(No Model.)

4 Sheets—Sheet 1.

H. WEBER.

WIRE STITCHING MACHINE.

No. 548,681. Patented Oct. 29, 1895.

Fig 1.

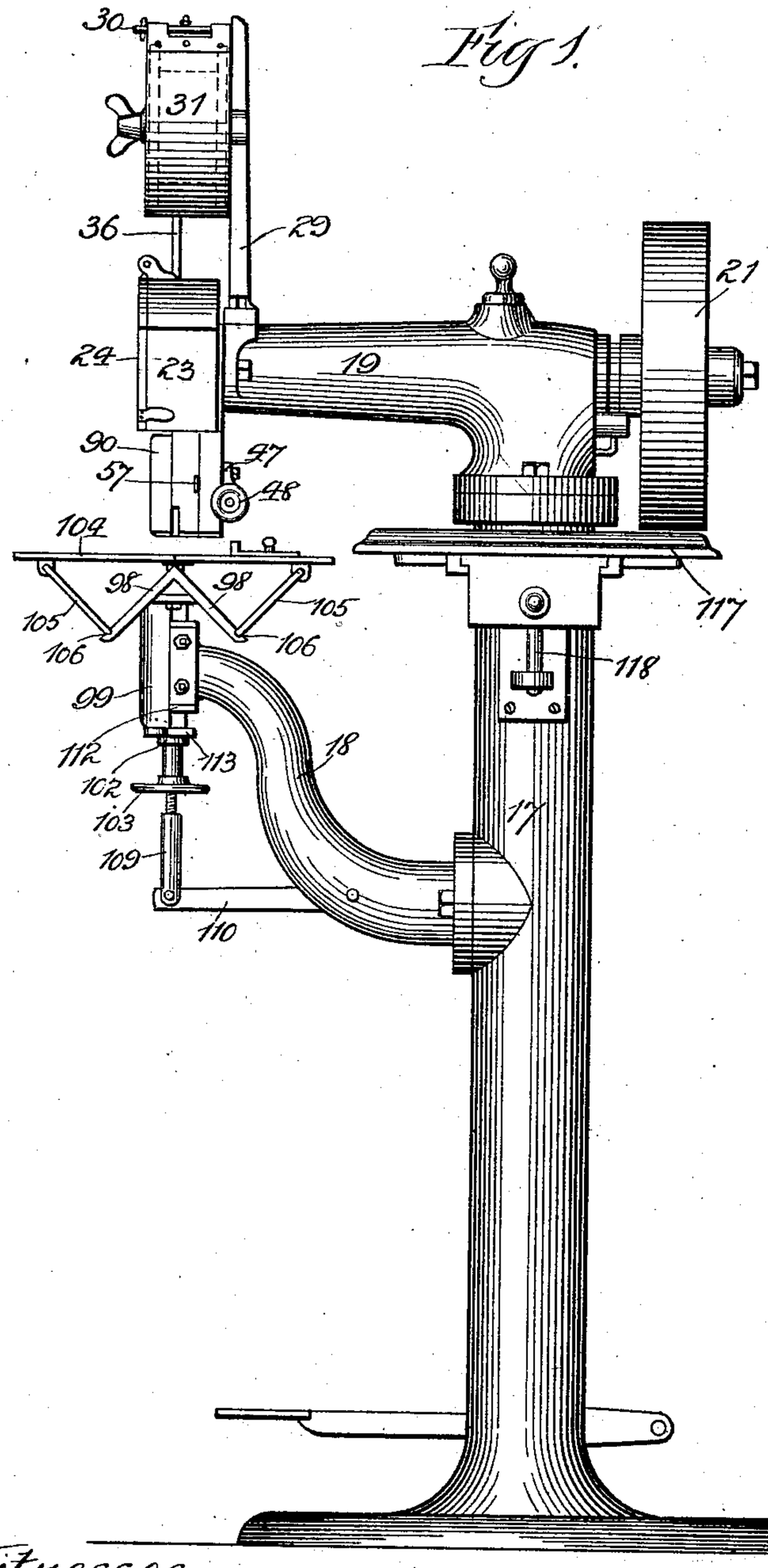


Fig 6.

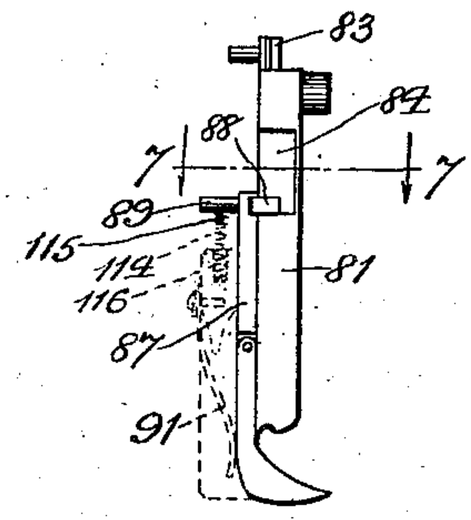
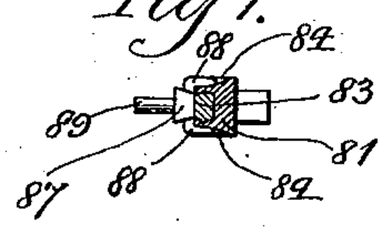


Fig 7.



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(No Model.)

4 Sheets—Sheet 2.

H. WEBER.

WIRE STITCHING MACHINE.

No. 548,681. Patented Oct. 29, 1895.

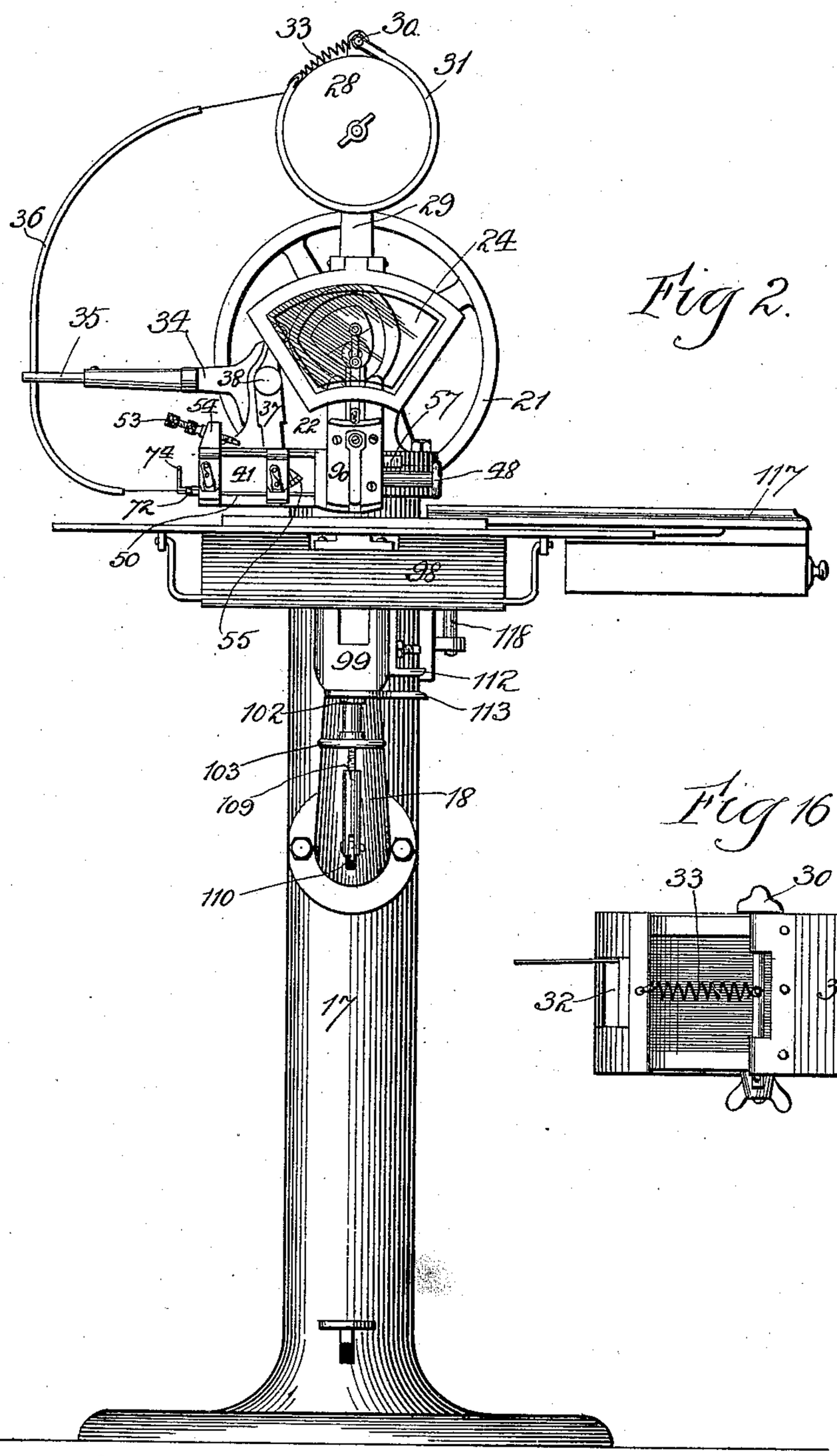

Fig 2.

Fig 16

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(No Model.) 4 Sheets—Sheet 3.

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WIRE STITCHING MACHINE.

No. 548,681. Patented Oct. 29, 1895.

Fig 3.

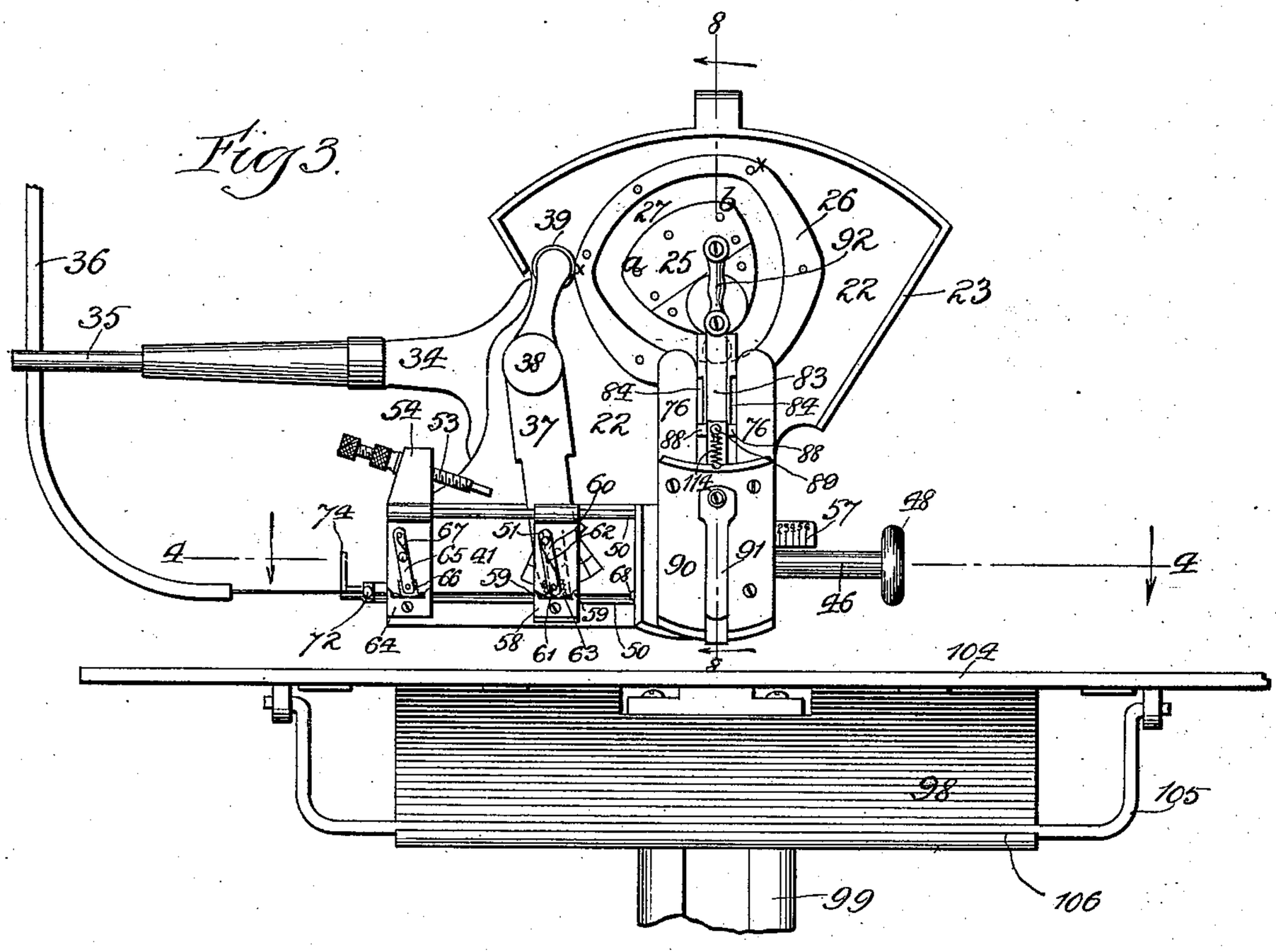


Fig 4.

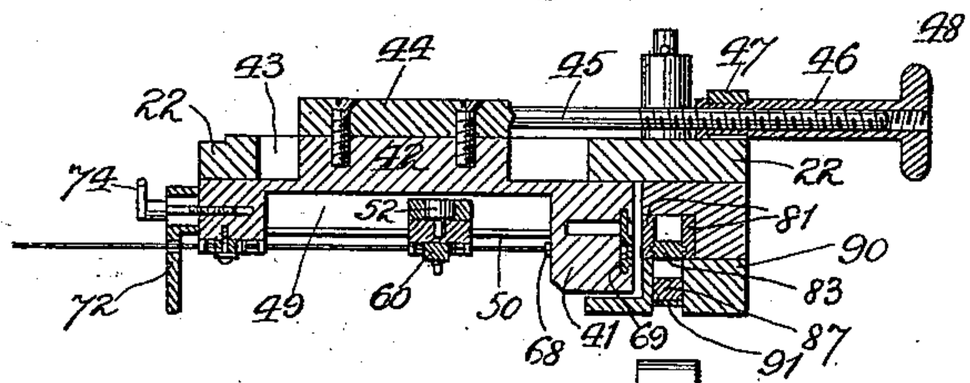
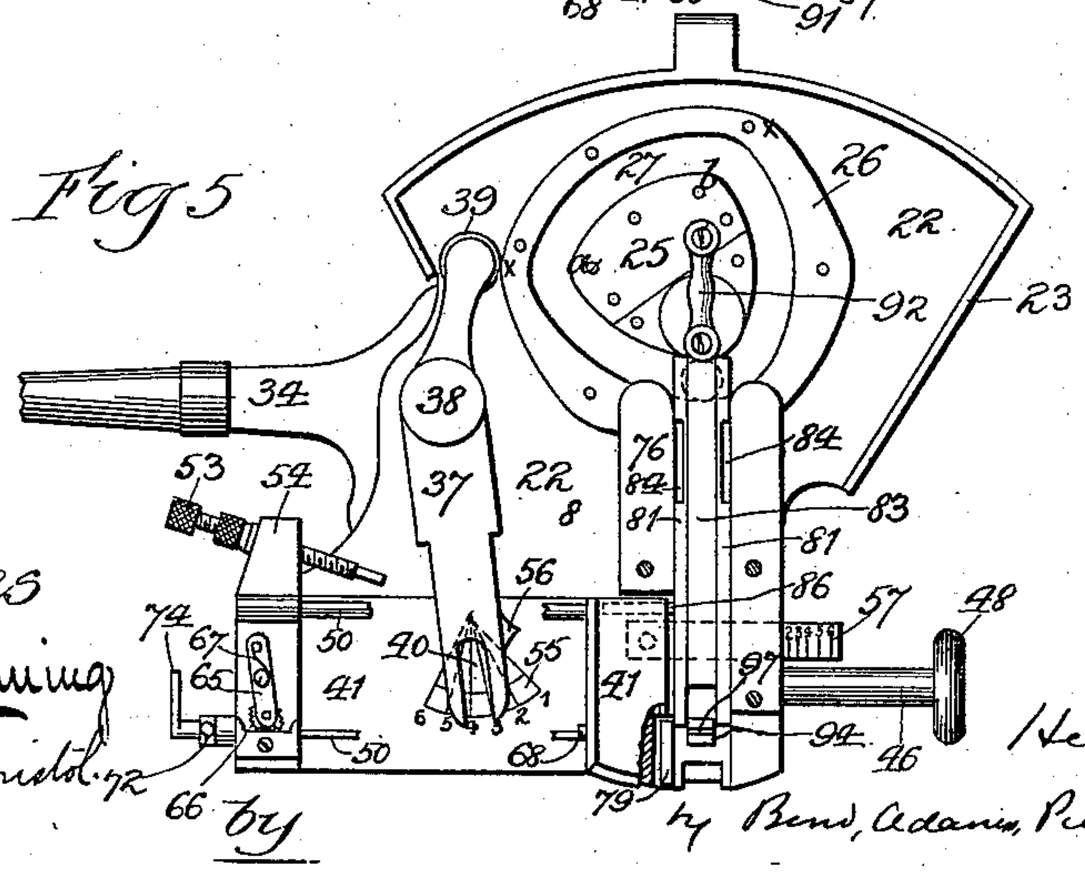


Fig 5



Witnesses
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(No Model.) 4 Sheets—Sheet 4.

H. WEBER.

WIRE STITCHING MACHINE.

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Fig 8.

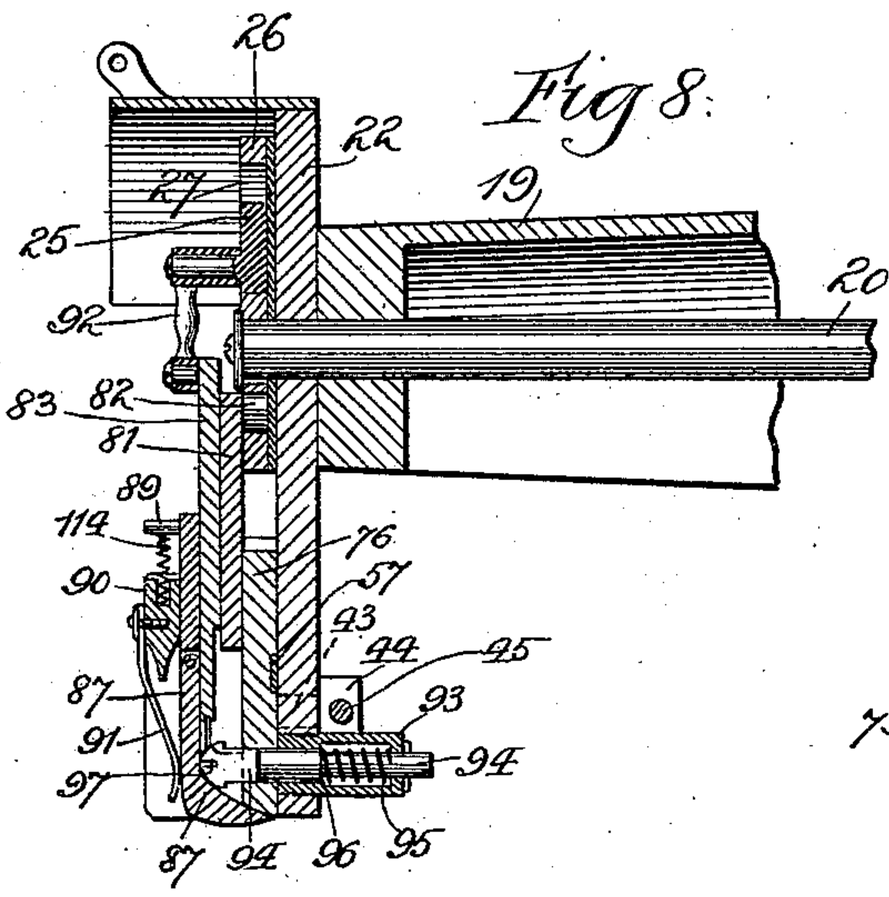


Fig 15.

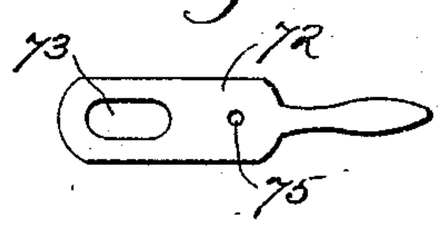


Fig 10

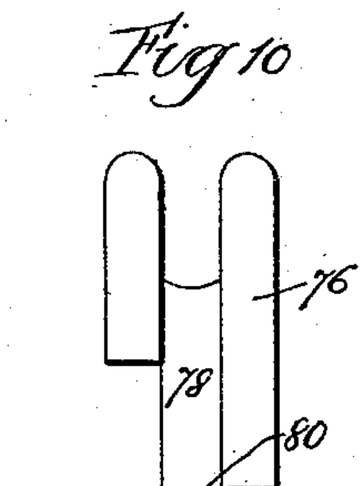


Fig 11.

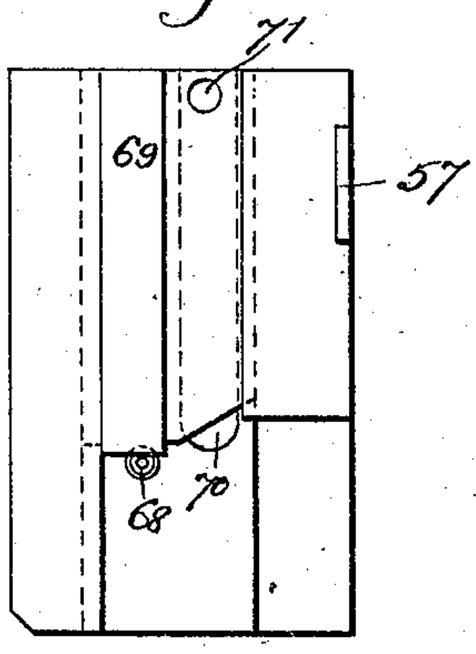


Fig 12

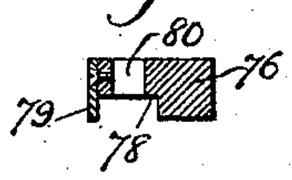


Fig 9

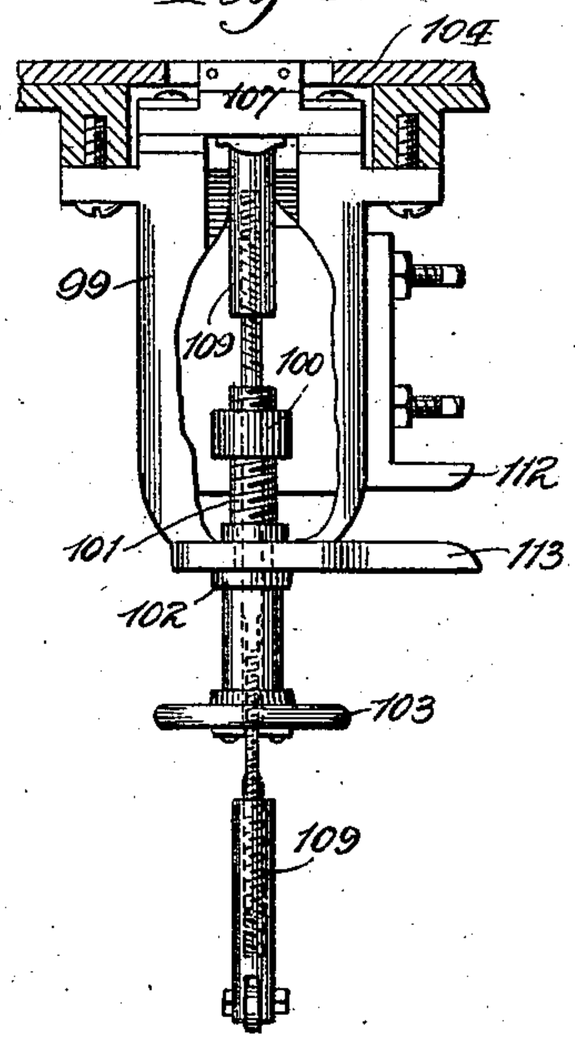


Fig 14

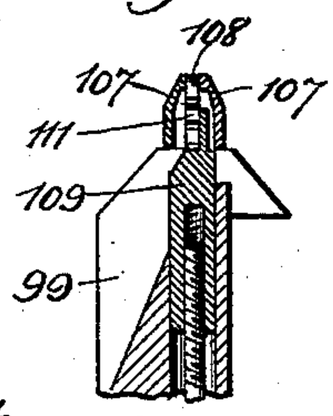
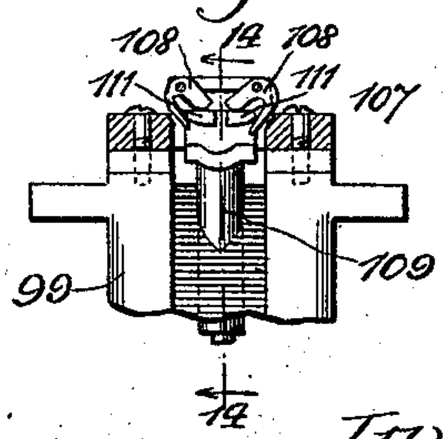


Fig 13



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UNITED STATES PATENT OFFICE.

HENRY WEBER, OF CHICAGO, ILLINOIS, ASSIGNOR TO JOHN R. HUDSON, OF SAME PLACE.

WIRE-STITCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 548,681, dated October 29, 1895.

Application filed March 6, 1894. Serial No. 502,585. (No model.)

To all whom it may concern:

Be it known that I, HENRY WEBER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Wire-Stitching Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the machine. Fig. 2 is a front elevation of the machine. Fig. 3 is an enlarged detail, being a front view of the feeding and staple-forming devices, with the glass cover removed, and of the table. Fig. 4 is an enlarged detail, being a horizontal cross-section formed by a plane passing through the line 4 4 of Fig. 3. Fig. 5 is an enlarged detail, being a front view of the feed and staple-forming devices with the face-plate removed. Fig. 6 is an enlarged detail, being a side view of the staple former and supporter. Fig. 7 is a detail, being a horizontal cross-section upon line 7 7 of Fig. 6. Fig. 8 is an enlarged detail, being a central vertical section upon a plane passing through the line 8 8 of Fig. 3. Fig. 9 is an enlarged detail, being a view of the movable table-support and clincher-rod with a portion of the face of the table-support removed. Fig. 10 is an enlarged detail, being a view of the slide-box. Fig. 11 is an enlarged detail, being an end view of the inner end of the sliding feed-adjuster and the sliding wire-cutter. Fig. 12 is a detail, being a horizontal cross-section on line 12 12 of Fig. 10. Fig. 13 is an enlarged detail, being a front view of the staple-clincher and top of the clincher-rod, partly in section. Fig. 14 is an enlarged detail, being a central vertical section made by a plane passing through the line 14 14 of Fig. 13. Fig. 15 is an enlarged detail, being a side view of a wire-straightener; and Fig. 16 is an enlarged detail, being a top or plan view of the wire-spool and cover.

This invention relates to wire-stitching machines in which wire is fed and severed into suitable lengths for staples and the staples formed and driven through book or other material which it is desired to fasten together and clinched in place.

The objects of my invention are to provide a new and improved feed mechanism for feeding the wire, to provide novel feed-adjusting devices, to provide novel means for forming the legs of the staples of uniform length, to provide novel wire-straightening devices, and to generally improve machines of the character referred to.

To accomplish these objects my invention consists in the combinations of devices hereinafter described, and pointed out in the claims.

In the drawings, 17 indicates the supporting-pillar of the machine, from which extend two goose-neck supports 18 and 19.

20 (see Fig. 8) indicates a driving-shaft, which is journaled in the goose-neck 19 and carries a driving-pulley 21 upon its outer end.

22 indicates a back plate, which is secured upon the projecting end of the goose-neck 19 and is provided with a suitable opening through which the driving-shaft 20 passes, and with side pieces 23, forming supports upon which a glass plate 24 may be secured, protecting the parts, as is best shown in Fig. 2.

25 indicates a cam, which is keyed upon the outer end of the driving-shaft 20, resting with its back against the surface of the back plate 22. The cam 25 has an outer cam-surface 26, which operates to move the wire-feeding device, as hereinafter described. It is also provided with a cam-groove 27, which is adapted to operate the staple former and driver, as hereinafter described.

28 indicates a spool, which is rotatably mounted upon a bracket 29, secured to the goose-neck 19.

30 indicates a pin, which is mounted horizontally on the top of the bracket 29 above the spool.

31 indicates a band of leather or other suitable material the end of which is secured upon the pin 30. The belt 31 passes around the spool a suitable distance and is provided with an opening 32, through which the wire may pass, as is best shown in Fig. 16.

33 indicates a spiral spring of suitable tension connecting the free end of the belt 31 with the pin 30, as is best shown in Fig. 16, and operating to cause the belt 31 to bear with proper force upon the spool 28 as it rotates.

34 indicates a hollow arm secured to the

back plate 22. 35 indicates a sliding rod moving horizontally in and out in said hollow arm 34, and carrying upon its outer end a curved tension-tube 36. A spiral spring operates to push the rod 35, and with it the tension-tube 36, outward, so as to cause the proper degree of tension upon the wire which passes from the spool 28 through the tension-tube 36; but as these devices are old and well known it is not necessary to describe them in detail.

37 indicates a feed-lever, which is pivotally mounted upon the back plate 22 upon a stud 38, which carries at its upper end a roller 39, which is adapted to bear upon the outer surface of the cam 25. A spiral spring mounted upon the stud 38 operates to force the upper end of the feed-lever 37, and with it the roller 39, toward the cam 25; but as such spring and its method of attachment and operation are old and well known in this class of machines I have not shown it in the drawings, and it will not be necessary to describe it in detail. The lower end of the feed-lever 37 is provided with a slot 40, adapted to engage with a pin upon the sliding feeder and move the same back and forth, as hereinafter described.

41 indicates a feed-adjuster, which is provided with a projecting block 42 upon its rear surface, adapted to slide horizontally in a slot 43 in the back plate 22, as is best shown in Fig. 4.

44 indicates a back piece, which is bolted to the back of the block 42 and adapted to bear against the back surface of the back plate 22 above and below the slot 43, so as to hold the feed-adjuster upon the back plate.

45 indicates a rod, which is secured to the back piece 44 and projects horizontally a suitable distance beyond the edge of the back plate and is screw-threaded upon its outer end.

46 indicates a screw-threaded tube rotatably mounted in an ear 47, secured to the back plate 22, as is best shown in Fig. 4. The tube 46 is provided with a thumb-wheel 48 upon its outer end, whereby the tube 46 may be turned. As the thumb-wheel 48 is turned the rod 45 will be moved forward or backward, as the case may be, carrying with it and moving horizontally upon the back plate 22 the feed-adjuster 41, as is best shown in Fig. 4. The feed-adjuster 41 is provided in front with a recess 49, in which the lower end of the feed-lever 37 moves.

50 indicates parallel rods secured to the feed-adjuster near the front of the recess 49, one near its top and the other near the bottom and passing across from side to side.

51 indicates a feeder which is slidingly mounted upon the rods 50, which pass through suitable openings in the feeder 51.

52 (see Fig. 4) is a roller mounted upon the back of the feeder 51 and adapted to engage with the slot 40 in the lower end of the feed-lever 37. As the feed-lever 37 is vibrated by the action of the cam the feeder 51 is carried horizontally backward and forward upon the rods 50. The cam 25 is driven in the usual manner in these machines, and as its construction and operation are the same as are found in machines of this character and are well known it is unnecessary to describe them more fully here.

53 indicates a feed-adjusting screw, which passes through a threaded opening in the projection 54 of the feed-adjuster 41. By screwing the feed-adjusting screw 53 in or out the backward motion of the lower part of the feed-lever 37 will be limited by the feed-lever 37 coming against the end of the feed-adjusting screw 53, thereby regulating the distance which the feeder 51 is carried backward in the feed-adjuster 41.

55 indicates a gage, which is engraved or marked in any suitable manner upon the surface of the recessed portion 49 of the feed-adjuster 41.

56 indicates a point which is formed upon or secured to the lower end of the feed-lever 37 and which passes across the surface of the gage 55.

57 indicates a bar, which is secured to the end of the feed-adjuster and passes horizontally outward through a recess in the slide-box hereinafter described. The outer end of the bar 57 is provided with a number of vertical marks, which are adjusted so as to form a gage by which the movement of the feed-adjuster 41 may be regulated to the desired amount when moved backward or forward by the action of the thumb-wheel 48, as hereinbefore described. The gage-marks upon the end of the bar 57 are so placed as to conform with the divisions upon the gage 55, so that when the feed-adjuster is moved to a position indicated by any one of the numbers upon the gage at the end of the bar 57 the point 56 upon the feed-lever 37 may be adjusted by the feed-adjusting screw 53 upon a corresponding number of the gage 55, and when the machine is operated the legs or arms of the staple will be of the same length.

58 indicates a shoulder, which is preferably formed separate from and secured to the lower end of the feeder 51, and is provided at each end with upwardly-projecting ears 59, which are pierced for the passage of the wire, so that the wire passing through them will rest upon the upper surface of the shoulder 58. I have shown the shoulder 58 as formed separately from and secured to the lower end of the feeder 51, and that is the way in which I prefer to make it; but it is obvious that it might be formed integral with it.

60 indicates a check-pawl, which is pivoted at its upper end upon the outer surface of the feeder 51 and is provided at its lower end with a projecting pin 61.

62 indicates a spring, which is secured at its upper end to the pivot upon which the check-pawl 60 turns, and at its lower end bears

upon the pin 61, so as to force the lower end of the check-pawl 60 downward toward the upper surface of the shoulder 58.

63 indicates a wire-gripper, which is pivotally mounted upon the lower end of the check-pawl 60 and has its edge serrated to enable it to grip the wire. The operation of the check-pawl is such that when the feeder 51 is moved by the action of the feed-lever 37 toward the staple forming and driving mechanism hereinafter described the wire-gripper coming in contact with the surface of the wire will tend to press it against the shoulder 58 and hold it firmly in position, preventing the wire from slipping upon the shoulder and forcing it forward as the feeder moves. When the feeder is moved in the opposite direction by the action of the feed-lever, the gripper will be freed by the backward motion of the feeder from the surface of the wire, permitting it to slide upon the wire.

64 indicates a shoulder similar in form and construction to the shoulder 58 and secured upon the outer end of the feed-adjuster 41, as is best shown in Figs. 3 and 5.

65 indicates a check-pawl similar in construction and operation to the check-pawl 60 and having a wire-gripper 66 pivotally mounted on its end similar in form, construction, and operation to the wire-gripper 63, and a spring 67 operating to force the lower end of the check-pawl downward against the shoulder 64. The operation of the pawl 65 is such that when the wire is pulled through by the forward motion of the feeder 51 the lower end of the pawl will be raised, permitting the wire to slide through. When the feeder 51 is moved backward in the opposite direction, the lower end of the pawl 65 is forced downward upon the wire, holding it against the shoulder 64 and preventing it from moving backward as the feeder is moved backward. The wire, after passing through the feeder 51, passes through a suitable opening 68, horizontally pierced through the inner end of the feed-adjuster 41.

69 indicates a wire-cutter, which is mounted so as to slide vertically in suitable grooves on the inner end of the feed-adjuster 41, as is best shown in Fig. 11. The inner end of the feed-adjuster 41 is provided with a vertical slot 70, as is best shown in Figs. 4 and 11, and the wire-cutter 69 is pierced near its upper end with an opening 71 opposite said slot, through which opening 71 a pin secured to the staple-former, as hereinafter described, passes, reciprocating the cutter 69 with the motion of the staple-former, as hereinafter described, and operating to sever the wire as it passes out of the opening 68 close against the end of the feed-adjuster. As the wire is severed close to the end of the feed-adjuster, as aforesaid, it is obvious that the farther the feed-adjuster is moved away from the staple-forming devices by the rotating of the thumb-wheel 48 the longer the staple will be. The length of the staple is thus adjusted to the thickness of the work which it is desired to fasten.

72 indicates a wire-straightener, which is best shown in the detail Fig. 15. The wire-straightener 72 is provided with a handle at one end and at the other end with a slot 73, and is mounted upon the outer end of the feed-adjuster 41 by means of a screw-lever 74 passing through the slot 73 and screwed into the end of the feed-adjuster 41, as is best shown in Fig. 4. The wire-straightener 72 is also provided with a suitable opening 75, through which the wire passes after leaving the tension-tube 36. The object of the wire-straightener is to cause the wire, after passing through the feed-adjuster, to enter into the staple-forming apparatus hereinafter described. If the wire after leaving the feed-adjuster tends to bend downward, it may be caused to bend in the opposite direction by raising the free end of the straightener 72 a suitable distance, and if it tends to bend upward the tendency may be corrected by moving the free end of the straightener downward a suitable distance. If the wire after leaving the feed-adjuster tends to move in or out horizontally, it may be corrected by moving the straightener 72 out or in on the thumb-nut 74 by means of the slot 73, any movement of the wire-straightener in any direction tending to cause the free end of the wire to bend in the same direction after leaving the feed-adjuster.

76 indicates a slide-box, which is secured to the back plate 22, and is constructed at its rear surface to accommodate the gage-bar 57, as shown in Fig. 8. The front portion of the slide-box 76 is provided with a vertical groove 78, (see Figs. 10 and 12,) the upper portion of the back of said plate being cut away, as is shown in Fig. 10, to permit the movement of the staple-former, hereinafter described. A portion of one side of the slide-box, as is shown in Fig. 10, is cut away to permit the movement of the knife-pin upon the staple-former, hereinafter described.

79 indicates a guide, which I prefer to form separately from and secure to the lower end of the slide-box 76, as is shown in Figs. 10 and 12, for the purpose of forming a guide at the lower end of the groove 78. It may, of course, be formed integral with the slide-box. The lower end of the slide-box 76 is pierced with an opening 80 for the passage through it of the lower staple-former, hereinafter described.

81 indicates an upper staple-former, which is mounted and adapted to reciprocate in the groove 78 of the slide-box 76. The upper staple-former 81 is provided at its upper end with a roller 82, which is rotatably mounted thereon and adapted to rest in and be operated by the cam-groove 27 in the cam 25, causing the staple-former to reciprocate up and down as the cam 25 is rotated. As this operation of the cam and the reciprocating of the staple-former are old and well known in this class of machines it is not necessary to de-

scribe them more fully in detail. The upper staple-former 81 is, in general, of the same form and method of operation as the older and well-known form of upper staple-formers in machines of this class, and is provided with a vertical groove at its front, in which a driver 83 reciprocates, as hereinafter described. The upper staple-former 81 is provided near its upper end with two recesses 84, one upon each side, and with a horizontally-projecting pin 86, (see Fig. 5,) adapted to engage with the opening 71 of the cutter 69 and reciprocate the cutter as the upper staple-former is reciprocated by the action of the cam. The pin 86 projects into and works in the cut-away portion at the side of the slide-box nearest the feed-adjuster, as shown in Fig. 10.

87 indicates a staple-supporter, which is, in general, of the form and construction well known in this class of machines, except that at its upper end it is provided with a fork 88, which rests in the recesses 84 in the upper staple-former 81, and is provided with a pin 89, projecting horizontally forward at its upper portion, as is best shown in Figs. 6 and 7.

90 indicates a face-plate, which is removably secured to the outer surface of the slide-box 76, as is shown in Fig. 3 and indicated by dotted lines in Fig. 6. A central vertical opening is cut in the face-plate 90, and a spring 91 is mounted upon the face-plate 90 and passing into said opening bears against the lower end of the supporter 87, forcing it inward, as is best shown in Fig. 8.

114 indicates a spring, which is secured at its upper end upon a pin 115, projecting downwardly from the pin 89 at its lower end in an opening 116 in the top of the face-plate 90. The spring operates to move the staple-supporter 87 upward when freed from the upper shoulders formed by the recesses 84 as the upper staple-former moves upward, as is best shown in Figs. 6 and 8.

83 indicates a driver, which is mounted in the groove in the front of the upper staple-former 81, so as to slide freely vertically therein.

92 indicates a link, one end of which is pivoted eccentrically on the cam 25 and the other end pivotally secured to the upper end of the driver 83, as is best shown in Figs. 3 and 5, causing the driver 83 to reciprocate vertically as the cam 25 is rotated. The driver 83, as is best shown in Fig. 8, and the upper staple-former 81, as is best shown in Fig. 6, are each provided with a small groove across the bottom, in which the wire rests when the devices are in operation. The lower portion of the back of the upper staple-former 81 is cut away at the lower end of the recess therein, as is best shown in Fig. 8, enabling the sides of the staple-former to straddle the lower staple-former, hereinafter described, and the supporter 87 as the machine is operated.

93 indicates a box, which is secured to the back plate 22 and projects horizontally backward therefrom.

94 indicates a lower staple-former, which passes through the opening 80 in the slide-box 76 and into the box 93.

95 indicates a spiral spring surrounding the lower staple-former 94 in the box 93 and bearing against a shoulder 96 of the said lower staple-former 94 and against the end of the box 93 and operating to push the lower staple-former forward under the upper staple-former and hammer, as is best shown in Fig. 8. The front end of the lower staple-former 94 is rectangular in cross-section, as is best shown in Fig. 5, and is beveled above and below, as is best shown in Fig. 8. It is also provided with a slot 97, extending transversely across its end, as is best shown in Figs. 5 and 8, of suitable size for the wire to pass through it.

98 indicates a saddle-frame, which is mounted upon the upper end of a block 99, which is hollow, in order to permit the passage through it of parts hereinafter described.

100 (see Fig. 9) indicates a nut, which is secured to the end of the goose-neck 18.

101 indicates a bolt, which is provided with a shoulder 102, that bears against the lower portion of the block 99, as is best shown in Fig. 9. The bolt 101 passes through the nut 100 and is provided at its lower end with a hand-wheel 103, which operates as it is turned to raise or lower the block 99, carrying with it the saddle-frame 98. The bolt 101 is pierced to permit the passage through it of parts hereinafter described.

104 indicates a table, which is divided longitudinally in two parts, which are hinged together, as is best shown in Figs. 1 and 3.

105 indicates braces, which are hinged below the table 104. The braces 105 are adapted to rest in grooves 106 at the bottom of the saddle-frame 98 and operate when in position to hold up the two parts of the table 104, so that it may form one continuous level surface. When either of the braces 105 is free from the grooves 106 in the saddle-frame 98, the corresponding part of the table will drop down, so as to rest upon the saddle-frame 98. Either side or both sides of the table 104 may be so dropped as may be desirable from the nature of the work that it is desired to stitch.

107 indicates a clincher-block, which is secured upon the upper end of the block 99, as is best shown in Figs. 9 and 13.

108 indicates clinchers, which are pivoted in said clincher-block 107 in an opening extending through said clincher-block, as is best shown in Figs. 13 and 14. The clinchers 108 are of a U shape, and are pivoted near the bottom of one arm of the U, as is best shown in Fig. 13.

109 indicates a clincher-rod, which passes through the block 99 and downward through the hollow bolt 101. The lower end is pivotally connected with a lever 110, which projects outward from the lower goose-neck 18. The inner end of the lever extends within the supporting-pillar 17 of the machine, and is moved up and down by any well-known cam or other

reciprocating mechanism located within the pillar and connected with the driving-pulley 21 and operating, as the said lever 110 is vibrated, to reciprocate the clincher-rod 109 vertically. The lever 110 and the devices by which it is operated are of the ordinary and well-known form and construction in this class of machines, and it is therefore not necessary to describe them. The upper end of the clincher-rod 109 is provided with two lugs 111, which are elongated and adapted to loosely rest between the two arms of the clinchers 108 and operate to throw the upper arms of the clinchers up when the clincher-rod 109 is moved vertically upward and to bear against the lower arm and throw the clinchers down when the clincher-rod 109 is moved downward. The lugs 111 are elongated for the purpose of affording a continuous support and a firm bearing for the clinching-arms of the clinchers 108 when they are forced upward to clinch the staples, as is best shown in Fig. 13.

112 (see Fig. 9) indicates a jaw, which is secured upon the outer end of the goose-neck 18.

113 indicates a jaw, which is secured upon the lower end of the block 99 immediately below the jaw 112 and moving with the block 99.

The jaws 112 and 113 are so adjusted that the distance between them may be the same as the distance between the top of the table and the operative parts of the staple forming and driving mechanism, thus forming a gage by which the height of the table may be adjusted to the thickness of the work which it is required to fasten. The work is placed between the jaws 112 and 113, and by turning the hand-wheel 103 the block 99 is moved until the distance between the jaws 112 and 113 corresponds to the thickness of the work. The work is then removed and the staple will be adjusted at a suitable distance from the staple forming and driving mechanism.

117 indicates a table, which is mounted upon a vertical pin 118 at one side of the machine. The pin 118 is rotatably secured to the side of the machine, as is best shown in Figs. 1 and 2, whereby the table 117 may be turned to one side or the other, as may be desired, forming a convenient table upon which the finished work may be deposited.

The operation of my machine is as follows: The wire is threaded from the wire-spool 28 through the tension-tube 36, through the straightener 72, and through the openings in the shoulder 64 below the check-pawl 65. It is then passed through the openings in the ears 59 of the shoulder 58 below the check-pawl 60 and threaded through the opening 68 in the end of the feed-adjuster 41. As the machine is set in motion, the cam 25 revolving, bringing the cam-surface 26 in contact with the roller 39 upon the feed-lever 37, throws it outward, the inner end of the feed-lever 37 being carried inward, carrying with it the feeder 51, thus carrying the wire forward into the slot 97 of the lower staple-former 94, the feed-adjuster 41 having been previously adjusted according to the length of the staple which it is desired to use. The portion of the outer cam-surface 26 between the stars on Figs. 3 and 5 is an arc of a circle whose center is the center of the driving-shaft 20. The upper end of the feed-lever having been thrown over to its greatest extent, the roller 39 bears upon the portion of the cam which is the arc of a circle, and the feed-lever is therefore retained in the position in which it has been thrown by the operation of the cam until it passes beyond the end of that portion which is the arc of a circle. As soon as the feed-lever 37 has been operated to throw the wire into the groove of the lower staple-former the cam-groove 27 begins to operate upon the roller 82 of the upper staple-former 81, moving it downward with the driver. As the staple-former begins to move downward, the pin 86 engaging with the opening 71 of the cutter 69 brings the cutter 69 downward upon the wire and severs it as the downward motion of the upper staple-former is continued. Its lower end straddling the lower staple-former 94 engages the wire in the groove at the bottom of the upper staple-former and bends the free ends of the wire downward over the lower staple-former 94 into the form of a staple around the lower end of the supporter 87, which is carried downward as the upper staple-former moves downward by the action of the upper shoulders of the recesses 84 coming in contact with the fork 88. The portion of the groove between letters *a* and *b* in Figs. 3 and 5 is an arc of a circle of which the center is the axis of the driving-shaft 20. As the cam rotates so that the roller 82 passes beyond the point *a* the upper staple-former is held in the same position while the roller is passing upon the portion *a b* of the cam-groove 27. As the roller 82 comes to the point *a* of the cam-groove 27 the link 92, as the cam 25 rotates, forces the driver 83 still farther downward. As the driver comes against the beveled surface of the lower staple-former 94 it forces it inward, leaving the staple which has been formed by the action of the upper staple-former in its place between the sides of the upper staple-former 81 and the supporter 87 until the staple is freed from the lower staple-former, the upper staple former and supporter having been carried downward to their lowermost limit and resting upon the surface of the work. As the driver continues its downward course, the top of the staple engages with the groove in the bottom of the driver, and the driver coming in contact with the beveled top of the hinged portion of the supporter 87 forces it outward as the driver descends, thus supporting the sides of the staple as it is driven through the paper until the supporter 87 is forced backward till the staple passes off from its point and the staple is driven home by the action of the driver. As the staple is driven through the work, the points come in contact

with the upper surfaces of the clinchers 108, which, being inclined downward toward one another, as is shown in Fig. 13, bend the ends of the staple inward. The mechanism operating the lever 110 is so timed as to drive the clincher-rod 109 upward when the staple has passed through the paper, carrying the upper surfaces of the clinchers 108 upward and clinching the wire tightly against the paper. The bearing-surface 26 of the cam 25 is so constructed as to permit the lever 37 to be returned backward by the operation of the spring hereinbefore mentioned to its former position at the proper time to permit it to again grip the wire and push it under the staple-former, as before. The bearing-surfaces of the cam-groove 27 and the link 92 are so arranged as to return the upper staple former and driver to their original positions after the staple is driven. As the clincher-rod 109 is moved downward after the staple is clinched, the lugs 111 coming in contact with the lower arms of the U-shaped clinchers 108 return the clinchers to the original position shown in Fig. 13. In case the wire passing through the machine bends so as not to enter the groove in the lower staple-former the wire-straightener 72 is adjusted to cure the difficulty, as above described.

Before the machine is set in motion the parts are adjusted by means of the thumb-wheel 48 and the feed-adjusting screw 53 until the point 56 indicates the same position upon the gage 55 as is indicated by the gage upon the arm 57, thus causing the two legs of the staple to be of the same length.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. In a wire stapling machine, the combination with reciprocating staple-forming and staple-driving mechanism, and means for reciprocating the same, of a sliding feed-adjuster, a support for the same, means for adjusting said sliding feed-adjuster, a wire-feeder slidingly mounted on said feed-adjuster, and mechanism for reciprocating said wire-feeder, substantially as described.

2. In a wire stapling machine, the combination of a support, a feed-adjuster slidingly mounted on said support, means for adjusting said feed-adjuster, a wire-feeder slidingly mounted on said feed-adjuster, means for reciprocating said wire-feeder, check pawls carried by said feed-adjuster and said wire-feeder respectively and adapted to cause a wire to be moved forward and to prevent its being moved backward as said wire-feeder is reciprocated, substantially as described.

3. In a wire stapling machine, the combination with a support, a feed-adjuster slidingly mounted on said support, a wire-feeder slidingly mounted on said feed-adjuster, mechanism for reciprocating said wire-feeder, a wire cutter mounted on said feed-adjuster, and means for operating said wire cutter, of gages carried by said feed-adjuster, and means for adjusting said feed-adjuster and said wire-feeder on said gages whereby the legs of the staples may be formed of the same length, substantially as described.

4. The combination with a support, a feed-adjuster slidingly mounted on said support, a feed-lever pivoted on said support, and a cam adapted to reciprocate said feed-lever, of a wire-feeder slidingly mounted on said feed-adjuster and adapted to be reciprocated in a straight path by said feed-lever, a bar 57 carried by said feed-adjuster and having a gage on its free end, means for adjusting said feed-adjuster, and a set screw 53 mounted on said feed-adjuster and adapted to bear upon said feed-lever and adjust the same on said gage 55, substantially as described and for the uses and purposes set forth.

5. The combination with a feed-adjuster, a wire-feeder slidingly carried by said feed-adjuster, and means for operating said wire-feeder, of a wire-straightener 72 mounted on said feed-adjuster and adapted to be adjusted at different positions, substantially as described and for the uses and purposes set forth.

6. In a wire stapling machine, the combination with wire feeding mechanism, staple forming and driving mechanism, staple clinching mechanism, a support, a vertically adjustable work table carried by said support and below said staple forming and driving mechanism, and means for adjusting said table vertically, of a fixed jaw secured to said support, a second jaw secured to said vertically adjustable table in the same vertical plane as said fixed jaw, substantially as described.

HENRY WEBER.

Witnesses:
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