

J. L. Krauser,

Making Cut Nails,

No. 33,018.

Patented Aug. 6, 1861.

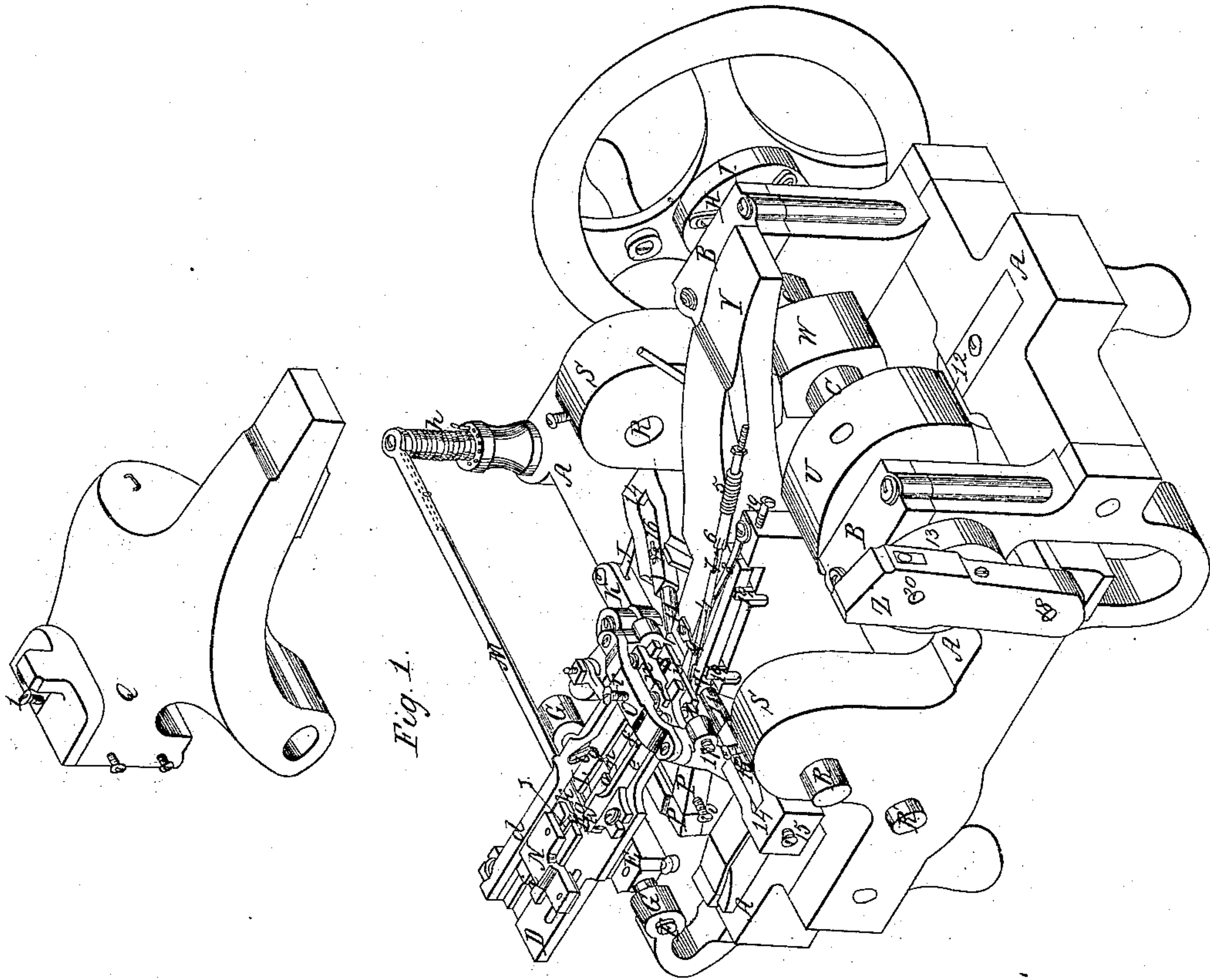


Fig. 1.

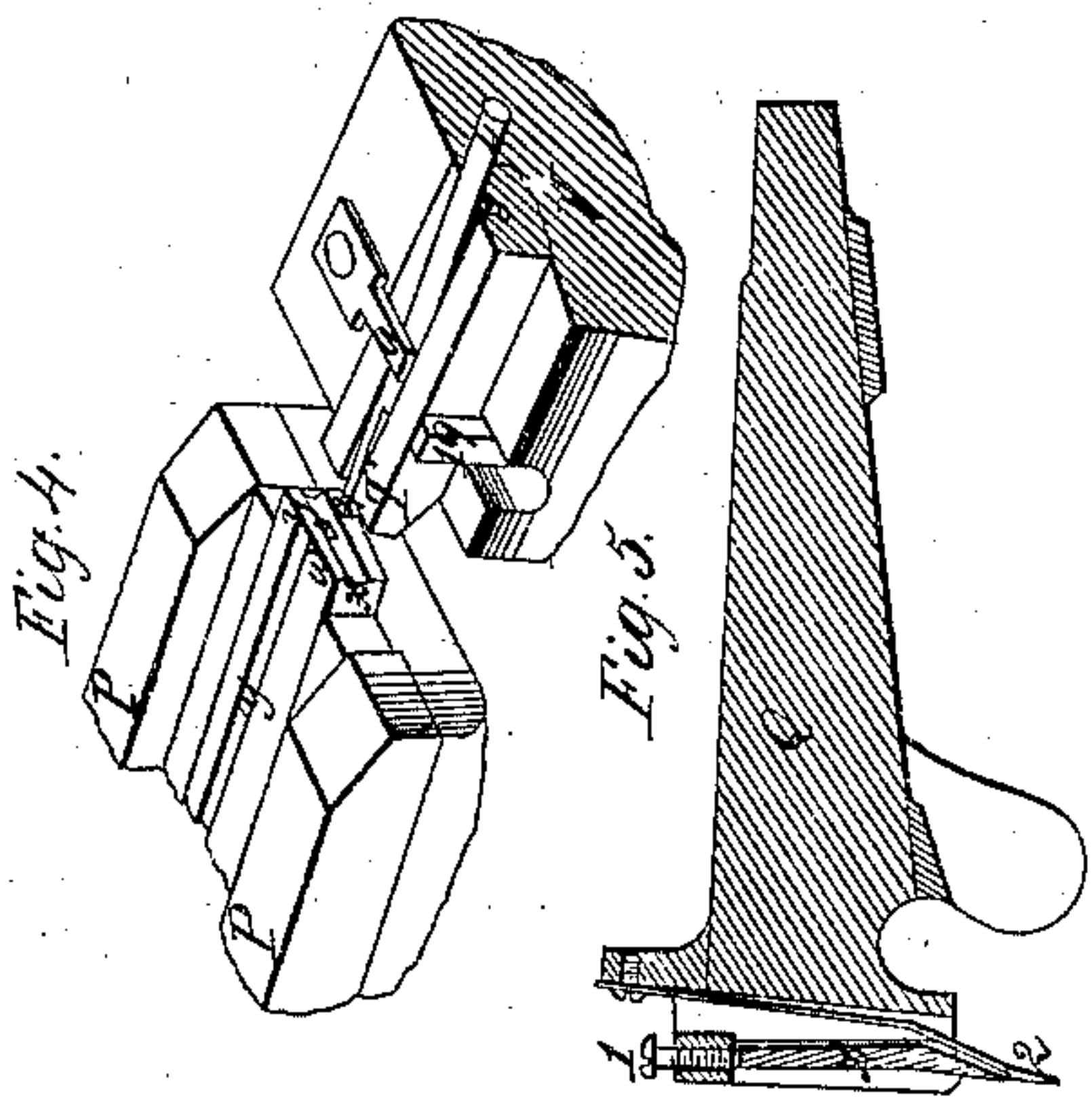


Fig. 4.

Fig. 5.

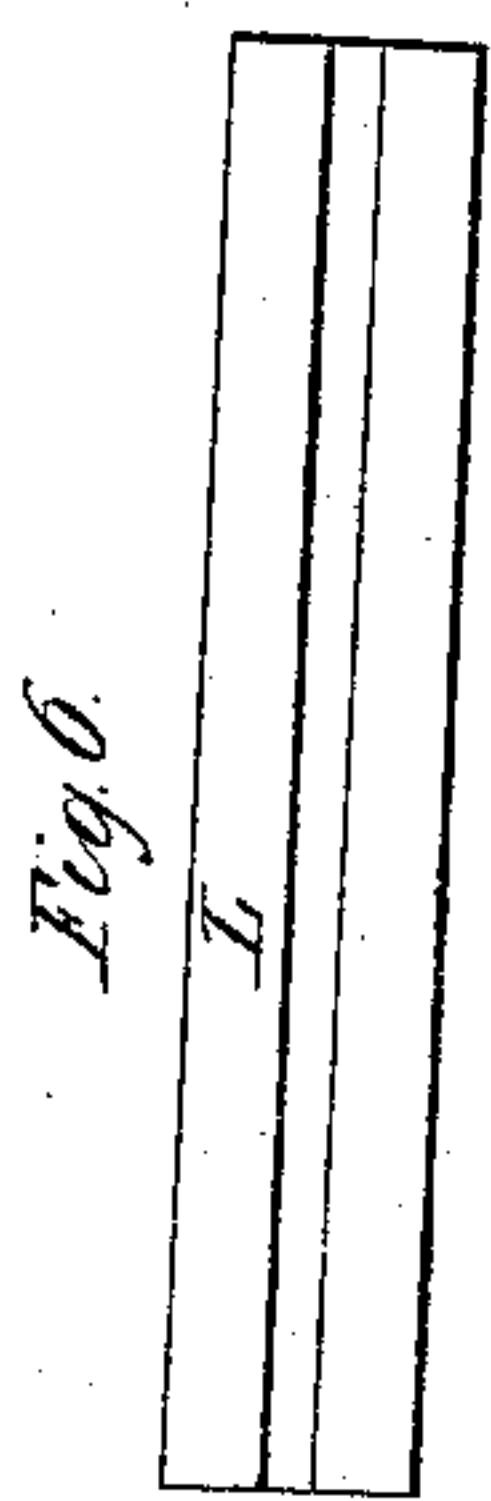


Fig. 6.

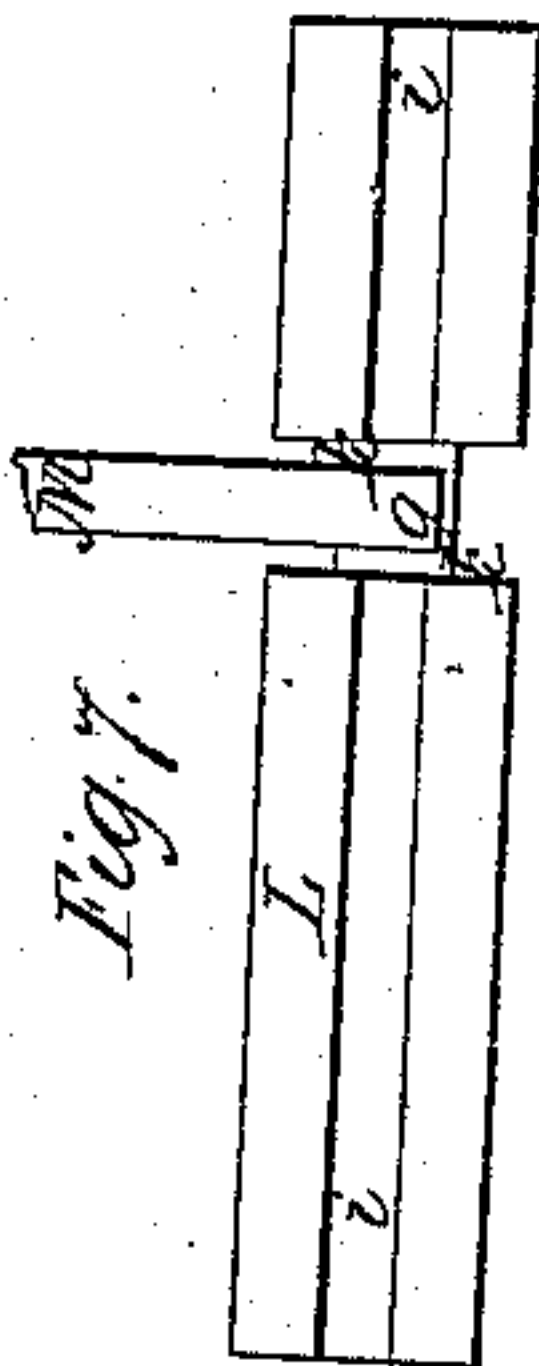


Fig. 7.

Fig. 8.

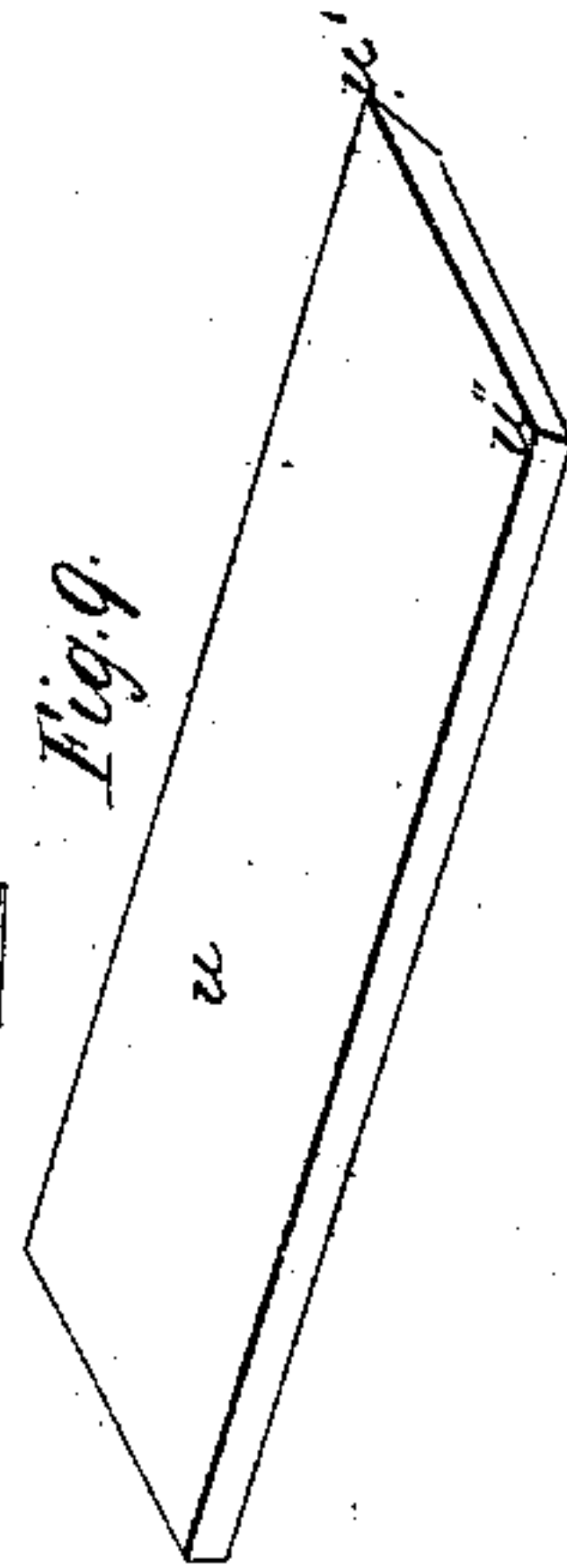


Fig. 9.

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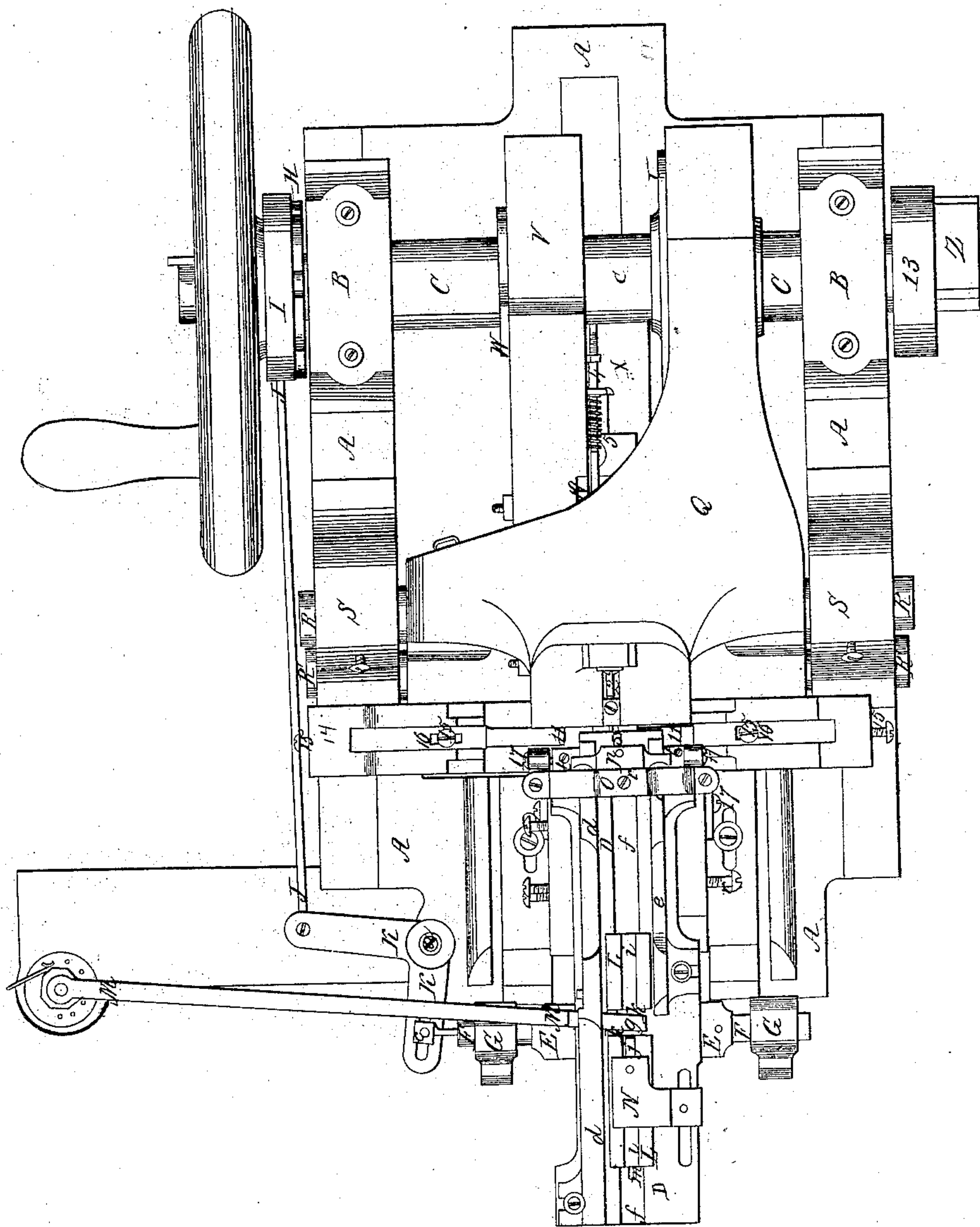
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Fig. 2.

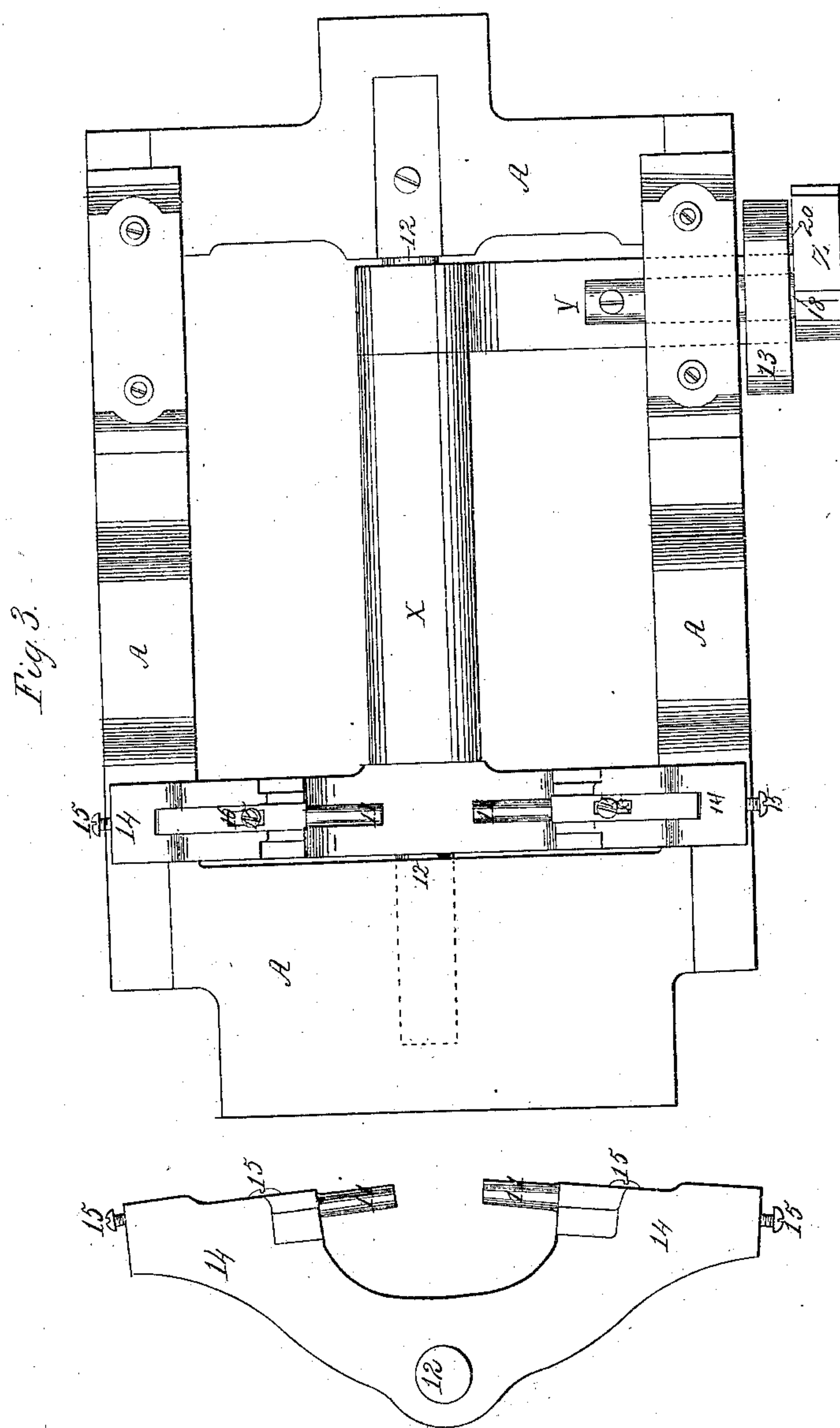


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*Patented Aug. 6, 1861.*

No 33,018-





# UNITED STATES PATENT OFFICE.

JOHN L. KRAUSER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO SELF, JAMES HARPER,  
AND JOHN H. BROWN, ALL OF SAME PLACE.

## NAIL-MACHINE.

Specification of Letters Patent No. 33,018, dated August 6, 1861.

*To all whom it may concern:*

Be it known that I, JOHN L. KRAUSER, of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Self-Feeding Right and Left Heading Nail-Machines; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a perspective view of the machine with the upper cutting lever raised up, and separated from the machine, to show the parts that would be concealed by it, if in its proper place. Fig. 2 represents a top plan of the machine. Fig. 3 represents, a top plan of the frame divested of every thing except the rocking shaft for operating the heading tools; as also an end view of the rocking heading lever. Figs. 4, 5, 6, 7, 8, and 9 represent detached portions or details of the machine, not so clearly shown in the full figures.

Similar characters of reference where they occur in the separate figures, denote like parts of the machine in all cases.

In the construction of machines wherein several operations are to succeed each other in regular order, to accomplish one end or result, it is indispensable not only that, every part of the mechanism should work in perfect unison with the other part or parts, but it must receive, and deliver up, with exact regularity, and positive certainty, the thing being made, else the machine, or the article may be damaged or destroyed. This is particularly the case with machines for forming, shaping, or working metals—for if the blank be not between the parts that are to act upon it, at the exact time, these parts may come together and be damaged, and if the thing be not given up at the exact time, the next blank will stick, or choke, in the machine, and thus render it liable to serious damage. So great has been this difficulty with nail machines that, though feeding up the nail plates, automatically, has been attempted in many ways, yet hand-feeding is almost universal.

It is necessary to fully understand all the difficulties in the way of self-feeding devices in nail machinery, and of the proper and certain action of the cutting gripping,

heading, and delivering apparatus, to work in connection with these self-feeding devices, to fully appreciate the many and important things that, have to be devised, constructed, and arranged, to make them work harmoniously together, to receive—to work upon, and to give up, at the proper time and place, the thing being made. To bring these things to perfection has been the labor of several years, and has involved the expenditure of much money.

My invention may be said to be twofold in its nature and purpose, but both are necessary to accomplish the object which I have in view—viz.: the making of a cheap, simple but entirely practical and efficient “self-feeding, right and left-heading, nail machine.” This after several years of toil and experiment and expenditure of money I have accomplished, and have proven its utility to my entire satisfaction by actual and practical demonstration.

It would be tedious to point out in detail in the nature of my invention, the many improvements I have made in this organized machine; and superfluous too, as they will be distinctly stated in the several clauses of the claim hereto annexed.

I briefly state the nature of my invention to consist first in the construction and mode of operation, of the self-feeding mechanism, by which the nail plates are properly supplied to the cutters, and gripping, and heading-tools. And, secondly, my invention consists, in the construction and mode of operation, of the cutting, gripping, and heading mechanism, by which perfect nails are made from the nail plates, fed up to them as will hereafter be explained.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents the frame of the machine, upon which, in suitable bearings B, is hung a shaft C, to which motion may be given by any first moving power, and through which shaft C, motion may be communicated to the several parts of the machine as follows: First—of the self-feeding mechanism: The nail-plate holder D, is pivoted to the bar E, which has long journals or bearings F resting in the supports G, so that said plate-holder, and bar, may be vibrated in the line of said bearings. On the cam shaft C, there



is a cam H, around which is placed a strap or collar I and to this strap or collar is connected one end of a rod J, the other end of which is attached to one arm of a bell-crank lever K, pivoted at *a* to the main frame; and to the other arm of the bell-crank lever is connected, by an adjusting mechanism *c*, the bar E, to which the nail plate holder is pivoted as above mentioned, to give it its vibratory movement, and to adjust its movement as circumstances may require.

The nail plate holder D, has adjustable sides *d*, *e*, upon it so as to adapt it to the width of the nail plates; and there is a groove *f*, cut longitudinally through or along it, which receives a corresponding projection on the underside of the nail plate carrier L, and guides this carrier as it moves up the nail plates to the cutters. A long slot is made under or through the side *d* of the nail plate holder, through which the end *g*, of the arm M, passes, and moves, as said arm through the uncoiling of the spring *h*, or otherwise, moves up the nail plate carrier to the cutting, gripping, heading, apparatus. There is a longitudinal groove *i* through the nail plate carrier L, so that it may move under and past the arm or projecting piece *j* of the head block N, and a cross groove *k* to receive the end *g*, of the arm M. The head block N, is also adjustable so as to adapt the nail plate holder to plates of differing lengths.

Connected to the side *d* of the nail plate holder is a pivoted switch *l*, which the end of the arm M, can raise up and pass under, as it traverses the slot, but which prevents the nail plates from entering said slot, at their starting point, which otherwise they are apt to do, and which of course disarranges the feed. At the rear of the nail plate holder there is a slot *m*, in which an adjustable plane is set, to raise up the rear end of the plate carrier L, as it is drawn back, and correspondingly lower its front end—that it may freely slip under the pile of plates, preparatory to its advancing with a plate to the cutting mechanism. On the front end of the nail plate carrier L there is a ledge *n*, which receives the rear end of the nail plate, when it drops off from the projecting piece *j*, where it had previously rested and which ledge together with the overhanging parts *o*, prevents the nail plate from tipping up behind as the cutters work upon its forward end; and that the nail plate carrier itself shall not tip or bounce under the working of the cutters, there is a bridge *p*, at the end of the nail plate holder, under which the carrier passes, and this bridge holds it down; and to prevent the nail plate holder from jumping or bouncing under the workings of the cutters, a cross-head or brace O, firmly connected to the main frame by adjusting screws, is provided, which by means of a set

screw *r*, holds the bridge *p* down. When the nail plate is so nearly fed up, as to have passed from under the bridge *p*, there is still an arm *s* which holds it down to the cutter plate, to prevent it from bouncing. The set screws *t* in the extreme forward end of the nail plate holder are for the purpose of raising, lowering, leveling, the said holder in relation to the cutters, and allow them to cut the blank square off vertically from the plate.

At the end of, and underneath, the nail plate holder, is seen the end of the stationary cutter *u*. This cutter rests in a cutter block or frame P, and is held therein, and thereto, by set screws *v*, which also admit of moving up this cutter to its fellow as it wears away as well as to adjust it otherwise. The cutter *u* is shown detached, and on an enlarged scale, at Fig. 9, where it will be seen that, it is thicker at one edge (*u'*) than it is at the other (*u''*); the object and purpose of this is that, I may have a shear cut upon the plate, but at the same time, a square cut in a vertical line which I accomplish by this shaped cutter. Underneath this plate *u*, is the stationary gripping jaw *w* as seen on an enlarged scale in Fig. 4—it has a groove *x* in its face to receive the blank after it is cut off and turned, and where it is held while being headed. This gripping jaw has a groove cut in it, to receive a nipper rod *y*, that acts in concert with the turning rod to be hereafter described, for turning the blank and allowing it to be gripped flatwise.

The movable cutter *z* is connected to the cutting lever Q, which is hung by trunnions R, passing through the supports S on the main frame (but is represented in Fig. 1, as detached from the machine, and raised up out of the way so that the parts underneath it may be seen); and can be adjusted by the set screw 1. Behind this cutter as seen in (Fig. 5) there is a spring gage 2 for gaging, and holding the blank while it is being carried within the reach of the nipper and turning rods, to be turned over flatwise, previous to its being gripped and held for the header. The movable gripping jaw T, has a groove in its face similar to that *x* in the stationary jaw, and a groove 3 cut longitudinally through it to receive the turning rod 4, and this groove is also made wide and large enough at the end of the gripper, to allow the spring gage 2 to remain down while the grippers close upon the blank.

It will be perceived by reference to Fig. 4, that, the turning rod 4 moves a little to the right of, and slightly below, the nipper rod *y* this is done to facilitate the turning, and turn the blank over, that the grippers may firmly and with certainty catch it. The moving cutter lever is worked from a cam V on the cam shaft C, and the gripping lever V hung to the main frame by the trunnions R' is worked from the cam W on the same



shaft, both levers having two motions to one rotation of the cam shaft.

The turning rod 4 (as shown in Fig. 1,) has a coiled spring 5, around it, to allow it to yield when two blanks happen to get in between the gripping jaws at the same time—or a finished nail, and a blank, which will sometimes happen; and there is a dog and ratchet 6, 7, also arranged upon or with it, so as to adjust it, or the power of the spring upon it, that it may not too readily yield, unless a nail and blank, or two blanks, should accidentally get in between the gripping jaws at the same time. The turning rod 4 may have some vertical play—by means of a spring 8 to hold it up, and a stop 9 to prevent it from rising beyond a given point. The gripping jaw T is held to the lever V by hook headed bolts 19, or otherwise by which it may be adjusted laterally, while a screw 10 may set it up or back longitudinally—this jaw T may be made of one, two, or more pieces, and should be capable of easy removal, when another of a different size is required, to form different sized nails.

The blank having been cut from the plate by the cutters *z*, *u*, and turned flatwise by the rods *y* 4 and caught and held in the grooves *x* of the gripping jaws T, *w*,—one or the other of the headers 11, as the case may be, is brought up, and heading the blank, completes the nail, when the opening of the jaws, will allow it to drop out.

The heading tools are operated as follows: A shaft X Fig. 3, is hung longitudinally of the main frame, so as to rock on its journals 12, which are properly supported in the main frame. At the rear of the rock shaft X there is an arm Y extending at right angles therefrom and to a ball and socket wrist 13 on the end of this arm is connected one end of the pitman Z, the other end of which is connected by a similar ball and socket wrist 20 to the eccentric 13, on the cam shaft—thus the rotation of the cam shaft, produces a rocking motion on the header shaft, and while the cutters and grippers come together twice or make two operations for every single rotation of the cam shaft, the headers only make one operation each, during the rotation of said cam shaft. At or near the front end of the rock shaft X there is a yoke, cross-head, or bow, 14, in which the heading tools 11, are set as shown in Fig. 3, by plan and end view, and so that by set screws 15 and slots 16 they may be set up to, or moved from, the grippers as may be necessary.

There are many adjustments on this machine not specifically referred to in the description, but most of them are shown on the drawings. I will merely mention some of them that gage the nail as to head, point, and taper.

The set screws 17, are for the purpose of regulating the heads of the nails, as sometimes there will be more of the blank projecting at one side of the grippers, than at the other side, and consequently the head made at that side will be the largest, to prevent this the front of the table or nail plate holder, is shifted, so as to equalize the projection on both sides, and to make the heads uniform on both sides.

The adjustment *c* in the bell crank lever K, is for defining the amount of taper to be given to the nail, for just as the vibration of the rear of table D is changed, so will the taper of the nail change.

The table itself is made adjustable on the sliding piece E, so that it may be perfectly centered with regard to the cutters, grippers and headers; the position of the table when at half stroke is at right angles to the faces of the cutter, and it is stationary when the cutters are cutting off the blank.

When the pile of nail plates are laid on the table, the rear ends of them rest upon the tongue or arm *j*, and their front ends rest upon the follower or plate carrier L, so that this carrier in moving back and forth must raise or hold up the front ends of the pile.

Having thus fully described the nature and object of my invention what I claim therein as new and desire to secure by Letters Patent is—

1. In combination with a movable cutter, a horizontal table that is vibrated past its central line at the rear only, and not at its front, and that is capable of holding a pile of nail plates from which the under one of the pile can be taken and fed up, and which is at rest while the cutter is acting, substantially as herein described.

2. Supporting the rear ends of the pile of plates upon an arm or tongue, for the purpose of allowing the plate carrier to move under them, and take and carry forward the lower plate of the pile, substantially as described.

3. The nail plate carrier L having a longitudinal and a cross groove in it, for the purpose of allowing it, and the arm that operates it, to move past and under the tongue that holds up the nail plates, substantially as described.

4. The lip or ledge, *n*, on the nail plate carrier for the purpose of preventing the rear end of the nail plate from tipping under the action of the cutter, substantially as described.

5. In combination with a vibrating table the bridge, and brace, for holding the nail plate and table down against the rising action of the cutter substantially as described.

6. In combination with a vibrating table, the lateral adjustment thereof by means of the set screws 17 at its front end, for regulating the forming of the heads on each side



of the gripping jaws, substantially as described.

7. In combination with a vibrating table the regulating of the taper of the nails by increasing or diminishing the throw of the rear end of said table, substantially as described.

8. A slot in the side of the table for allowing the spring lever M, to form a working connection with the plunger or nail plate carrier, substantially as described.

9. In combination with the table, plunger, and spring lever, the pivoted switch, to allow the lever to pass, but prevent the nail plates from entering the slot, substantially as described.

10. In combination with the bed gripper the nipper rod y, placed in a groove in said bed gripper, substantially as and for the purpose described.

11. A yielding and adjustable, turning rod, constructed and operating substantially as described.

12. The attaching of the turning rod, to the gripping lever, so that it shall receive its motion from said gripping lever with which it acts in concert substantially as described.

13. The employment of two headers upon one rocking shaft, substantially as described.

14. The combination, in a right and left-heading nail machine, of a double cutting cam, and a double gripping cam, on a revolving shaft, and double heading tool, on a rocking shaft, substantially as herein described.

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Witnesses:

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WILLIAM SHANS.