

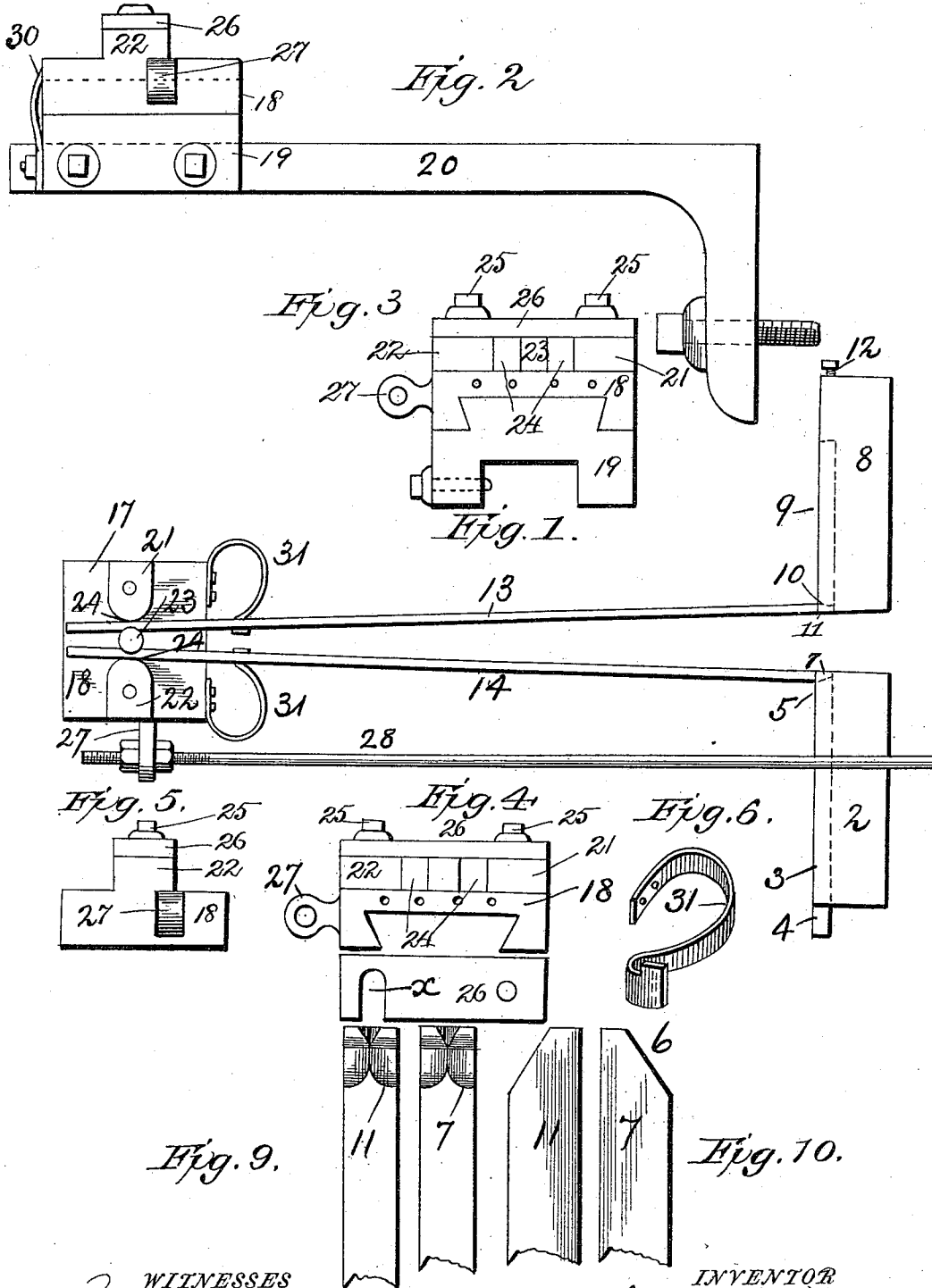
(No Model.)

2 Sheets—Sheet 1.

C. E. HOUGHTON.
NAIL MACHINE.

No. 463,365.

Patented Nov. 17, 1891.



WITNESSES
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Fig. 8.

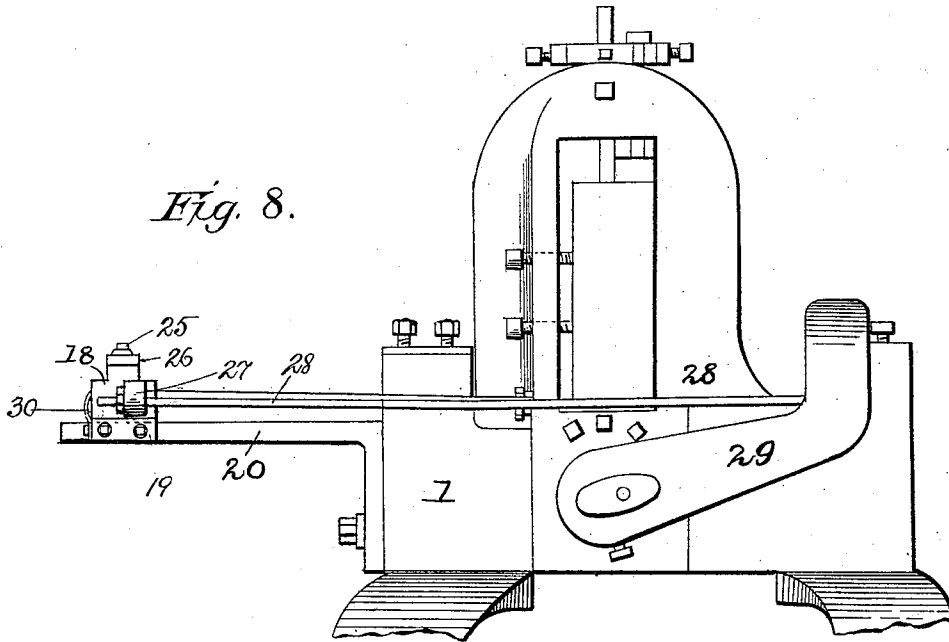
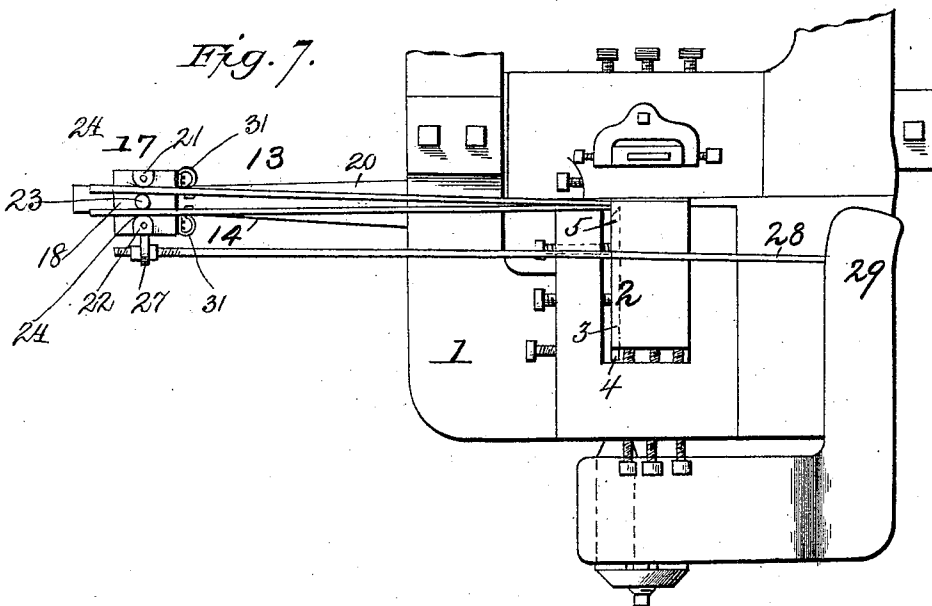


Fig. 7.



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UNITED STATES PATENT OFFICE.

CHARLES E. HOUGHTON, OF NORTHUMBERLAND, PENNSYLVANIA, ASSIGNOR
OF ONE-HALF TO HORACE RUFUS JOHNSON, OF SAME PLACE.

NAIL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 463,365, dated November 17, 1891.

Application filed January 24, 1891. Renewed October 23, 1891. Serial No. 409,572. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HOUGHTON, a citizen of the United States, residing at Northumberland, in the county of Northumberland and State of Pennsylvania, have invented a new and useful Nail-Machine, of which the following is a specification.

My invention relates to improvements in machines for cutting nails from a rolled "nail-plate," the object being to provide a machine of this character with point-cutting dies and operating mechanism therefor, whereby a clean-cut point is formed upon the nail.

Heretofore it has been attempted to form a point upon nails cut from a plate by the use of dies acting by direct cutting contact or pressure; but great difficulty has been experienced owing to the strain or wear upon the edges of the dies and the obstruction to the cutting or forming process caused by the superfluous metal removed from the nail to form the point.

My invention consists in the mechanism hereinafter fully described, by means of which I impart a shearing or sliding movement to the point-cutting dies, thus avoiding undue strain upon the die-edges and expelling the superfluous metal from the forming-dies.

My improvements are adapted to be applied to the ordinary "high-post" nail-machine in common use, and I have illustrated in the accompanying drawings only such parts of a nail-machine as are essential to a clear understanding of my invention.

Figure 1 is a plan view of my improved point-cutting dies in proper relation with the gripping-dies and of a part of the mechanism for operating the point-cutting dies. Fig. 2 is a side view of a bracket-arm for supporting the sliding block carrying the point-cutting die-rods. Figs. 3, 4, and 5 are detail views of the sliding block and its attachments. Fig. 6 illustrates in detail one of the rod-retracting springs. Fig. 7 is a plan view of a part of a nail-machine bed with my improvements applied thereto. Fig. 8 is a side elevation of a nail-machine with my improvements added thereto. Fig. 9 is a view showing the faces of the point-cutting dies, and Fig. 10 shows the beveled ends of the die-bearing pieces.

1 indicates the bed of the machine, upon which is located the bed-gripping die 2, formed with a longitudinal recess 3 in its front side, said recess opening into the face or gripping end of the die and serving as a seat for a bearing-piece 4, the front end 5 of which is beveled to correspond to the beveled side 6 of the point-cutting die 7. This bearing-piece, as shown, does not extend out to the face of the gripping-die 2, thus leaving a space within which the point-cutting die 7 has bearing.

8 indicates the moving die, recessed at its side to receive an adjustable bearing-piece 9, which latter, as in the case of the piece 4, is beveled at its ends and extends only a part of the length of the die to leave a space 10 for the other point-cutting die 11. The piece 9 may be adjusted by the set-screw 12.

13 14 are the rod portions or stems of the point-cutting dies, the forward ends of which (7 and 11) constitute the die-faces proper. These die-rods are counterparts, and their ends are supported on a sliding block or clamp 17, the construction of which will now be described.

18 indicates the body of the sliding clamping-block, formed on its under face with a dovetail recess or groove to take a corresponding tongue on a supporting-bracket 19, adjustably secured upon an arm 20, projecting from the bed of the machine.

21 and 22 are oppositely-arranged lugs formed on the sliding block 18. Midway of these lugs is an upwardly-projecting bearing-lug 23. These lugs, thus arranged, form spaces 24, within which the rods 13 and 14 rest, as clearly shown in Fig. 1. The lugs 21 and 22 have threaded openings to receive bolts 25 for securing a spanning keeper or clamp 26, which clamps the rods in place. One side of the keeper 26 is formed with a slot, through which one of the securing-bolts passes. Projecting from one side of the sliding block 18 is an eye 27, within which is secured an operating push-rod 28, the free end of which is adapted to be struck by the heading-lever 29 to force the block 18 backward.

30 is a spring secured at one end to the bracket 19 and bearing at its free end against the block 18 to return the latter and the die-rods to their forward or normal positions. At

each side of the front end of the block 18 is secured a curved spring 31, the free ends of which are bent or turned to engage the rods 13 14, as shown, and force said rods apart after their contact to cut the point.

An important advantage in my improvement consists in the fact that the die-rods are readily removable from the machine. To remove them it is only necessary to loosen one of the nuts of the keeper 26 and turn said keeper to one side to clear the rods, when the latter may be lifted out of their seats in the gripping-dies.

To compensate for wear upon the rods 13 14, I make the bracket 19 adjustable upon its arm 20. By adjusting said bracket as required the rods may be moved toward the gripping-dies as often as may be necessary.

The operation of the parts thus described is as follows: It will be understood that the usual knives and gage are employed, and the plate is fed to the machine by any preferred feeder. As the moving die 8 contacts with the bed-die to grip the nail, the point-cutting die-faces are brought together, and the heading-lever strikes the push-rod 28, thus sliding the block 18 backward to effect a shearing cut on the nail-point. This shearing action not only results in the formation of a clear-cut point, but discharges the superfluous metal rearward between the die-rods.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a nail-machine, the combination, with the gripping-dies, of point-cutting die-rods formed with dies in their inner longitudinal faces and mechanism for imparting a sliding movement thereto to effect a shearing action, substantially as set forth.

2. In a nail-machine, the combination, with the gripping-dies, of point-cutting dies consisting of reciprocating rods formed in their inner longitudinal faces with integral dies, substantially as set forth.

3. In a nail-machine, the combination, with the gripping-dies and with the heading-lever, of point-cutting die-rods formed with dies in their inner longitudinal faces and operated from said heading-lever, substantially as set forth.

4. In a nail-machine, the combination, with the gripping-dies, recessed as described, of a pair of reciprocating rods the forward ends of which are formed with point-cutting dies in their inner longitudinal faces and rest within the ends of the recesses of the gripping-dies, substantially as set forth.

5. In a nail-machine, the combination, with the gripping-dies, of a pair of reciprocating rods, the forward ends of which constitute point-cutting dies, a sliding block supporting said rods, an operating-rod attached to said block, and a lever adapted to contact with the operating-rod and force the longitudinal

faces of said point-cutting rods together, substantially as set forth.

6. In a nail-machine, the combination, with the gripping-dies, of a pair of reciprocating rods formed with dies in their inner longitudinal faces, mechanism for throwing said dies backward, and a spring for returning the dies to their forward position, substantially as set forth.

7. In a nail-machine, the combination, with the gripping-dies and point-cutting dies, of a sliding block upon which the point-cutting dies are supported, means for sliding said block backward, springs for forcing said rods apart, and a spring for returning the block and dies, substantially as set forth.

8. In a nail-machine, the combination, with the gripping-dies recessed to receive bearing-pieces, of the point-cutting die-rods the forward ends of which rest against said bearing-pieces, the sliding block upon which said rods are removably secured, and mechanism for reciprocating the block and rods, substantially as set forth.

9. In a nail-machine, the combination, with the gripping-dies, of a pair of point-cutting die-rods formed with dies in their inner longitudinal faces and mechanism for moving said rods both laterally and longitudinally, substantially as set forth.

10. Point-cutting dies for nail-machines, consisting of rods formed with dies in their inner longitudinal faces, in combination with means for reciprocating said rods and devices for securing said rods removably upon the machine, substantially as set forth.

11. The combination, in a nail-machine, of the gripping-dies, point-cutting die-rods, and sliding block, of the rod-retracting springs secured to said block and engaging the die-rods, substantially as set forth.

12. In a nail-machine, the combination, with the gripping-dies formed with recessed seats, of a sliding block and point-cutting die-rods resting in said seats and supported upon said block and having a limited pivotal movement upon said blocks, substantially as set forth.

13. In a nail-machine, the combination, with the gripping-dies and the sliding block provided with side lugs and a central bearing-lug, of removable point-cutting die-rods and a keeper secured upon the side lugs of the sliding block, substantially as described.

14. The point-cutting dies herein described, consisting of steel rods having point-cutting die-surfaces formed on their inner longitudinal end faces and beveled surfaces on the ends on the opposite sides of the die-faces.

In witness whereof I have hereto set my hand in the presence of two attesting witnesses.

CHARLES E. HOUGHTON.

Attest:

A. G. HEYLMAN,
REUBEN JOHNSON.