J. L. FIRM.

STAPLING MACHINE.

APPLICATION FILED DEC. 17, 1909.

955,505. Patented Apr. 19, 1910.

Fig. 1.

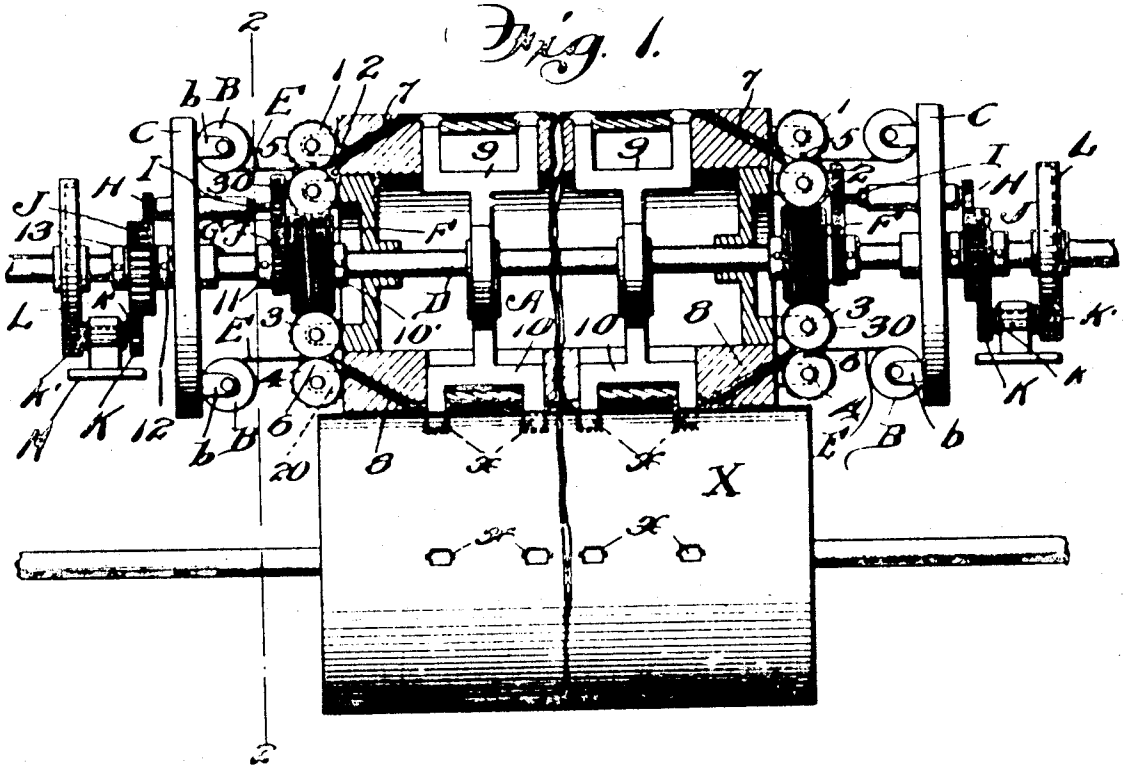
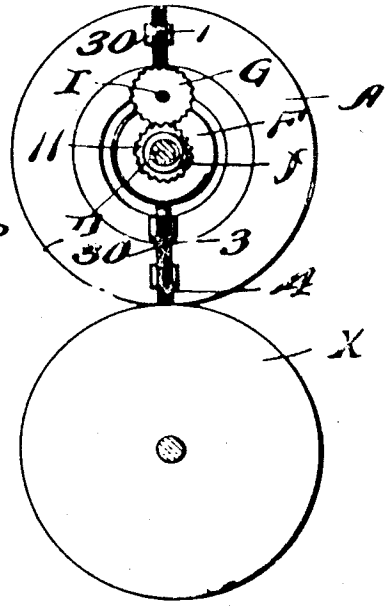


Fig. 2.



Witnesses

Geo. L. Thomas

Edith L. Smith

Inventor

J. L. Firm.

By

Attorney

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UNITED STATES PATENT OFFICE.

JOSEPH L. FIRM, OF BERWYN, ILLINOIS, ASSIGNOR TO THE GOSS PRINTING PRESS COMPANY, OF CHICAGO, ILLINOIS.

STAPLING-MACHINE.

955,505. Specification of Letters Patent. Patented Apr. 19, 1910.

Application filed December 17, 1909. Serial No. 533,624.

To all whom it may concern:

Be it known that I, JOSEPH L. FIRM, a citizen of the United States, residing at Berwyn, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stapling-Machines, of which the following is a specification.

This invention relates to stapling mechanism for rotary stapling machines, and has for its object to provide improved wire holding and feeding devices for supplying the wire at proper speed to the staple formers.

The invention is capable of use with stapling machines such for example as that shown in my Patent No. 945,506 granted Jan. 4, 1910, but is not limited to such use.

In the drawings, Figure 1 is a side elevation, partly in section, of the mechanism. Fig. 2 is a section on the line 2—2 of Fig. 1.

Referring specifically to the drawings, A indicates a rotary cylinder or carrier for the staple forming mechanism which acts in combination with a carrier X in which the formed staples are placed, in a manner similar to that described in my pending application above mentioned, the staples being received in boxes or sockets *x* in the last mentioned cylinder. The wire spools B are mounted on brackets *b* projecting from a head C, in a manner also similar to that disclosed in said application, the head C being keyed to the shaft D. The wires E are fed respectively by and between the rollers 1 and 2, 3 and 4, and are cut into lengths by the knives 5 and 6 carried by one of each of said pairs of rollers, which are mounted to turn in bearings in brackets 20 contained within the cylinder A at the end thereof. From the rollers the wires pass through guide tubes 7 and 8 by which the pieces of wire are conducted to position opposite one of the heads of the formers 9 and 10 which work radially in the cylinder A, said formers being double headed as described in my said pending application so that each forms two staples at each operation. The feeding devices are duplicated at each end of the cylinder A, which may be made in as many sections as desired, as also disclosed in said application, each section having similar wire feeding devices. From the formers the staples are delivered to the setters X. The present invention, however, relates to the means for operating and timing the wire feed rollers.

On the shaft D of the carrier A is a worm F, and gear *f*, fastened together or made in one piece, and loose on the shaft D, being held in place thereon by the collars 10 and 11. This worm meshes with worm wheels 30 fastened to one side of the rollers 2 and 3 and receives its motion from a gear G on one end of the shaft I, which is conveniently mounted in bearings in the head C. On the outer end of the shaft I, which is eccentric and parallel to the shaft D, is a pinion H driven by a gear J loose on the shaft D and is held in place by the collars 12 and 13. The gear J receives its motion and time from the gear K on shaft *k* which is driven by the gear L on the shaft D by means of a gear K′ on the shaft *k*, said shaft *k* being supported by any suitable fixture or bracket M.

In operation, motion at proper speed imparted to the gear K by the means above described will be communicated through the pinion H, shaft I and bevel gears G and *f* to the worm F which will drive the rollers 2 and 3 accordingly and thus feed the wire to the formers, the gearing being so timed that the wire will be fed at proper speed to supply the formers with proper wire sections to produce the staples.

What I claim as new is:—

1. The combination with a rotary cylinder and its shaft, said cylinder carrying a staple former, of means to feed wires to said former, comprising a pair of wire-cutting and feeding rolls carried by the cylinder, a guide leading from said rolls to the former, a worm loosely mounted on the cylinder shaft, and geared to one of said rolls, spools carried by said shaft, a feed shaft parallel and eccentric to the cylinder shaft and carried thereby to revolve therewith, and means to rotate the feed shaft.

2. The combination with a rotary cylinder carrying a staple former, of means to feed wire to said former, comprising a pair of wire-feeding and cutting rolls carried by the cylinder, a guide leading from said rolls to the former, spools mounted for revolution with the cylinder, a feed shaft revolving with the cylinder and means to drive the same, and gearing between the feed shaft and one of said rolls, including a worm mounted for rotation at the axis of the cylinder.

3. The combination with a rotary cylinder and its shaft, a staple former carried by

said cylinder, a pair of wire-cutting and feeding rolls with axes extending crosswise at the end of the cylinder, a guide in the cylinder leading from the rolls to the former, a feed shaft carried for revolution with said shaft and parallel thereto, means to drive the feed shaft, and gearing between said feed shaft and out of the rollers, including a worm loosely mounted on the cylinder shaft.

4. The combination with a rotary cylinder and its shaft, a staple former carried by the cylinder, and means for feeding wire to said former comprising a pair of wire-cutting and feeding rolls carried by the cylinder, a head on the cylinder shaft opposite and spaced from the end of the cylinder, spools for wire mounted on said head, a feed shaft extending through and carried by the head, gearing between the inner end of the feed shaft and one of the rolls, and means geared to the outer end of the feed shaft to drive the same.

In testimony whereof, I affix my signature in presence of two witnesses.

JOSEPH L. FIRM.

Witnesses:
MATILDA GEDERT,
AMELIA B. FIRM.