

(No Model.)

2 Sheets—Sheet 1.

E. J. WARNER.

Machine for Making Lacing Studs for Shoes, Gloves,
Corsets, &c.

No. 237,347.

Patented Feb. 1, 1881.

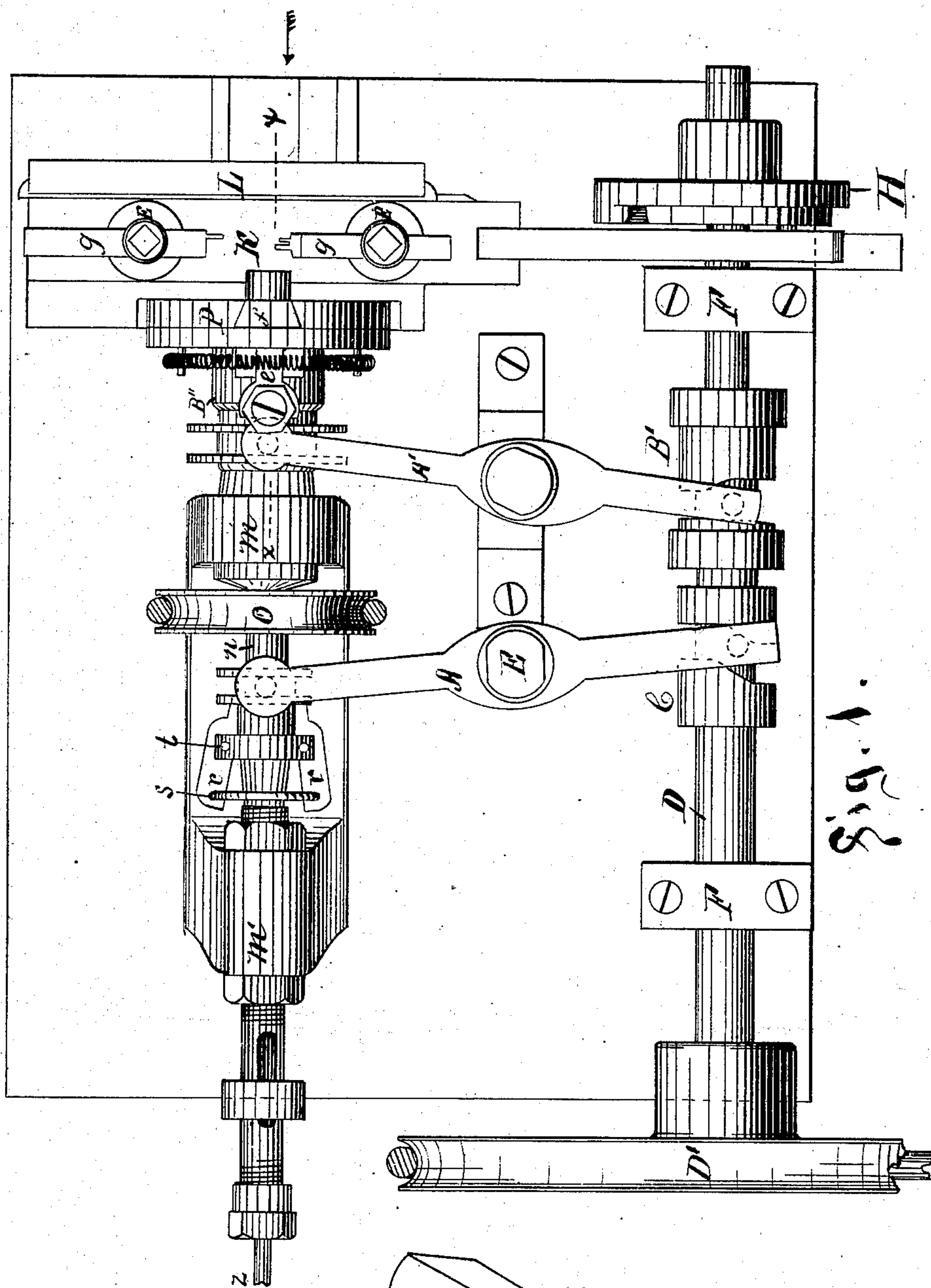


Fig. 1.

Witnesses:
Charles H. Bell
Chas. Herr

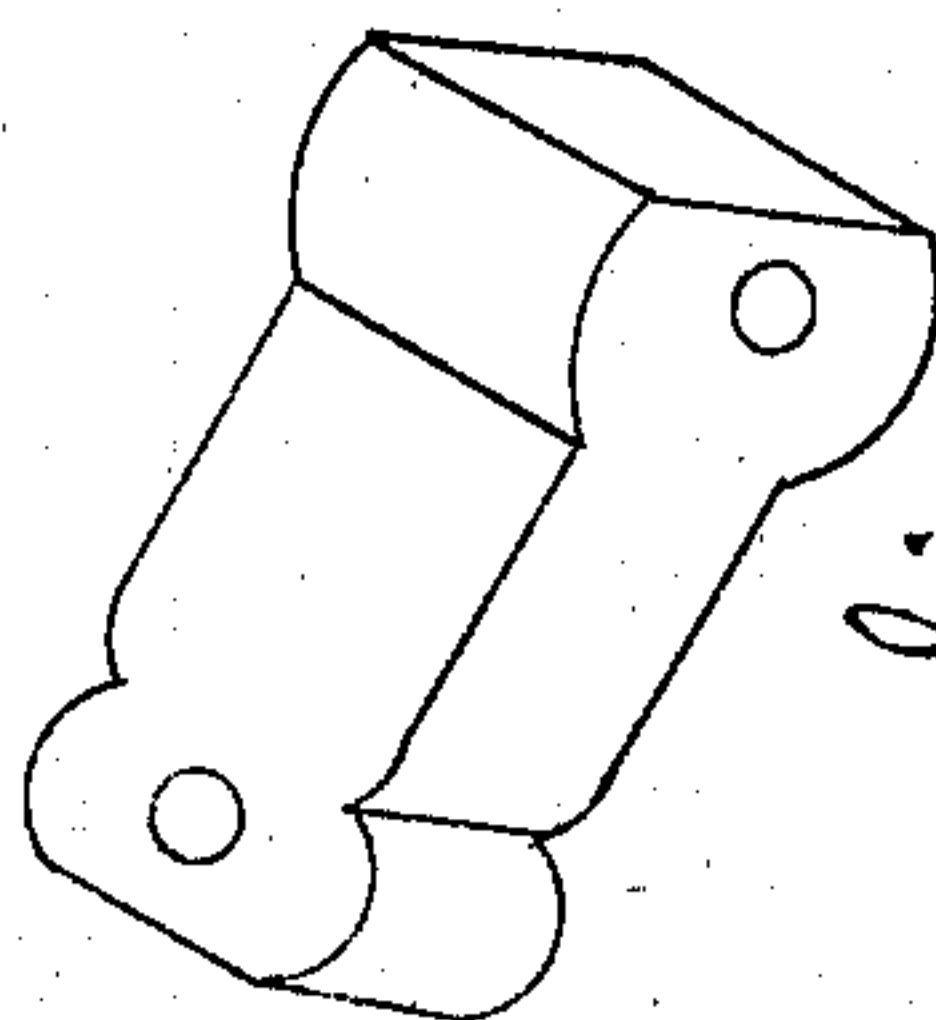


Fig. 2.

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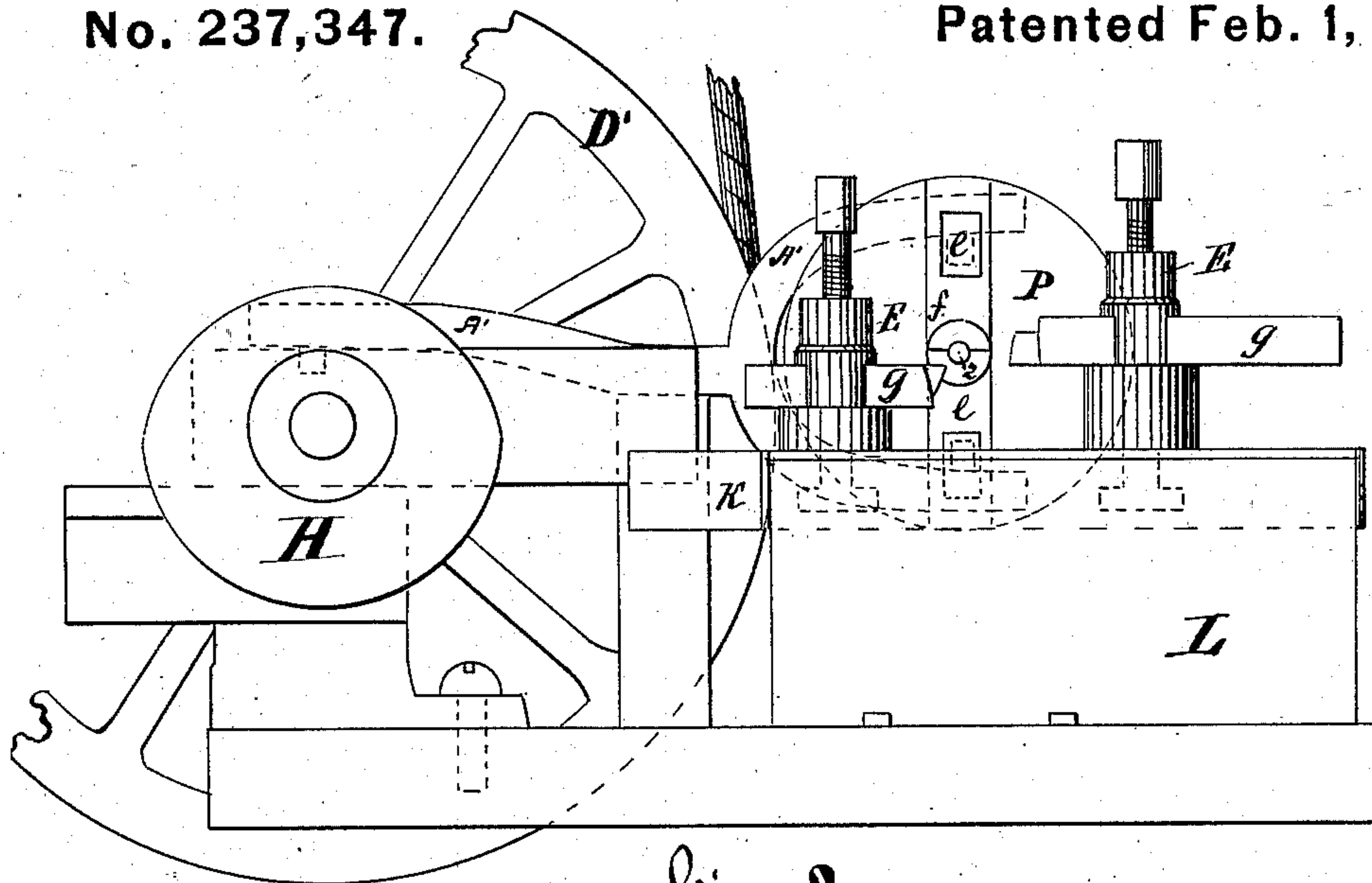
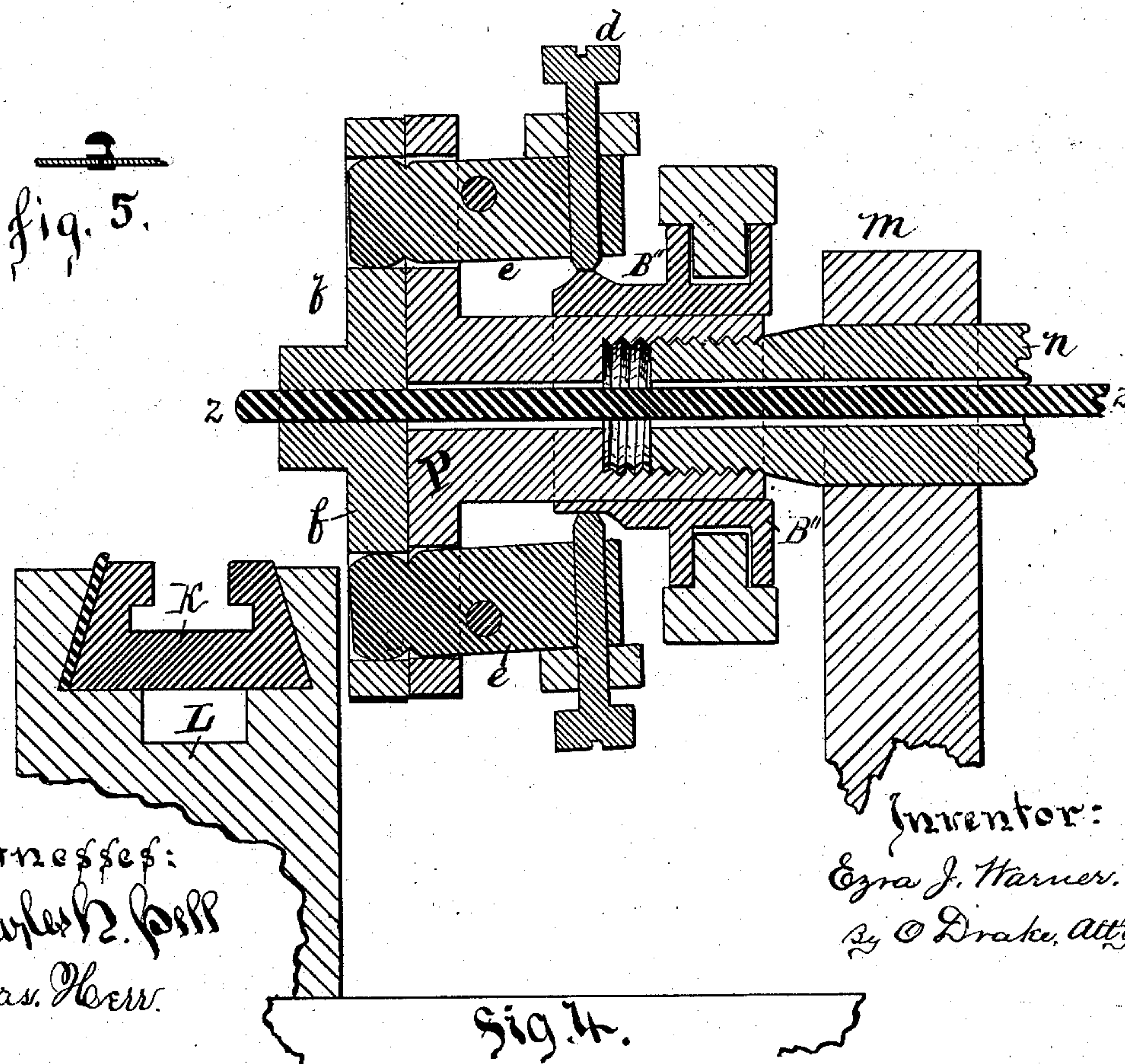


Fig 3.



Sig 4.

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UNITED STATES PATENT OFFICE.

EZRA J. WARNER, OF NEWARK, NEW JERSEY.

MACHINE FOR MAKING LACING-STUDS FOR SHOES, GLOVES, CORSETS, &c.

SPECIFICATION forming part of Letters Patent No. 237,347, dated February 1, 1881.

Application filed June 10, 1880. (No model.)

To all whom it may concern:

Be it known that I, EZRA J. WARNER, of the city of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Machines for Making Lacing-Studs for Shoes, Gloves, Corsets, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to more expeditiously manufacture lacing-studs for shoes, gloves, corsets, &c., of a peculiar construction—to wit, the studs have an eccentric neck, which connects the head to the portion attached to the glove, &c. This part of the stud (the portion attached to the glove, &c.) is formed of two plates, which are also connected together by a neck, said neck being, however, concentric. It will be seen, therefore, and especially so by reference to the illustration, Figure 5 of the drawings, that the stud which I desire to manufacture by my invention has both an eccentric and concentric neck or shank.

Heretofore studs of this character have been made by hand, which process or operation has been attended with so much difficulty and expense as to practically exclude the article from the market. By my invention, however, this difficulty has been entirely overcome, so that the articles can now be manufactured expeditiously and perfectly at a comparatively trifling expense.

The invention consists in the combination of means for turning, by a continuous operation, from a solid wire or rod, a stud having an eccentric and concentric neck thereon.

It further consists in means for automatically supplying the said solid wire or rod to the said means for cutting the eccentric and concentric neck upon said stud.

It still further consists in the combination of means for automatically bringing the cutters successively to bear upon the wire with means for automatically changing its center of revolution while still in motion; and it finally consists in the further combination of parts,

as will hereinafter be more fully set forth and claimed.

Referring to the accompanying drawings, in which similar letters of reference indicate like parts in each of the several figures, Figure 1 is a plan view of my invention, showing the relation of the different parts composing it to one another; Fig. 2, a perspective view of the lever which is operated upon by the cam B'' to actuate the sliding plate *f*. Fig. 3 is an end elevation, as indicated by the arrow in Fig. 1; and Fig. 4 is an enlarged section taken through line *x* of Fig. 1, which more fully illustrates the manner of changing the center of revolution while the machine is in motion; and Fig. 5 is a view of the stud which my invention manufactures, showing the eccentric and concentric neck or shank.

In carrying out my invention, I first construct upon the table or bed-plate the head and tail pieces, M and M', which carry the hollow shaft or mandrel N. This shaft is actuated in its rotatory motion by power received from the driving-shafting through the pulley O.

To the end of the mandrel N is attached the chuck P, Figs 1 and 4, which is perforated and grooved to receive the levers *e* and the sliding plates *f*. The chuck P is also adapted to receive the sliding cam B'', which revolves with it. This cam is so constructed, Fig. 4, that it can, by changing the point of contact with the lever *e*, or the set-screw *d* therein, change the center of motion of the sliding plates *f*, and in consequence the wire *z*, held in the embrace of said sliding plates *f*. The sliding cam B'' is actuated in its lateral movement, substantially as in the manner shown in Fig. 1, by the lever A', which receives such motion from the grooved cam B' upon the shaft D.

The wire from which the buttons are manufactured is fed to the cutters by means of the spring-clutch *r*, the jaws of which pass through the shaft and clutch the wire. Said jaws are adapted to slide over the wire in the backward motion, but to hold and carry said wire in the forward motion. The clutches are held upon the wire by the spring *s*, work upon the pivots *t*, and are actuated in their backward and forward motion by the lever A, which works upon the fulcrum E, and is, in turn, actuated by the grooved cam C upon the shaft D.

The mechanism for operating the cutting-tools is driven by the pulley and shafting D' and D, which work in the bearings F. The cutters *g* are held in the tool-posts E, which
 5 are adjusted in the grooved cutter-carrier K, which works in the saddle L. Said cutter-carrier K is connected with and operated by the cam H upon the shaft D. By means of
 10 this cam H the tools or cutters *g* are alternately brought to bear upon the wire in a manner in itself common.

In operating the invention, the wire *z* being properly supplied to the hollow mandrel and the machine set in motion, the feeding mechanism, already described, supplies the requisite
 15 quantity of wire for a button. The cam B' will then, by means of the lever A', throw the eccentric portion of the cam B'' into contact with the set-screw *d* of the lever *e*, which action will change the center of revolution of the
 20 plates *f*, sliding in the chuck P, and with them the revolving wire held therein. At this moment one of the cutters is brought to bear, by means of the cam H, upon the said wire, and the eccentric neck or shank is turned
 25 thereon. The tool which thus cuts the eccentric neck then passes back from engagement with the wire, and at the same time the second cutter comes into engagement with the
 30 wire *z*, which wire has, however, in the meantime (by means of the cam B', the lever A', the sliding cam B'', the lever *e*, and the sliding plates *f*) changed its center of revolution back to its normal position, and a concentric
 35 neck is thereby cut into the wire. At the same time the head of the stud is finished and the button is cut from connection with the wire and drops into a receptacle below. It should
 40 here be mentioned that the sliding cam B'' is so formed that at the moment that the clutch throws the wire forward the said sliding cam B'' causes one of the levers to slightly open one of the sliding plates, and thus to leave a
 45 passage for the wire *z*. All these operations are performed and repeated by a continuous movement of the machinery, and after being at first properly regulated and adjusted it requires no further manipulation by an attendant, except, of course, in so far as to see that
 50 the wire is properly supplied to the machine.

Having thus described my invention, what I claim, and wish to have secured by Letters Patent, is—

1. In a machine for cutting an eccentric and a concentric neck to a wire or rod, the combination of a hollow revolving mandrel, as N, for carrying the wire, a chuck, as P, at the end of the mandrel, provided with sliding plates, as *f*, a cam and levers, as B'' and *e*, for sliding said plates back and forth, cutters, as
 55 *g*, for cutting the necks, and mechanism for imparting motion to the several parts, substantially as set forth.

2. In a machine for cutting an eccentric and a concentric neck to a wire or rod, the combination of mechanism for revolving and automatically feeding forward said wire, and sliding plates, as *f*, for moving said wire, substantially as described, in order that it may be
 65 operated on by cutters, as *g*, so as to have cut therein eccentric and concentric necks, substantially as set forth.

3. In a machine for cutting an eccentric and a concentric neck to a wire or rod, the combination, with mechanism for revolving and feeding forward the wire, of sliding plates, as *f*,
 75 for moving the wire, substantially as described, and a carrier, as K, for bringing the cutters alternately against the wire, so as to cut the necks, substantially as set forth.

4. In a machine for cutting an eccentric and a concentric neck to a wire or rod, the combination of mechanism for revolving and automatically feeding forward the wire, sliding plates, as *f*, automatically moving said wire
 85 so as to be operated on by cutters, and a carrier, as K, automatically bringing first one cutter and then another against the wire, whereby eccentric and concentric necks are automatically formed in the wire, substantially as and
 90 for the purposes set forth.

5. In a machine for cutting an eccentric and a concentric neck to a wire or rod, the combination of levers A and A', cams C and B', shaft D, sliding cam B'', clutches *r*, and plates *f*, the
 95 several parts being adapted to operate substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of May, 1880.

EZRA J. WARNER.

Witnesses:

OLIVER DRAKE,
 CHARLES H. PELL.