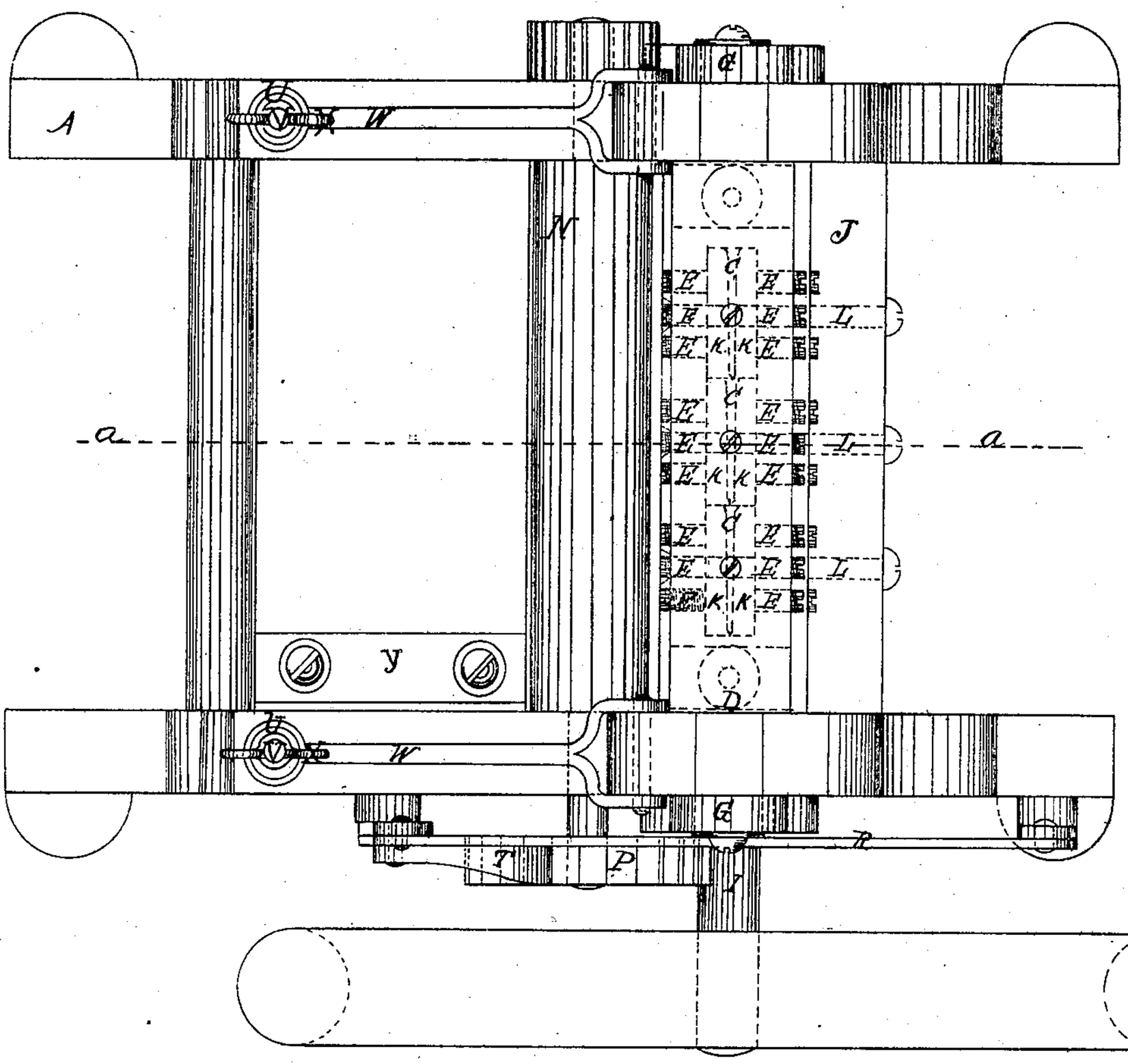
Sheet 1 – 4 Sheets.

B. Robinson.

Making Nails.

No. 72230 Patented Dec. 17, 1867.

Fig: 1.



Witnesses
O. Nichols.
A. D. Nichols.

Inventor
Benjamin Robinson.

Shut 2 – 4 Shuts.

B. Robinson.

Making Nails.

No 72230 Patented Dec. 17 1867.

Fig: 2.

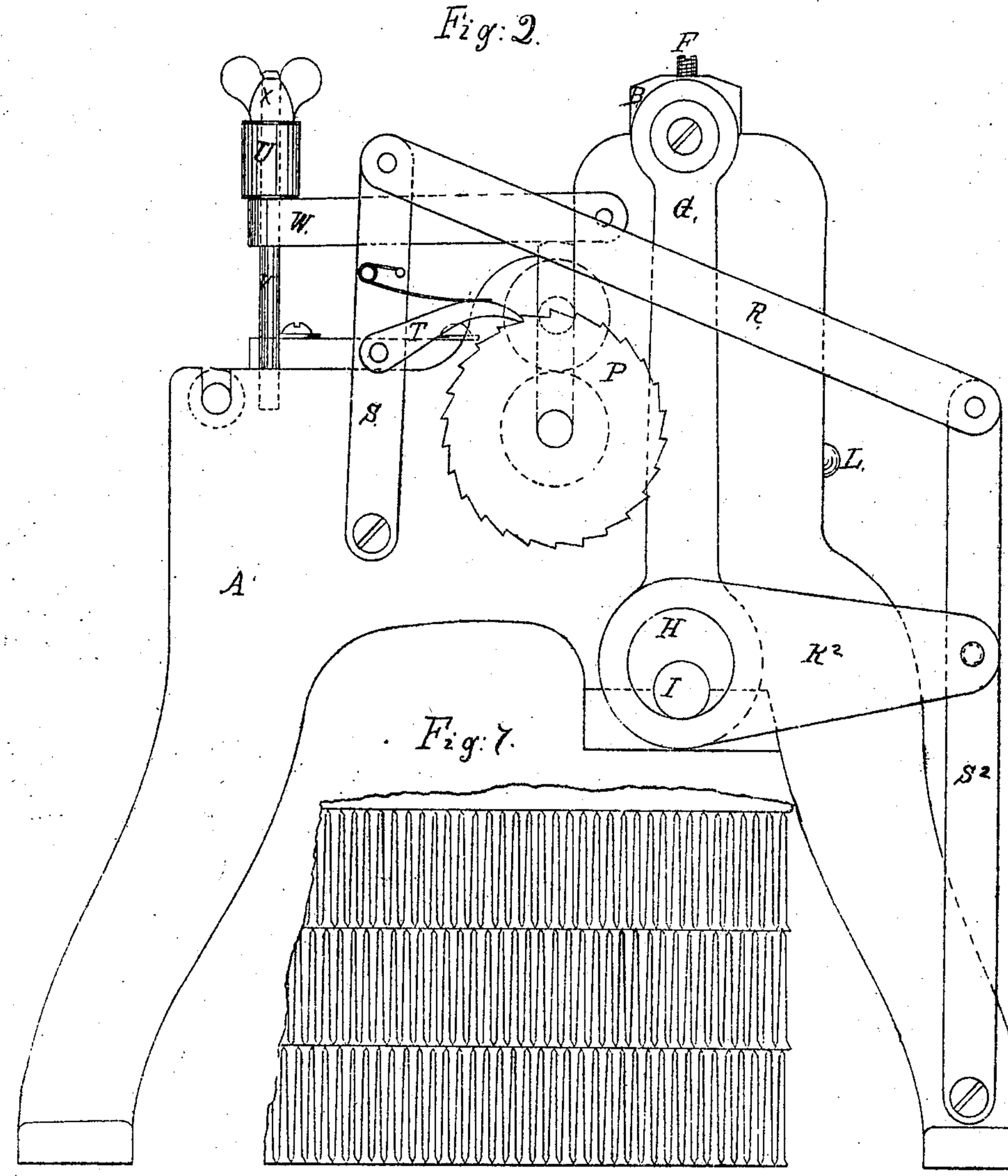


Fig: 1.

Witnesses

O. Nichols
A. D. Nichols.

Inventor

Benjamin Robinson.

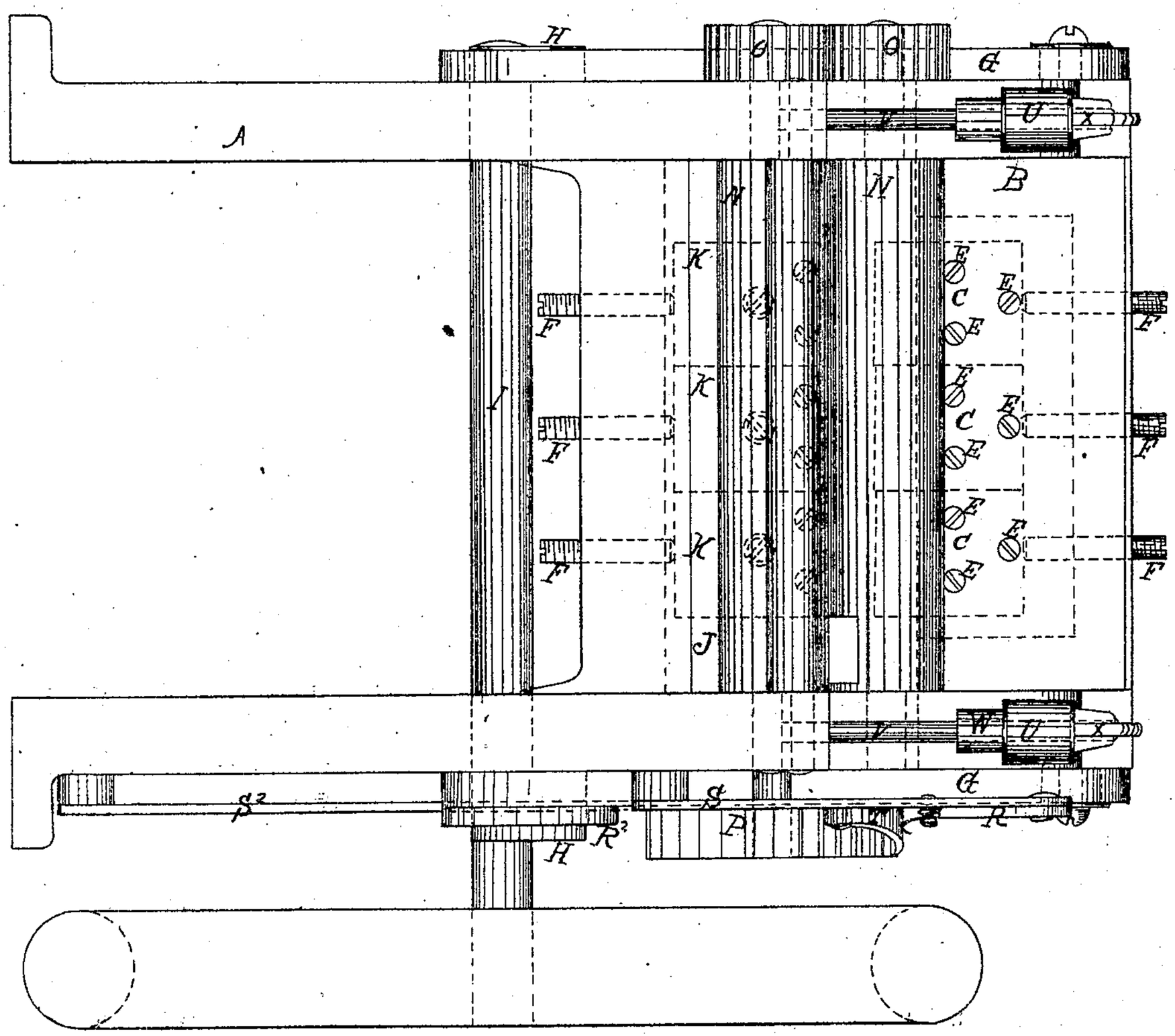
Sheet 3- 4 Sheets.

B. Robinson.

Making Nails.

No 72230 Patented Dec. 17, 1867.

Fig: 3.



Witnesses

O Nichols
A. D. Nichols.

Inventor

Benjamin Robinson.

Shut 4 - 4 Sheets.

B. Robinson.

Making Nails.

No 72230 Patented Dec. 17, 1867.

Fig: 4.

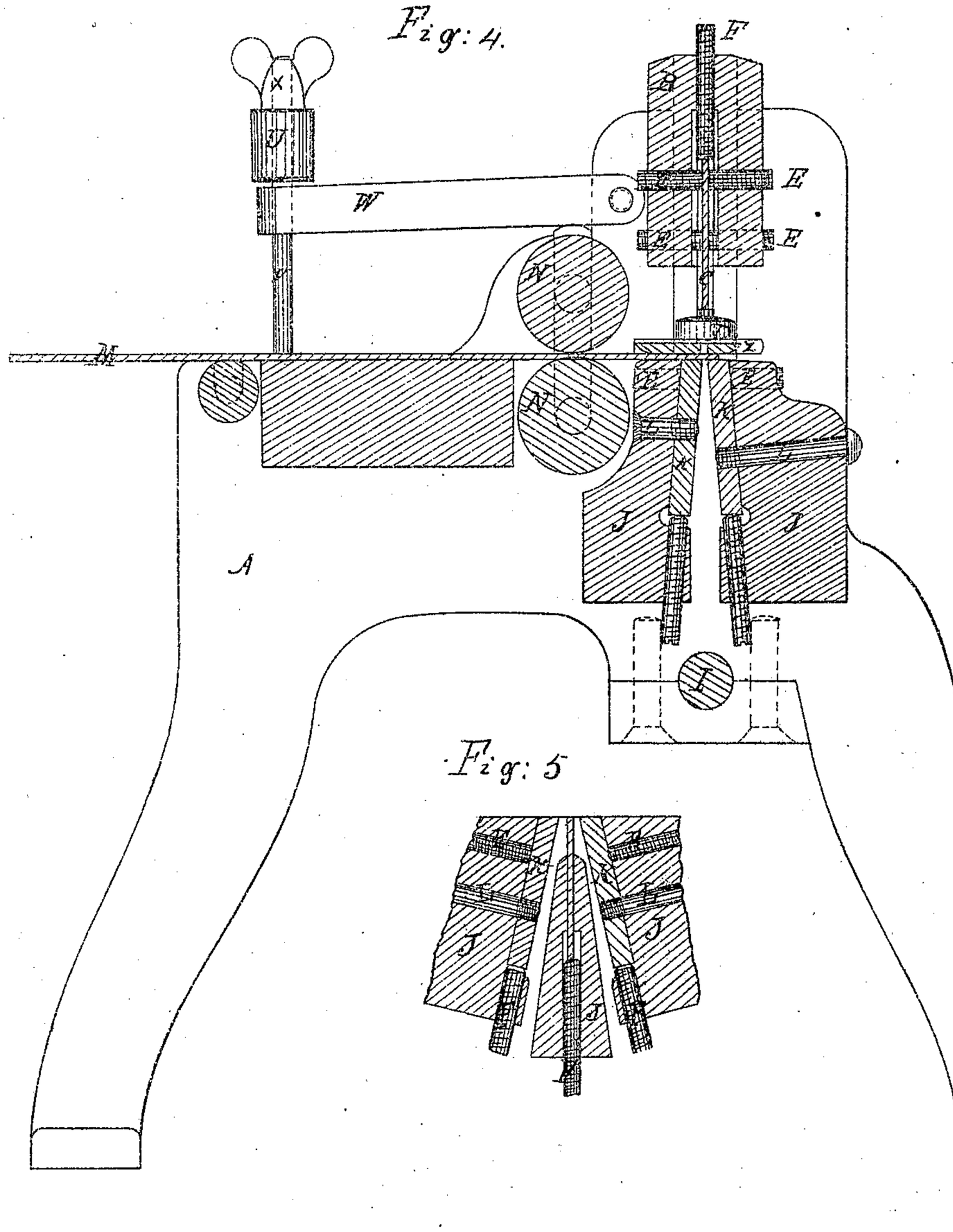


Fig: 6.

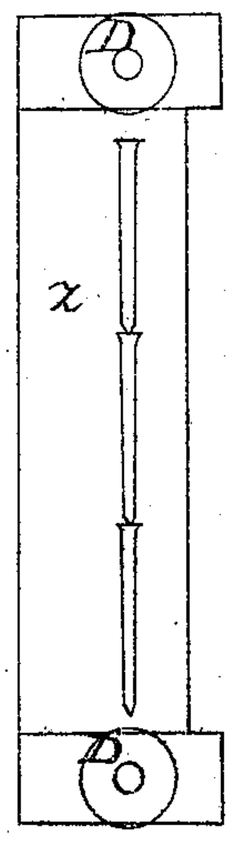


Fig: 5

Witnesses

C. Sedgwick.
A. D. Nichols.

Inventor

Benjamin Robinson.

United States Patent Office.

BENJAMIN ROBINSON, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 72,230, *dated December* 17, 1867; *antedated December* 5, 1867.

IMPROVEMENT IN MACHINES FOR MAKING NAILS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, BENJAMIN ROBINSON, of Boston, in the county of Suffolk, and State of Massachusetts, have invented a new and useful Improvement in Nail-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a plan.

Figure 2, a side elevation.

Figure 3, an end elevation.

Figure 4, a transverse vertical section on line *a a*.

Figure 5, a sectional device for one of many series in which the dies may be used.

Figure 6, a plan view of the pressure-bar *z;* and

Figure 7 represents a sheet of metal as it would appear if seen after it has passed through the machine.

By referring to letters, A represents the frame; B, the movable cross-head; C C C are male dies; E E E and F are adjustable screws; G G, connection-rods; H H, eccentrics on the driving-shaft I; J J are cross-bars in the main frame; K K K are female dies made in halves; L L L are bolts; M, a sheet of metal, from which nails are to be made; N N are feed-rolls; O O, gears or spur-wheels; P, a ratchet-wheel fastened to the lower feed-roll, and operated by means of eccentric H, connections R R, levers S S, and pawl T; U U are rubber springs, upon bolts V V, which serve to regulate the pressure on feed-rolls N N by levers W W and thumb-screws X X; Y is a guide to direct the sheet from which nails are to be made.

My invention relates to machines for making cut-nails by punching, in distinction from cutting; and consists, first, in arranging a series of male dies upon the cutter-head, and female dies in the bed of the machine, continuously across, placed head to point, and combining therewith a feed-motion, which advances the sheet to be cut so as to pass the foremost edge of the upper die the width of one nail before each stroke of the dies, and a peculiarly constructed and arranged pressure-bar; in a peculiar construction of the female dies so that they can be readily removed to be sharpened, and, at the same time, can be set to cut varying widths of nails; and, secondly, in the various details by which this, the principle of the machine, is carried out.

To enable others skilled in the art to make and use my invention, I now describe its construction and operation.

I erect two side frames, A, properly shaped to receive the transverse parts, and arrange between them cross-bars J, to receive the female dies K. These dies are made in sections or halves, and are fastened to the cross-bar by bolts L, and are susceptible of adjustment perpendicularly and laterally by set-screws F, pressing them up from below, and E, pressing them in the direction of the length of the machine, so that they can be gauged to cut a wider or narrower nail, as may be desired. In all the figures except fig. 5, but one set or series of dies is shown, but in fig. 5 a central die is interposed, so that, with two male dies, to enter the intervals between the lateral and central dies, four nails would be punched at a stroke by each member of the series of dies, instead of but two. Over this is placed the pressure-bar Z, slotted, to allow the passage of the male dies, as shown in fig. 6, and guided at either end by steady-pins, on which are spring-washers D, to secure fixity of the sheet of metal while punched, and allow a feed in the intervals of punching. The cross-head B vibrates in guides on the inner sides of the side frames A, and is formed with an interior recess, in which is fixed the male die C, by means of set-screws F adjusting it to its place vertically, and E securing it laterally. Blocks of metal may also be pressed against its sides by set-screws E, to prevent buckling. It will thus be seen that a sort of bed is formed to the machine by the upper surface of transverse bars J and female dies K. In rear of these are the pressure-rolls N, for feeding forward the sheet of iron to be cut up. These are geared together by cogs O, external to the machine, and are operated by a pawl, T, and ratchet P, on the lower roll. The requisite pressure is given to them by means of a lever of the second kind, W, which is kept depressed by bolt V, passing through it, spring U surrounding bolt V, and pressing upon lever W, and thumb-screw X compressing spring U. This lever depresses the journal-boxes of the upper roll, which ride in slots of the side frames, and any unevenness of the iron passing through the machine is allowed for and taken up by spring U.

The cross-head B is operated by a connecting-rod, G, firmly fastened to it by a device allowing a recipro-

cating rotary motion, and operated by an eccentric, H, on shaft I, which eccentric also operates the feed-motion by means of connecting-rod R^2, attached to lever of the third kind, S^2, which operates, from its upper end, connecting-rod R, giving motion to lever of the second kind, S, which carries pawl T, and, forcing it against the ratchet P, compels the revolution of the feed-rolls. This feed-motion may be regulated in length by varying the size of the ratchet-teeth, or by altering the connections of connecting-rods R or R^2 with said levers S S^2, the ratchet being sufficiently fine-toothed to allow of one or more teeth being passed by each stroke of the pawl.

A gauge, Y, upon the bed of the machine, guides the edge of the nail-plate, which is to be cut by the dies, and, in co-operation with the feed-rolls, secures the complete consumption of all the material, or allows the part unconsumed to be saved in a valuable form.

Upon revolving shaft I, by means of the connecting-rods R^2 and G, the feed and cutting-motions are set in motion, and we have the plate regularly fed forward and completely cut up, the nails being punched and cut alternately, heads and points, by the cutting-edges of the dies, each half of the female die cutting a side of a nail at each stroke, the object of this machine being to avoid the impracticable lateral traverse of the sheet metal or its frequent turning, and to do rapid work, and to avoid the twist frequently given to the nails when cut instead of punched.

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

1. In combination with a feeding-device, so arranged as to feed the forward edge of the nail-sheet past the foremost edge of the upper die, by the width of one nail, at each stroke of the cutter-head, and a pressure-bar, Z, slotted as shown, the arrangement of the male dies C and female dies K, placed in transverse series, heads to points, substantially as and for the purpose described.

2. The arrangement of lever W, spring U, standard V, and nut X, in combination with the journal of roll N, as and for the purpose described.

3. The arrangement of female dies K K, made in halves, in cross-bars J, as held by bolts L, and adjusted by set-screws E and F, as and for the purposes described.

4. The arrangement of levers S S^2, connecting-rods R R^2, substantially as and for the purpose described.

BENJA. ROBINSON.

Witnesses:
W. F. Richardson,
F. W. Longley.