

(No Model.)

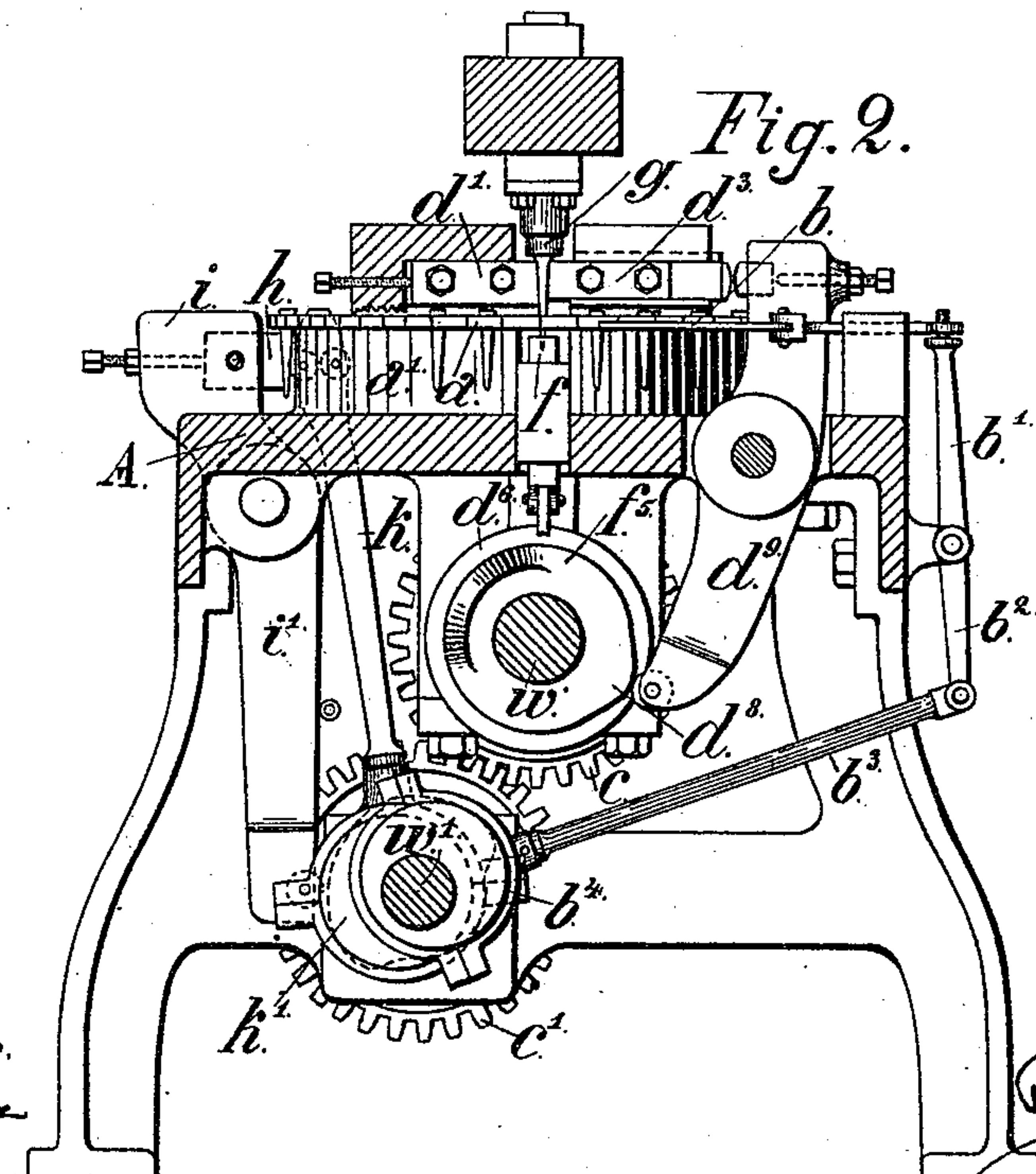
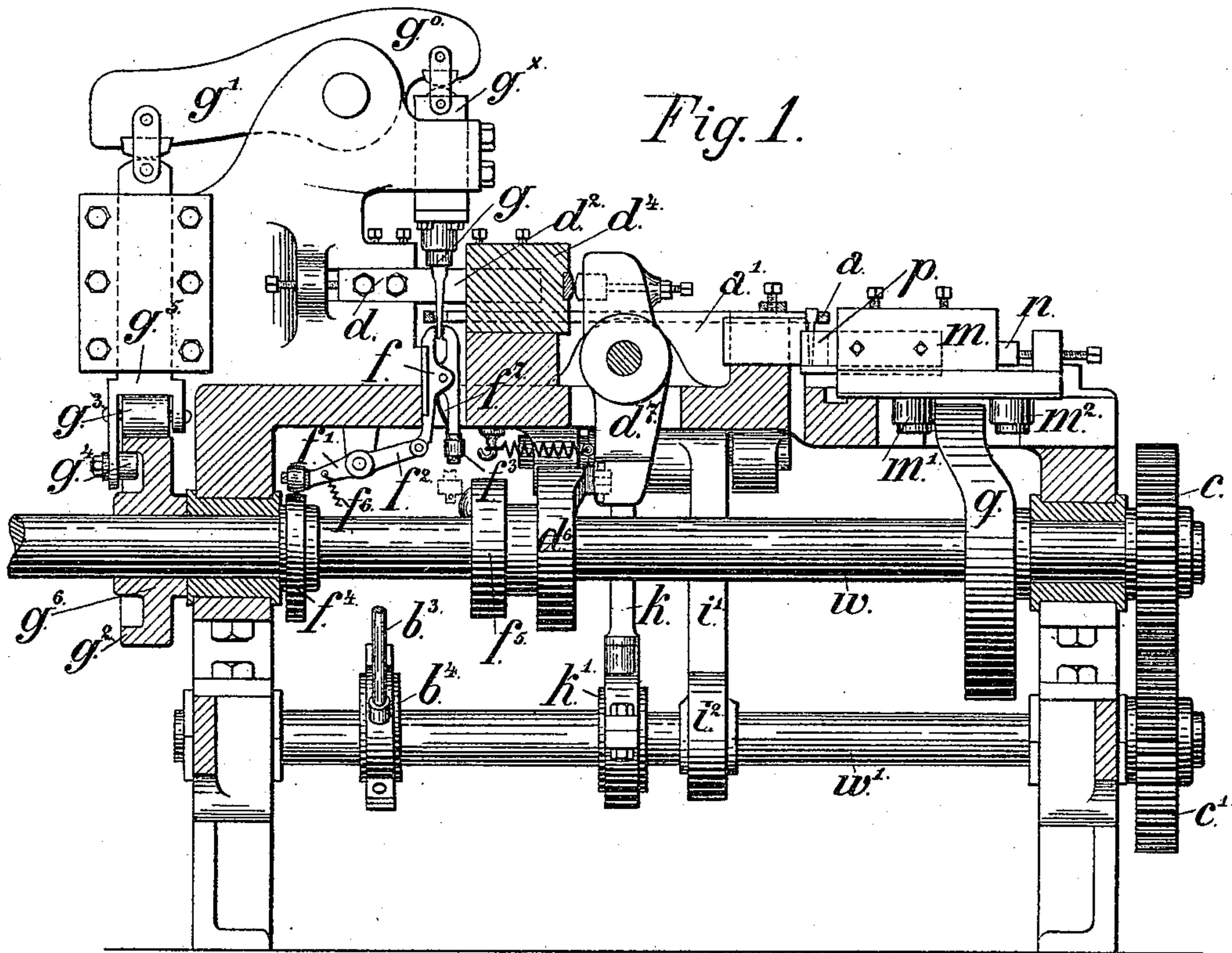
2 Sheets—Sheet 1.

P. A. NILSSON.

MACHINE FOR THE MANUFACTURE OF HORSESHOE AND OTHER NAILS.

No. 438,556.

Patented Oct. 14, 1890.



Witnesses,
C. A. Boudenberg
Walter Scott.

Inventor,
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Attys.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

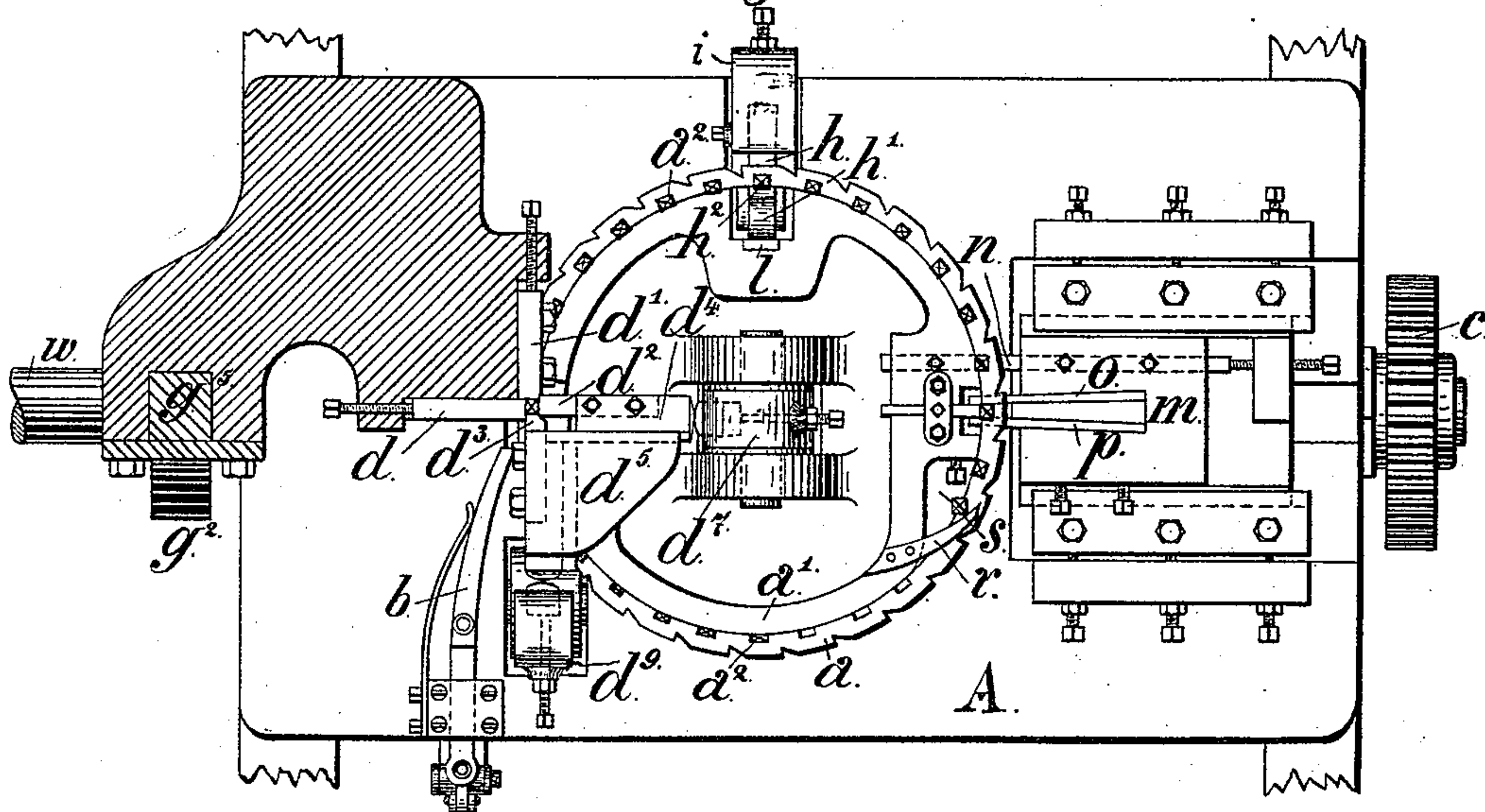


Fig. 4.

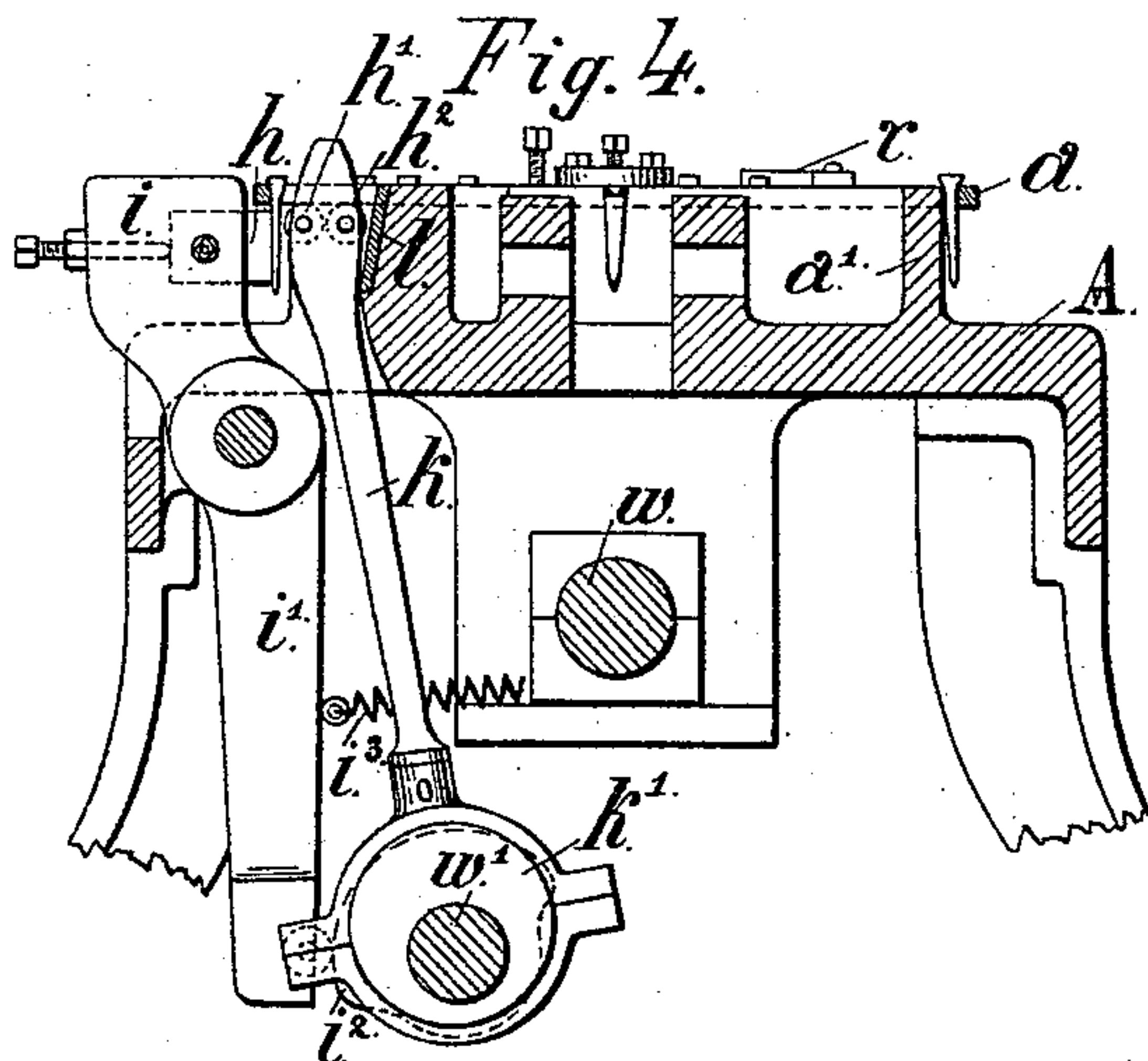


Fig. 5.

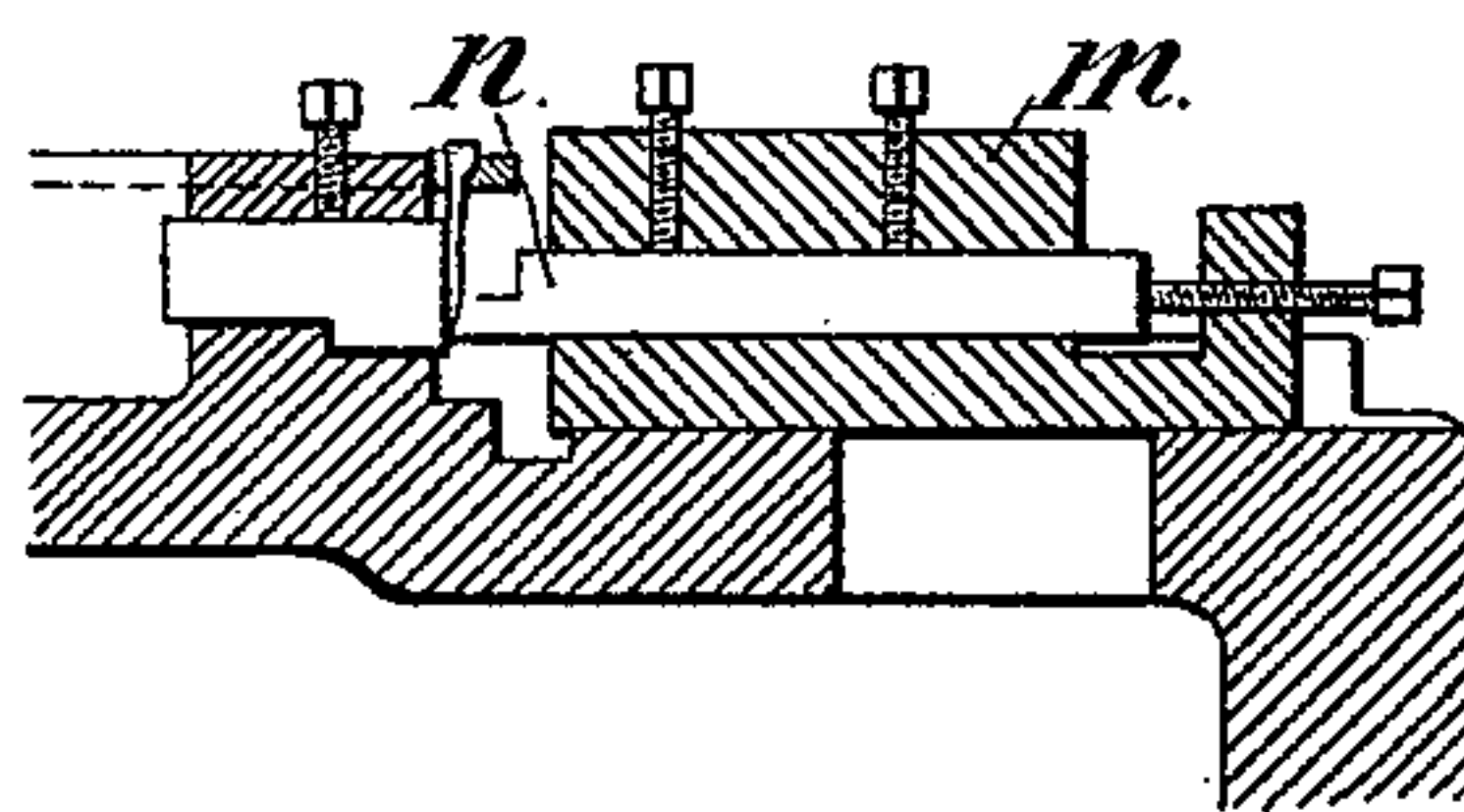


Fig. 6.

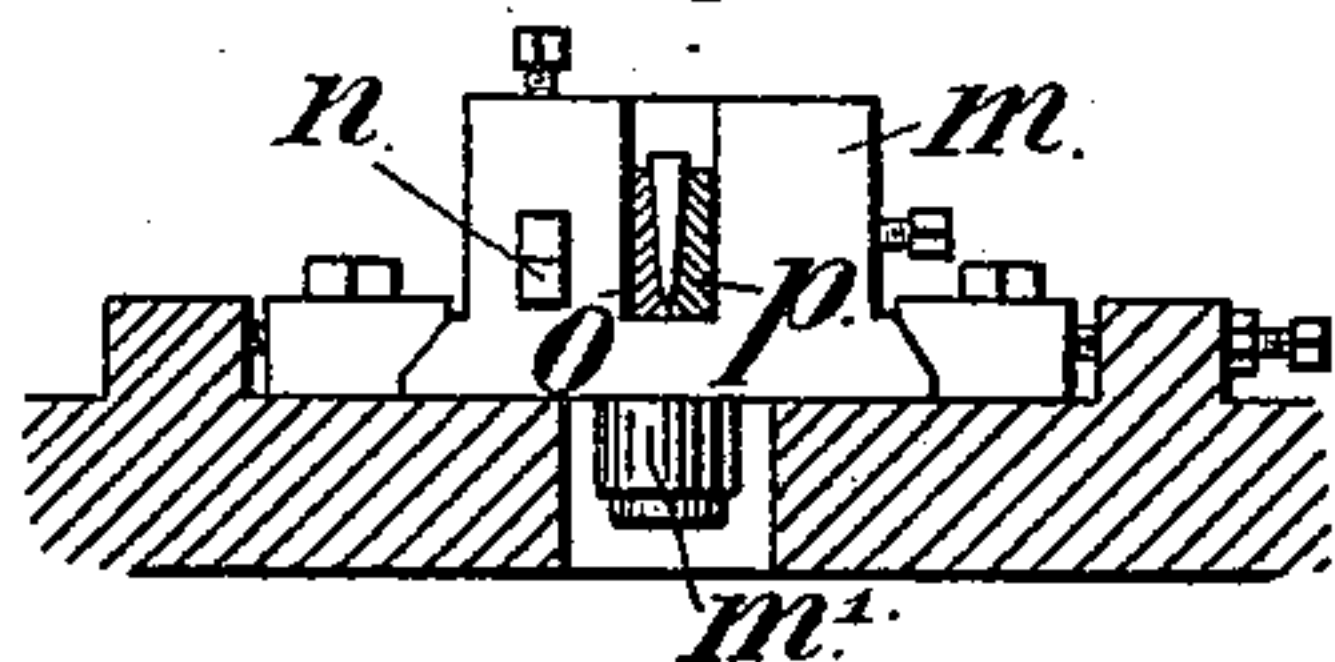
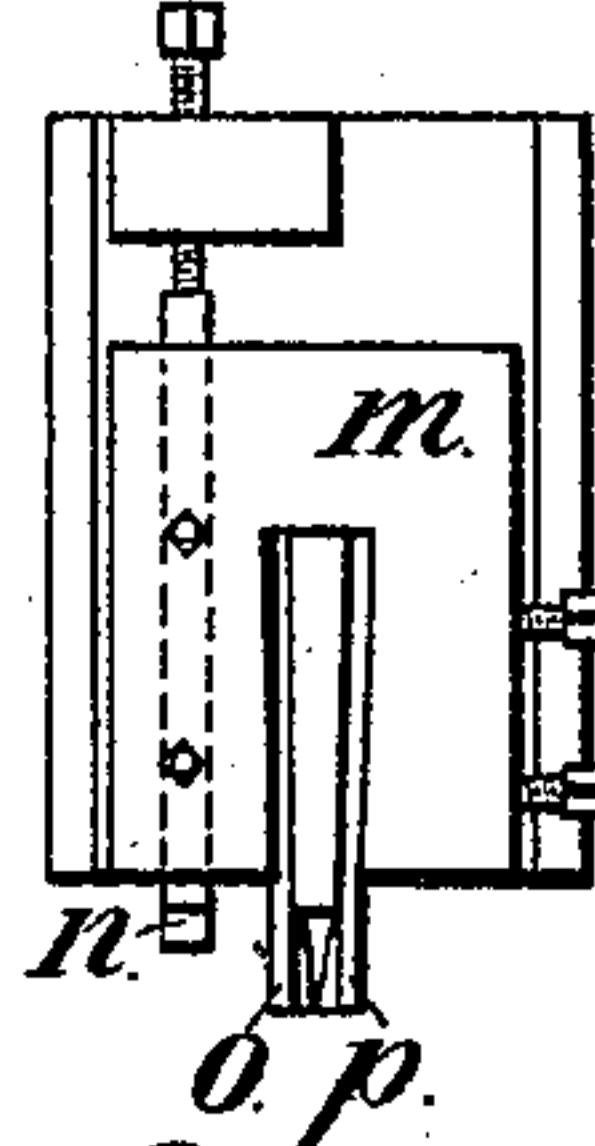


Fig. 7.



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UNITED STATES PATENT OFFICE.

PER ADOLF NILSSON, OF GOTHENBURG, SWEDEN, ASSIGNOR TO JOHANN HINRICH EHLERS, OF BAHRENFELD, GERMANY.

MACHINE FOR THE MANUFACTURE OF HORSESHOE AND OTHER NAILS.

SPECIFICATION forming part of Letters Patent No. 438,556, dated October 14, 1890.

Application filed January 29, 1890. Serial No. 338,494. (No model.)

To all whom it may concern:

Be it known that I, PER ADOLF NILSSON, a subject of the King of Sweden, and a resident of Gothenburg, in the Kingdom of Sweden, have invented certain new and useful Improvements in Machines for the Manufacture of Horseshoe and other Nails, of which the following is a specification.

My invention relates to improvements in machines for the manufacture of horseshoe and other nails; and it consists of the construction and arrangement of mechanism for effecting successively the jumping of the head, then stretching or rolling out, and finally pointing and clipping the shaft of the previously cut or punched nail-blanks. I attain these objects by the mechanisms illustrated in the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of the entire machine; Fig. 2, a vertical cross-section thereof; Fig. 3, a top view of the entire machine, partly in horizontal section; Fig. 4, a vertical section of a part of the machine, showing the device for stretching or rolling out the shaft of the nail-blank; and Figs. 5, 6, and 7 show the dies and knives in connection with the actuating parts effecting the pointing, shaping, and clipping of the shaft of the nail-blanks.

Similar letters refer to similar parts throughout the several views.

The nail-blanks, after having undergone the preliminary cutting or punching operations, are inserted into notches a^2 in a ring a , revolving upon the annular projection a' of the stationary bed-plate A, and provided with ratchet-teeth at its outer edge. This ring a receives at certain intervals a partial circular motion from a lower shaft w' through the medium of an eccentric b^4 , rod b^3 , lever $b' b^2$, and pawl arrangement b , so that each time it moves a sufficient distance for a fresh blank to be exposed to the action of the various devices from which it is to receive its final shape. The said lower shaft w' is driven from the main shaft w by means of the spur-wheels $c c'$. As soon as a blank is brought in line with the jumping-die it is seized by a pair of jaws or tongues f , connected with a

pivoted lever $f' f^2$, and operated from the main shaft w by a cam f^4 and spring f^6 , these jaws f being caused to open precisely at the moment when the blank is moved up to them by another cam f^5 acting upon the arm f^3 of the tongue, whereupon they immediately close under the action of a spring f^7 , Fig. 1. In being thus seized by the jaws f the blank is at the same time lifted in position to be locked between lateral and longitudinal jaws or cheeks $d d' d^2 d^3$. The first two cheeks $d d'$ are stationary, while the two others $d^2 d^3$ are fitted in movable carriages $d^4 d^5$, and are so shifted in relation to either of the first two cheeks by the joint action of a cam d^6 and lever d^7 , Fig. 1, on one hand and that of the circumferential projecting portion d^8 of the above-mentioned cam f^5 , operating the tongue f and a lever d^9 , Fig. 2, on the other hand, that the blank as it is raised in position is locked in between them and the corresponding fixed cheeks $d d'$. The die g , which is moved by a conveniently-arranged carriage g^x toward the blank, is operated by a lever $g^o g'$ through the medium of a slide g^5 , which holds the edge g^2 of a heart-cam g^6 , engaged between running sheaves $g^3 g^4$, and is thereby caused to advance or recede the required distance. The movable cheeks $d^2 d^3$ recede at the same time as the die g moves back to its original position, so that the blank, with its head stamped into shape, is released, and being once more grasped by the jaws f is reinserted into the catch-ring a , by which it is carried forward a sufficient distance to enable it to take up its position between a side cheek h and a small roller h' , where the nail-shaft is stretched or rolled out toward its point to the length desired. For this purpose the said cheek h , which is fitted in one arm i of a pivoted lever $i i'$, is caused to advance toward the blank under the influence of a cam i^2 , mounted on the shaft w' , while on the other hand a rod k , which carries the aforesaid small roller h' , is drawn downward by an eccentric k' , Fig. 4, on the same shaft, so that the small roller h^2 , which is mounted beside the said roller h' at the end of the rod k , is carried along an incline l on the frame of the machine. The

consequence is that the roller h' as it descends presses against the shaft of the nail with a gradually - increasing force, and thereby stretches the same to the length desired and
 5 into shape toward its point. When the pair of rollers h' h^2 have reached the end of the incline l , they are made to roll up again, while at the same time the lever-arm i , carrying the side cheek h , swings back, together with the
 10 said cheek h , and under the action of a spring i^3 thus releasing the blank. This is then further carried on by the ring a toward a carriage m , which is moved backward and forward at the proper intervals by a cam g , mounted
 15 on the main shaft w and acting upon runners m' m^2 , and thus alternately approaches or recedes from the blank. In this carriage m are arranged both the intermediate die n and the cutters o p at a distance corresponding to
 20 the intervals between the notches a^2 in the ring a , so that the said die n is enabled to sharpen one side of the point of the blank and slightly to bend the same, while at the same time the cutters o p clip away the waste
 25 and cut into shape both sides of the blank, which has just before undergone the action of the intermediate die n , and finally provides it with a sharp point. The nail thus completed is by a further partial turning of
 30 the ring a caused to meet a bracket r , fixed in an inclined position in the stationary plate a' , whereby it is expelled laterally from the notches a^2 and drops out of the machine through a slot s , provided for the purpose in
 35 said plate a' .

Having now particularly described and as-

certained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is—

1. In a machine for the manufacture of 40 horseshoe and other nails, the combination of the revolving ring a , the cheeks d d' d^2 d^3 , the jaws f for seizing and lifting the nail-blank between said cheeks, and the die g for jumping the head on the nail, substantially as 45 hereinbefore described.

2. In a machine for the manufacture of horseshoe and other nails, the combination of the ring a , having notches a^2 and revolving 50 upon a stationary plate or frame a' with the cheeks d d' d^2 d^3 , the jaws f for lifting the nail-blank between said cheeks, the stamping-die g , the cheek h , the rod k , carrying rollers h' h^2 , and the incline l , substantially 55 as and for the purpose hereinbefore described.

3. In a machine for the manufacture of horseshoe and other nails, the combination of the revolving ring a , with the cheeks d d' d^2 d^3 , the jaws f for lifting the nail-blank be- 60 tween said cheeks, the stamping-die g , the cheek h , the rod k , carrying rollers h' h^2 , the incline l , and the carriage m , carrying a die n and cutters o p , substantially as and for the purpose specified.

In testimony that I claim the foregoing as 65 my invention I have signed my name, in presence of two witnesses, this 23d day of October, 1889.

PER ADOLF NILSSON.

Witnesses:

ANDERS GUSTAF NILSSON,
LATH REINHOLD JOHANSSON.