

(No Model.)

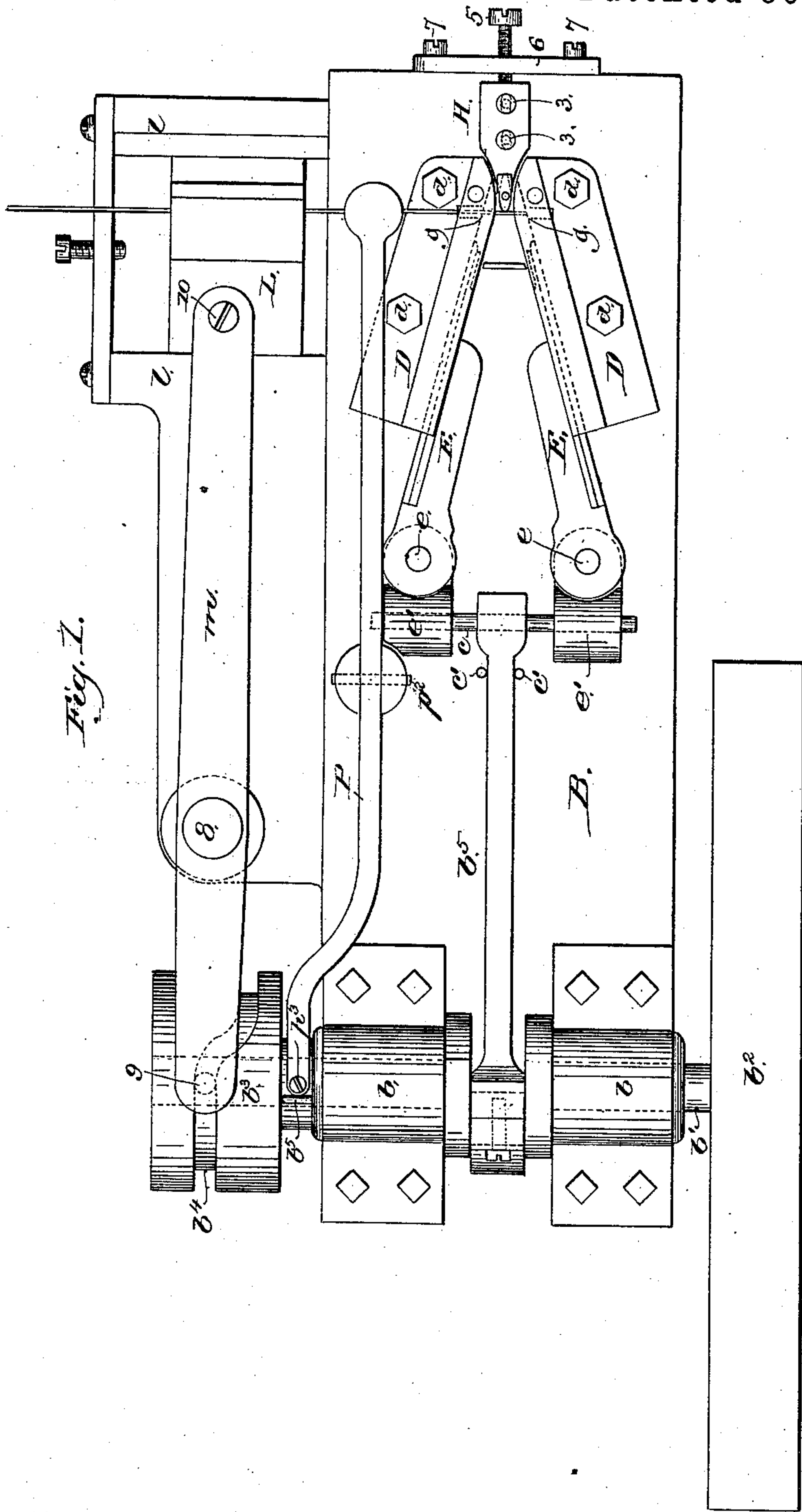
2 Sheets—Sheet. 1.

E. O. ELY.

STAPLE MAKING MACHINE.

No. 351,629.

Patented Oct. 26, 1886.



Witnesses.

John F. C. Priest
Fred L. Emery.

Inventor:

Edward O. Fite
by Crosby Gregory *attys.*

(No Model.)

2 Sheets—Sheet 2.

E. O. ELY.

STAPLE MAKING MACHINE.

No. 351,629.

Patented Oct. 26, 1886.

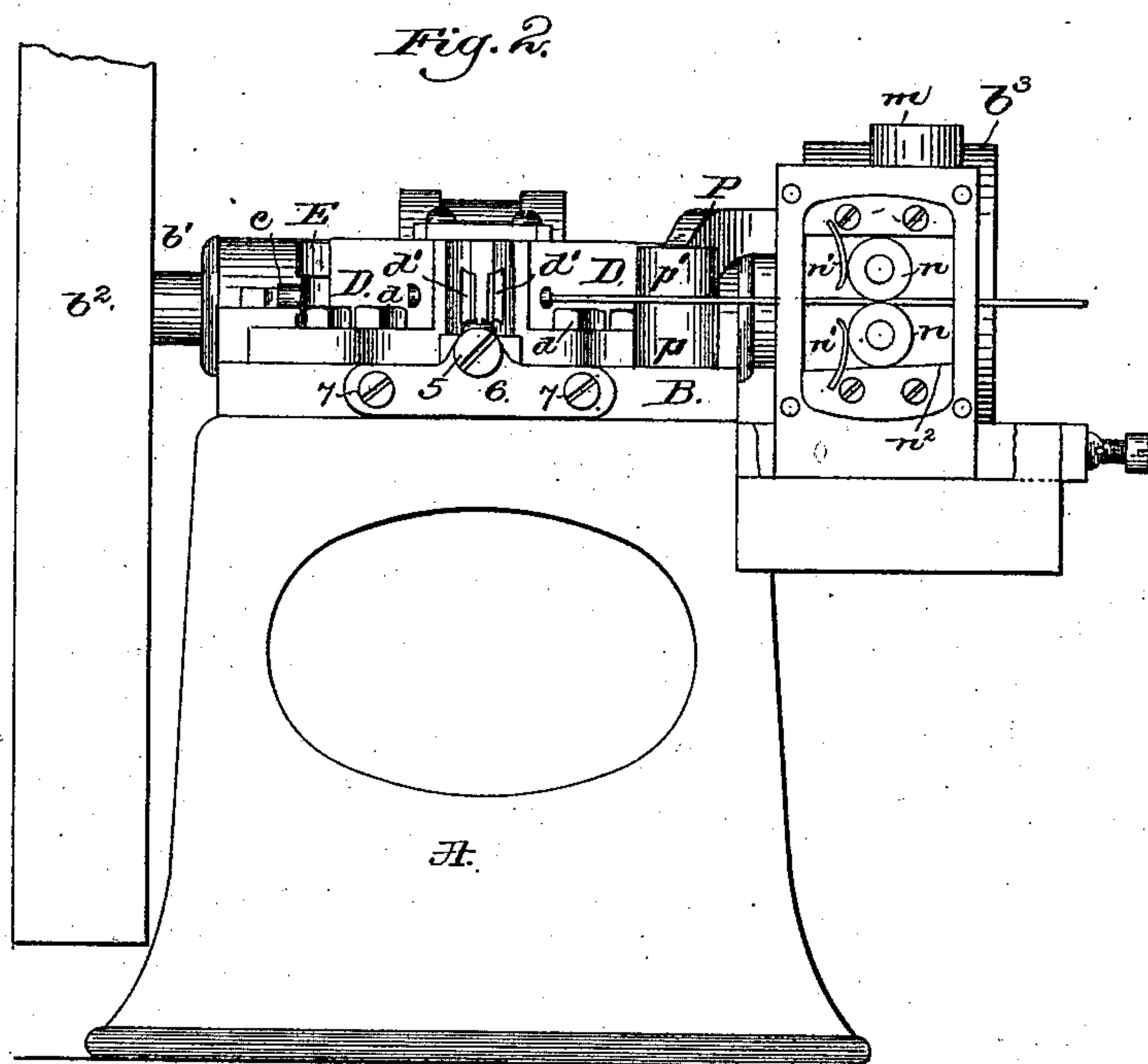


Fig. 4.

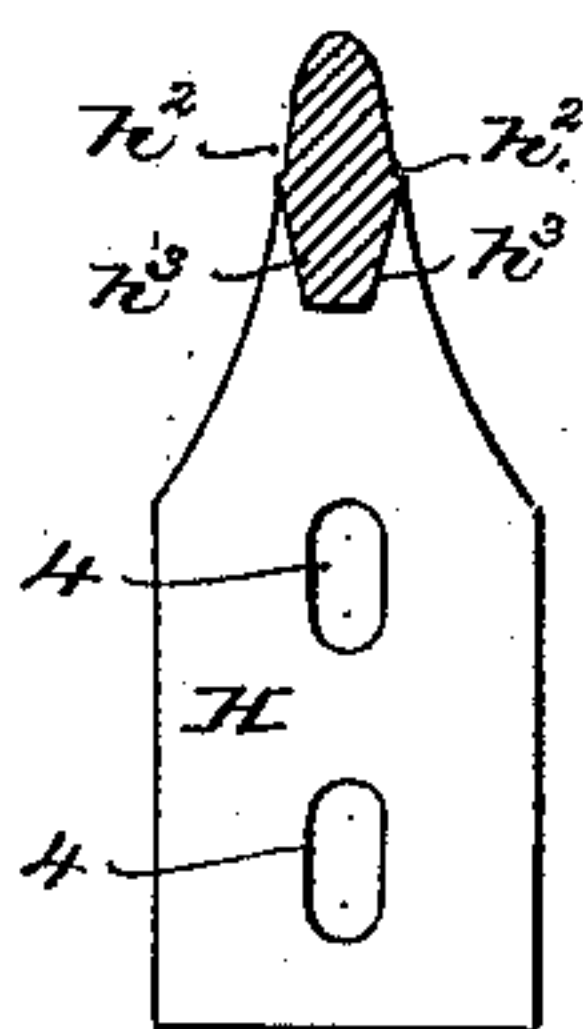


Fig. 3.

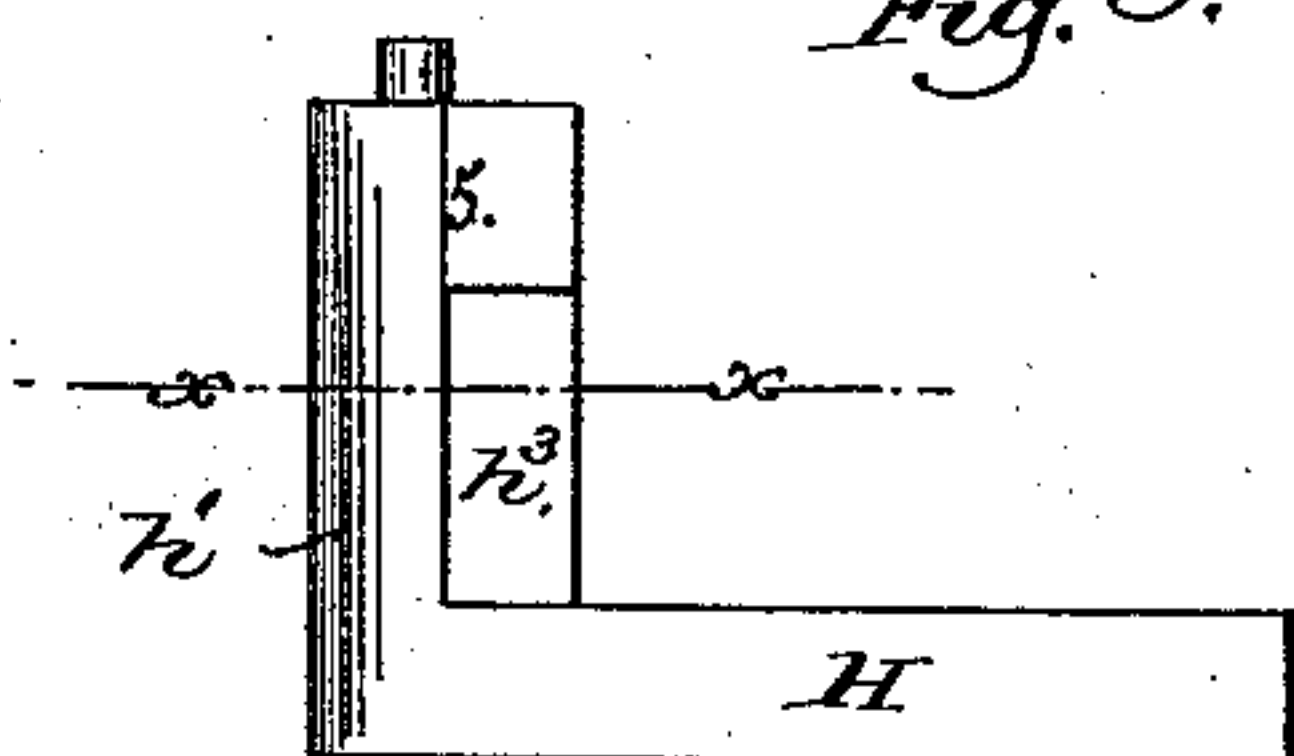


Fig. 5.

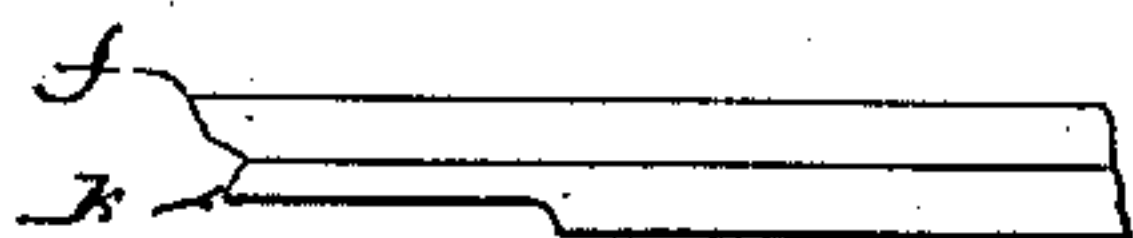
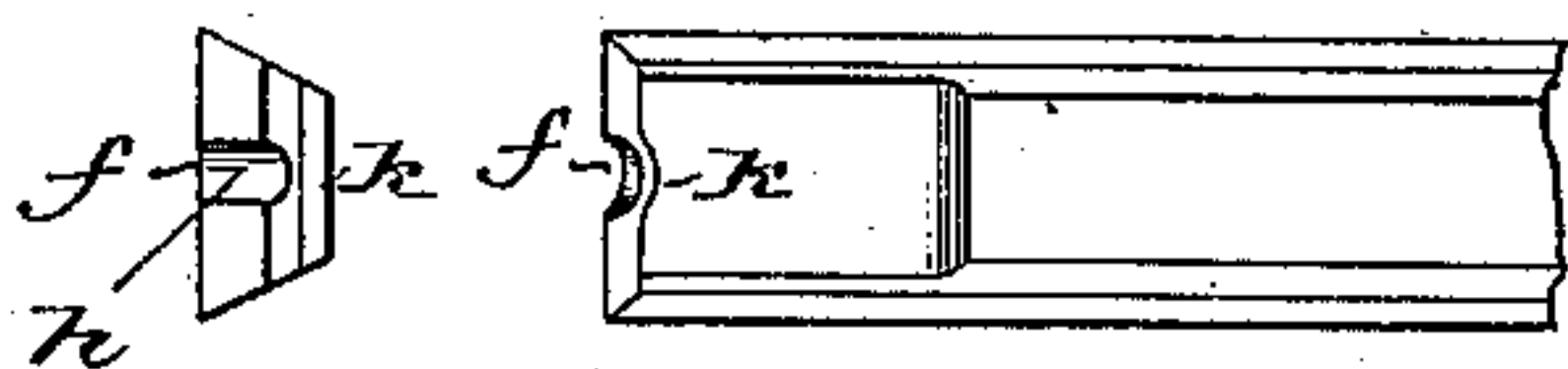


Fig. 6.

Witnesses,

John F. L. Pringle

Frederic L. Emery.

Inventor,

Edward O. Ely

by Crosby Gregory attys.

UNITED STATES PATENT OFFICE.

EDWARD O. ELY, OF BOSTON, MASSACHUSETTS.

STAPLE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 351,629, dated October 26, 1886.

Application filed March 25, 1886. Serial No. 196,479. (No model.)

To all whom it may concern:

Be it known that I, EDWARD O. ELY, of Boston, county of Suffolk and State of Massachusetts, have invented an Improvement in Staple-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to staple-forming machines, more particularly designed for making that class of staples or fasteners which are employed to secure buttons to boots and shoes.

In this my improved machine, I employ, in connection with wire-feed mechanism and a staple-former, two reciprocating converging carriers, provided with, first, a cutter or cutters to sever the wire that is fed across the path of said cutters by the feed mechanism; second, wiping-surfaces to wipe or press the severed wire about the staple-former, and, lastly, with cutters operating in connection with the staple-former to cut the ends of said wire on a bevel, and thus provide the formed staple with bevel points.

My invention embodies minor improvements, as hereinafter described, and particularly pointed out in the claims.

Figure 1 illustrates in plan view a staple-forming machine embodying my invention; Fig. 2, a front elevation thereof; Fig. 3, a side elevation of the staple-former which constitutes a part of my invention; Fig. 4, a plan view thereof, with the former shown in section on the line xx of Fig. 3. Fig. 5 represents side and end views of the front portions of one of the reciprocating carriers, showing the cutters and wiping-surfaces, to be referred to, and Fig. 6 is a top or edge view thereof.

The column or standard A supports the bed or table B, the latter having bearings b for the crank-shaft b' , carrying the belt-pulley b^2 , the wheel b^3 , having the peripheral cam-groove b^4 , and the connecting-rod b^5 , secured at one end to the crank of said crank-shaft, and fastened at its other end to the cross-rod c .

A pair of guide-pins, c' , secured to the bed B, may be employed to prevent lateral play of the connecting-rod as it is reciprocated by the rotary movement of the crank-shaft b' .

Secured to the forward part of the bed B, as by the bolts d , is a pair of converging ways or guides, D, each provided with a dovetail

groove, d' , to receive the pair of reciprocating converging carriers E, pivoted each on a vertical pin or axis, e , of a block, e' , which in turn is capable of sliding laterally on the cross-rod c , as clearly indicated in Fig. 1. The purpose of this construction, as will be readily noted from an inspection of Fig. 1, is to permit the converging carriers to move laterally toward and from each other without binding or undue friction as they are reciprocated in the converging ways or guides D.

Each carrier E is provided with a wire-cutter, f , (see Figs. 5 and 6,) at the side or face of said carrier which is next adjacent to the inner or back wall of the dovetail groove in the ways D, the other wire-cutting surface for the severance of the wire being at the orifices g (shown in dotted lines, Fig. 1) in the ways D, into which the wire is so passed by the wire-feeding mechanism as to stand across the path of the reciprocating carriers, so that upon the forward movement of said carriers E the cutters f will sever the wire at g , whereupon the wiping-surfaces h of said carriers press against and force the length of severed wire about the surface h' of the staple-former H to form the staple.

The piece of wire severed by the wire-cutters f is of greater length than is required for the staple, and when the staple is formed by the wiping-surface h forcing the wire about the staple-former the legs or prongs of said staple are longer than in the completed article, and project beyond the shoulders h^2 (see Fig. 4) of the former H. While the unfinished staple is thus pressed about the former H in the forward movement of the converging carriers, a second pair of cutters, k , on the opposite or adjacent faces of the carriers E, are pressed against the legs of the staple and sever the same at the shoulders h^2 , the line of cut being oblique to the longitudinal axis of the legs of the staple by reason of the converging movement of the carriers E. In such movement the cutters k , in severing the legs of the staple, move over the beveled surfaces h^3 of the staple-former H, said surfaces h^3 thereby serving as the other members of the second set of wire-cutters. By this means the legs of the staple are relieved of their surplus length, and at the same time are bevel-pointed to facilitate their entrance into and there clinching against the

material with which they are used. By thus providing the converging carriers with two pairs of wire-cutters, the first part of which sever the wire of a length greater than is needed to make the staple, and the second pair rid the staple of such surplus length, and at the same time bevel-point the legs of said staple, the finished staples are always of a predetermined size and shape, which is the great object sought for in this class of machines.

The wiping-surfaces h , as well as the cutter members on the carriers E , are shown (see Fig. 5) as slightly grooved or made concave, the primary purpose of which is to enable them, in being forced or pressed against the wire, to hold said wire, in a measure, and prevent its displacement in being forced about the former H , as well as to facilitate such formation of the staple.

The former H , constructed substantially as shown and described, is adjustably secured to the bed B by screws 3 passing through slots 4 (see Fig. 4) in said former H and entering said bed, the said former H being arranged with its upright portion or nose 5 between the forward ends of the converging ways and at a point just within the converging paths of the carriers E , so that the inner wire-cutters, k , will bear against or slide upon the beveled faces h^2 of the former H , as specified.

By loosening the set-screws 3 the former H may be adjusted by turning the adjusting-screw 5, which passes through the plate 6, secured by screws 7 to the front end of the bed B , the said screw 5 abutting one end of the former H , as shown in Fig. 1.

The wire-feed mechanism consists in the present instance of the head L , adapted to reciprocate in the ways l , forming a part or adjunct of the bed B at right angles to the throw or plane of movement of the connecting-rod b^5 , which operates the converging carriers.

Motion is imparted to the head L from the crank-shaft b , through the wheel b^3 , having cam-groove b^4 , and the lever m , pivoted at 8 to the bed B , and having a pin, 9, at one end projecting into the cam-groove b^4 , and attached at its other end by the screw 10 to the said head L . The wire is passed into said head L and between the pair of rolls n (see Fig. 2) actuated by the spring n' , the lower roll resting on the inclined lower surface, n^2 , of said head L , whereby in the movement of the head toward the wire-cutting and staple-forming devices to feed wire thereto, the said wire is gripped by the rolls n , but in the backward movement of said head the rolls will loosen their grip and pass over said wire, as is well known. The head L of the wire-feed mechanism having fed a length of wire forward, commences its backward movement away from the wire-cutting and staple-forming devices. The wire is gripped or clamped intermediate of said feed mechanism and staple-forming mechanism, to prevent possible retraction of the wire already fed to the

cutters and staple-former by means of a clamp or wiregrip, consisting, in the present instance, of a stationary jaw, p , secured to the bed B , and a movable jaw, p' , which latter forms a part of a lever, P , pivoted to the bed B at p^2 , and having a pin or stud, p^3 , adapted to be engaged by the cam b^5 of the shaft b' to cause the wire passing between said jaws to be alternately clamped and released in the rotary movement of said shaft b' .

It will be noted that in the present instance I pass the wire to be severed through the wire-orifice g in the way D nearest the feed mechanism, thence across the path of the carriers and into the wire-opening g in the other way D . I also provide both carriers with a wire-cutter, f , so as not only to sever a length or piece of wire from the strip fed by the wire-feed, but also to cut a small piece from the opposite end of the wire, or cut so much therefrom as projects into the wire-opening g of the way D farthest from the wire-feed. I do this mainly to obtain even resistance, and thereby secure a more certain and even running machine. It will, however, be apparent that it is within the spirit and scope of my invention to employ but one cutter f to sever simply a piece of wire from the feed-strip.

I claim—

1. The combination, with wire-feed mechanism, as specified, and a staple-former, of two reciprocating converging carriers, provided with a cutter to sever a piece of wire from the strip fed by the wire-feed, wiping-surfaces to wipe or press the severed wire about the staple-former, and a pair of cutters operating in connection with the staple-former to sever the ends of the wire pressed about the staple-former, as and for the purpose set forth.

2. The combination, with wire-feed mechanism, as specified, and a staple-former, and a wire-clamp intermediate of said feed mechanism and staple-former, of two reciprocating converging carriers provided with a cutter to sever a piece of wire from the strip fed by the wire-feed, wiping-surfaces to wipe or press the severed wire about the staple-former, and a pair of cutters operating in connection with the staple-former to sever the ends of the wire pressed about the staple-former, as and for the purpose set forth.

3. The combination, with a pair of converging ways or studs and a staple-former arranged between said ways and adjacent to the point of convergence thereof, of a pair of reciprocating carriers adapted to slide in said ways, and provided with a wire-cutter to sever a piece of wire from the strip fed to the cutter, wiping-surfaces to wipe or press the severed wire about the staple-former, and a pair of cutters to cut the ends of the wire after it has been wiped about the staple-former, substantially as and for the purpose set forth.

4. The combination, with a crank-shaft provided with a connecting-rod having a cross-pin, and a pair of converging carrier-ways

and a staple-former, of a pair of carriers sliding in said ways and provided with wire-cutters and wiping-surfaces, and a pair of blocks laterally pivoted on the cross-rod and vertically pivoted to the carriers, as and for the purpose set forth.

5 5. The converging carrier-ways provided with the wire orifices or tubes *g*, and the staple-former provided with the beveled surfaces
10 *h*³, combined with a pair of reciprocating converging carriers adapted to slide in said ways

and provided with the two sets of wire-cutters, *f* and *k*, and intermediate wiping-surfaces, as and for the purpose set forth.

In testimony whereof I have signed my name 15 to this specification in the presence of two subscribing witnesses.

EDWARD O. ELY.

Witnesses:

F. L. EMERY,
BERNICE J. NOYES.