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J. M. LAUGHLIN.

Horseshoe Nail Machine.

No. 230,950. **Patented Aug. 10, 1880.**

Fig. 1

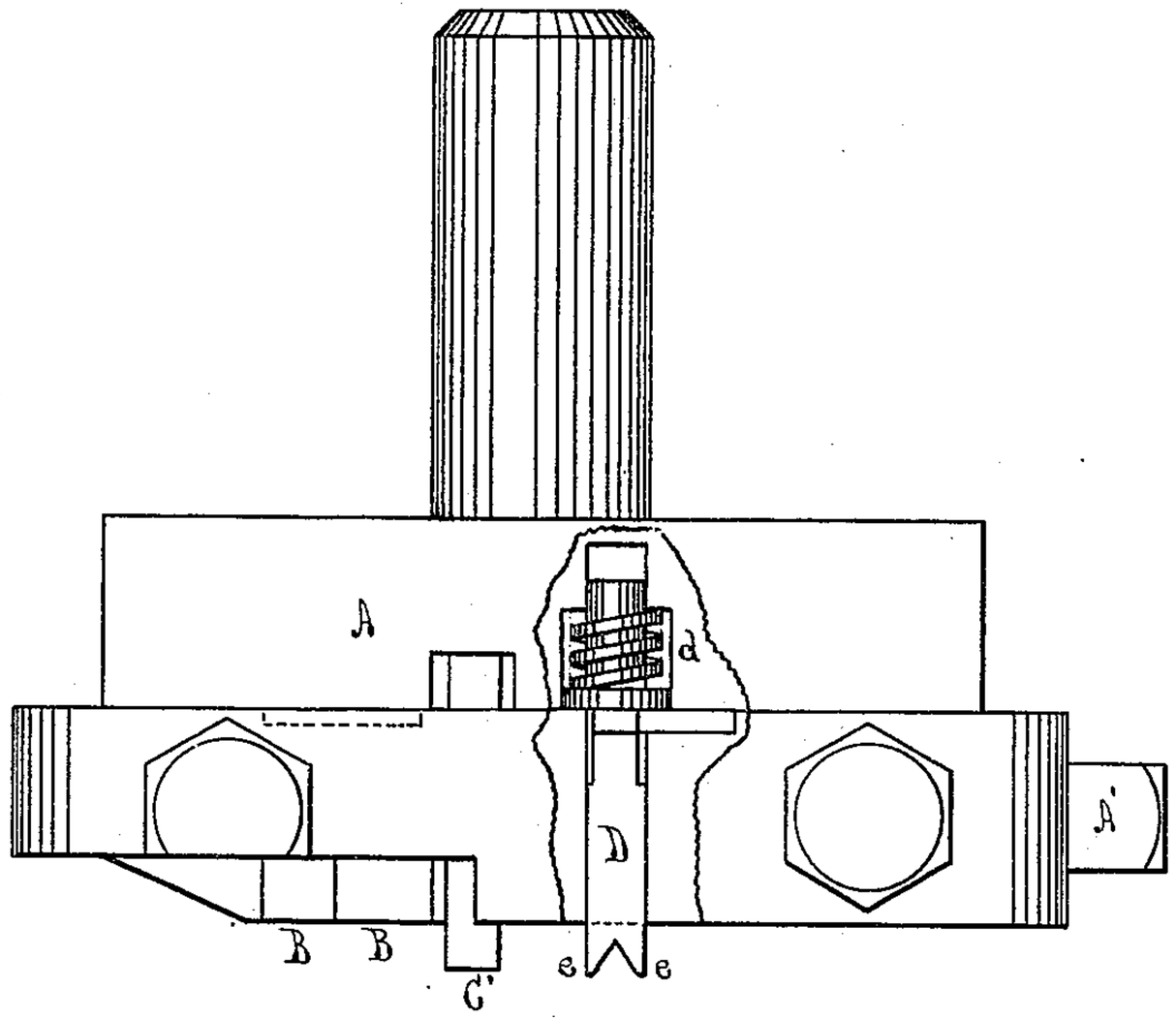
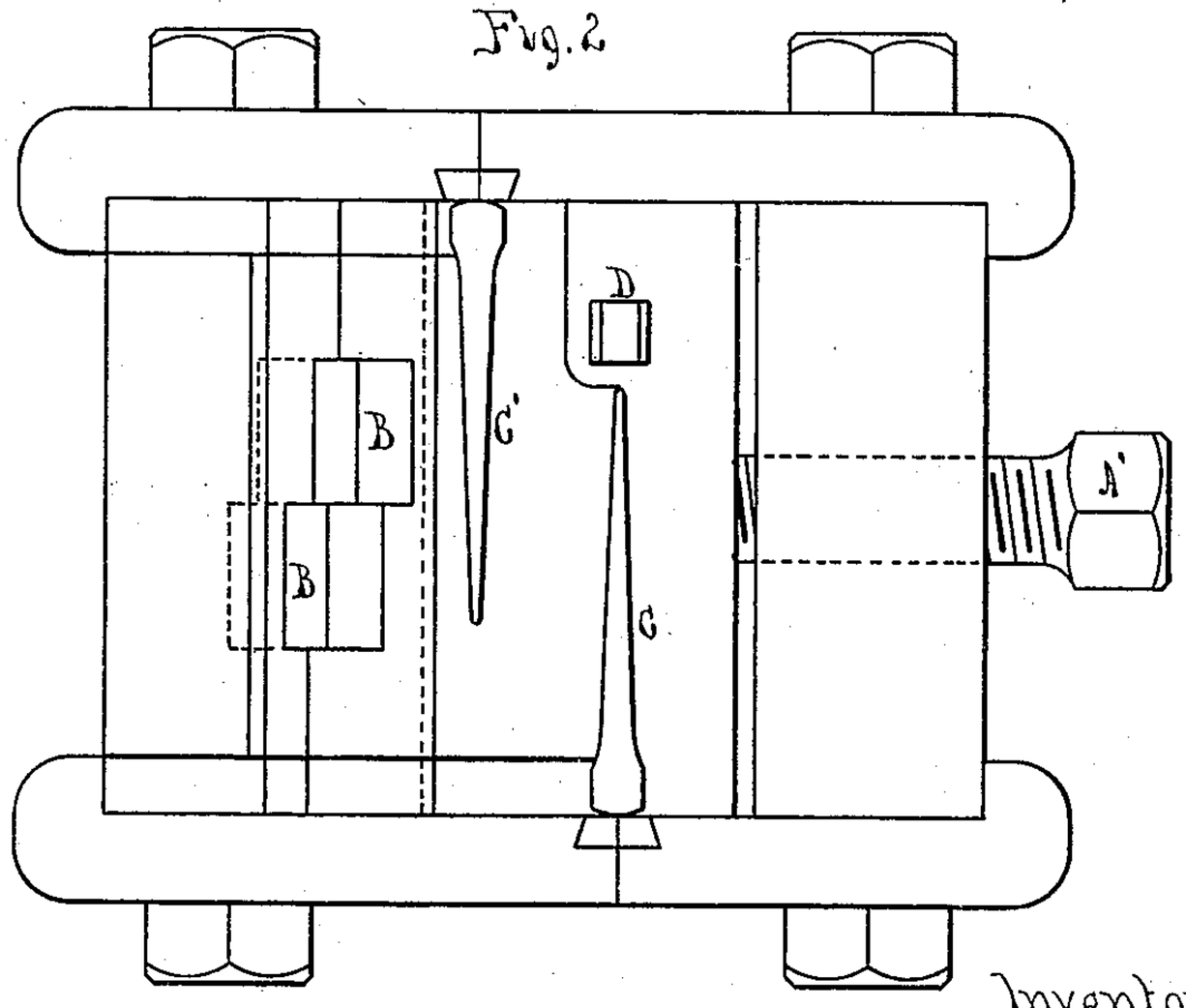


Fig. 2



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5 Sheets—Sheet 2.

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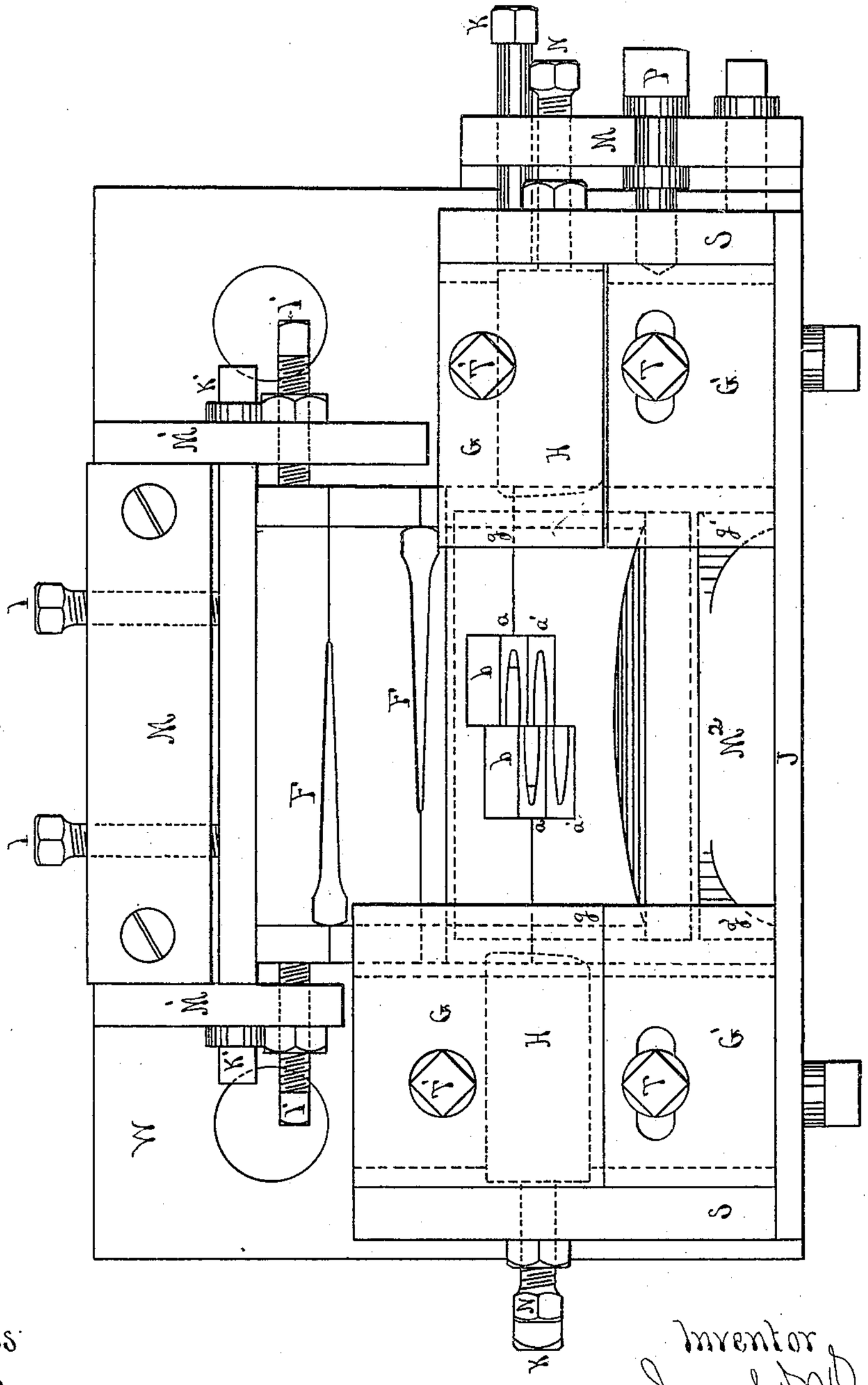

Fig. 3.

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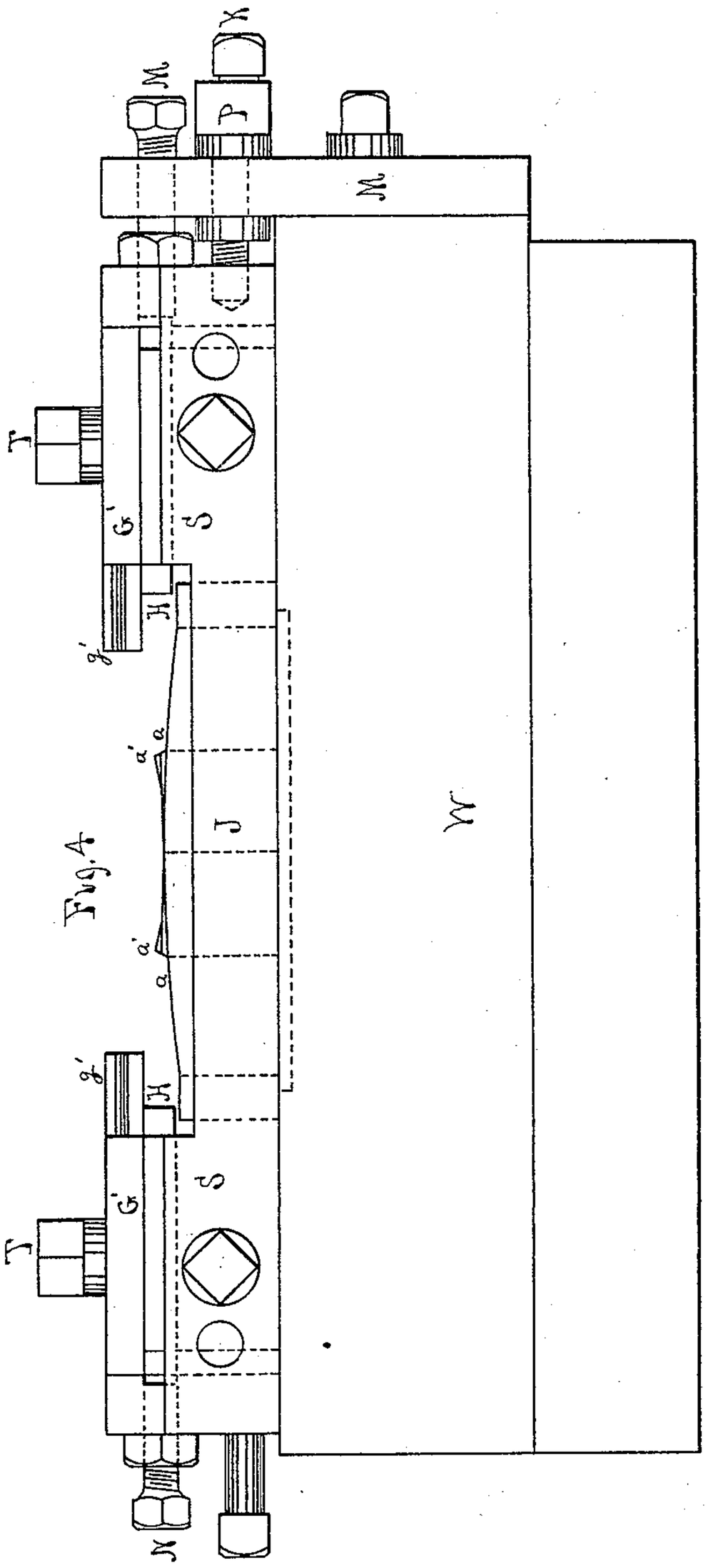

Fig. 4.

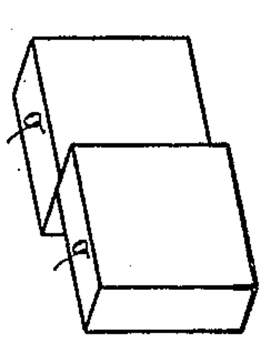

Fig. 5.

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5 Sheets—Sheet 4.

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Horseshoe Nail Machine.

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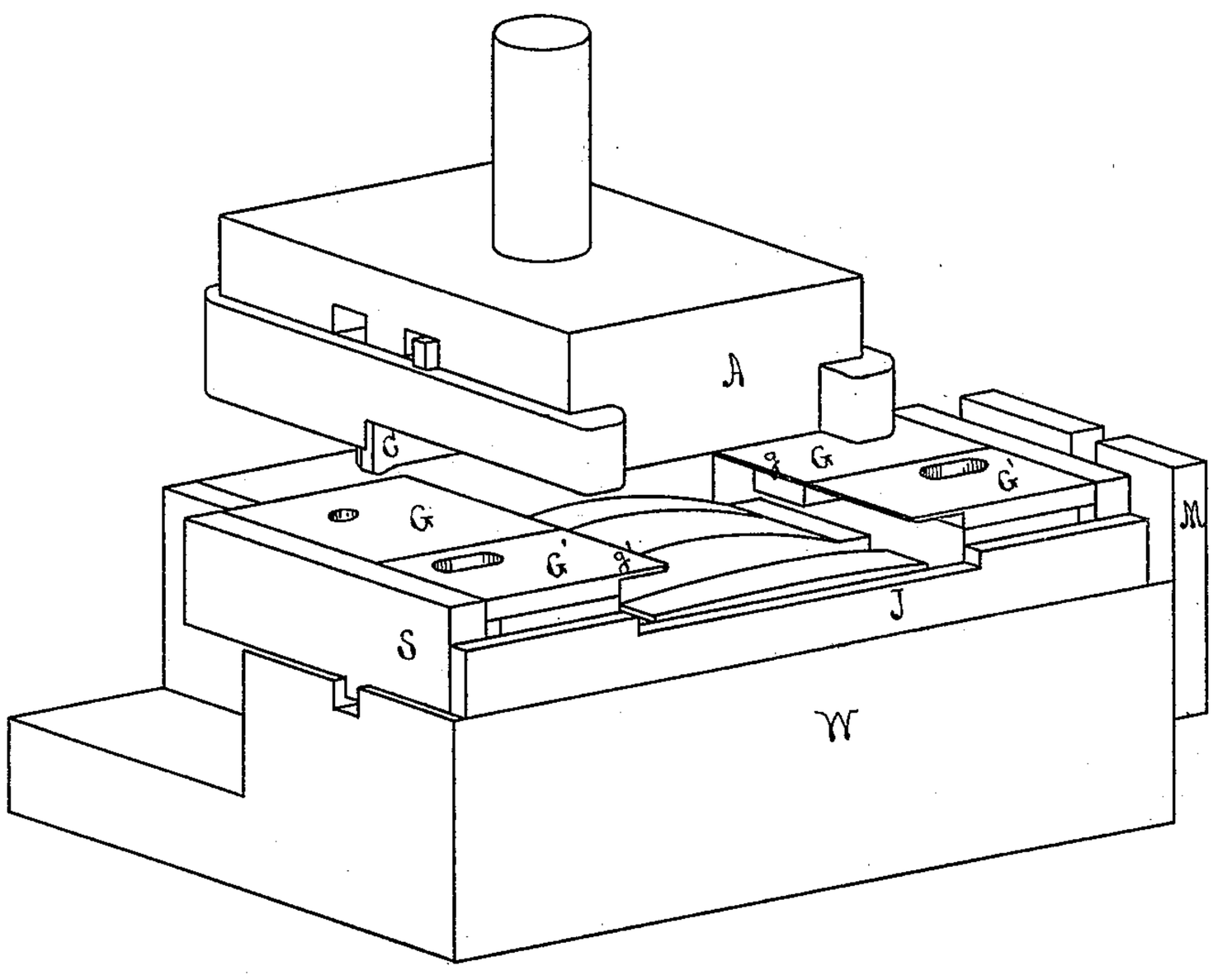
Fig. 5.



Witnesses

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5 Sheets—Sheet 5.

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Horseshoe Nail Machine.

No. 230,950. **Patented Aug. 10, 1880.**

Fig. 6

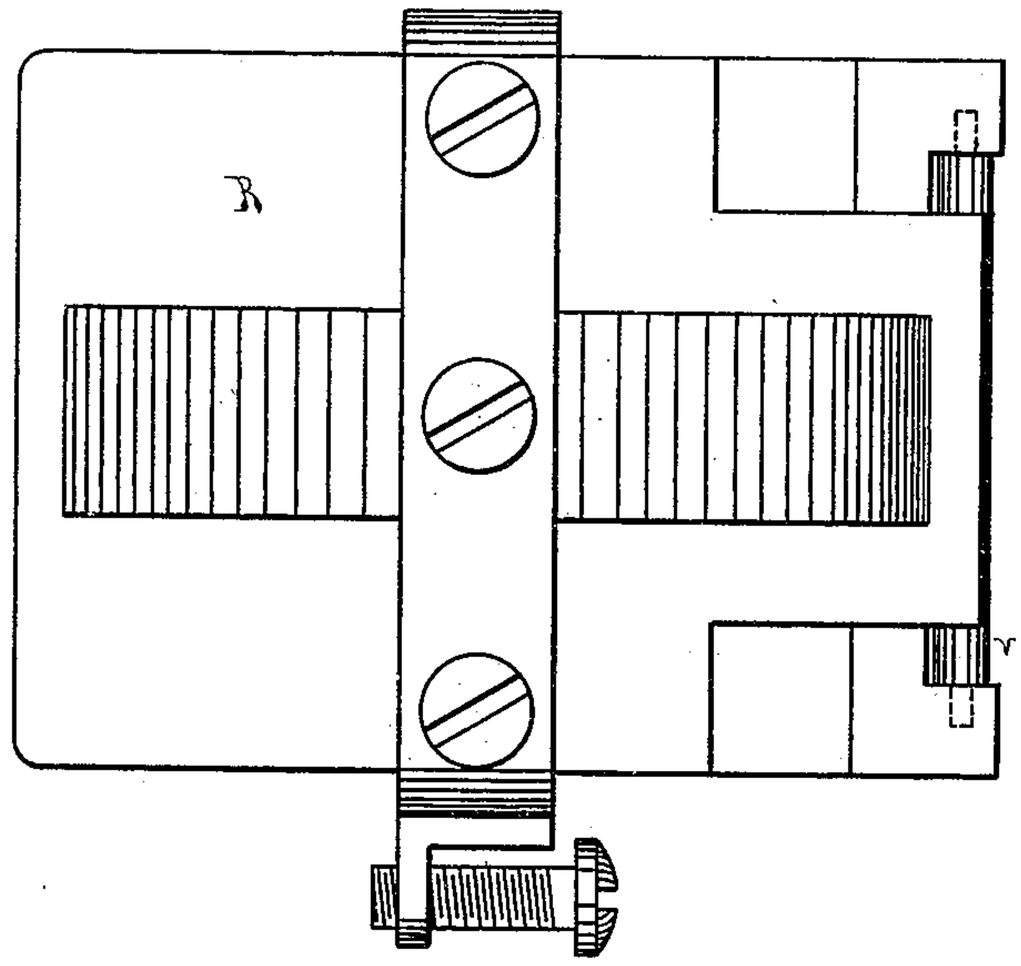


Fig. 7

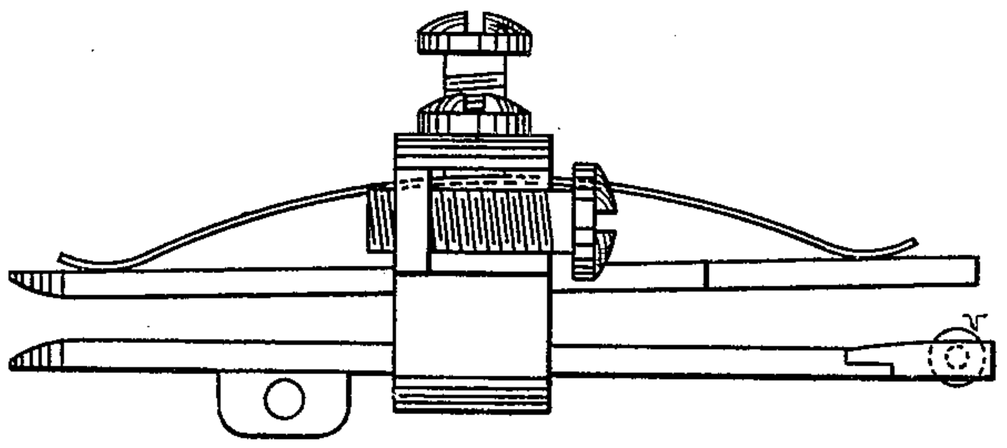
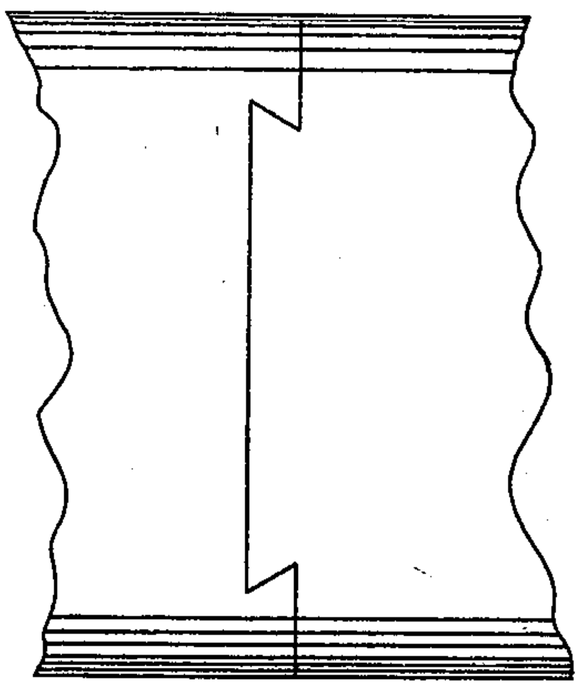


Fig. 8



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UNITED STATES PATENT OFFICE.

JOSEPH M. LAUGHLIN, OF BOSTON, ASSIGNOR TO BRIGDEWATER IRON COMPANY, OF BRIDGEWATER, MASSACHUSETTS.

HORSESHOE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 230,950, dated August 10, 1880.

Application filed March 6, 1879.

To all whom it may concern:

Be it known that I, JOSEPH M. LAUGHLIN, of Boston, county of Suffolk, and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Horseshoe-Nails, of which the following is a specification.

My invention relates to machines for making horseshoe-nails.

Heretofore these machines have been so constructed that while the guides were separately adjustable it was only by operating a number of independent set-screws on opposite sides of the machine that it was possible to so adjust them. While so adjusting them it required great care to prevent greater changes from being made in one part than in another, which frequently made it necessary to stop the machinery while the adjustment was being made, and as each lateral bend or variation in the lateral center of the material being worked would require a change in the relative position of the guides with the nail-cutting punches and dies to produce perfect work, and as such stoppage or delay was vexatious and expensive, it often happened that the operator would allow slight imperfections to pass rather than stop the machine.

In these machines, as heretofore constructed, after the plate had passed out from under the lips of the guide-pieces and one nail had been punched from it, there has been sometimes difficulty caused by the waste metal adhering to the second punch, and by the metal sometimes springing sidewise after the first nail was cut, so that the punch cutting the overlapping nail would not cut it from the exact portion of the plate spotted, or from which the point of the nail should be taken; and it has also been found that when the ears of the bed are made solid with the bed, and the set-screws are unscrewed to take the nail-dies from the bed for regrinding or repair, it is difficult to replace the dies accurately and quickly on account of the nice adjustment required between the punches and dies to make a good edge and point on the nail.

In machines heretofore made using a tunnel through which to feed the nail-plate to the dies and punches the plate did not enter under the lips overhanging the dies until it had passed entirely out from the tunnel. It therefore sometimes happened that the plates joined together by dovetailing, or in other suitable manner, became disconnected by the motion of the tunnel, and the ends did not then pass smoothly and regularly forward to the punching-dies, owing to the vibratory and irregular motion of the feed causing the plates to overlap, wedge, and crowd one another.

The object of my invention is to overcome and remedy these defects; and it consists in joining the several parts forming the guides in such a manner that they can be quickly and easily given a uniform lateral motion; in providing a clearing finger or bolt so constructed that it shall also act as an adjuster for the stock worked under the second punch when the stock has been slightly sprung by the action of the first; and in constructing the ears of the bed which hold the nail-dies in place so that one or more of them can be removed and replaced without altering the adjustment of the set-screws; and, further, in constructing the tunnel and dies in such manner that the tunnel shall enter between the side pieces and over the edge of the bed or die, so that when the nail-plate passes out from the tunnel it will be already under the lips of the dies, and cannot become disconnected, wedged, or jammed by the oscillations of the tunnel and forward movement of the plate.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a perspective of the punch-holder, showing the clearing and automatic adjusting finger. Fig. 2 is a plan view of the same. Fig. 3 is a plan view of the pointing and nail dies, guides, and connecting parts. Fig. 4 is a front view of the bed with the dies, guides, and adjusting-connections upon it. Fig. 5 is a perspective view of the punch and die blocks in operative position. Fig. 6 is a plan view of the tunnel. Fig. 7 is a side view of the same. Fig. 8 is a plan view of the ends of two plates, showing the manner of uniting them as they are fed into the machine. Fig. 9 is a detached view of the smoothing-dies.

In Fig. 1, in the portion broken away, will be seen the finger D, which is forced up when the punch is depressed upon the plate and the punches C C′ are in use. The finger or bolt D is placed opposite the end of the second nail-punch, and its points reach the bed-die somewhat in advance of it, so that the points *e e* may pass one upon each side of the strip of metal left by the first punch, from which the overlapping nails are cut by the second, and by means of their sloped or curved inner faces act upon the metal to move it sidewise, if sprung, and bring its center opposite the point of the punch, so that the point of the nail will be cut from the center of the strip and spot prepared for the purpose. As it is not designed to have this bolt or finger act as a presser-foot to hold the metal down upon the dies, its bifurcation is begun far enough from the end and its parts ending in the points *e e* separated, so that if the metal be not sprung or bent by the action of the first punch, so as to require the use of the finger to center it before the second punch acts upon it, it may not be pressed upon by the bolt while being so acted upon, but may lie between the points *e e* while they rest upon the bed-die and hold up the bolt D. If, however, the stock from which the nail is to be cut by the second punch is sprung or bent sidewise by the action of the first, one or the other of the parts of the bolt will be brought in contact with the bent metal before the punch reaches it, and, as the spring *d* is made strong enough to keep the bolt projected until it meets with a greater resistance than such a strip of metal can offer in bending, the metal will be sprung back or straightened by the sloping inner surface of the part bearing upon it. It will not, however, be pressed against the opposite part or branch of the bolt, because, before the place where the parts are near enough together so that the metal might touch both at once is reached, the points *e e* will be brought against the bed-die F and press up the bolt. When the punch-block A with the punches is lifted up from the die-block this bolt or finger is forced out by the spring *d*, and any waste which may adhere to the punch C will be removed or thrown off, for when the bolt is forced out, if the waste metal clings to the punch C, the strip which lies between the points *e e* will be brought in contact with the inner sides of the bifurcated part of the bolt where they near each other as the bolt is projected, and the waste will be crowded off the punch. This finger or bolt is not intended to act as a presser-foot or stock-holder, having its action limited so that it may extend just far enough to clear the punch of waste metal when the punch-block A is raised and guide the stock, as above described.

In Fig. 3 will be seen the bed-piece W, provided with ears M M′. I construct those on the sides of the nail-dies M′ movable, in order that the nail-dies may be removed and replaced by taking one of the ears off from the bed without changing the set-screws I′, which hold the dies laterally. By this construction I am enabled to remove and replace the dies for repair without being obliged to readjust them.

Through the ears M the set-screws I I act to hold the nail-dies F and pointing and finishing dies *a a′* and *b* in place from back to front, while the set-screws I′ hold only the nail-dies F in place and prevent a lateral motion.

The parts G, having the lips *g*, are united to the parts S, which extend beneath them, (see Fig. 4,) by the screw-bolts T′, and the parts G′ are held in contact with the parts S by the screw-bolts T passing through slotted holes in both into the bed W.

The set-screws K K, passing through the parts S S, act upon the pointing and finishing dies *a a′* and *b* to adjust them laterally when placed in position before the set-screws I I are tightened. When, however, that is done, the set-screws K K are backed out so that they will not touch the dies and prevent the free lateral movement of the sides S.

The set-screws N N, passing through the parts S S, act upon the guides H H, while the bar J, uniting the parts S S and those thereto attached, enables the operator, by means of the guide-screw P, to produce, in the united construction formed as above—to wit, the parts G, G′, H, and J, with their set-screws N—a movement in a lateral direction as a whole, sliding upon the steel-faced bed W and against the lip M^2. This lateral movement may be produced by a lever, cam, or other equivalent device without departing from the spirit of my invention.

I construct the tunnel with its upper leaf, R, made narrow at the back end, so that that end of the tunnel can be inserted between the side pieces, S S, which are upon and beside the pointing-dies, and under the lips of the guide-pieces G′. I prefer to construct this tunnel with a roller, *v*, on the under lip, at its end, but it may be constructed without that attachment.

I am aware of the patent issued to me September 2, 1873, No. 142,403, and desire to state that I do not claim anything therein set forth as now new and of this my present invention; and of the patent issued to J. D. Sumner, August 13, 1878, No. 206,907, and also say that I do not set up or claim as new and of my invention anything therein claimed.

What I claim as new and of my invention is—

1. The combination of the pointing-dies *a*, guides H H, set-screws N, guide-screw P, and sides S S, connected by the bar J, substantially as described.

2. The combination of the nail-dies F, punches C, guides H H, sides S, connected by the bar J, and guide-screw P, substantially as described.

3. In combination with the pointing-dies *a*

a', smoothing-dies *b*, stamper B, adjustable guide-pieces H, having set-screws N, and sides S, connected by the bar J, the guide-screw P, substantially as described.

4. The combination of the nail-die F, punch C, and spring *d* with the crotched bifurcated bolt D, placed on a line with the center of the punch to automatically center the stock, substantially as described.

5. The combination, with the bed W and nail-dies F, of the ears M', set-screws I', and make-fast screws K', substantially as described.

JOSEPH M. LAUGHLIN.

Witnesses:
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LEPINE C. RICE.