

(No Model.)

2 Sheets—Sheet 1.

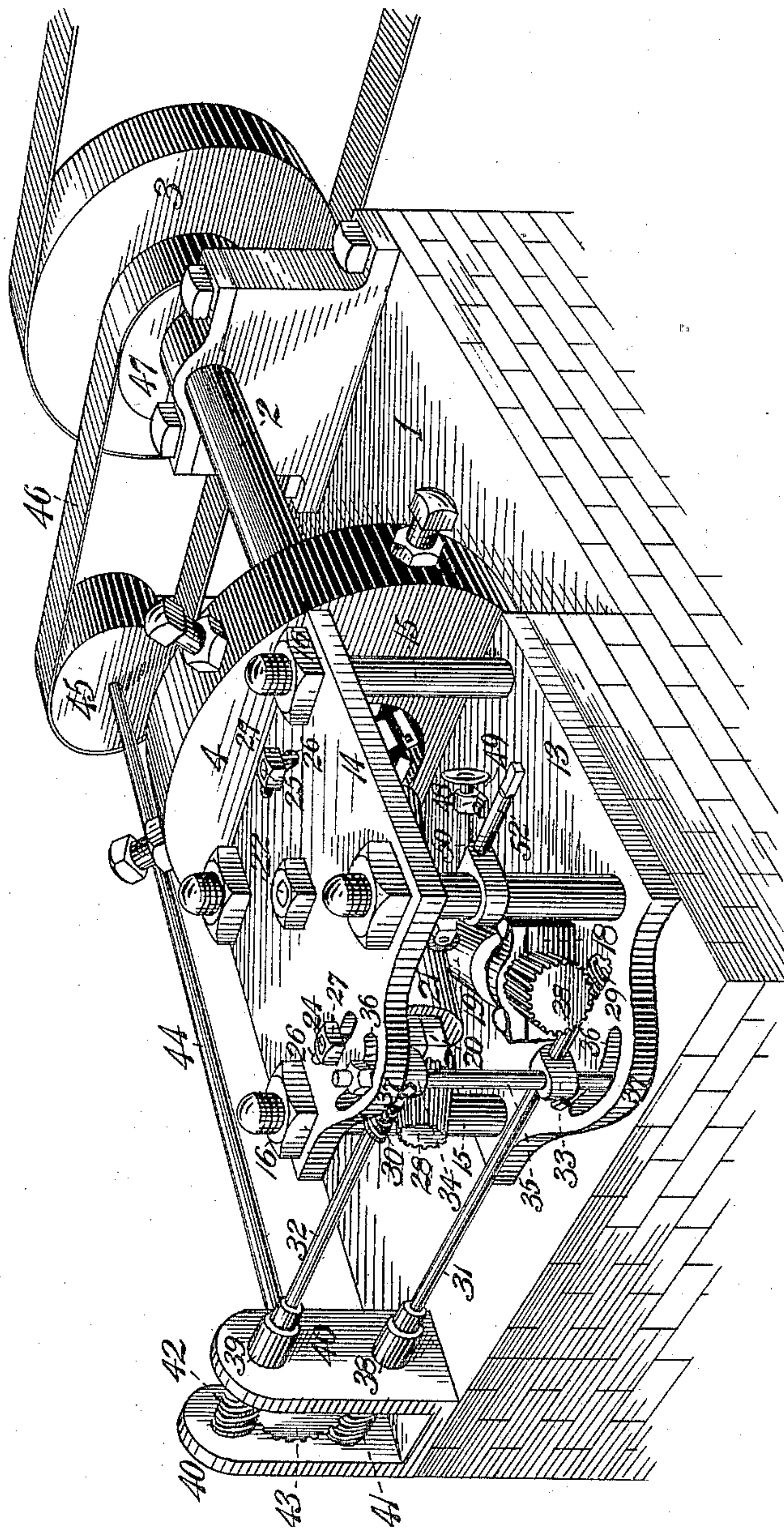
I. E. HIGGINS.

MACHINE FOR DRAWING WIRE.

No. 330,114.

Patented Nov. 10, 1885.

Fig. 1.



WITNESSES:

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

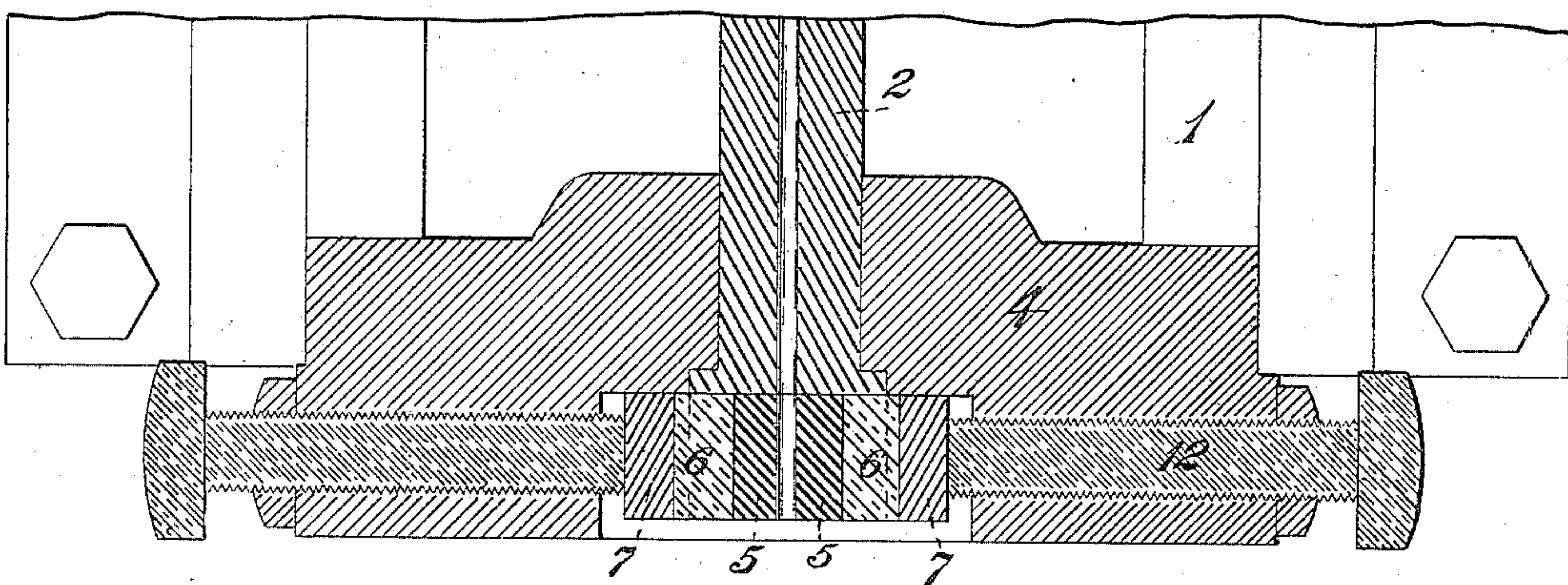
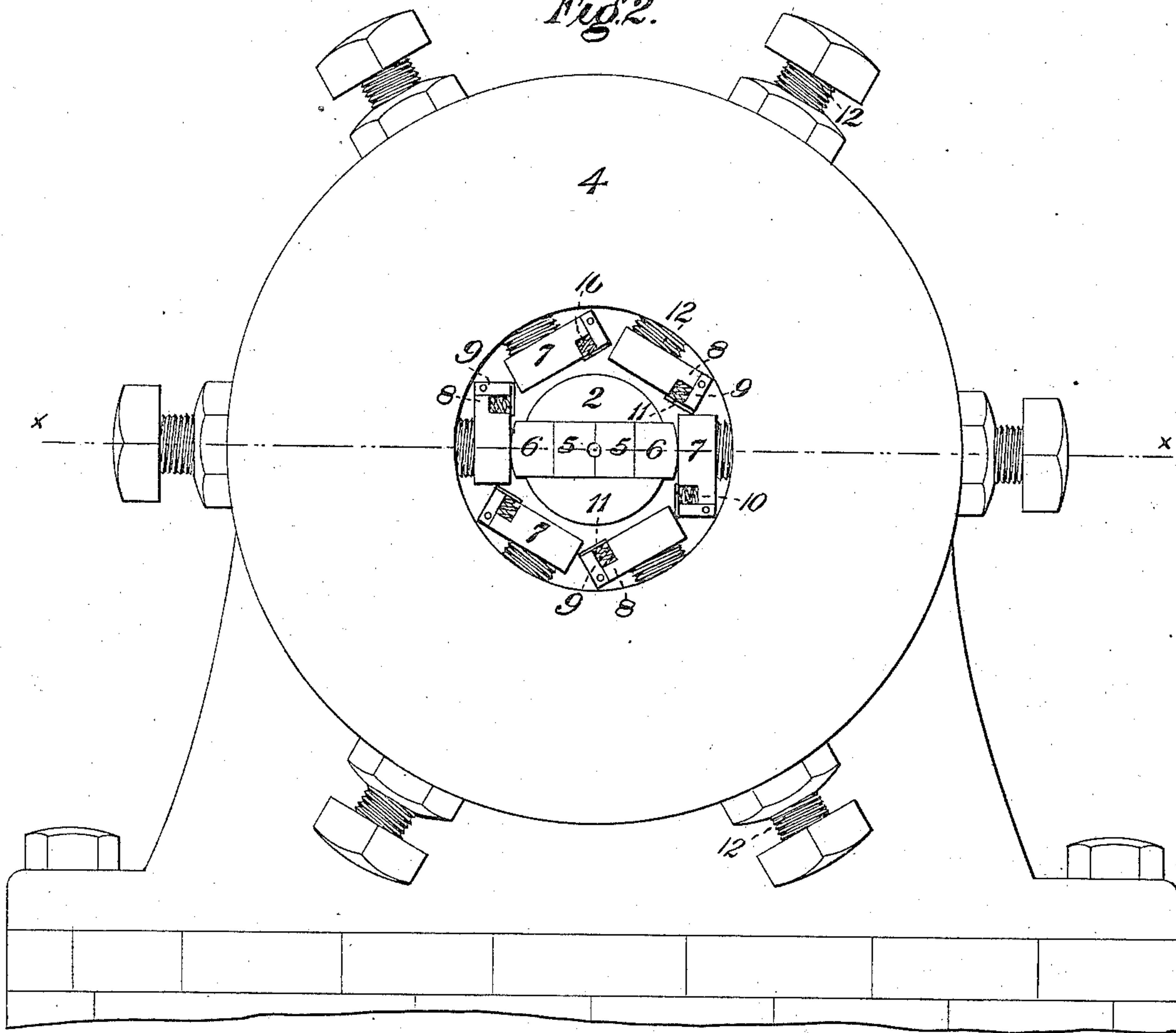


Fig. 3.

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UNITED STATES PATENT OFFICE.

ISAAC E. HIGGINS, OF ETNA, PENNSYLVANIA.

MACHINE FOR DRAWING WIRE.

SPECIFICATION forming part of Letters Patent No. 330,114, dated November 10, 1885.

Application filed June 5, 1885. Serial No. 167,777. (No model.)

To all whom it may concern:

Be it known that I, ISAAC E. HIGGINS, residing at Etna, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Wire-Drawing Machines, of which improvements the following is a specification.

In the accompanying drawings, which make part of this specification, Figure 1 is a view in perspective of my improved wire-drawing machine. Fig. 2 is a view in front elevation of the drawing-head. Fig. 3 is a sectional view of the same, the section being taken on the line *x x*, Fig. 2.

The invention herein relates to certain improvements in that class or kind of wire-drawing machines in which movable compressing-dies are employed; and the object of my invention is to so construct said dies and their operating devices that the dies may be quickly forced inward to the full limit of their movement, and after being retained in such position for an appreciable length of time may be released and allowed to move outward away from the wire; and to these ends my invention consists, in general terms, in the construction and combination of parts, all as more fully hereinafter described and claimed.

In suitable bearings on the bed 1 is mounted the hollow rotating shaft 2, having the pulley 3 secured to its rear end, as shown in Fig. 1, the front end of said shaft 2 projecting beyond the bed into the head 4, secured to the front side of the bed. In the front end of the shaft 2 is formed a diametrical slot, in which are located the dies 5, having their adjacent faces transversely grooved, and the hammer-blocks 6, having their outer ends rounded, as shown, said dies and blocks having free radial movement in the slot. The front face of the head 4 is recessed for a considerable distance around the front end of the shaft 2, and within this recess in the head are located the anvils 7, which are provided with tongues 8 at one end, said tongues being pivotally secured within slots in the studs 9, screwed into the rear wall of the recess or secured thereto in any suitable manner. In a recess in the rear of the anvil 7 is located the spring 10,

one end of said spring having a bearing against the tongue 8, forward of the pivotal point, and its opposite end being supported by the projection 11, extending laterally from the stud 9, by a pin suitably secured to the rear wall of the recess. These springs 10 serve to hold the anvils against the set-screws 12, passing through radial threaded openings in the head 4, and being adapted to adjust the anvils radially in the recess. The anvils 7 and their supporting and adjusting devices are arranged in pairs, the members of the respective pairs being located diametrically opposite each other, and adapted to operate simultaneously on the hammer-blocks 6. Upon a suitable bed in front of the head 4 is located a frame consisting of the base-plate 13 and the top plate, 14, the latter being supported at its corners by the rods 15, passing through the base-plate and having their upper ends threaded. On these threaded ends are screwed the nuts 16 and 17, arranged one above and the other below the top plate, thereby providing for the adjustment and retention of the plate in any desired position. On the base-plate is pivotally secured the frame 18, having up-turned ends provided with suitable bearings, in which are mounted the journals of the concaved-face roll 19. To the under side of the top plate, 14, is attached a frame, 20, similar in construction to the frame 18, but arranged in a reversed position—i. e., with its bent ends extending downward, and in these ends is journaled the concaved-face roll 21. This frame 20 and the frame 18 are secured to the plates 13 and 14 by pivot-pins 22 and 23 and the locking pins or bolts 24 and 25, which are attached to the frames 18 and 20 and project through curved slots 26 in the plates 13 and 14, the projecting ends being threaded, and provided with clamping-nuts 27, whereby the frames may be held in any desired position. The rear journals of the rolls 19 and 21 are provided with toothed cone-shaped wheels 28, adapted to intermesh, respectively, with the worms 29 and 30, formed on the shafts 31 and 32. These shafts are supported near their front ends by the blocks 33 and 34 on the vertical rod 35, said rod being adjustably secured in the curved slots 36, formed in extensions 37 of the plates 13 and 14. The rear ends of the

shafts 31 and 32 are connected by any suitable universal and sliding joints to the shafts 38 and 39, mounted in the standards 40. On the shafts 38 and 39, between the standards 40, are mounted the worm-wheels 41 and 42, said wheels being constructed and arranged to engage the worm-wheel 43, formed on one end of the shaft 44, the opposite end of said shaft being provided with a pulley, 45, driven by a belt, 46, from the pulley 47, formed with or secured to the pulley 3 on the hollow shaft 2. On the base-plate 13 is secured the stud 48, having a pivoted top portion, 49, through which is formed a threaded opening for the reception of the threaded shaft 50, the end of said shaft being loosely connected to the block 51, swiveled to the frame 18. This device is adapted to adjust the roll 19 to any desired position, the upper roll, 21, being provided with similar means of adjustment.

In operating this machine the set-screws 12 are screwed in or out, in order to adjust the anvils 7 to such a position as will cause the desired inward movement of the hammer-blocks 6 and dies 5. The roll 21 is then raised or lowered by means of the nuts 16 and 17, in order to bring it into proper relation to the roll 19 for the feeding of the wire to be drawn. These rolls 19 and 21 are then adjusted to the proper angular relation to each other, in accordance with the rapidity with which the wire is to be fed. If the reduction to be effected is small, and the wire is comparatively soft, the speed may be increased by turning the rolls to a great angle to each other. The wire, when placed between the rolls, is held in proper position to be acted on by the guides 52, consisting of rods adjustably mounted in blocks on the rods 15, and provided at their ends with friction-rolls. In addition to their feeding action, the rolls 19 and 21 impart an axial rotation to the wire being fed in a direction opposite to the rotation of the drawing or reducing dies, thereby increasing the effective surface action of the dies—that is, presenting a large surface to the action of the dies at any given time. As the hollow shaft

is rotated, the hammer-blocks are brought into contact with the anvils, which force said dies and blocks inward against the wire, and as both dies are simultaneously forced inward compress the wire, so as to reduce it to the required gage. It will be observed that the hammer-blocks are so constructed that they are forced in the full amount of their movement on first impact with their anvils, and are held in such position as long as they are in contact therewith. By means of this hammer blow of the dies a greater amount of reduction can be effected than if the dies are moved gradually inward. The springs 10 serve to hold the anvils firmly against their adjusting-screws, thereby preventing any yielding of the anvils when struck by the hammer-blocks, the anvils being at the same time free to move when their adjusting-screws are turned, but stationary when adjusted to any desired position.

I claim herein as my invention—

1. In a wire-drawing machine, a hollow rotating shaft, in combination with dies and hammer-blocks mounted in said shaft and a series of anvils arranged in the plane of rotation of the dies and hammer-blocks, substantially as set forth.

2. In a wire-drawing machine, a hollow rotating shaft, in combination with dies and hammer-blocks mounted in said shaft and a series of radially-adjustable anvils arranged in the plane of rotation of the dies and hammer-blocks, substantially as set forth.

3. In a wire-drawing machine, a rotating drawing-head, in combination with wire-feeding rolls adapted to feed the wire forward and to impart an axial rotation thereto in a direction opposite to the rotation of the drawing-head, substantially as set forth.

In testimony whereof I have hereunto set my hand.

ISAAC E. HIGGINS.

Witnesses:

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W. B. CORWIN.