(No Model.) 2 Sheets—Sheet 1.

H. T. CREPEAU.

WIRE NAIL MACHINE.

No. 354,828. Patented Dec. 21, 1886.

Fig. 1.

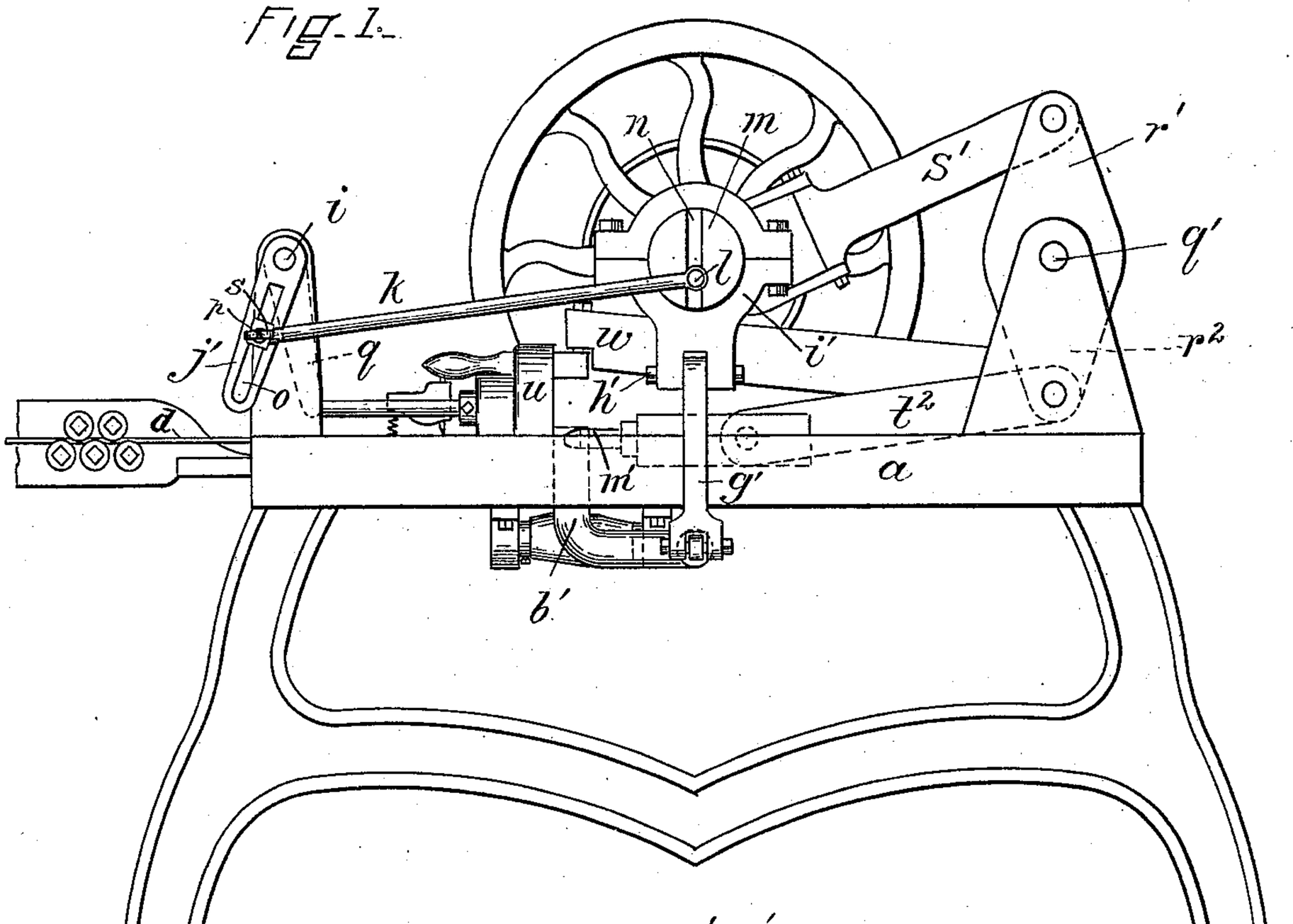


Fig. 3.

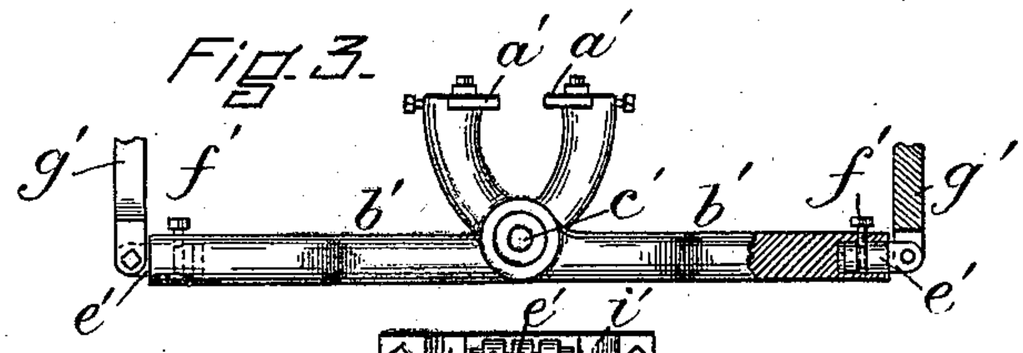
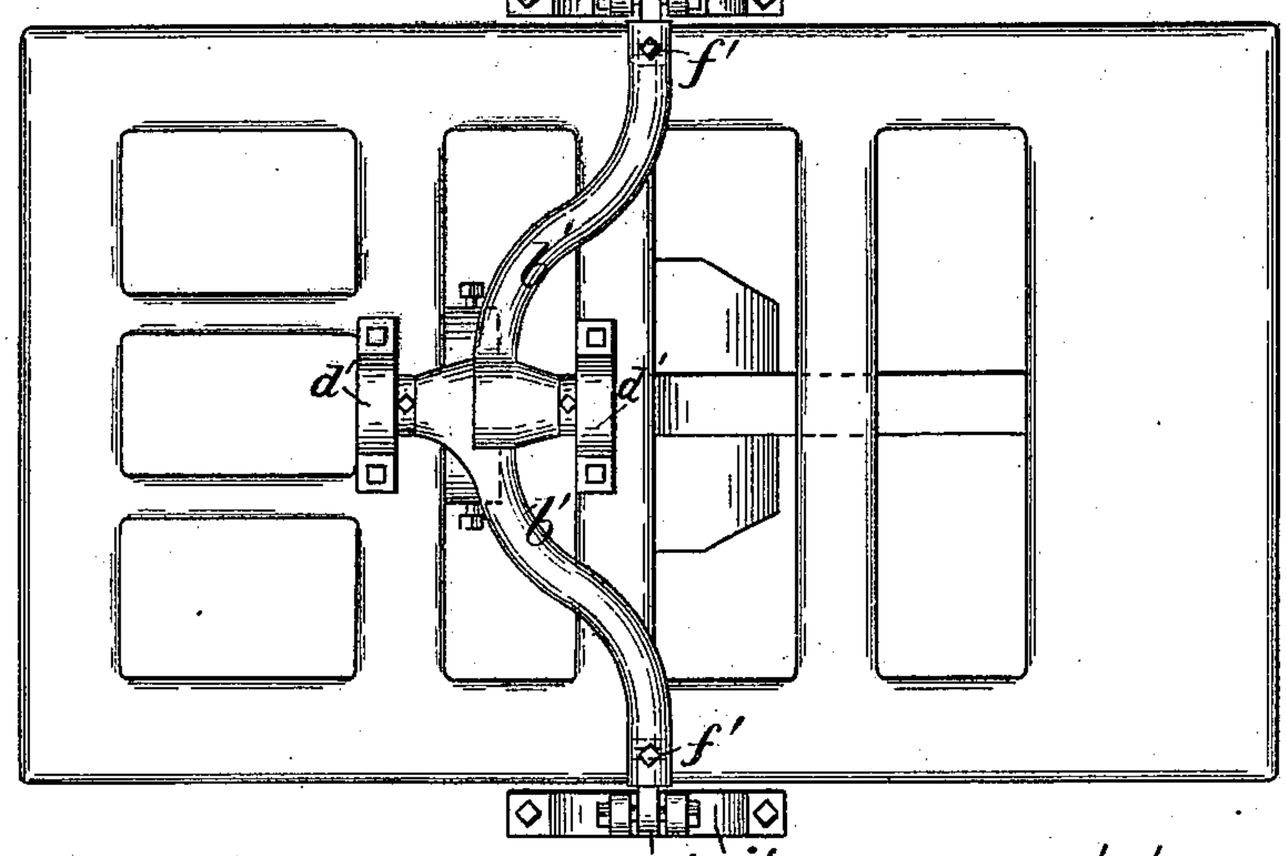


Fig. 2.



WITNESSES.

A. D. Harman.

H. H. Thurston.

INVENTOR.

Henry T Crepeau

by Mfgh'. Brown & Cooley

Attorneys.

(No Model.) 2 Sheets—Sheet 2.

H. T. CREPEAU.

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Fig. 3.

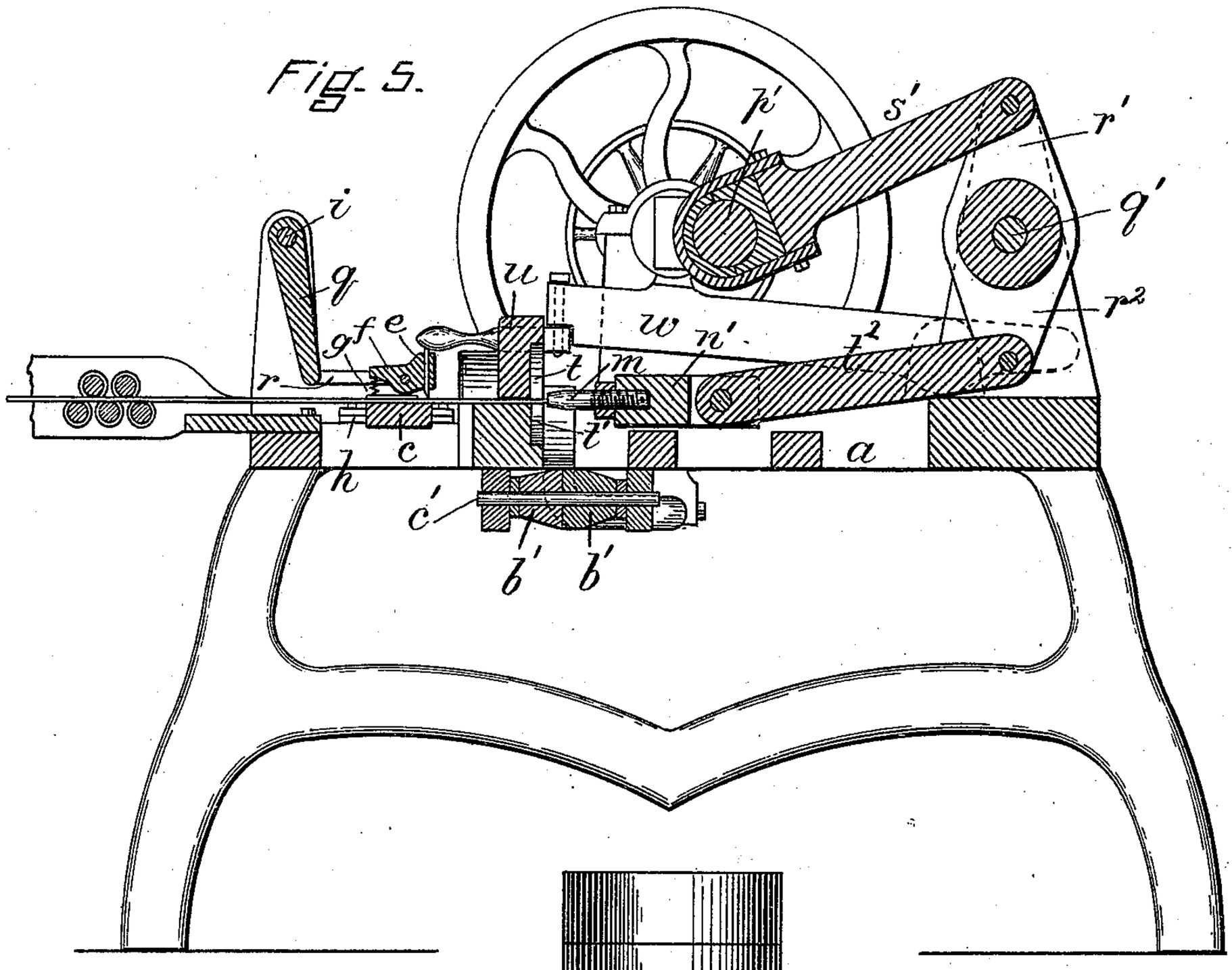
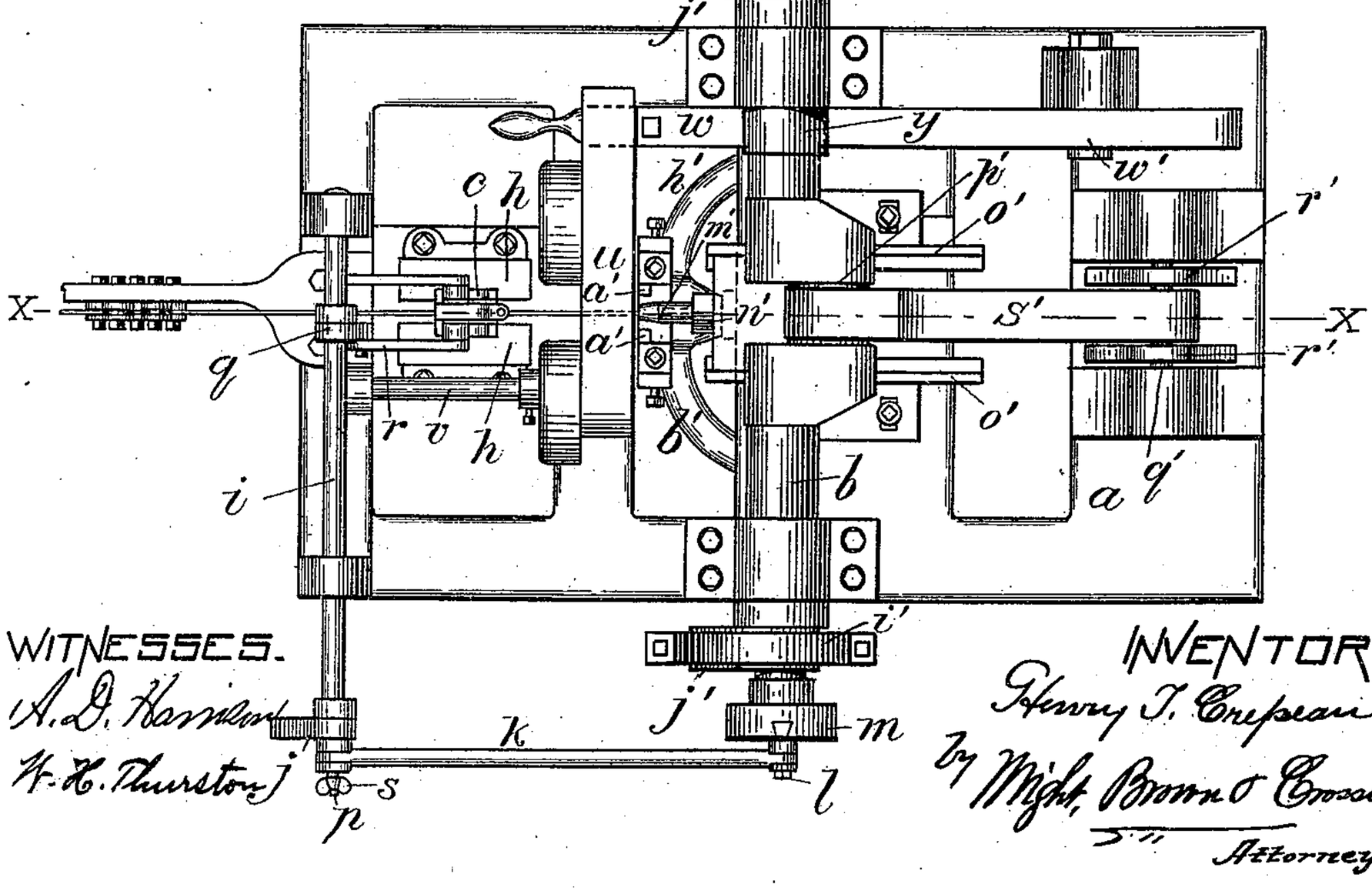


Fig. 4.



WITNESSES.

A. D. Harriman

H. H. Thurston

INVENTOR.

Henry T. Crepeau

by Wright, Brown & Crosby

Attorneys.

UNITED STATES PATENT OFFICE.

HENRY T. CREPEAU, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR TO G. W. WOOD AND GEORGE H. APPLETON, BOTH OF SAME PLACE.

WIRE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 354,828, dated December 21, 1886.

Application filed October 1, 1886. Serial No. 215,048. (No model.)

To all whom it may concern:

Be it known that I, HENRY T. CREPEAU, of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Wire-Nail Machines, of which the following is a specification.

This invention relates to wire-nail machines in which a continuous length of wire is fed forward, acted on by dies, which, by a combined swaging and cutting action, sever the wire and form a point on the part separated from the main wire, and finally upset or headed to form the head of the next nail severed and pointed by said dies.

The invention consists in the improvements hereinafter described, relating to the wire-feeding mechanism, the cutters, and the means for operating the header or hammer.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a machine provided with my improvements. Fig. 2 represents a bottom view of the bed of the machine. Fig. 3 represents a side elevation of the cutter-carrying levers shown in Fig. 2. Fig. 4 represents a top view of the machine. Fig. 5 represents a section on line *x x*, Fig. 4.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* represents the bed portion of the frame of the machine.

b represents the driving-shaft, which is journaled in bearings on the bed *a*, and is provided with devices, hereinafter described, whereby the feeding, gripping, cutting, and head-forming appliances are operated.

Near one end of the bed *a* is a sliding block, *c*, over which the supply-wire *d* passes on its way to the nail-forming appliances. Over said block is a reciprocating feed-dog, *e*, which is mounted in the end of a pivoted lever, *f*, and is pressed against the wire by a spring, *g*, bearing against said lever. The lever *f* is pivoted to ears on the sliding block *c*, which block slides between guides *h h* on the bed *a*.

i represents a rock-shaft, journaled in standards on the bed *a*, and extending across said bed. Said rock-shaft has an arm, *j*, at one end, to which is adjustably secured one end of a connecting-rod, *k*, the other end of said rod being secured by an adjustable wrist-pin, *l*, to the outer face of a disk, *m*, on the driving-shaft. The wrist-pin *l* is adjustable toward and from the center of the driving-shaft in a dovetail slot, *n*, across the disk. The arm *j* has a slot, *o*, in which the wrist-pin *p*, that secures the rod *k* to said arm, is adjustable toward and from the rock-shaft *i*.

q represents another arm on the rock-shaft *i*, said arm being connected by a rod, *r*, with the feed-dog-carrying slide *c*.

It will be seen that the rotation of the driving-shaft oscillates the rock-shaft *i* through the rod *k* and arm *j*, while the oscillations of said rod reciprocate the feed-dog through the arm *q* and rod *r*, the dog being thus caused to alternately grasp and feed the wire, and to slip back upon the same.

The adjustability of the connection of the connecting-rod *k* to the disk *m* on the driving-shaft and to the arm *j* on the rock-shaft *i* enables the rapidity of as well as the length of movement imparted to the feed-dog to be varied, as will be readily seen. The wrist-pin *p* on the slotted arm *j* has a thumb-screw, *s*, which can be grasped and rotated to tighten or loosen and move the wrist-pin without stopping the machine.

t t' represent grippers, between which the wire is fed by the feeding devices above described. The gripper *t'* is affixed to the bed *a*, while the gripper *t* is affixed to a lever, *u*, one end of which is pivoted to a rod, *v*, its other end being pressed upwardly by a spring (not shown) against a lever, *w*, which is pivoted at *w'* to the bed *a* and bears against a cam, *y*, on the driving-shaft. The rotation of said cam depresses the levers *u w* at intervals, and thus causes the grippers *t t'* to grasp the wire at intervals, the spring above referred to raising the gripper *t* and releasing the wire when said gripper is not depressed by the cam *y*.

a' a' represent the dies or cutters which sever the wire and form a point on the part cut off from the main portion of the wire. Said cutters are affixed to the shorter arms of crossed levers *b' b'*, which are mounted upon a pivot, *c'*, affixed to lugs or brackets *d' d'* on the under side of the bed *a*. The longer arms of said levers extend outwardly and have sockets in their outer ends, in which are swiveled short studs *e' e'*, which are held in said sockets by

screws f' f', entering grooves in said studs. (See Fig. 3.)

To the outer ends of the studs e' are pivoted the lower ends of rods g' g', the upper ends of which are pivoted at h' h' to straps i', encircling eccentrics j' j' on the driving-shaft. The levers b' b' are oscillated by the upward and downward movements given to the rods g' g' by the eccentrics j', and the cutters are caused thereby to alternately approach and recede from each other. The cutters are formed to cut and swage the wire, thus severing it and forming a tapering point on the severed portion. The swiveled studs e' and the pivotal connection of the rods g to the straps i' of the eccentric enable the levers b' b' to be oscillated without binding or undue friction of the parts, and enable the power of the machine to be applied to good advantage. The levers b' b' are crossed, as shown, and their shorter arms, carrying the cutters, extend upwardly above the pivotal point. The cutters are therefore caused to approach each other by a downward movement of the eccentrics, the rods g' and the longer arms of the levers b', the weight of said parts being thus utilized in giving the cutters their operative movement.

m' represents the hammer which upsets the end of the main wire after the cutting operation, and thus forms the head of the next nail. Said hammer or header is attached to a slide, n', which is reciprocated between guides o' o' on the bed a by a crank, p', on the driving-shaft, a rock-shaft, q', having arms r' r^2, a connecting-rod, s', connecting the crank to the arm r', and a connecting-rod, t^2, which connects the arm r^2 to the slide n'. The rock-shaft is oscillated by the crank p', rod s', and arm r', and the header-slide is reciprocated by the rock-shaft q', arm r^2, and rod t'.

It will be seen that the rock-shaft and its arms and the rods s' t' enable the power that reciprocates the header to be applied substantially in line with the direction of movement of the header, and therefore in a manner well calculated to economize power.

The operation as a whole is like that of other machines of this class—that is to say, the wire is first fed forward while the grippers are separated, then the grippers grasp the wire and the cutters close upon it and cut off and point a nail, and, finally, after the cutters have separated, the hammer advances and upsets the end of the wire against the outer faces of the grippers, thereby forming the head of the next nail.

It will be seen that by the several improvements hereinafter claimed (and to which my invention is limited) a machine of simple construction and capable of economical and efficient operation is produced.

I claim—

1. In a wire-nail machine, the wire-feeding mechanism consisting of the slide c, having the spring-pressed dog e, the rock-shaft i, connected to said slide by an arm and connecting-rod, and provided with the slotted arm j, and the rod k, secured at one end to a wrist-pin which is adjustably attached to said slotted arm, as described, and at the other end to a wrist-pin which is adjustably attached to a disk on the driving-shaft, as set forth.

2. In a wire-nail machine, the combination, with wire-feeding mechanism, of the cutting mechanism consisting of the crossed pivoted levers b' b', having the cutters a' a' on their shorter arms and the swiveled studs e' e' at the outer ends of their longer arms, the eccentrics on the driving-shaft, and the rods g', pivoted to straps on said eccentrics and to the studs e' of the levers b', the arrangement being such that the cutters are moved toward each other by a downward movement of the eccentrics and the rods g', as set forth.

3. In a wire-nail machine, the combination, with wire feeding and cutting mechanism, of the header and its operative mechanism, the latter consisting of the slide n', the crank p' on the driving-shaft, the rock-shaft q', the arms r' r^2 on said rock-shaft, and the connecting-rods s' t^2, all arranged and operating substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 23d day of September, A. D. 1886.

HENRY T. CREPEAU.

Witnesses:

ISAAC E. PEARL,

L. W. CHAMBERLAIN.