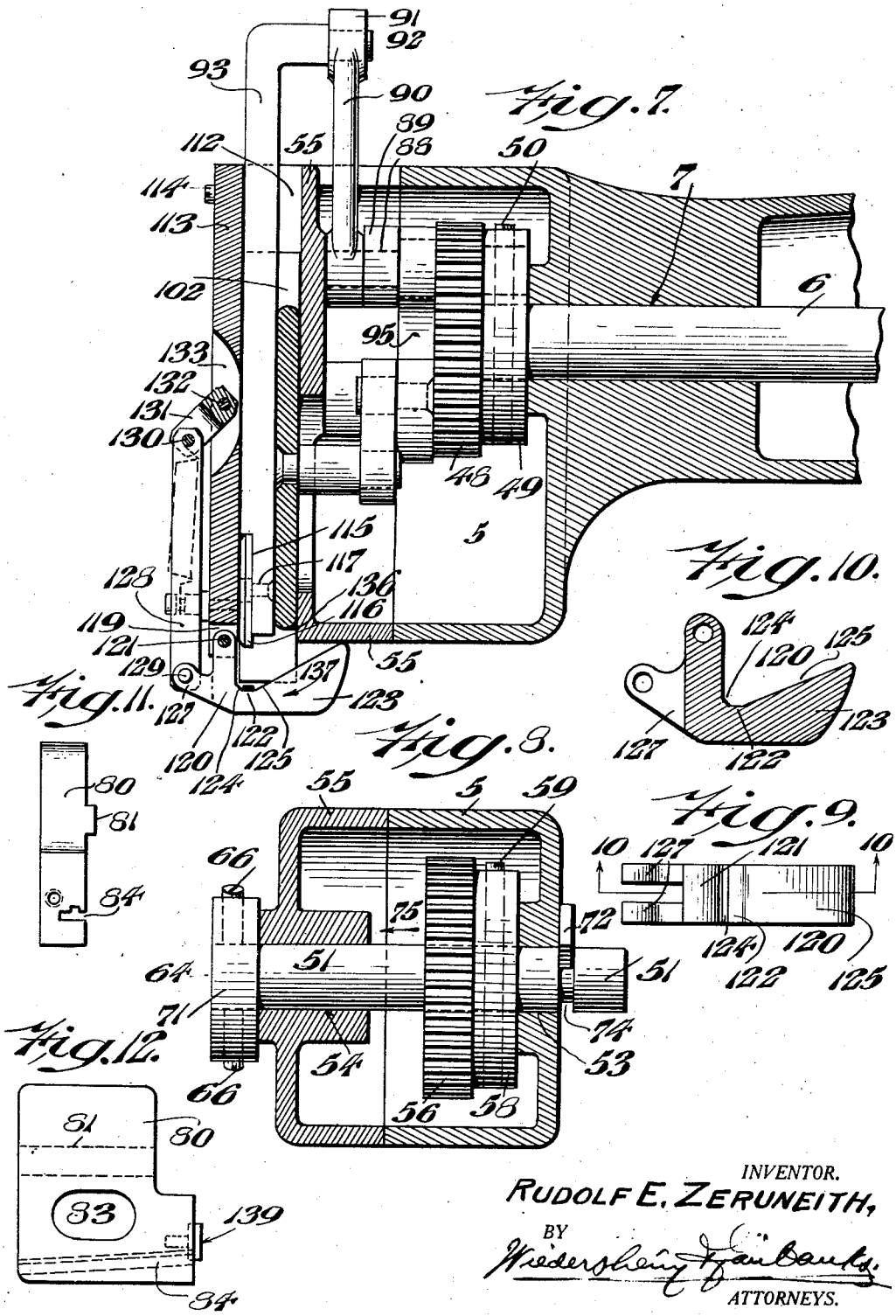
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WIRE STAPLING MACHINE

Filed Aug. 17, 1928 5 Sheets-Sheet 3



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April 19, 1932. R. E. ZERUNEITH 1,855,162

WIRE STAPLING MACHINE

Filed Aug. 17, 1928 5 Sheets-Sheet 4

Fig. 13.

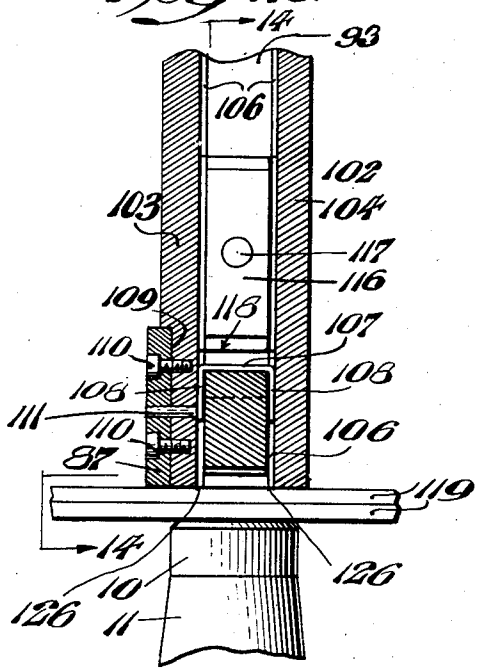


Fig. 14.

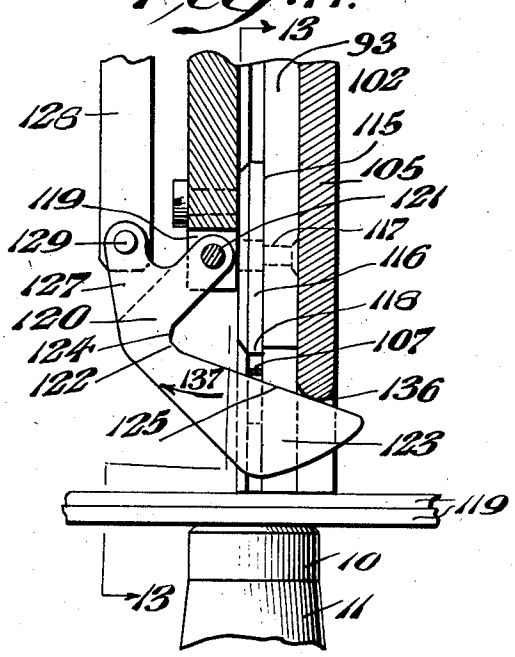


Fig. 15.

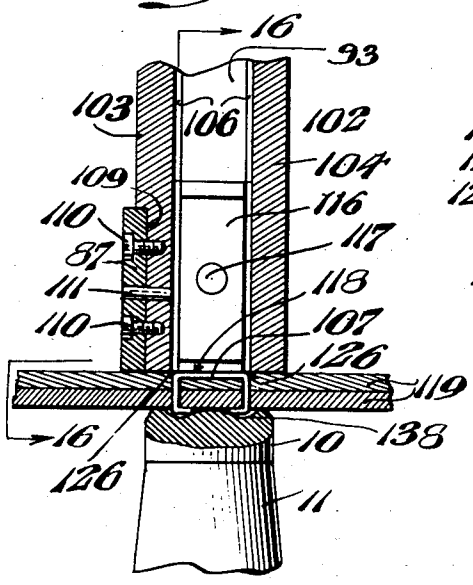
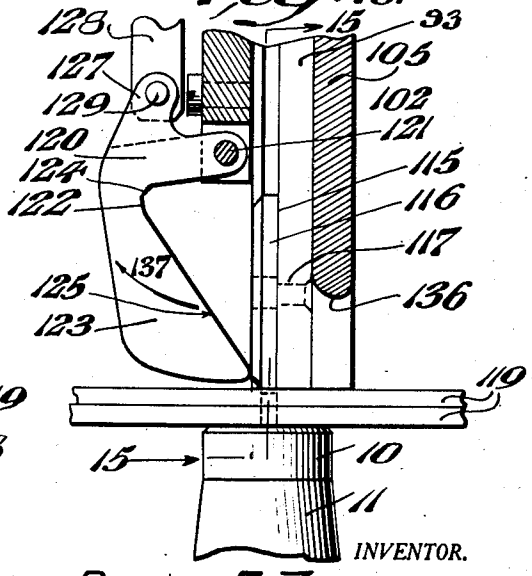


Fig. 16.



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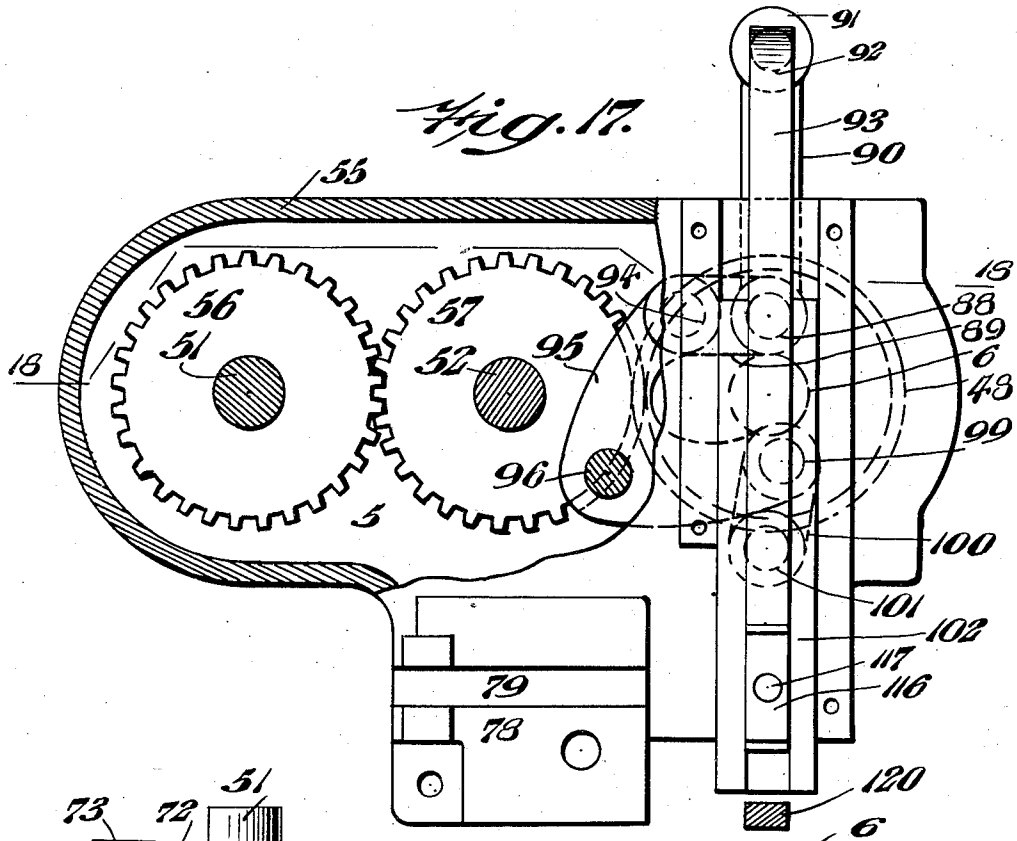
ATTORNEYS.

April 19, 1932. R. E. ZERUNEITH 1,855,162

WIRE STAPLING MACHINE

Filed Aug. 17, 1928 5 Sheets-Sheet 5

Fig. 17.



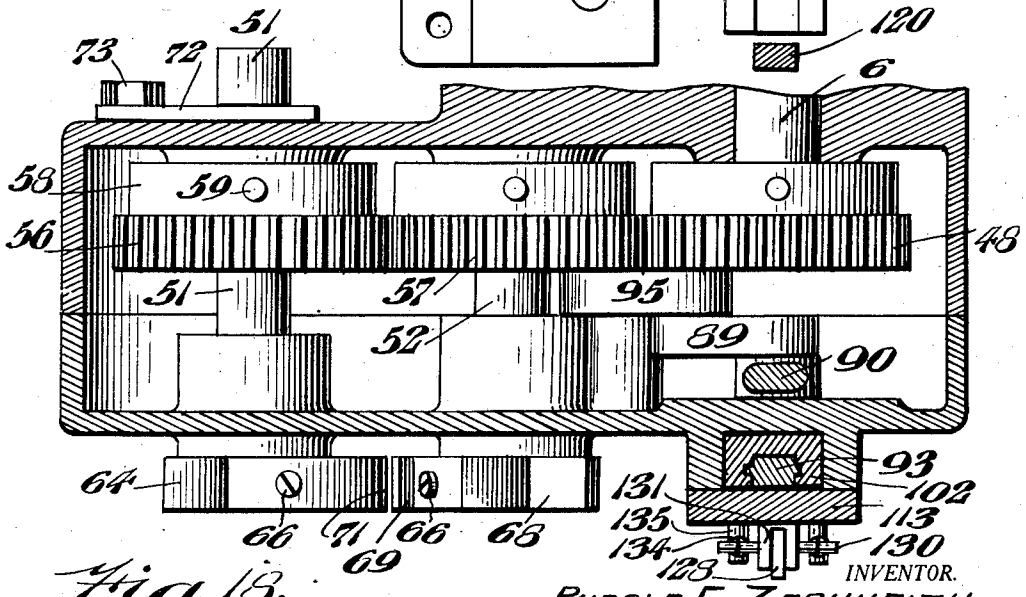


Fig. 18.

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Patented Apr. 19, 1932 1,855,162

UNITED STATES PATENT OFFICE

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WIRE STAPLING MACHINE

Application filed August 17, 1928. Serial No. 300,244.

My invention relates to a new and useful wire stitching or stapling machine, and it relates more particularly to certain novel wire feeding, guiding and forming devices, whereby a more rapid stitching or stapling operation is obtainable.

Thus my invention consists of a certain novel intermittent wire feeding mechanism, whereby the stapling or stitching wire may be fed to the forming and driving devices of the stitching machine in an intermittent manner, in predetermined though variable lengths, and by a continuously revolving means without the aid of any reciprocatory motion or the like.

My invention further consists of a novel forming mechanism including an automatically centering anvil and wire support, whereby the wire will be automatically aligned and centered with regards to the former, regardless of any slight mis-alignment in the feeding of the same.

My invention further consists of a certain novel mechanism for synchronizing the movement of the wire former, driver and feeding mechanism by positive mechanical connections, without the aid of any cams or the like.

My invention further consists of a novel clincher support whereby a clincher normally out of alignment with the driver, is brought temporarily into alignment with the same prior to the action of the clutch of the machine and by the same operation which actuates the clutch.

For the purpose of illustrating my invention I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of the instrumentalities as herein shown and described.

In the accompanying drawings in which like reference characters indicate like parts:

Figure 1 represents a side elevation, partly in section, of a wire stitching or stapling machine embodying my invention.

Figure 2 represents a front elevation of the stitching head of the machine, on a greatly enlarged scale.

Figure 3 represents a side elevation of the former bar.

Figure 4 represents a front elevation of the same.

Figure 5 represents a top plan view of the same.

Figure 6 represents a view in elevation of the novel clutch forming part of my invention.

Figure 7 represents a longitudinal section on line 7—7 of Figure 2 of the stitcher head.

Figure 8 represents a section on line 8—8 of Figure 2.

Figure 9 represents a top plan view of a novel automatically centering anvil and support.

Figure 10 represents a section on line 10—10 of Figure 9.

Figure 11 represents a side elevation of a wire guide and stationary cutter block.

Figure 12 represents a front elevation of the same.

Figure 13 represents a vertical section on line 13—13 of Figure 14, illustrating the formation of the staple subsequent to the cutting of the wire.

Figure 14 represents a vertical section on line 14—14 of Figure 13.

Figure 15 represents a section on line 15—15 of Figure 16, illustrating the completion of the stapling operation, with the driver at the lowermost position of its stroke.

Figure 16, represents a section on line 16—16 of Figure 15.

Figure 17 represents a front elevation of the head of the machine with the cover partly broken away so as to expose to view the internal construction thereof.

Figure 18 represents a section on line 18—18 of Figure 17.

The stitching or stapling machine of my novel construction comprises a generally hollow, cast-iron frame or housing 1 including a horizontal base member 2, the vertical post 3 in the rear, and the overhanging arm 4.

The free end of the overhanging arm 4 terminates in the head 5 of the machine in which the wire feeding, guiding, cutting, forming and driving mechanisms are contained.

Within the upper horizontal arm 4, the main shaft 6 is suitably journalled in the bearing 7 at the head end and bearing 8 at the rear end.

The main shaft 6 may be driven in a continuous manner by means of a belt traveling upon the pulley 9 and through a novel clutch to be described more in detail hereinafter.

The clincher 10 of my novel construction is adjustably mounted upon a vertical post 11, pivotally supported at its lower end upon the pivot 12 in the bracket 13 carried upon the lower base 2. The normal position of the clincher 10 and clincher bar 11 is shown in solid lines in Figure 1, while the operative position thereof is shown in dotted lines in the same figure. The work is placed over the clincher and clincher bar in the inclined or normal position thereof, after which said clincher and clincher bar are deflected in the direction of the arrow 14 and brought beneath and in vertical alignment with the driver within the head 5 of the machine.

The movement and positioning of the clincher and clincher bar 10 and 11 and the operation of the clutch 15 are both controlled by a single foot treadle 16, the lever 17 of which extends through the base 2 of the frame of the machine and is pivoted at its rear end upon a pivot 18. The clincher bar or post 11 carries a lower cam arm 19 extending below the pivot 12 and extending into the base 2 of the frame of the machine.

The rise or incline 20 of the cam arm 19 is just sufficient to swing the clincher bar into the vertical position shown in dotted lines in Figure 1. The neutral cam surface 21 of the cam bar is in turn arcuate about the pivotal center 18 so that a further downward deflection of the treadle 16 in the direction of the arrow 22 will merely retain the clincher bar 11 in its vertical position, while the clutch is being thereby actuated.

The clutch is illustrated particularly in Figures 1 and 6, and is mounted directly upon the main horizontal shaft 6 at the rear of the machine. Thus the pulley and fly wheel 9 is mounted loosely upon the rear end of the main shaft 6 as shown in Figure 1, suitably retained thereon by collars or the like (not shown in the drawings). To the hub 23 of the pulley and fly wheel 9 a toothed clutch member 24 is fixedly secured either by forming the same integral with the hub or by keying the same to the hub of the fly wheel and pulley 9. The teeth 25 are provided with a substantially vertical engaging edge 26 facing the direction of rotation of the clutch as indicated by the arrow 27. The number of teeth 25 provided upon the clutch member 25 may be varied although four has been found to be the suitable number in order to effect operative engagement between the driving mechanism and the stitching mechanism with the minimum amount of lag.

To the shaft 6 is fixedly secured or keyed a flange 28 which carries a pin or stud 29 in the face thereof. Upon the pin or stud 29 is loosely, pivotally mounted the driven clutch member or the clutch ring 30, surrounding the toothed driving clutch member 24. The driven clutch ring 30 is provided with a single tooth 31 extending inwardly from the inner periphery 32 of said ring, which tooth is adapted to be engaged by any one of the teeth 25 of the driving clutch member 24 when the clutch ring 30 is deflected eccentrically with respect to the driving clutch member 24 about its pivot 29, in the direction of the arrow 33.

A spring 34 is anchored at one end upon the pivot or stud 29, while the other end thereof passes through a suitable pin 35 carried by the driven clutch ring 30, thereby exerting a constant force upon the clutch ring 30, tending to deflect or swing the same about its pivot 29 in the direction of the arrow 33, thereby tending to cause engagement between the tooth 31 of the driven clutch ring 30 and the teeth 25 of the driving clutch member 24.

Thus the normal tendency of the clutch is to effect an operative engagement between the driving and driven members 24 and 30 respectively.

The clutch is controlled from the foot treadle and lever 16 and 17 respectively, through a suitable connecting rod or chain 36 having its lower end attached to the lever 17 at a point 37, and having its other end secured to a suitable arm 38 carried by the trip shaft 39 suitably journaled in the housing of the machine, as indicated particularly in Figure 1. The engagement and disengagement of the clutch is controlled by the trip lever 40 fixedly secured to the trip shaft 39. The driven clutch ring 30 is provided with a notch or shoulder 41 at a point generally diametrically opposed to the pivot pin 29. The trip lever 40 is adapted to engage the shoulder or notch 41, when the lever is in its uppermost position shown in Figure 6. When in this position, the engagement of the shoulder 41 by the end of the trip lever 40, causes an eccentric and upward deflection of the clutch ring 30 in the direction of the arrow 42, thereby withdrawing or retracting the tooth 31 from operative interengagement with the teeth 25 of the driving clutch member 24. Thus, while the trip lever 40 is withdrawn into the position shown in dotted lines in Figure 6, the clutch will remain in engaged position, while when the trip lever is released into its upper position, the driven clutch ring 30 will be deflected upwardly into

an operative position, by the engagement of the shoulder 41 by the end of the trip lever 40, whereupon the driven clutch member 30 ceases to revolve.

In order to prevent any counter or backward rotation of the driven clutch ring 30 and the driven clutch flange 28, to which the clutch ring is pivotally secured by the pivot pin 29, a second lever 43 is provided, loosely mounted upon the trip shaft 39. A helical tension spring 44 is operatively interposed between the loose lever 43 and the fixed trip lever 40, tending to draw the two towards each other, as indicated in Figure 6. The driven clutch flange 28 is provided with a shoulder or notch 45 facing the direction opposite to the normal direction of rotation of the driven clutch members, and is positioned relative to the clutch tooth 31 in the driven clutch ring 30, so that the driven clutch flange 28, revolving in the direction of the arrow 27 while the clutch is engaged, will come to rest with the notch or shoulder 45 in juxtaposition to the end of the lever 43, thereby causing the lever 43 to drop into the notch 45 when the driven clutch flange 28 comes to rest, so as to prevent counter-rotation thereof, and so as to prevent counter-rotation of the stitching mechanism while the clutch is disengaged.

While the clutch is engaged and the clutch flange 28 revolves, the lever 43 rides on the periphery of the flange 28 and upon the release of the tension upon the connecting rod or chain 36 the trip lever 40 is drawn upwardly by the spring 44.

A helical tension spring 46 is also interposed between the lever 17 and the suitable anchor 47 within the frame or housing of the machine, normally tending to draw the lever and treadle 17 and 16 respectively in an upward or inoperative position.

To the front end of the main shaft 6, the gear 48 is secured, having a suitable hub 49 which is keyed to the shaft 46 by a suitable pin 50 or the like. The gear 48 serves to drive the continuously revolving wire feed mechanism to be described hereinafter.

The wire feed mechanism is mounted upon two parallel horizontal shafts 51 and 52, the rear ends of which are journalled in suitable bearings 53 in the head housing 5 of the main frame, while the front ends of said shafts 51 and 52 are journalled in corresponding bearings 54 in the front cover 55 of the head. The shafts 51 and 52 carry gears 56 and 57 respectively. Each of the gears 56 and 57 is provided with a hub 58 through which a pin 59 extends, by means of which the gear is fixed to the shaft.

The gears 48, 56, and 57 are all permanently in mesh with each other, whereby the shafts 51 and 52 are caused to revolve in the direction of the arrows 60 and 61 respectively.

Each of the shafts 51 and 52 extends outwardly beyond the front cover 55 of the head 5 and is provided with two opposed flat recesses 62 for the reception of set screws.

The feeding of the wire 63 is effected by means of a pair of similar and opposed feed heads 64 and 65 respectively carried upon the outer ends of the two shafts 51 and 52 respectively. Each of the feed heads 64 and 65 carries a pair of opposed set screws 66 whereby the heads 64 and 65 may be locked onto the ends of the shafts 51 and 52 and whereby, moreover, a slight amount of adjustment may be obtained between the shafts and the corresponding heads, and hence an adjustment may be made in the relative angular positions of the two feed heads tc each other.

Each of the feed heads 64 and 65 includes a spring jaw 67 and 68 respectively, formed by suitable undercutting through a slot 69 and enlarged opening 70. The slots 69 are cut in opposite directions in the two feeding heads 64 and 65 so that the free unsupported end of the jaw 67 is juxtaposed to the fixed and connected end of the other jaw 68, and vice versa.

The outer peripheries 71 of the jaws 67 and 68 are cylindrical about the axis shafts 51 and 52 and said cylindrical surfaces of the jaws 67 and 68 are so spaced with respect to each other as to engage the two opposed sides of the wire with sufficient pressure to clamp the same between the jaws firmly, thereby to propel the wire in the direction of movement of the peripheries 71, that is, in the direction of the wire forming, cutting and driving means.

Due to the resilient character of the jaws 67 and 68 wires of varying thickness may be inserted between said jaws within suitable limits. The length of the wire which is fed to the forming, cutting and driving mechanism (to be described hereinafter) is determined upon the length of the peripheral contact of the two jaws 67 and 68, that is, the overlapping length of said jaws. Thus the maximum length of the wire which may be fed with each revolution and consequently with each stroke or operation of the forming, cutting and driving mechanism, is the peripheral length of the jaw. This maximum length is fed only when the two jaws 67 and 68 are directly opposite to each other so that the entire length of each of said jaws contacts with the wire simultaneously. By varying the extent to which the jaws 67 and 68 overlap the contacting length is correspondingly varied and hence the length of the wire fed with each revolution is similarly varied. In order to adjust the angular relation of the jaws 67 and 68 and hence to vary the overlap of the jaws, the shaft 51 is retained longitudinally in its bearings 53 and 54 by a latch 72 pivoted upon a pin 73 car-

ried by the casing 5 of the head. The latch 72 normally rests within an annular groove 74 in the rear end of the shaft 51 thereby normally to retain the shaft 51 against axial displacement. When it is desired to vary the angular relation of the two shafts 51 and 52 and hence to vary the overlap of the feed jaws 67 and 68 it is merely necessary to raise the latch 72 and then to displace the shaft 51, together with the gear 56 carried thereby, in the direction of the arrow 75 (Figure 8), thereby throwing the gear 56 out of mesh with the gear 57 on the shaft 52. The shaft 51 may then be revolved with respect to the shaft 52 to the desired extent. By moving the shaft rearwardly, the gear 56 is again meshed with the gear 57, thereby locking the two shafts as well as the two spring jaws in approximately the desired angular relation to each other. The desired final angular adjustment between the two jaws 67 and 68 is obtained by means of the set screws 66.

The wire 63 is suitably guided to and from the feed mechanism by means of guide tubes and channels 76 and 77 suitably supported upon studs or screws upon the outer cover 55 of the head of the machine.

Upon the lowermost part of the cover 55 a raised pad or boss 78 is provided, having a horizontal channel 79 extending across the same. A stationary cutter block 80 is then provided upon the pad 78. The cutter block 80 is provided with a horizontal tongue 81 corresponding to and seated within the horizontal channel 79 thereby to retain the block 80 in alignment. A bolt 82 is then provided, extending through an elongated aperture 83 in the block 80, whereby the block may be detachably and adjustably secured to the pad 78.

An inclined channel 84 is provided in the inner face of the block 80 and in the channel 84 a stationary cutter 85 is positioned and clamped against the face of the pad 78 by means of the bolt or screw 82. The stationary cutter 85 is adjustable within the channel 84 and its cutting edge 86 is in operative alignment with the movable cutter 87 to be described hereinafter. The wire 63 leaving the lower or delivery end of the guide 77 rides up upon the cutter strip 85 which thereby acts as a final guide therefor.

In order to obtain a suitably timed successive operation of a staple former and staple driver, I provide a novel link motion whereby the movement of the former and cutter will be approximately 90° in advance of the movement of the driver on the down stroke.

I thus provide a crank pin 88 in the face of the gear 48 on the main shaft 6. Upon the crank pin 88 is mounted a link 89 as well as the connecting rod 90. The connecting rod 90 is directly connected at its upper end 91 to the horizontal pin 92 carried by the vertical driver 93. The link 89 on the other end is connected at its other end to the pin 94 carried by the bell crank lever 95. The bell crank lever 95 is pivoted at approximately its center, upon the pivot 96 carried in the cover 55 of the head of the machine.

The bell crank lever comprises two similar arms 97 and 98; the upper arm 97 carrying the pin 94, while the lower arm 98 carries the similar pin 99. The center of the two pins 94 and 99 and the pivot pin 96 of the bell crank lever 95 are arranged at the vertices of an equilateral triangle, as this angularity has been found in practice to give the desired lag between the former and driver. The angularity, however, may be varied, and the angle between the two arms 97 and 98 of the bell crank lever 95 may likewise be varied within suitable limits.

The lower pin 99 carried by the lower arm 98 of the bell crank lever 95 carries a link 100 similar to the upper link 89. The lower end of the link 100 is in turn pivoted upon the pin 101 carried by the former 102.

By this means, the circular movement of the crank pin 88 is converted into two vertical reciprocatory movements of the driver 93 and of the former 102, with the desired lag between the movement of the same. Thus on the down stroke the former precedes the driver by approximately 90°, while on the up stroke the former arrives at the uppermost position or dead center about 60° ahead of the driver.

The former is shown detached in Figures 3, 4 and 5 and is also shown in sections in Figures 13 to 16 inclusive.

The former 102 comprises a U-shaped channel bar of steel having the two similar sides 103 and 104, and having the pin 101 positioned mid-way of its center and preferably riveted or otherwise firmly secured to the central web 105.

The distance between the two sides 103 and 104 of the former bar 102 corresponds substantially to the distance between the two legs of the staple to be formed. A vertical channel 106 is provided in the inner face of each of the sides 103 and 104 of the former bar, for the reception of the legs of the staple 107. The positioning of the staple 107 in the former bar and the positioning of the legs 108 thereof in the channels 106 is shown particularly in Figures 13 and 14.

The channels 106 also serve to receive and guide the driver 93, as will be described more in detail hereinafter.

The diagonally opposed ends of the former bar are recessed as at 109 for the reception of a small flat movable cutter 87. The movable cutter 87 is secured to the side of the former bar 102 in either one of the two diagonally opposed recesses 109 by means of a pair of screws 110, and a dowel pin 111.

Due to the fact that the former bar 102 is entirely symmetrically about the axis of

the pin 101, the former bar may be reversed so that either one of the two ends thereof may be employed for the forming operation.

Thus if one end of the former bar wears or spreads as a result of continuous use, the former bar may be reversed and the opposite end employed, merely by removing the cutter 108 from one end and placing it on the other end of the former bar and reversing the former bar.

The former bar 102 is guided in a suitable vertical channel 112 in the cover 55 of the head of the machine, and is retained within said channel by the plate 113 which is secured to the cover 55 by means of the screws 114.

The driver 93 in turn is a square bar, of a cross section corresponding substantially to the cross section of the space between the sides 103 and 104 of the U-shaped former bar 102, and is disposed within said space as indicated particularly in Figures 7 and 13 to 16 inclusive. The driving bar 93 is thus slidably mounted within the former bar 102 and is retained therein likewise by the cover plate 113.

The lower end of the driver bar 93 is recessed as at 115 and a terminal driving plate or head 116 is secured to the driver bar 93 by means of the screw 117 or the like. The driver head 116 is narrowed at its vertical edges and said narrow vertical edges extend into, and slide within the two vertical channels 106 in the former bar 102. By this means the lower driving edge 118 engages the entire width of the staple 107 for the purpose of driving the same through the material 119 to be stitched or stapled.

The driver head or plate 116 is likewise symmetrical about the axis of the screw 117 so that it also may be reversed and both ends thereof may be made use of.

In the operation of the machine the former bar 102 descends, and in doing so the wire 63 is sheared at the cutting edge 86, between the stationary cutter 85 and the movable cutter 87 as indicated particularly in Figure 2.

The lower end of the cover plate 113 is recessed at 119 and within said recess a staple support and anvil 120 is pivotally mounted by means of the pivot pin 121. The staple support and anvil 120 is supported upon an arm and comprises the anvil portion 122 of a width sufficient to accommodate the width or thickness of the wire, and a supporting member 123. The anvil portion 122 is disposed between an inclined guide surface 124 and the similarly inclined edge 125 of the supporting member 123. Due to the fact that the anvil portion 122 is below, or at the bottom of the two inclined surfaces 124 and 125, the wire 63 is automatically guided or centered into proper position upon the anvil so as to align properly with the guide channels 116, the lowermost edges 126 of which act as the forming or bending edges.

The support and anvil 120 is also provided with a bifurcated arm 127 to which a link 128 is pivotally secured at 129. The upper end of the link 128 is in turn pivotally secured at 130 to a short pivotal arm 131 loosely pivoted at 132 within a recess 133 in the cover plate 113. A pair of helical tension springs 134 are interposed between the pivot pin 130 and a pair of stationary anchor screws 135, thereby exerting a constant force upon the support and anvil 120 through the link 128. By means of the springs 134 a support and anvil is automatically returned into its initial forming position shown in Figure 7.

After the wire 63 is sheared off as indicated in Figure 2 the severed piece of wire is positioned automatically upon the central anvil portion 122 of the anvil and support 120 as indicated in Figure 7. With the severed piece of wire thus positioned, the former bar 102 continues on its downward movement and in doing so the bending edges 126 engage the two end portions of the severed piece of wire 63 which overhang the support and anvil 120 on either side thereof, and bend said two end portions downwardly on either side to form the two vertical legs 108 as indicated in Figure 13.

Due to the fact that the anvil portion 122 is positioned but a short distance from the pivot center 121 of the anvil support 120, said anvil and support will not be deflected about the pivot 121 during the forming operation, since the moment of the force of bending will be relatively small.

After the bending and the formation of the staple is completed, however, and the former descends further the lower rounded edge 136 of the web 105 of the former bar 102 engages the inclined edge 125 of the supporting member 123 of the support and anvil 120. Since the engagement is at a point further removed from the pivotal center 121 of the anvil and support 120, the moment of the force is sufficient to deflect the support and anvil 120 about the pivot 121 in the direction of the arrow 137, indicated particularly in Figure 14. As the support and anvil 120 is deflected the driver bar 93 likewise descends and engages the top of the staple 107 and further deflects the support and anvil 120.

The support and anvil 120 is thus gradually deflected as the staple 107 is forced downwardly towards, into and through the material 119. Thus the two legs 108 of the staple 107 are supported and retained within the channels 106 of the former bar 102 against any buckling, by the supporting member 123, said supporting member 123 being deflected outwardly in the direction of the arrow 137 from between the legs 108 of the staple as said staple moves downwardly.

Due to this continuous support of the sta-

ple as the same is being driven downwardly a greater depth or thickness of material may be penetrated with the given strength or rigidity of wire and with a given penetrability of material.

As the legs 108 pierce the material 119 they encounter the annular depression 138 in the clincher head 10. The sides of the annular depression 138 are suitably inclined so as to bend the projecting ends of the legs 108 towards each other, thereby to clinch the staple as indicated particularly in Figure 15.

A set screw 139 is also provided for the purpose of adjustably retaining and affixing the stationary cutter 85 in the channel 84, particularly for the purpose of preventing any slight displacement of the cutter 85 in the direction of the movable cutter 87 after the former has been adjusted with respect to the latter.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and no restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

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

1. In a stitching machine of the character stated, a main shaft, a slidably mounted staple former, a slidably mounted staple driver in operative relation to said staple former, an eccentric crank pin carried by said shaft, a connecting rod operatively interposed between said crank pin and said driver thereby to convert the rotary movement of the shaft into a reciprocatory movement of the driver, and a pivotally mounted bell crank lever having one arm thereof operatively connected with said crank pin through a suitable link, and having the lower end thereof operatively connected with said staple former through a suitable link, thereby to convert the rotary movement of the shaft into a reciprocatory movement of said staple former in timed relation to said driver.

2. In a stitching machine of the character stated, a staple forming and driving mechanism, driving means to operate the same, a pivoted clincher normally out of alignment with said staple forming and driving mechanism, a starting treadle, and means carried by said treadle camming said clincher into operative alignment with said staple forming and driving mechanism when the latter is in operation.

3. In a stitching machine of the character stated, a staple forming and driving mechanism, driving means for operating the same, a clutch operatively interposed between said staple forming and driving mechanism and the driving means therefor adapted to effect operative engagement to the same when it is desired to operate the machine, a starting treadle for controlling said clutch, a clincher normally out of alignment with said staple forming and driving mechanism, and means carried by said starting treadle for camming said clincher into operative alignment with said staple forming and driving mechanism and operating said clutch.

4. In a stitching machine of the character described, a staple former, a staple driver, a combined staple anvil and staple support for the staple during the driving operation beneath and in operative alignment with said staple former and staple driver, and a fixed pivot for said combined staple anvil and support located above and substantially in line with the path of the movement of the driver and former whereby the combined anvil and support can be maintained in forming position during the formation of a staple without any locking means.

5. In a stitching machine of the character described, a staple former, a staple driver, a combined staple anvil and staple support for the staple during the driving operation beneath and in operative alignment with said staple former and staple driver, and a fixed pivot for said combined staple anvil and support located above and substantially in line with the path of the movement of the driver and former whereby the combined anvil and support can be maintained in forming position during the formation of a staple without any locking means and yielding means for returning the combined anvil and supporter to operative position.

6. In a stitching machine of the character described, a staple former, a staple driver, a pivoted staple anvil over which the staple is formed in operative alignment with said staple former and staple driver, and a fixed pivot for said staple anvil so located that a force applied in forming of the staple is neutralized and no mechanical locking means are necessary during the formation of the staple.

7. In a wire stitching machine of the character stated, a stationary cutter block inclined upwardly towards the head of the stitcher to guide the wire being fed across the anvil or piece over which it is formed at an angle to the line in which it is maintained while being cut off and formed over said anvil, to prevent the flying off of the severed portion prior to the formation thereof.

8. In a stitching machine, a staple former, wire feeding means, an anvil over which the staple is formed, a fixed cutter cooperating with the former in severing a portion of wire to be formed into a staple, said cutter being so located as to feed the wire above the line in which it is cut off and formed so that the wire is engaged by the bottom edge of said

former prior to the severing thereof to prevent flying off of the severed portion.

9. In a stitching machine of the character described, a staple former having grooves therein, a pivoted combined staple anvil and support for supporting the staple during the forming and driving operations, the operative surface of said combined anvil and support being of a substantially V-shaped formation, whereby the wire being formed is brought into alignment with the grooves of said former to prevent the accidental shearing of said wire during the forming operation.

10. In a stitcher, a staple former, a staple driver, wire feeding means, an anvil over which the staple is formed and a fixed cutter cooperating with the former in severing a portion of wire to be formed into a staple, there being a receiving slot or guide extending upwardly at an angle whereby the wire will be tensioned by the former over the anvil while said wire is being cut.

11. In a stitching machine of the character described, a staple former, a staple driver, a combined staple anvil and staple support for the staple during the driving operation beneath and in operative alignment with said staple former and staple driver, and a fixed pivot for said combined staple anvil and supporter located above the point of forming the staple, said fixed pivot being so close to the line of the path of the movement of the driver and former that the combined anvil and supporter can be maintained in forming position during the formation of a staple without any auxiliary locking means.

12. In a stitching machine of the character described, a staple former, a staple driver, a combined staple anvil and staple support for the staple during the driving operation beneath and in operative alignment with said staple former and staple driver, a fixed pivot for said combined staple anvil and supporter and yielding means for returning the combined anvil and supporter to operative position.

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