(No Model.) 4 Sheets—Sheet 1.

M. G. VOIGT, Sr.

WIRE NAIL MACHINE.

No. 319,150. Patented June 2, 1885.

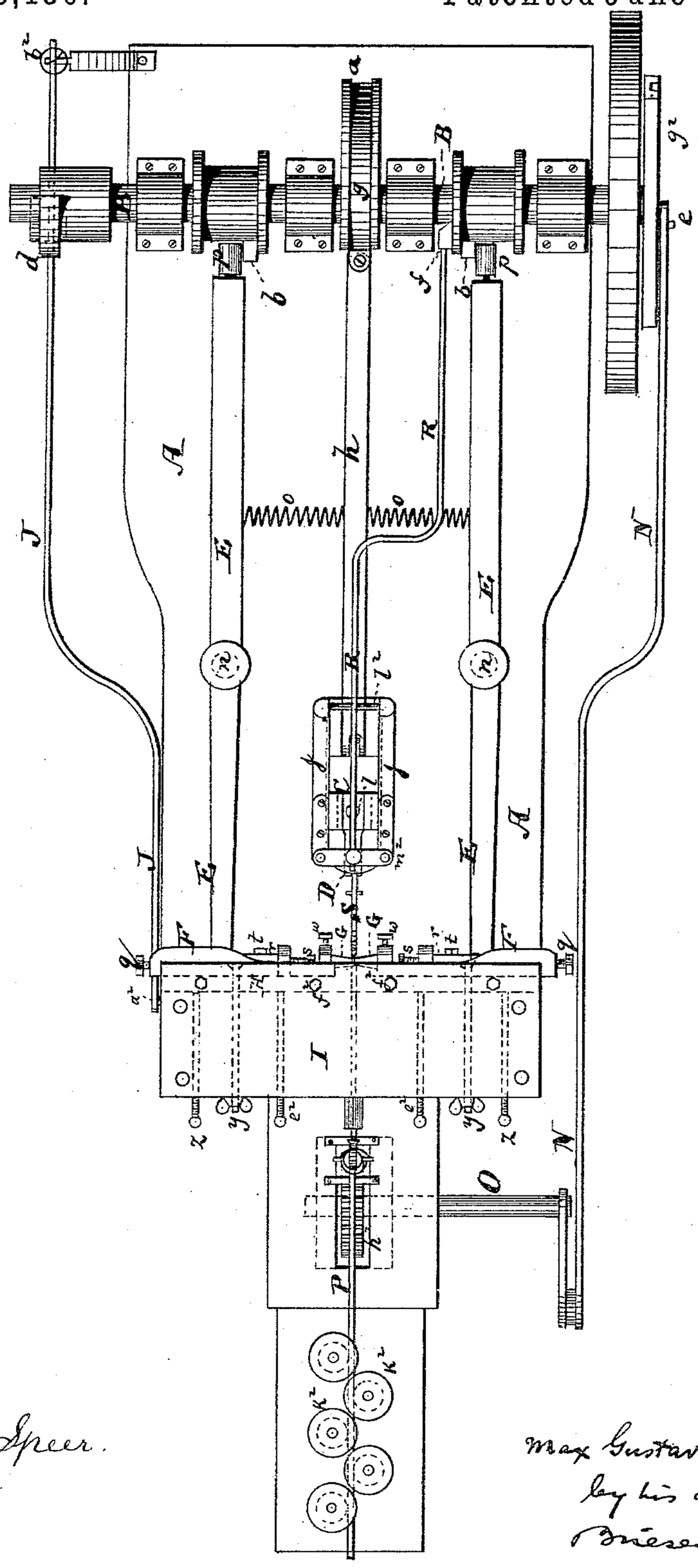


Fig. 1.

Witnesses:
John M. Speer.
A. Scheele

Inventor:
Max Gustav Voigt Sen
by his attorneys
Briesen & Steele

(No Model.)

4 Sheets—Sheet 2.

M. G. VOIGT, Sr.

WIRE NAIL MACHINE.

No. 319,150. Patented June 2, 1885.

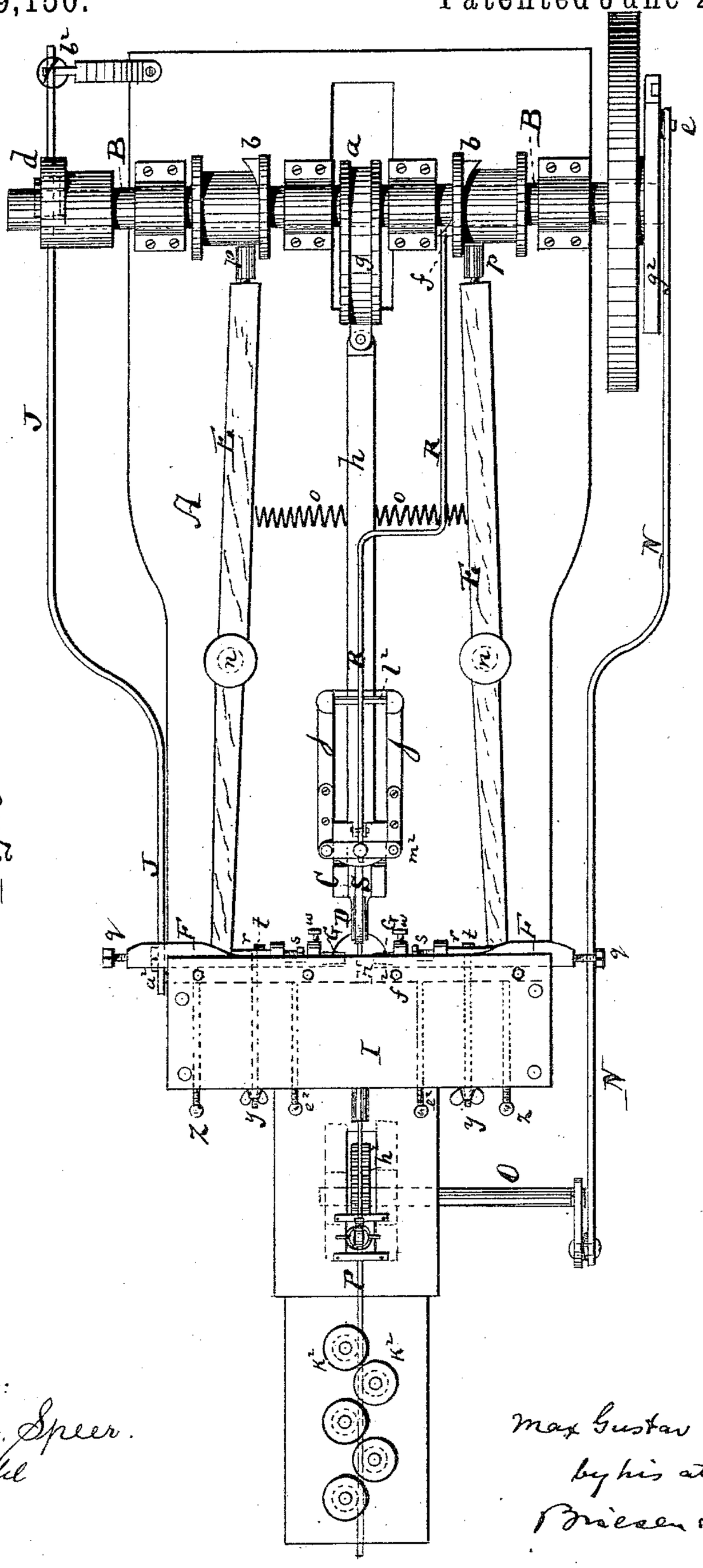


Fig: 2

Witnesses:
John M. Speer.
A. Schickel

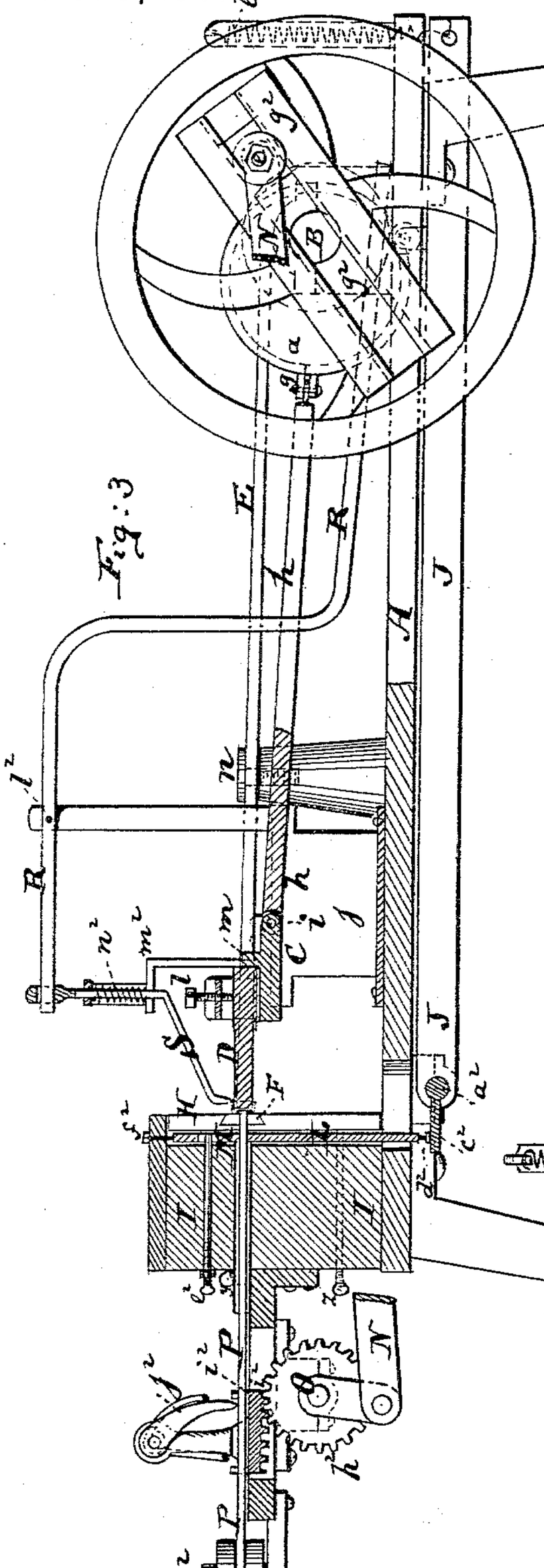
Inventor:
Max Gustav Voigt Sen.
by his attorneys
Bowen & Steele

(No Model.) 4 Sheets—Sheet 3.

M. G. VOIGT, Sr.

WIRE NAIL MACHINE.

No. 319,150. Patented June 2, 1885.



Witnesses:
John M. Speer.
A. Schelil

Inventor:
Max Gustav Voigt Sen.
by his attorneys
Briesen & Steele

(No Model.)

M. G. VOIGT, Sr.

4 Sheets—Sheet 4.

WIRE NAIL MACHINE.

No. 319,150. Patented June 2, 1885.

Fig: 6

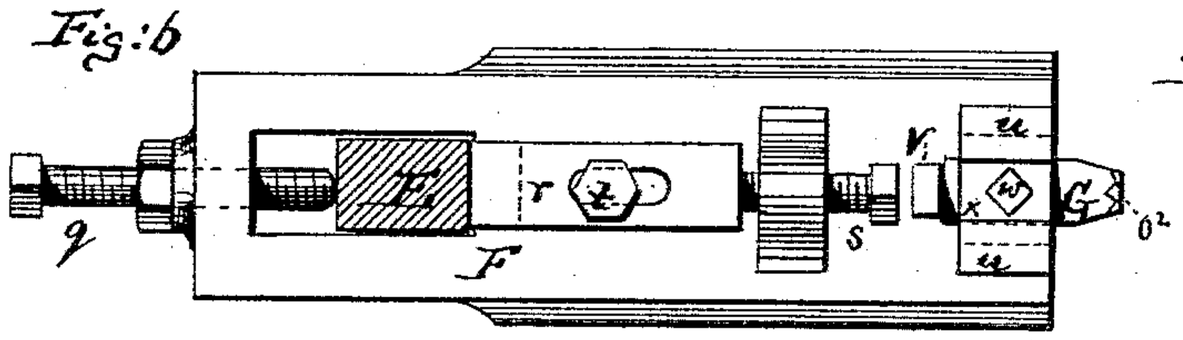


Fig: 8

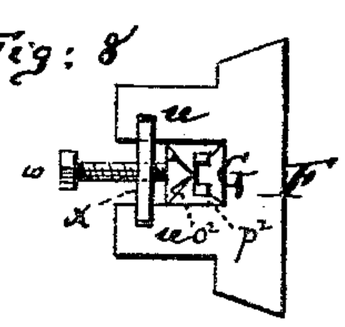


Fig: 7

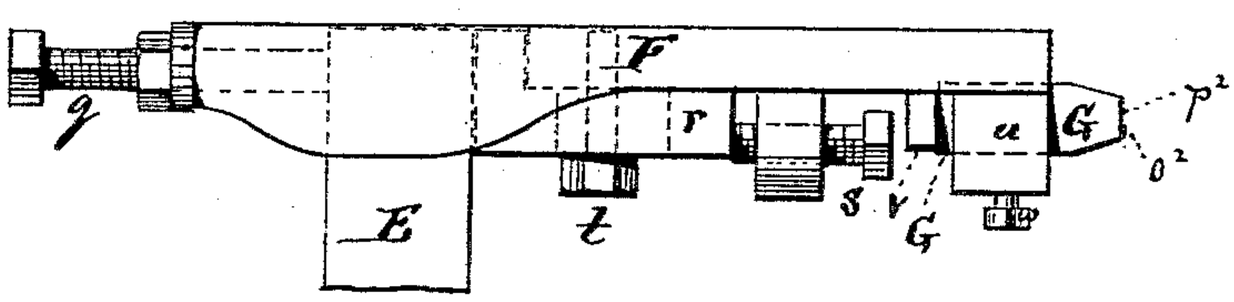


Fig: 5

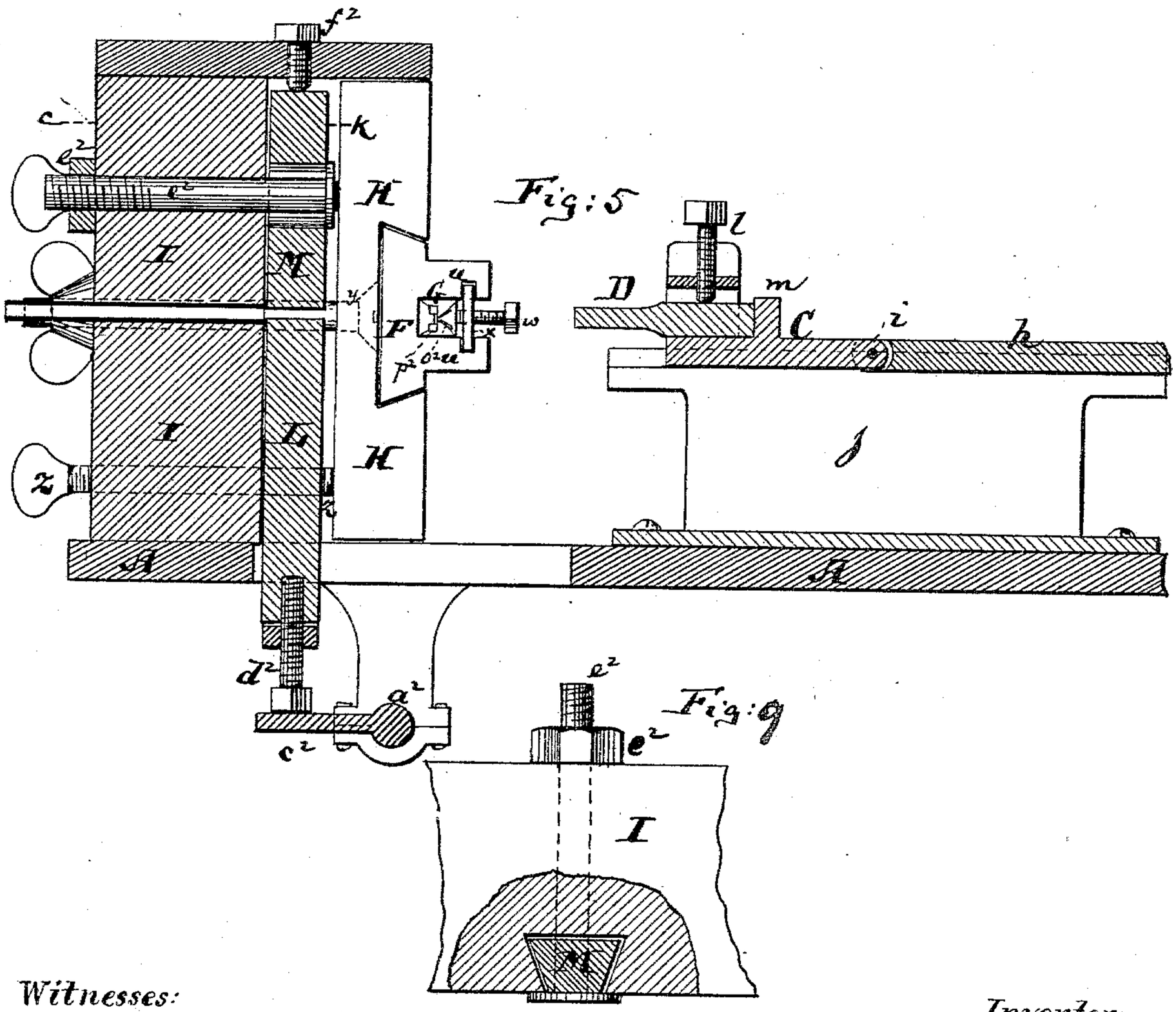


Fig: 9

Witnesses:

John M. Speer.

A. Schield

Inventor:

max Gustav Voigt Sen

by his attorneys

Bowen & Steele

UNITED STATES PATENT OFFICE.

MAX GUSTAV VOIGT, SR., OF NEW YORK, N. Y.

WIRE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 319,150, dated June 2, 1885.

Application filed January 30, 1885. (No model.)

To all whom it may concern:

Be it known that I, MAX GUSTAV VOIGT, Sr., a resident of New York city, in the county and State of New York, have invented an Improved Wire-Nail Machine, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings, in which—

Figures 1 and 2 are top views of my improved wire-nail machine, showing the parts in different positions. Fig. 3 is a vertical longitudinal central section of the same. Fig. 4 is a detail side view showing part of the mechanism for clamping the wire during the act of heading. Fig. 5 is a vertical longitudinal central section of the wire clamping and heading mechanism, the parts being shown on an enlarged scale. Fig. 6 is an enlarged face view of one of the cutting-dies. Fig. 7 is an enlarged top view of the same. Fig. 8 is an enlarged end view of the same. Fig. 9 is a horizontal section on the line *c k*, Fig. 5.

This invention relates to a new machine for making nails from continuous lengths of wire.

The invention consists of the novel combinations of parts, hereinafter more fully described.

A in the drawings is the frame of the machine. Near one end this frame carries the transverse horizontal shaft B, to which continuous rotary motion is imparted by suitable mechanism. This one shaft moves all the parts of the machine by means of the eccentric *a*, cams *b b*, eccentric *d*, crank *e*, and crank *f*, as follows, to wit: The eccentric *a* is embraced by a strap, *g*, which carries a rod, *h*, that is pivoted at *i* to the horizontally-longitudinally sliding carriage C. This carriage is guided by rails *j j*, that are supported by the frame A. The part of the carriage C which is farthest away from the shaft B has secured to it by a screw, *l*, the header D. The back end of this header butts against a block, *m*, that projects from the carriage C. Thus the header is reciprocated.

The cams *b b* serve to swing two levers, E E, on vertical pivots *n n*. The ends of the levers E E which are farthest away from the shaft B enter slots in transverse horizontal slides F F. (See Figs. 6 and 7.) These slides carry at their inner ends the cutters G G. Springs *o o* connect with the levers E E, and tend to crowd them against the cams *b*. The ends of the levers E that bear against these cams are preferably provided with friction-rollers *p*. Each slide F is slotted to receive the end of a lever, E. The position of said lever in said slot can be regulated by a set-screw, *q*, Fig. 6, and by a sliding counter-piece, *r*, which in turn is held in place by a screw, *s*, all as shown in Figs. 6 and 7. The screws *q* and *s* are supported by the slide F, as shown. The counter-piece *r* is slotted and guided on a pin, *t*.

Each cutter G is by its shank inserted between two lips, *u u*, that project from the slide F, and the said shank butts against a projection, *v*, on the said slide. A screw, *w*, holds the cutter in place. This screw turns in a nut, *x*, which is inserted between the lips *u u*, fitting grooves therein, as shown in Fig. 8. Should the screw *w* break, which may occur, the sliding nut *x* is moved out from between the lips, and a new screw easily inserted. Whenever the cams *b b* crowd their ends of the levers E E apart, the cutters G are brought together. When the cams no longer crowd the levers, the springs *o o* will move the levers E E so as to separate the cutters.

The slides F F are dovetailed in a block, H, which, by a screw or screws, *y*, (shown dotted in Fig. 5,) is secured to a rigidly-projecting ledge, I, of the frame A. By means of the screw *y* and by set-screws *z* the block H may be set somewhat nearer to or farther away from the shaft B, to thereby regulate the force of the cutters, which force should be increased for thicker and decreased for thinner wire.

The eccentric *d* on the shaft B serves to depress one end of a lever, J, that is pivoted at a^2 to the frame A. (See Fig. 4.) A spring, b^2, holds the lever J in contact with the eccentric *d*. The pivot-pin a^2 of the lever J turns with the lever in its bearings and carries a crank-plate, c^2, (see Fig. 5,) that supports the lower wire-biting jaw, L. This jaw is placed between the block H and the ledge I, and carries at its lower part an adjusting-screw, d^2, by means of which its position vertically can be regulated. Above the lower jaw, L, is the upper jaw, M, which, by a screw or screws, e^2, is fastened to the ledge I. The

screw e^2 passes through a slot in the upper jaw, M, so as to allow the latter to be set higher or lower by means of a small set-screw, f^2. After the jaw M has been adjusted to the proper height by the screw f^2 it is tightly clamped in the desired position by the screw e^2. Whenever the eccentric d depresses its end of the lever J, the crank-plate c^2 lifts the jaw L, so as to crowd the wire against the jaw M.

The crank e slides in a grooved crank-plate, g^2, which is mounted upon the shaft B, and connects by a rod, N, with a crank-shaft, O, that is hung in the frame A behind the ledge I, and that carries a serrated feed-wheel, h^2. This feed-wheel meshes into a sliding rack, i^2, which carries a spring-pawl, j^2. This spring-pawl, together with said rack, is intended to feed the wire P forward through a hole in the ledge I, and between the jaws L M and cutters G G. Whenever the wheel h^2 is turned to move the rack i^2 toward the ledge I, the pawl j^2 will bite the wire and feed it along; but whenever the wheel h^2 is turned in the opposite direction the pawl will slide loosely on the wire without affecting its position. The wire P, before reaching the pawl j^2, may be guided between grooved friction-rollers k^2.

The cam f on the shaft B projects longitudinally, as shown in Fig. 2, and serves to depress one end of a lever, R, that is pivoted at l^2 in projecting posts of the frame A, said lever R at its free end—that is, the end which is farthest away from the shaft B—connecting with a vertically-sliding ejector, S, which is guided in posts m^2, that project from the frame A. A spring, n^2, serves to depress the ejector and to lower the end of the lever R whenever the cam f shall have passed it. When the ejector is lowered by the action of the spring, its point enters between the receding header D and the cutters G G. The cam f serves to lower one end of the lever R, and thereby to lift the ejector.

I have now described the construction of the machine.

The operation will be understood from what has been said, but in order to avoid any misunderstanding it will here be briefly recapitulated.

The wire P is fed forward by the feeding mechanism i^2 j^2 until it projects a certain proper distance beyond the face of the jaws L M. The cutters G G at this time are drawn apart. The jaws L M now take hold of and bite the wire between them. Next the header D is projected against the wire that extends beyond the face of the jaws L M and forms the head thereon. (See Fig. 3.) The header now recedes, the jaw L is lowered, the wire P is fed further forward, and then the cutters G G approach one another and cut off the headed piece of wire which was between them. Immediately after this the ejector S descends to expel or throw down the wire nail thus separated, whereupon the operation continues, as already stated.

The cutting ends of the cutters G G are represented more plainly in Figs. 5 and 8, from which figures it will appear that each of these cutters has a V-knife, o^2, facing the header, and behind this V-knife a vertical knife, p^2. The V-knives of the two cutters form the point of the finished nail, while the vertical knife p^2 cuts the blunt end from which the head of the next nail is to be made.

I call attention to the very simple construction of my machine, to the fact that all the motions thereof are derived from a single shaft, B, and that all the actuating parts are readily adjusted. Thus the play of the cutters can be regulated as has been described, the force of their throw can be adjusted, the motion of the jaw L is adjustable, and the parts most exposed to destruction—that is, the headers and cutters—are removable and readily replaced.

I claim—

1. The combination of the single shaft B and its eccentric a, cams b b, eccentric d, and crank e with the rod h, carriage C, header D, levers E E, slides F F, cutters G, lever J, pin a^2, movable jaw L, upper jaw, M, rod N, shaft O, and feed mechanism h^2 i^2 j^2, substantially as herein shown and described.

2. The combination of the single shaft B and its eccentric a, cams b b, eccentric d, crank e, and crank f with the rod h, carriage C, header D, levers E E, slides F F, cutters G, lever J, crank-pin a^2, movable jaw L, upper jaw, M, rod N, shaft O, feed mechanism h^2 i^2 j^2, lever R, and ejector S, substantially as herein shown and described.

3. The lever E, combined with the slotted slide F, set-screw q, sliding counter-piece r, screw s, and pin t, substantially as herein shown and described.

4. The combination of the slide F, having the projection v and lips u u, with the sliding nut x, screw w, and cutter G, substantially as herein shown and described.

5. The combination of the slides F F, having cutters G G, with the block H, screw y, ledge I, and set-screws z, substantially as specified.

MAX GUSTAV VOIGT, SR.

Witnesses:

HARRY M. TURK,

GUSTAV SCHNEPPÉ.