

No. 680,511.

Patented Aug. 13, 1901.

J. WIKSCHTRÖM.
WIRE NAIL MAKING MACHINE.

(Application filed Nov. 21, 1900.)

(No Model.)

4 Sheets—Sheet 1.

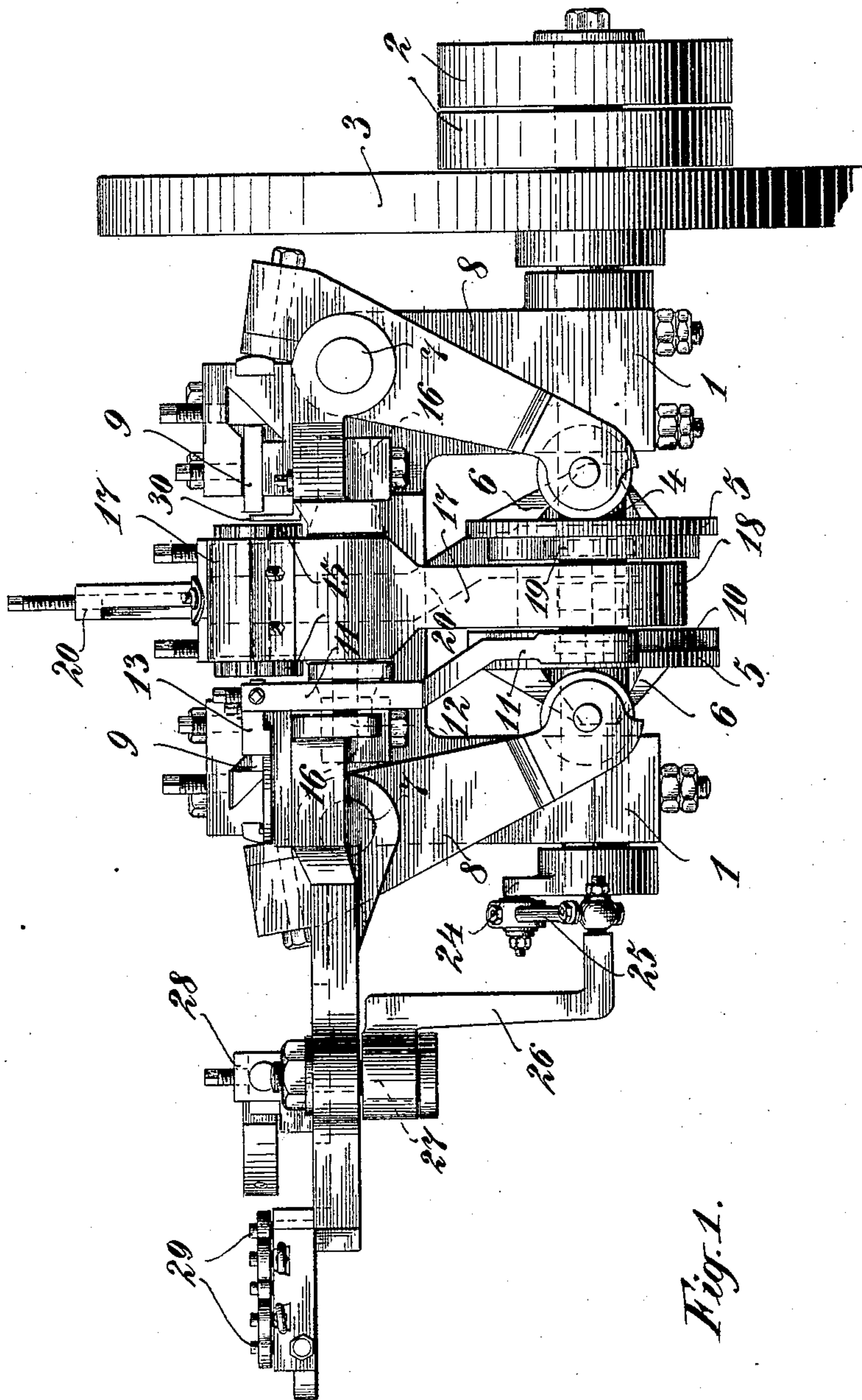


Fig. 1.

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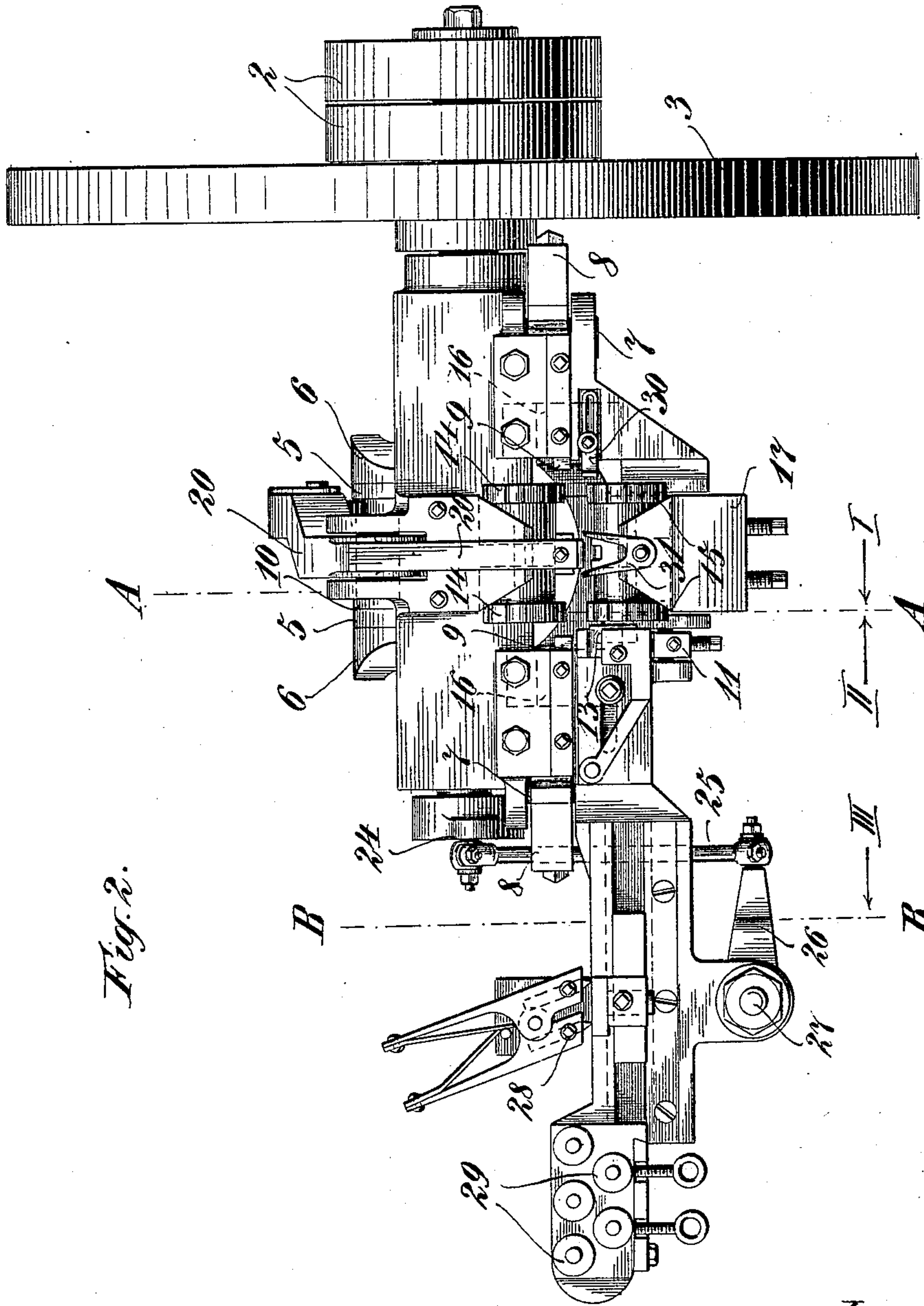


Fig. 2.

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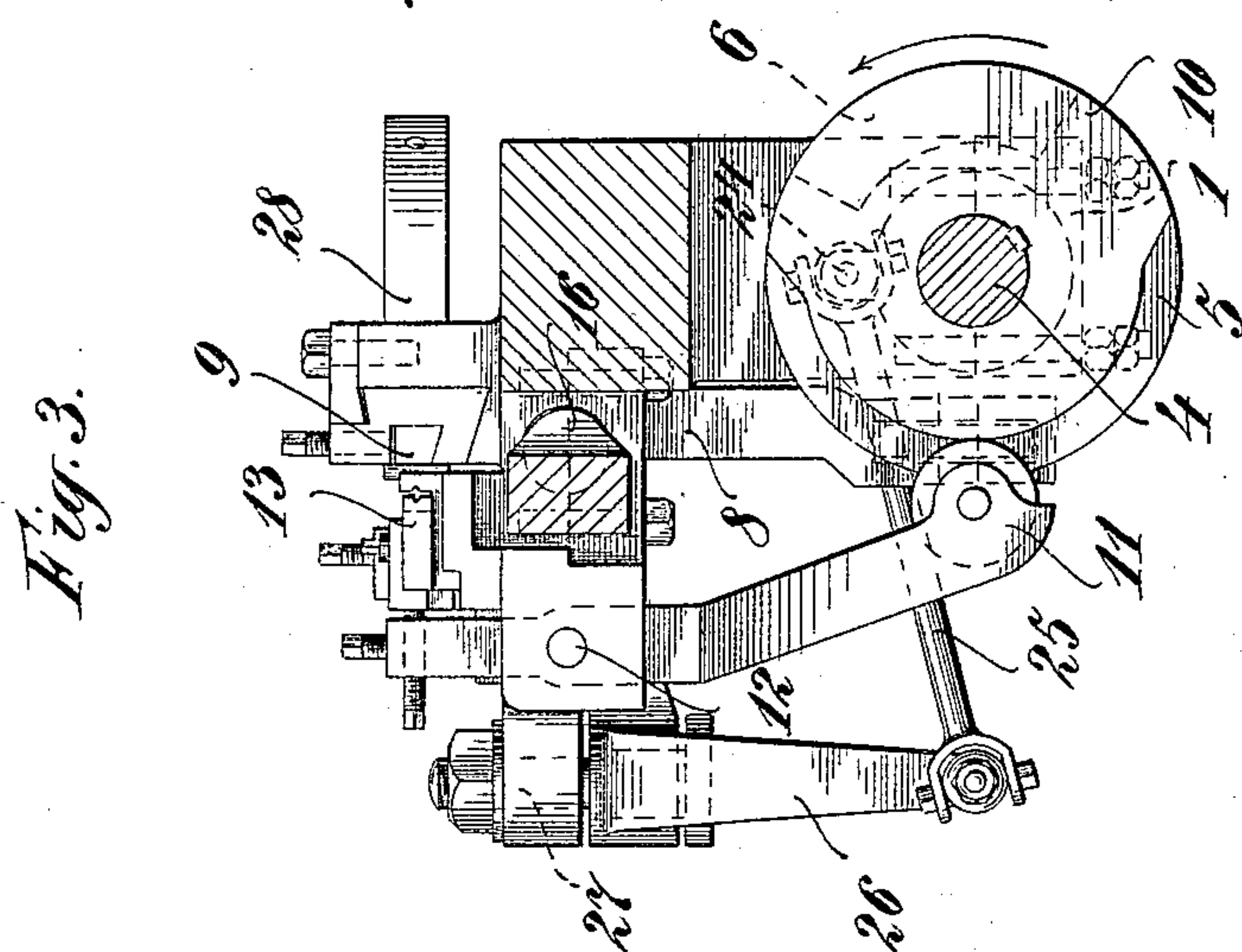
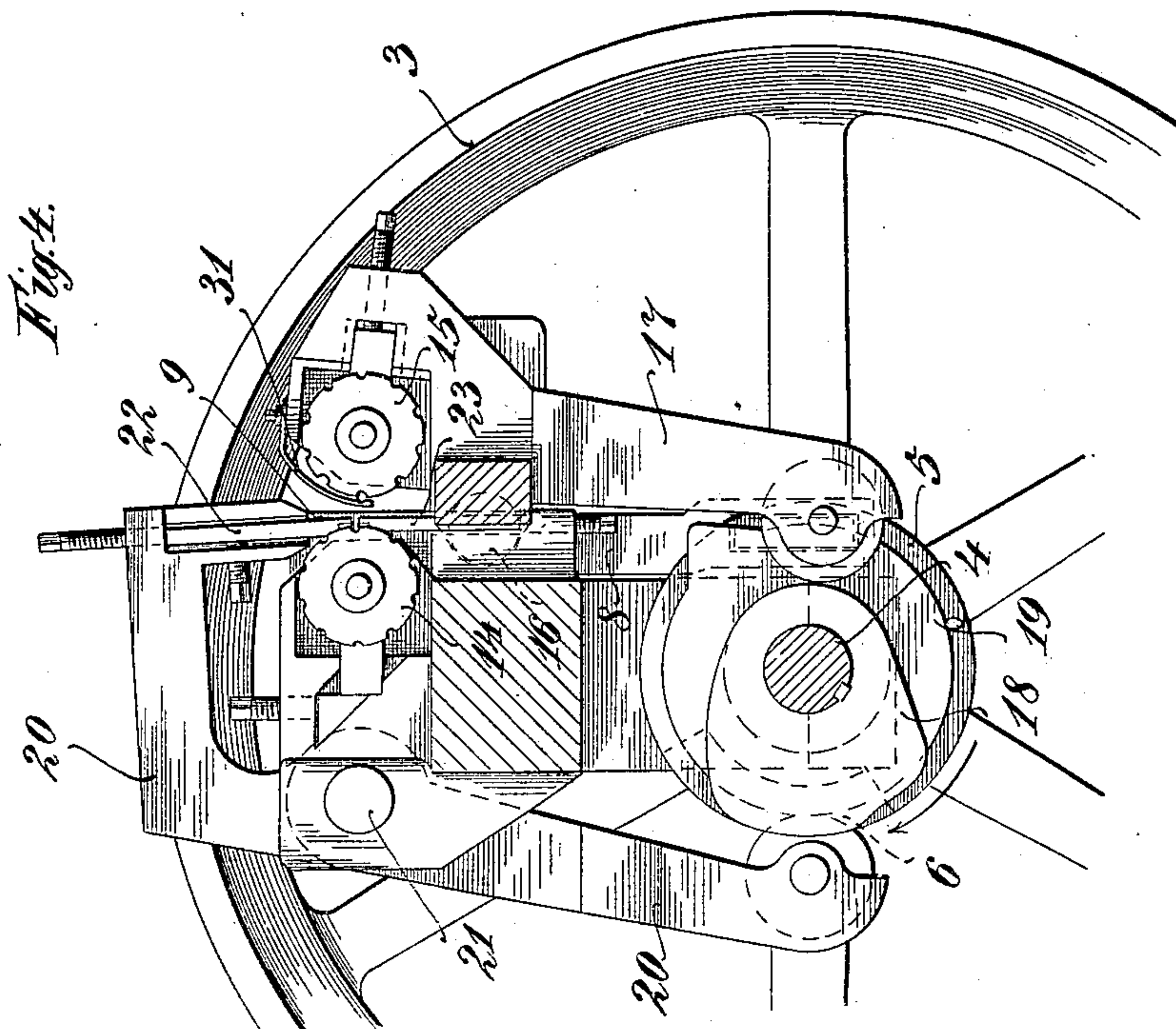
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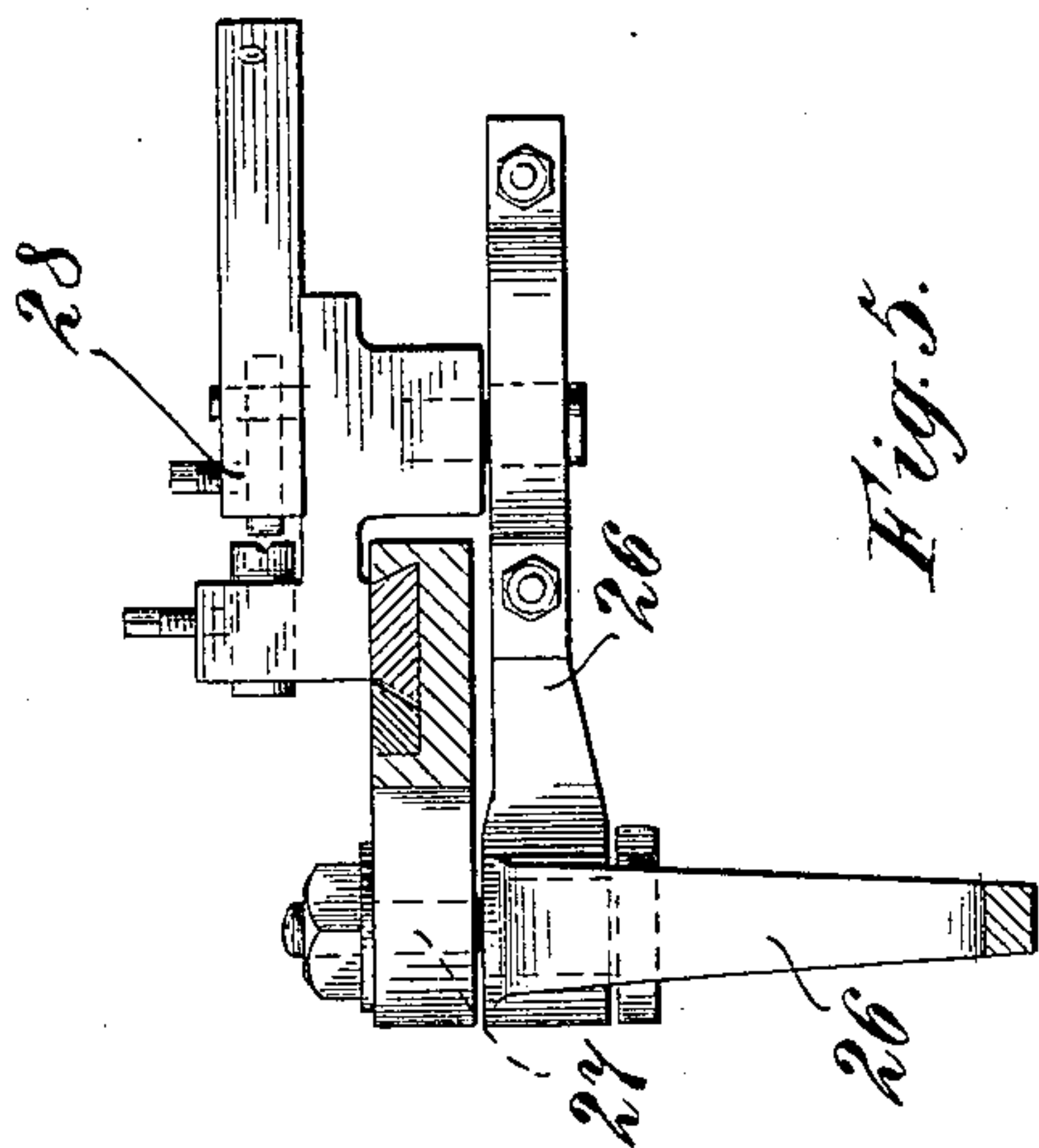
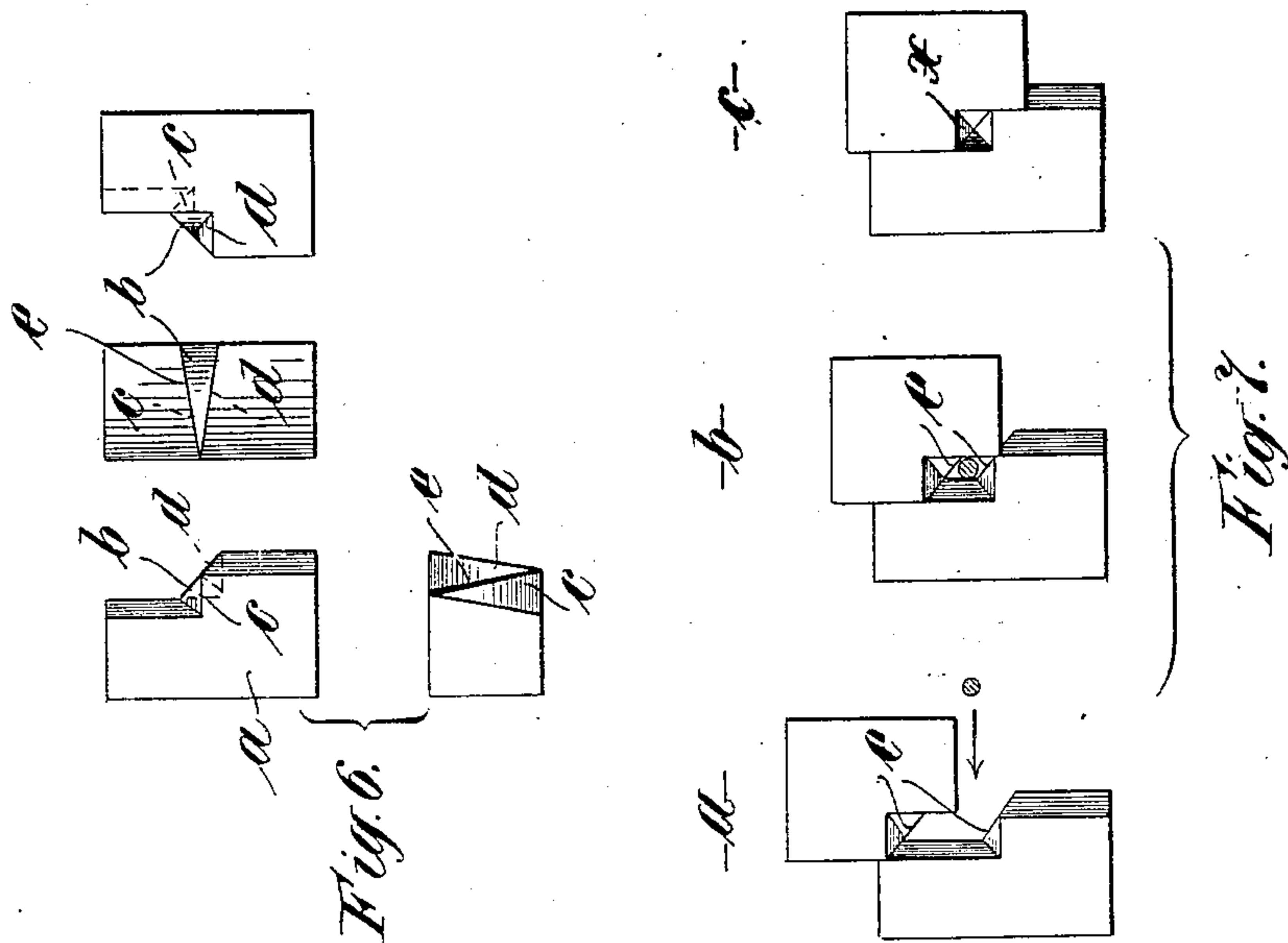
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

JAKOB WIKSCHTRÖM, OF KIEW, RUSSIA.

WIRE-NAIL-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 680,511, dated August 13, 1901.

Application filed November 21, 1900. Serial No. 37,284. (No model.)

To all whom it may concern:

Be it known that I, JAKOB WIKSCHTRÖM, a citizen of the Empire of Russia, and a resident of Kiew, Russia, (whose post-office address is Malaja, Wasilkowskaja 30,) have invented certain new and useful Improvements in Wire-Nail-Making Machines, of which the following is a specification.

This invention relates to wire-nail-making machinery, and especially to that class of machines which work without any loss of material. With my new machine two nails are made simultaneously.

The special feature of this machine is the knives which separate the two nails and give the points of them their conical shape all in one and the same operation.

In the accompanying drawings, Figure 1 shows the machine as seen from the side. Fig. 2 is a view from above. Figs. 3 and 4 are cuts through line A A of Fig. 2, as seen in the directions of the arrows I and II. Fig. 5 is a cut through line B B of Fig. 2, as seen in the direction of the arrow III. Figs. 6 and 7 show the peculiarly-shaped knives and the way they act.

In the bearings 1 1, fastened to the working-table of the machine, runs the main shaft 4, carrying two pulleys 2 2, one of which is fast, the other one loose, and a fly-wheel 3. On this same shaft between the bearings 1 1 are arranged two circular disks 5 5, carrying each outwardly a sidewise-projecting cam 6. Double-armed levers 8 8, oscillating on pivots 7 7 on the casing of the machine, glide with friction-rollers fastened to their longer arms on the outward sides of the disks 5 5 and have an oscillating motion imparted to them by means of the cams 6 6. Their short arms exert a strong pressure upon the tails of stamps 9 9, guided in the frame and designed to shape the head of the nail in the manner described farther on. Between the disks and next to the left one, Figs. 1 and 2, there is fastened to the main shaft a third disk 10, the circumference of which is formed by two semicircles of different radii, but having the same center point, and connected by short curves. Upon the circumference of this disk 10 there glides, by means of a friction-roller, the end of the lever 11, oscillating on a pivot 12, fastened to the frame of the

machine. The free end of this lever operates a cutting device 13, acting in the manner of a pair of scissors.

Two disks 14, turning on pins fastened to the frame, carry on their circumference a series of transverse grooves of different widths designed to hold wires of different thickness therein. Cylindrical blocks are inserted between the disks to keep them the proper distance from each other. The grooves mentioned above are turned out a little on the outer side and are placed exactly opposite the stamps 9. Two more disks 15 of equal shape are arranged opposite the former ones and have their pivots fastened to the end of a double-armed lever 17, oscillating on pins 16 and gliding with its free end on the circumference of an eccentric 18. This lever in oscillating carries the disks 15 toward the disks 14, and thus causes the wire to be gripped between them.

Between the eccentric disk 18 and the right-hand disk 5 there is fastened to the shaft another disk 19, carrying on its circumference a cam, imparting to the lever 20, pivoted upon the pins 21, an oscillating motion. The end of the lever 20 is curved twice and carries a knife 22, which is thus moved toward a fixed knife 23, these two knives by virtue of their peculiar shape separating and sharpening the nails.

To the end of the shaft 4 is fastened a cam 24, transmitting its movement by aid of a rod 25 to an angle-lever 26, pivoted to the pin 27, fastened upon the frame. Its free end imparts an appropriate motion to a feeding device 28, gliding in the frame and carrying the straightened wire.

This machine works in the following manner: The straightened wire is fed into the machine after passing some pairs of rollers 29 by aid of the feeder 28, gripping it in moving to the right, Figs. 1 and 2, and drawing it forward to the right, while in returning (to the left) the feeder passes above the wire. The wire being pushed forward enters into the grooves of the disks 15 and stops as soon as its end touches the shoulder 30. There are springs 31 arranged to hold the wire in the grooves and prevent its being shifted. As soon as the wire has been pushed into position the end of lever 11 passes from the lower

half of the disk 10 to the higher one and carries the cutter toward the fixed jaw, thus causing a piece of wire of appropriate length to be cut off. To prevent the end of the wire from recoiling after the nails have been cut off, the cutter bears a shoulder designed to grip the wire immediately after the cutting off has been effected and hold the wire as long as the cutter remains closed until the feeder 28 has passed through its returning movement and starts afresh. The disks 15, together with the cut-off piece of wire, are then carried toward the fixed disks 14, the larger diameter of the eccentric 18 imparting an oscillating motion to the lever 17. As soon as the disks 14 and 15 have approached each other and have gripped the wire between them the cam on disk 19 causes the lever 20 to oscillate and drive the knife 22 toward the fixed knife 23, the wire by this action being cut in two pieces, each of which is at the same time sharpened or pointed, as shown below. At the same time the cams 6 cause the levers 8 to drive the pressing-stamps against the disks 14 and 15, the protruding ends of the wire being thereby pressed into head shape, the conical profile of the grooves favorably influencing this operation.

The essential features of this invention, as mentioned above, lie in the peculiar shape of the knives and in the way they act. Each of the knives 22 and 23 has the shape of a parallelepiped *a*, with a base having the shape of a trapezium, one side of which has a shoulder *b*, Fig. 6. These knives are built strictly symmetrical to each other, but are placed opposite each other and their sides inverted, as shown in Fig. 7, *a c*. The surface of the shoulder *b* is not set off at right angles, but is composed of two triangles *c* and *d*, the latter one having its point at the end of the base of the former one, these triangles being inclined in opposite directions. When these knives approach each other, the edge *e* first cuts off the wire introduced sidewise, Fig. 7, *a* and *b*. After this the cuneiform ends of the wire are pressed by aid of the then formed pyramid-shaped grooves into pyramid shape. Thus the two nails after having been cut off and provided with heads are separated and sharpened in one and the same operation.

An automatic ejecting device of any well-known construction may be connected with the machine.

All parts of this machine are to be displaced at will, so as to be able to manufacture nails of different length.

Having thus fully described the nature of my invention, what I claim is—

1. A machine for simultaneously cutting and forming two nails without any loss of material out of a wire fed into said machine,

comprising a main shaft, fixed to said shaft two disks with lateral projections, two two-armed levers moving the stamps for forming the heads of the nails being actuated by said lateral projections; a mechanism for feeding the wire into the machine, for cutting it into the required lengths and for holding it during the formation of the heads and points; a stationary knife of peculiar form for forming the points and severing the two nails and an oscillating one of the same form arranged opposite the same, said knife being moved by means of a two-armed lever which is acted upon by a cam on the main shaft; and means for ejecting the ready nails; substantially as hereinbefore shown and described.

2. In a machine of the kind described above the combination with the main shaft carrying two disks operating the nail-head-shaping stamps and another disk operating the cutter of two pairs of disks arranged opposite each other, transverse conical grooves of different widths being provided on the circumference of said disks, one of these pairs of disks being fixed to the machine-frame, a double-armed lever carrying the other pair of disks, an eccentric on the main shaft in contact with the other arm of said lever, substantially as shown and described.

3. In a machine of the kind described above the combination with nail-head-shaping, wire feeding, cutting and gripping devices of a separating and sharpening device comprising a knife fastened to the frame of the machine, a double-armed lever, another knife fastened to the shorter end of said lever opposite the fixed knife, a disk fastened to the main shaft, a cam on said disk being in contact with the longer arm of said lever, substantially as shown and described.

4. In a machine of the kind described above the combination with nail-head-shaping, wire feeding, cutting and gripping devices of a separating and sharpening device comprising two symmetrically-built knives, said knives being placed opposite each other and their sides inverted, each of these knives having the shape of a parallelepiped, the base being trapezium-shaped, a shoulder protruding on one side of said trapezium, the surface of said shoulder being composed of two triangles inclined in opposite directions, one of these triangles having its point at the end of the base of the other one, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

JAKOB WIKSCHTRÖM.

Witnesses:

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