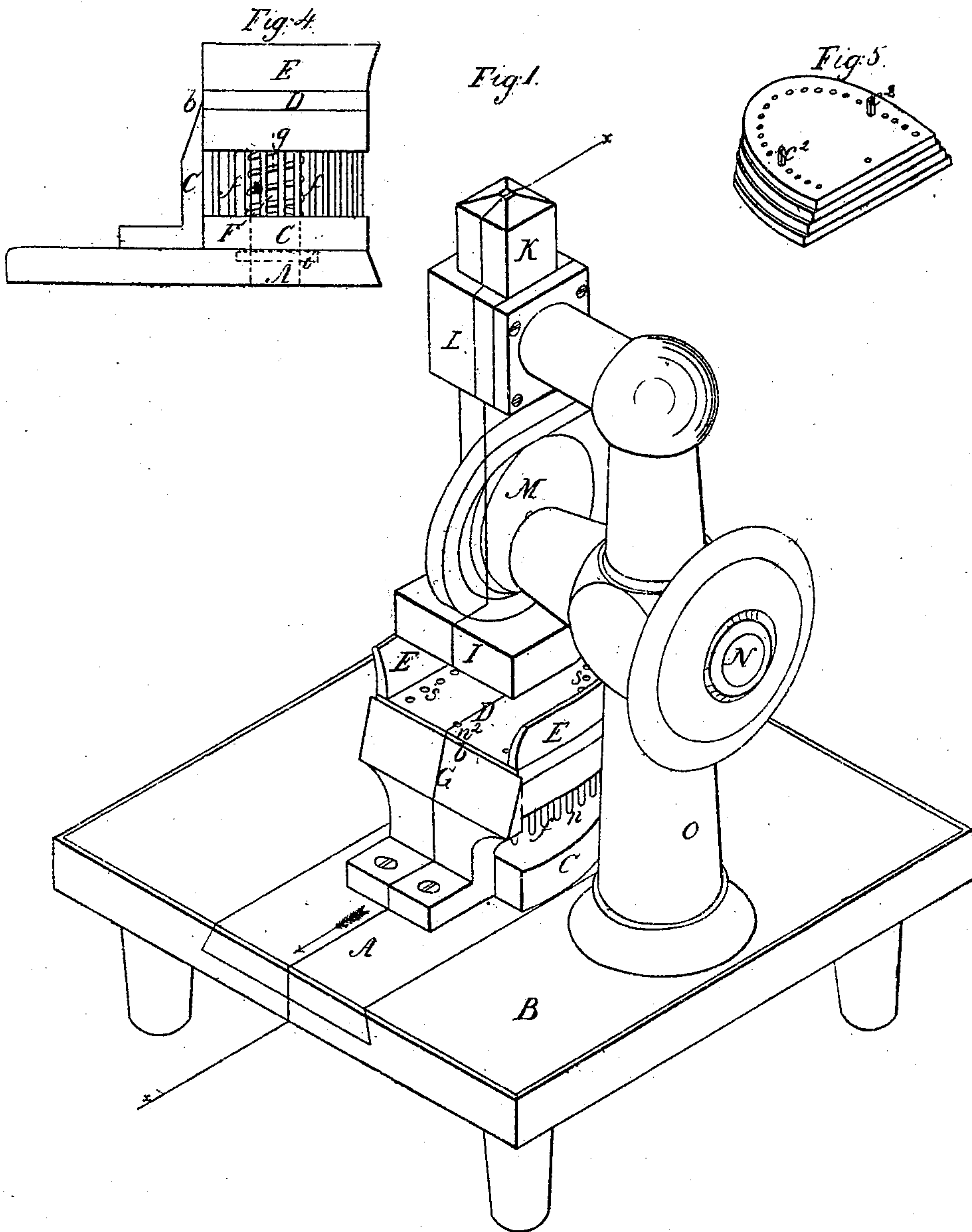


G. W. Ellis.

Punching the Lifts of Boot Heels.

No 41,037.

Patented Dec 22. 1863.



Witnesses;
P. B. Tschernach
C. W. Kearns

Inventor;
Sam. Cooper
Attorney for
G. W. Ellis

G. W. Ellis.
Punching the Lifts of Boot Heels.
No 41,037. *Patented Dec 22, 1863.*

Fig. 2.

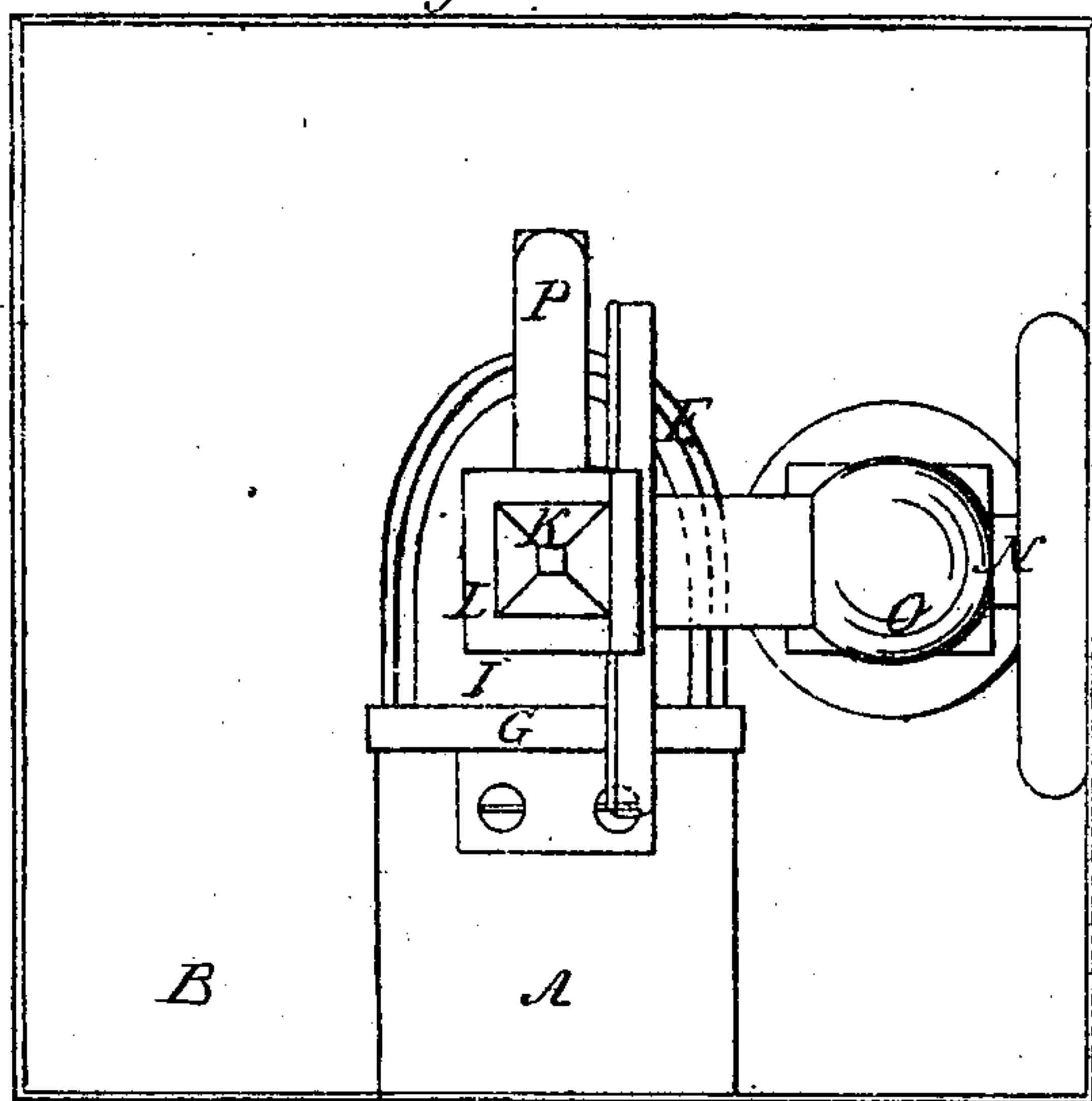
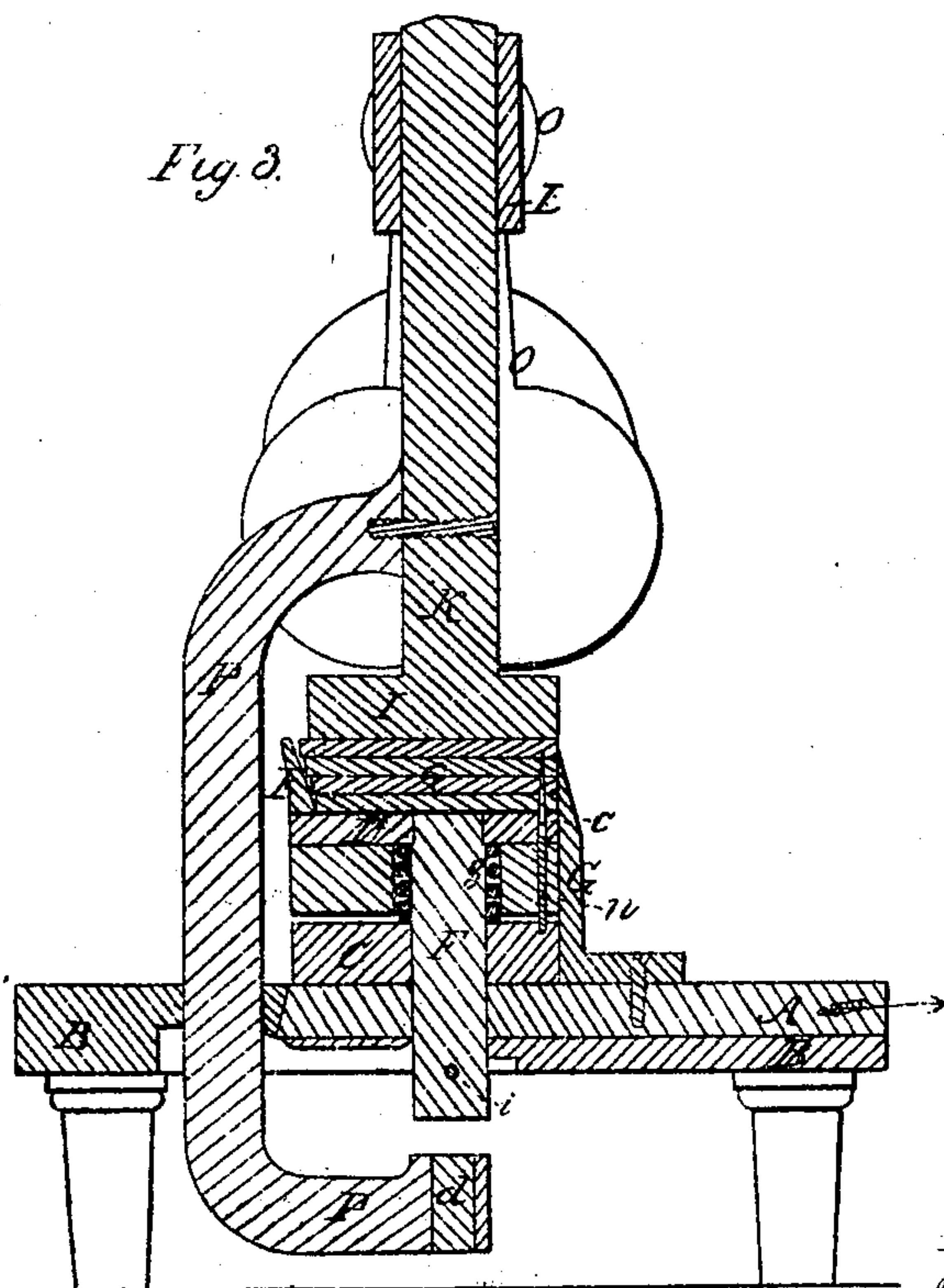


Fig. 3.



Witnesses;
P. E. Tschumacher
N. W. Stearns.

Inventor;
Sam Cooper
Attorney for
G. W. Ellis

UNITED STATES PATENT OFFICE.

GEORGE W. ELLIS, OF LYNN, MASSACHUSETTS, ASSIGNOR TO HIMSELF
AND LUTHER HILL.

MACHINE FOR PUNCHING THE LIFTS OF BOOT-HEELS.

Specification forming part of Letters Patent No. 41,037, dated December 22, 1863.

To all whom it may concern:

Be it known that I, GEORGE W. ELLIS, of Lynn, in the county of Essex and State of Massachusetts, have invented an improved machine for punching the lifts of boot-heels and temporarily securing them together, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my machine; Fig. 2, a plan of the same; Fig. 3, a vertical section on the line *xx* of Fig. 1; Figs. 4 and 5, details to be referred to.

My machine is designed to temporarily secure the lifts of heels together and to punch them for the nails which secure them to the boot, and which are driven by another machine for which I have made application for Letters Patent simultaneously with this.

In carrying out my invention the lifts are first cut out by dies of a size and form approximating to that which they are ultimately to have in the heel. They are then placed upon a bed, suitably arranged with respect to each other, and by means of a follower which is then brought down upon them they are forced down upon the awls and punched, and at the same time two or more tacks or headless nails are driven sufficiently far into them to hold the lifts temporarily together, the nails being allowed to project sufficiently far from the heel to serve as guides for placing it in the machine by which the driving of the nails is subsequently performed.

To enable others skilled in the art to build and use my machine, I will proceed to describe its construction and operation.

A sliding table, A, runs upon ways on the bench B, or is dovetailed into the same, as seen in the drawings, so that it may be drawn out from beneath the plunger for the purpose of inserting the work. To this table is secured the awl-block C, from which rise the awls *f*, which are to pierce the heel and make the holes for the nails. Above the block C is a bed, D, which is perforated with holes *s* to permit the passage of the awls through it, and upon it the lifts which are to form the heel are placed, the smallest lift at the bottom and the largest at the top. The bed D is surrounded

by a flaring rim, E, which arranges the lifts with respect to each other as they are placed upon the bed, and has projecting down from it a post, F, which is surrounded by a spiral spring, *g*, the upper end of which rests upon the under side of the bed and the lower end upon the block C, in which the awls are secured. The post F is passed down through a hole in the block C, and is allowed a motion up and down to a certain extent, being limited in its upward motion by a pin, *i*, which is allowed to move in slots up through the bench B and table A, but rests against the bottom of the block C.

In Fig. 1 the bed D is thrown by the spring *g* into its highest position, the pin *i* resting upon the under side of the block C. When in this position, the bottom of the post F is elevated clear of the bench B, and the table A may be withdrawn.

G is a stationary knife, secured to the table A, the edge *b* of which is on a level with the top of the bed D.

I is a plunger, attached to the rod K, that slides in a guide, L, and is moved up and down by the eccentric M upon a driving-shaft, N, which is operated by suitable power. In the machine represented in the drawings the guide L and shaft N are carried by the standard O, rising from the bench B; but any other suitable arrangement of these and other details forming no part of my invention may be adopted. In the operating machines the shaft N is driven by steam, and makes about fifteen revolutions per minute.

Attached to the rear of the rod K is a bent arm, P, which moves up and down with the rod, and is formed at its lower end, as seen at *d*, for a purpose that will be hereinafter explained.

Operation: The table A being drawn out in the direction of the arrow, Fig. 1, so as to bring the bed D from beneath the plunger I, the lifts Q, Fig. 3, are placed upon the bed D, the smallest at the bottom, the next size above it, and so on, the flare of the rim E being such as instantly to arrange the lifts without requiring time or attention on the part of the operator for the purpose. The table A is then pushed back, so as to bring the leather lifts beneath the plunger I, and the shaft N is

turned, by which the plunger I is brought down upon the lifts, and as it continues to descend it forces down the bed D into the position seen in Fig. 3. While this is taking place the forward part of the heel is carried down past the edge of the knife G, by which it is shaved smooth, and the awls *f* are forced into and through the leather lifts, there being depressions in the under side of the follower I to permit the awls to pass entirely through the heel. It is evident that the adhesion between the awls *f* and the leather will be very great, and that it would not be practicable to employ a spring, *g*, of sufficient force to withdraw them from the heel. To effect this purpose, and to raise the bed D and the heel-blank from off the awls, the lower portion, *d*, of the arm P strikes the lower end of the post F and raises it as the eccentric continues to turn, the spring *g* serving only to hold it elevated until the plunger strikes the leather lifts. The spring also holds the bed D up when the table A is withdrawn, Fig. 4. The heel is now shaved upon its forward edge, and the holes for the nails are made; but it is requisite at the same time to secure the lifts temporarily together and to furnish the heel with guides, by which it may be properly adapted to the machine before referred to, by which it is secured to the shoe. This is effected in the following manner: Two or more of the awls *f* are replaced by short drivers, one of which is seen at *n*, Fig. 3, which plays in the hole *n*² of Fig. 1. Into the holes of the bed D, corresponding to these drivers, are dropped nails of a sufficient length to penetrate the lifts and to project about one-eighth inch, or thereabout, above the top lift. One of these nails, *c*, is seen driven in Fig. 3, it having been dropped, point uppermost, in the hole *n*², before the lifts were placed upon the bed, the driver *n* being then so low that the point of the nail is below the upper surface of the bed D. In the machine by which the heels are applied to the shoes, the edge of the heel is shaved by a knife which passes round its edge, and to avoid the danger of the nails *c* interfering with the shaving-knife the drivers *n* may be inclined inward, so as to slant the nails inward or away from the edge.

Fig. 5 represents a heel-blank, the holes for

the nails being made and the lifts secured together temporarily by the nails *c*², which project about one-eighth inch from the upper lift, and thus serve as a guide by which the blank may be placed in the next machine, where the nails are driven and the heel shaved.

The piston I is represented, Fig. 3 as passing down just within the cutting edge of the knife G; but I contemplate in most cases having it project over the knife, the cutting-edge of which works against a strip of solder on the under side of the plunger.

With some work I secure the sole temporarily to the heel blank at the same time that the latter is punched and tacked together. The rear part of the sole, or that portion covered by the heel, is then secured to the shoe by the nails which are afterward driven to secure the heel to the sole, a portion of them passing through the upper-leather and inner sole and clinching upon an iron-plated last.

At times, also, my machine will be used for preparing heel-blanks that are to be afterward secured to the boot from the inside. Under these circumstances the awl-holes will not be required; but as the heels are to be subsequently shaved by machinery the guide-nails *c*² will be required, and the lifts must be secured together.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The projecting nails *c*², operating as guides for placing the work in the subsequent machine, as set forth.
2. The awls *f* and the drivers *n*, in combination with the bed D and plunger I, operating as set forth, for the purpose specified.
3. In combination with the above, the stationary knife G, operating as set forth.
4. The rim E upon the bed D, for the purpose of arranging the lifts, as set forth.
5. The arm P, attached to the rod K, in combination with the spring *g*, whereby the awls are withdrawn and the plunger elevated and held up, as set forth.

GEO. W. ELLIS.

Witnesses:

WILLIAM H. PIERCE,
FRANKLIN KNIGHT.