

H. WEBER.

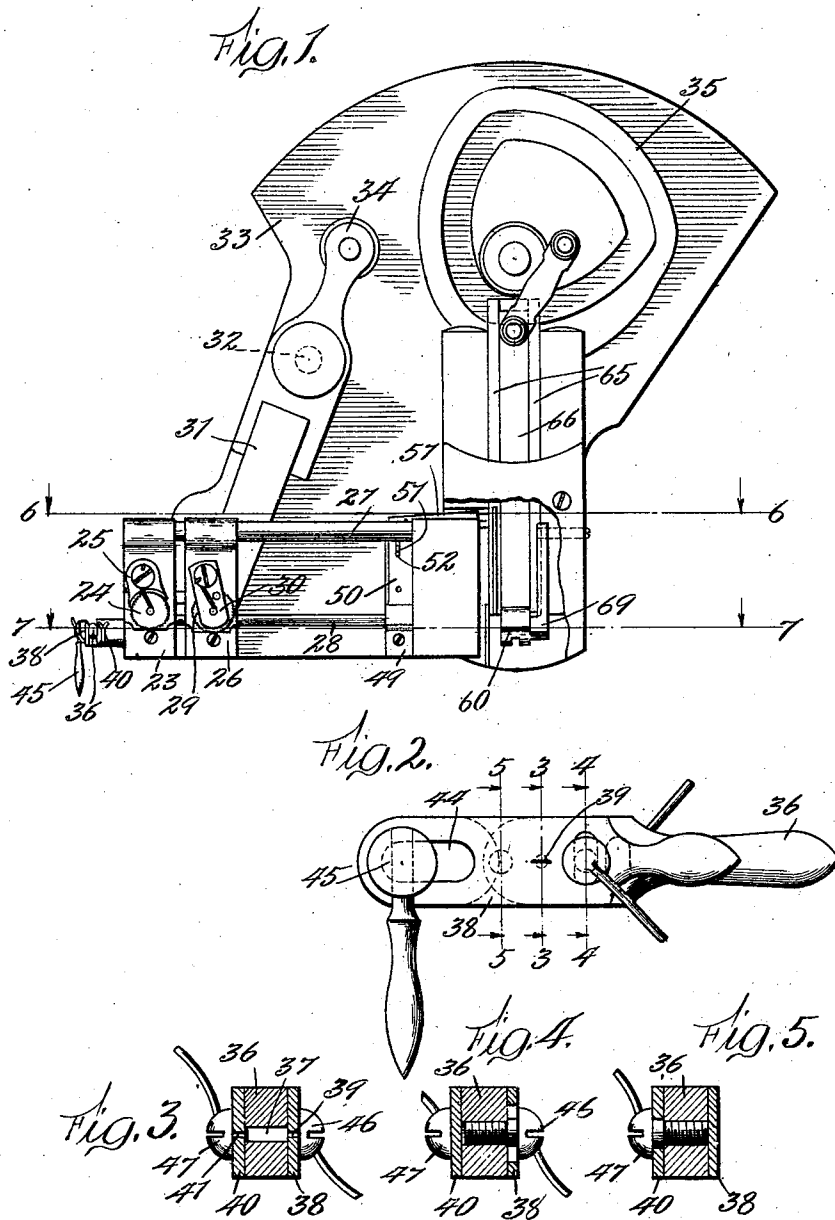
WIRE FEEDING, STRAIGHTENING, AND CUTTING MECHANISM FOR STAPLING MACHINES.

APPLICATION FILED AUG. 19, 1907.

980,894.

Patented Jan. 3, 1911.

3 SHEETS—SHEET 1.



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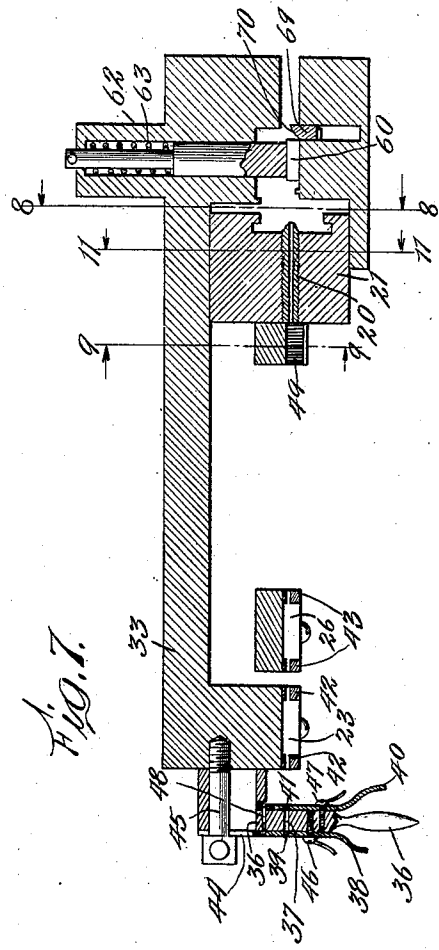
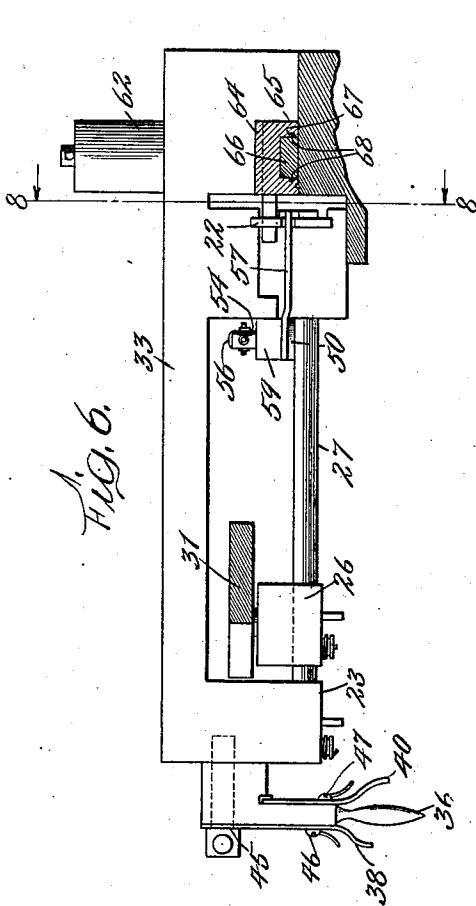
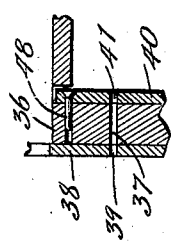


Fig. 13.



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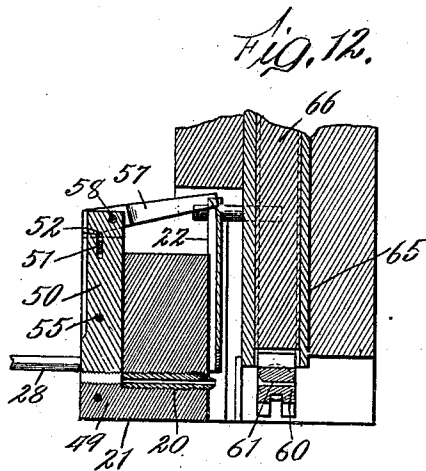
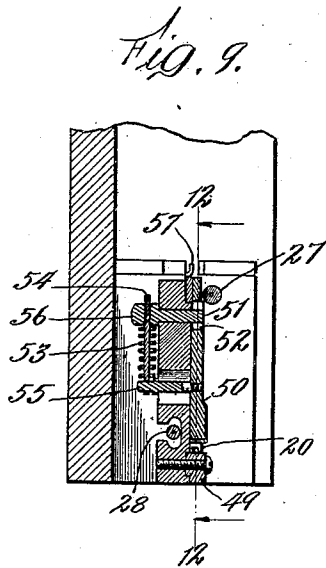
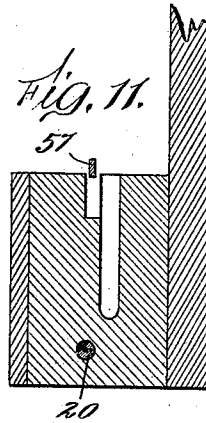
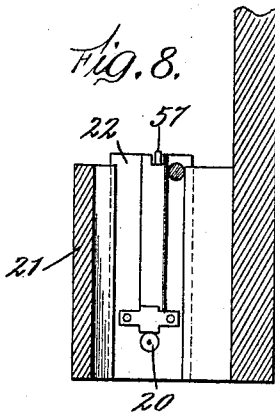
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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WIRE FEEDING, STRAIGHTENING, AND CUTTING MECHANISM FOR STAPLING-
MACHINES.

980,894.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Original application filed June 9, 1905, Serial No. 264,377. Divided and this application filed August 19,
1907. Serial No. 389,165.

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 Feeding, Straightening, and Cutting Mechanism for Stapling-Machines, of which the following is a specification.

This invention relates to improvements in wire feeding, straightening and cutting mechanism for stapling machines, particularly as shown and described in my application for United States Letters Patent, Serial No. 264,377, filed June 9, 1905, and of which the present application is a division.

In machines of this character, the supply of wire is usually contained in a coil upon a spool or reel, and consequently is given a curved form which tends to throw it out of line with the wire guide and other devices which cooperate in the proper placement of the wire in the slot of the anvil, and therefore, the primary object of this improvement is to provide improved means for removing this curvature from the wire and otherwise straightening it preparatory to reaching such wire guide or other wire-feeding devices.

The anvil in the usual machines of this class is provided with a slot open at one side into which the wire is projected and rests, while a former which embraces the anvil, by engaging the projecting ends of the wire, turns said ends downwardly to produce the staple, which is thereafter forced home by a staple driver.

Another object of the invention is to provide improved means for actuating the holder whereby the parts will be less liable to project, and will be capable of exerting greater holding powers upon the wire.

With a view to the attainment of these ends and the accomplishment of certain other objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed, and shown in the accompanying drawings illustrating an exemplification of the invention, and in which:

Figure 1 is a front elevation of a portion of a wire stapling machine partially broken

away, and having this improvement applied thereto, constructed in accordance with the principles of this invention. Fig. 2 is an enlarged end elevation of a wire tightener. Fig. 3 is a sectional view on line 3—3 of Fig. 2. Fig. 4 is a sectional view on line 4—4 of Fig. 2. Fig. 5 is a sectional view on line 5—5 of Fig. 2. Fig. 6 is a sectional view on line 6—6 of Fig. 1. Fig. 7 is a sectional view on line 7—7 of Fig. 1. Fig. 8 is a detail sectional view on line 8—8 of Fig. 7. Fig. 9 is a sectional view on line 9—9 of Fig. 7. Fig. 10 is a detail elevation of a portion of the wire cutting knife. Fig. 11 is a detail sectional view on line 11—11 of Fig. 7. Fig. 12 is a detail sectional view on line 12—12 of Fig. 9. Fig. 13 is an enlarged detail sectional view of the wire tightener.

Referring more particularly to the drawings, and in the present exemplification of the invention, the numeral 20 designates a section of a tube through which the wire is fed from the spool or reel, as usual in machines of this type, and which it is not necessary to illustrate. This section of tube is preferably screwed onto the frame portion 21 for holding the wire preparatory to being severed by the wire cutting knife 22, all as usual in machines of this character. The wire in its passage to the tube 20 runs over a fixed support 23 over which is arranged a holding dog 24 pivoted in an arm 25 in such a manner that it may swing downwardly against the support 23 should the wire attempt to make a retrograde or backward movement, and may freely move upwardly away from the support in the direction of the feeding movement of the wire, the dog 24 being held against reverse rotation in any desired or suitable manner. From the support 23 the wire passes over a second support 26, which is suitably mounted upon a pair of guide rods 27, 28, as usual, and over which support is arranged a second dog in the form of a serrated wheel 29 mounted in a pivoted arm 30, as usual, acting like the arm 25 to allow the dog 29 to move forwardly in the direction of the movement of the wire, but to grip the wire against the seat or support 26 for preventing a relative rearward movement between the wire and the feeding dog 29. The support 26 is in the form of a slide mounted upon the guide rods 27, 28,

and is suitably connected to an operating lever 31 pivoted as at 32 to a plate or head 33, and having an arm 34 arranged to be acted upon by a cam 35 whereby the proper feeding movement will be imparted to the slide or support 26, and the wire will be drawn from the reel between the support 23 and holding dog 24, and thereby project through the guide tube 20.

As before stated, the wire comes from the reel in a curved form, and this gives it a tendency to project upwardly or in some other direction out of a straight line with the guide tube 20 and the staple forming and driving mechanism arranged beyond the guide tube, and which mechanism forms the subject matter of the application above referred to. In order to remove this curvature from the wire before it comes into engagement with those parts of the machine where its deflection from a straight course would materially interfere with the proper operation of the machine, there are provided these improved wire straightening devices more clearly illustrated in Figs. 2 to 7.

Arranged directly opposite the passage for the wire over the support 23 and under the dog 24 is an arm 36 which is provided with a passage 37 for the wire, and on one side of this arm is arranged an auxiliary arm 38 having a passage 39 for the wire, while on the other side is located a second auxiliary arm 40 provided with a passage 41 for the wire. All of these passages are approximately in line and register with the passages 42, 43 of the supports 23 and 26 respectively. The passages 39, 41 are preferably in the form of horizontal slits, while the passage 37 in the main frame 36 is preferably cylindrical and approximately the same in diameter as the length of the slots 39, 41. Both the auxiliary arms 38, 40 are pivoted so that they may be moved independently of the main frame 36, and their slotted passages 39, 41 thereby raised or lowered with relation to the main passage 37, and all of the arms 36, 38 and 40 are adjustable laterally or longitudinally with relation to the passages 42 and 43, so that they may be properly adjusted in this direction also for bringing the wire passages therein into accurate register with the said passages 42 and 43, and in addition to this longitudinal adjustment of the arms as a whole, they are also adjustable in a rotary direction as a whole, so that the wire passages therein may be raised or lowered with relation to the wire passages 42—43. To that end, the main frame 36 is formed with a slot 44, which is also carried through the auxiliary arm 38, and through which slot projects a set screw 45, whereby all of the arms may be rigidly clamped against the end of the plate or head 33. The auxiliary arms 38, 40 are also provided with set screws

46, 47 respectively, whereby they may be securely held in place after they are given the desired adjustment, the set screw 45 serving as a pivot for the arm 38, and a pin 48 as a pivot for the arm 40. The elongated passages or slots 39, 41 in the auxiliary arms are approximately the same in width as the diameter of the wire to be used, and consequently it will be seen that by the proper adjustment of these passages 39, 41 with relation to each other and the passage 37, the wire may be caused to scrape and rub more on one side than the other as it passes through the straightener, and consequently it may be given a tendency to curve in the opposite direction to that which it is curved by being wound upon the reel. Hence, by proper adjustment of these straightening members, the requisite degree of friction may be produced on either side of the wire for overcoming the curvature which it possesses before reaching the straightener.

The wire in its passage to the tube 20 passes over a block or jaw 49, which is fixed, and over which is arranged a movable jaw or wire-holder 50, guided by a pin 51 and slot 52, or by any other suitable means, as is usual in machines of this character. In the construction shown in my United States Letters Patent, No. 683,823, issued October 1, 1901, the upper end of the shank of the jaw 50 is formed with an integral laterally projecting arm arranged to be struck and operated by the upper edge of the upper end of the wire knife 22 to cause the jaw to release the wire on the jaw 49, while the jaw 50 was pressed against the wire by means of a spring, just as in the present improvement, the spring being shown at 53 on rod 54, which is secured at its lower end to a pin 55 attached to the shank of the jaw 50, and passes through a rearwardly projecting portion 56 of the guide pin 51, the spring 53 being sleeved on the rod 54 between the portion 56 and the pin 55, as shown more clearly in Fig. 9 of the drawings. In the present invention, however, the aforesaid integral laterally projecting arm is omitted, and in lieu thereof I employ a lever 57, which is pivoted at 58 to a suitable standard or projection 59, and is connected by fulcrum pin 58 to the upper end of the shank or jaw 50, the free end of the lever 57 projecting over the knife 22 and being adapted to be engaged thereby, as heretofore. By this means it will be seen that the parts may be made sufficiently elastic and durable to avoid breakage by the pressure of the knife 22, and at the same time they will possess the requisite power for lifting the jaw 50 out of engagement with the wire.

The anvil 60, as usual, is provided with an open sided slot 61 in its end and is mounted in a suitable socket 62 provided with a spring or cushion 63 whereby it may be

moved longitudinally, it being held against rotary motion in any desired or suitable manner.

The former 64 (shown more clearly in Fig. 6 of the drawings) is provided with flanges 65 embracing a driver 66, and the opposite faces of these flanges 65 are provided with grooves 67 extending lengthwise of the line of movement of the former and arranged directly over and in line with the inner end of the slot 61, the jaws of the driver 66 being provided with tongues 68, fitting in said grooves or slots 67 and thereby serving to guide the driver and hold it accurately in position with relation with the former and anvil.

As the wire protrudes from the wire tube 20, it extends through the slot 61 and should rest therein directly in line with the grooves 67 so that as the former descends, the wire being clipped off, the ends of the wire projecting from the sides of the anvil will be bent downwardly and fit in the grooves 67. The end of the wire is directed into the slot 61 by means of the wire guide 69 provided with a beveled or rounded face 70 arranged at one side of the anvil, and which is adapted to be engaged by the end of the wire. The specific construction and operation of this guide 69 forms the subject matter of the application above referred to.

The former 64 and the driver 66 may be operated as usual, or by any other suitable means, such, for instance, as a suitable connection between the driver and the former and the operating cam 35.

In order that the invention might be fully understood by those skilled in the art, the details of the foregoing embodiment thereof have been thus specifically described, but

What I claim as new and desire to secure by Letters Patent, is:—

1. In a wire stapling machine, the combination with wire feeding means comprising a wire passage, of a wire straightener comprising an arm provided with a passage in line with the first said passage, and relatively and independently adjustable members arranged on the side of the said arm and having passages registering with the passages in the arm.

2. In a wire stapling machine, the combination with wire feeding means comprising a wire passage, of a wire straightener comprising an arm having a passage arranged in line with the first said passage and being adjustable transversely and longitudinally, whereby the second passage may be centered with relation to the first passage,

and an arm having a passage of smaller diameter than the second said passage arranged in register with the second said passage, the second said arm being adjustable with relation to the first said arm.

3. In a wire stapling machine, the combination with wire feeding means, of a wire holder for holding the wire during the return movement of the feeding means, comprising a movable jaw, a pivoted lever for operative connection with said jaw, and means for engaging and oscillating said lever.

4. In a wire stapling machine, the combination with wire feeding means, of a wire holder for holding the wire during the return movement of the feeding means, comprising a sliding jaw, a pivoted lever having operative connection with said jaw, and a wire clipping knife for severing the wire after it passes said holding means, arranged in line with and adapted to strike the end of the said lever, for operating the said jaw.

5. A wire straightener for stapling machines and the like, including a wire feed comprising a wire passage, a wire straightener comprising relatively adjustable members having passages registering with and adjustable with relation to the first said passage and with respect to each other.

6. A wire straightener for stapling machines and the like, including wire feeding means comprising a wire passage, a wire straightener comprising an arm having a passage for the wire arranged in line with the first said passage, and an auxiliary arm having a passage for the wire registering with said second passage, said auxiliary arm being adjustable with relation to said first arm.

7. A wire straightener for stapling machines and the like, including a wire feeding means comprising a wire passage, of a wire straightener comprising an arm having a passage arranged in line with said first passage, said arm being adjustable with relation to the first said passage, and an auxiliary arm adjustable with relation to said first arm and having a wire passage registering with the passage in the said first arm.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 15th day of August A. D. 1907.

HENRY WEBER.

Witnesses:

A. L. SPRINKLE,
CLARA L. MARTIN.