(No Model.) 4 Sheets—Sheet 1.

J. F. ELLIS.

WIRE DRAWING MACHINE.

No. 452,837. Patented May 26, 1891.

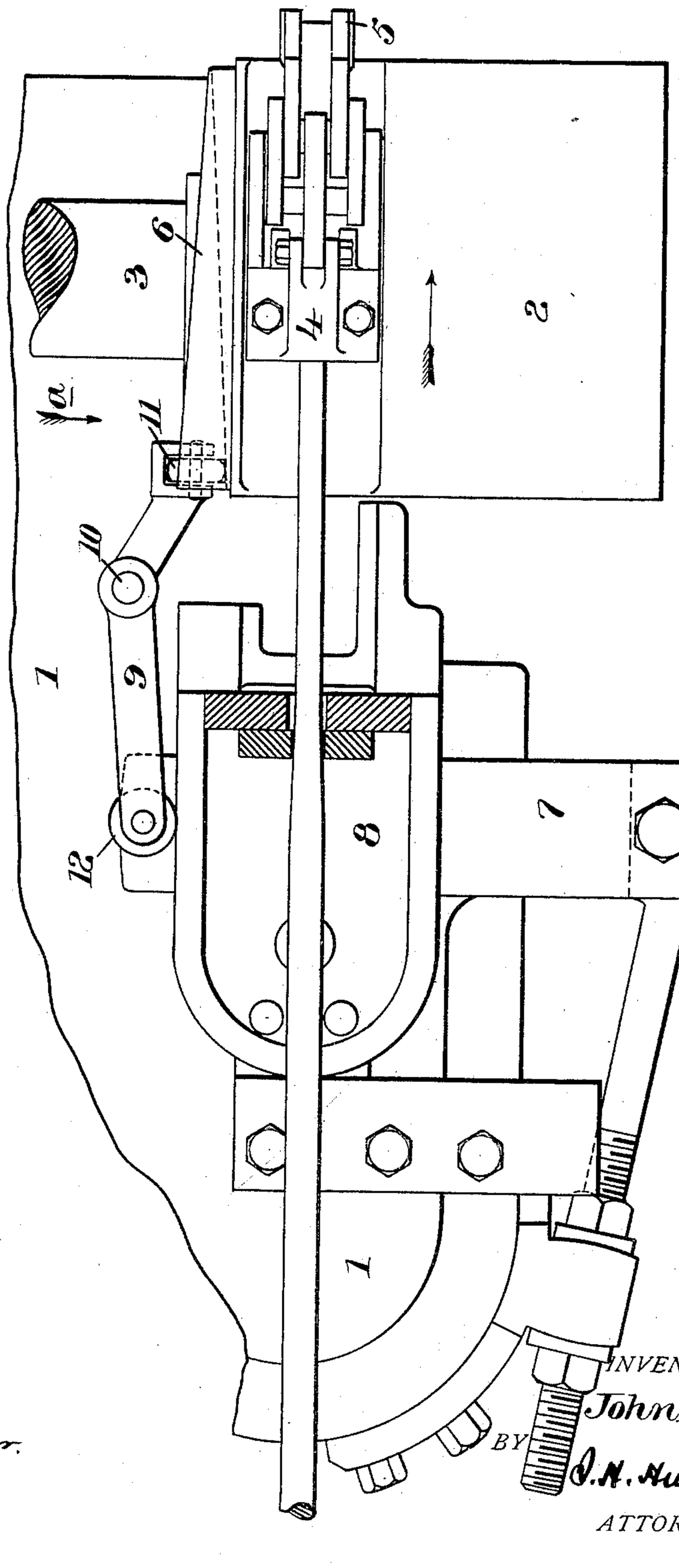

Fig. 1.

WITNESSES;
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(No Model.) 4 Sheets—Sheet 2.

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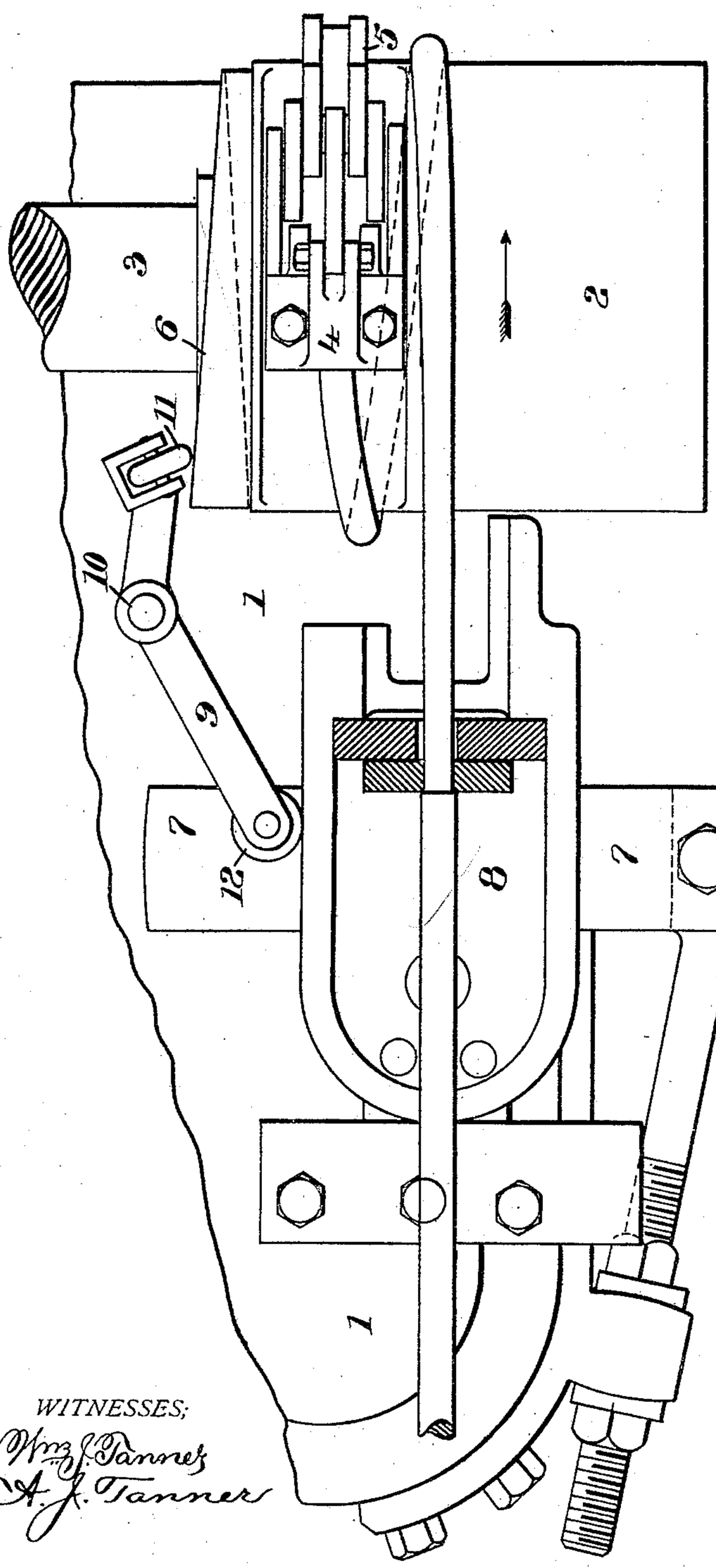

Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

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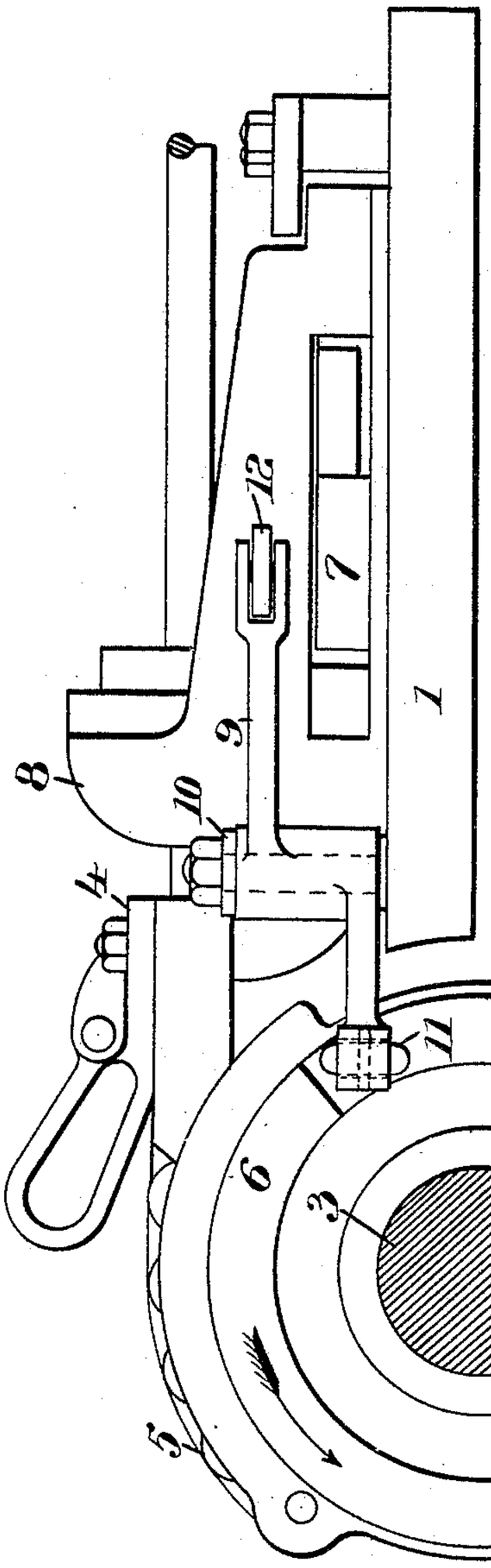

Fig. 3.

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(No Model.) 4 Sheets—Sheet 4.

J. F. ELLIS.

WIRE DRAWING MACHINE.

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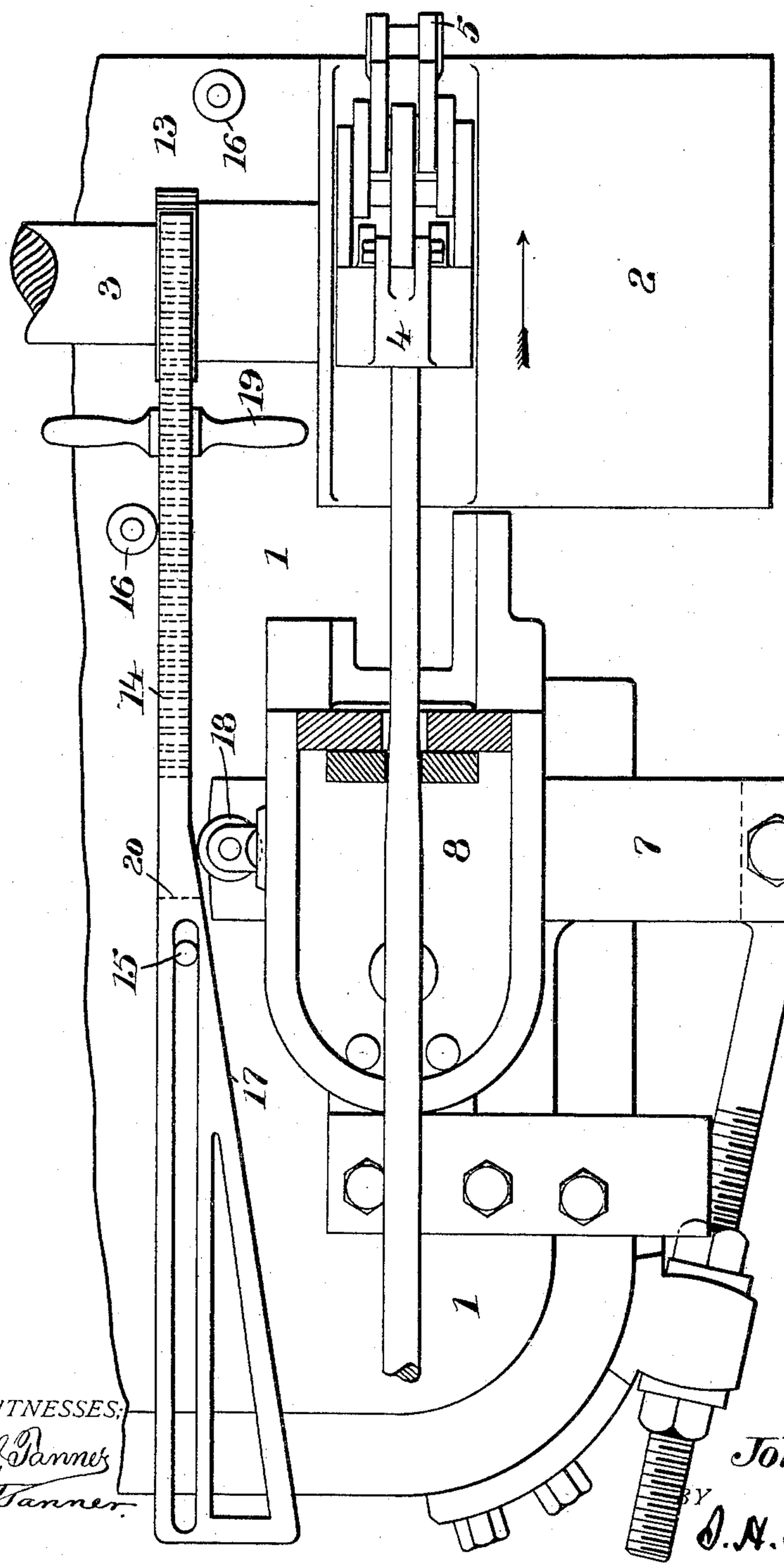

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN F. ELLIS, OF TORRINGTON, CONNECTICUT, ASSIGNOR TO THE COE BRASS MANUFACTURING COMPANY, OF SAME PLACE.

WIRE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 452,837, dated May 26, 1891.

Application filed February 14, 1891. Serial No. 381,453. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. ELLIS, a citizen of the United States, residing at Torrington, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Wire-Drawing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in machines for drawing wire; and it has for its object to alter and in some respects to improve upon the construction shown and described in Letters Patent of the United States No. 443,752, granted to me December 30, 1890.

In the machine described in said Letters Patent the wire block is shown as provided with a vise for holding the end of the wire, which vise also performs the function of drawing in the wire—that is, grasping the short end as it protrudes and pulling it through the die—thereby doing away with any separate mechanism for this purpose, as has heretofore been common and usual in wire-drawing machines. In order that the wire when drawn upon the machine just referred to may not be wound upon or otherwise foul the vise and its attachments, the block is provided with a spiral flange between whose ends the vise is located, which said flange imparts to the first turn of wire around the block a sharp pitch that carries it beyond the outer side of the vise, after which the turns of wire arrange themselves around the block in a regular close spiral of low pitch.

It is the object of my present invention to provide a machine which shall impart the spiral above described to the wire and a proper lateral traverse to the die, but in which the spiral flange upon the block shall be dispensed with; and with these ends in view my invention consists in the construction and combination of elements hereinafter fully set forth, and then recited in the claims, and particularly in means interposed between the wire block and the die, whereby the latter is given a limited traversing movement directly proportional to the rotation of the block.

In order that those skilled in the art to which my invention appertains may fully understand its construction and method of operation, I will describe the same in detail, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan view of my machine, the drawing operation having just commenced; Fig. 2, a similar view, the block having made one full turn; Fig. 3, an end elevation looking from the inside of Fig. 1 in the direction of the arrow *a;* Fig. 4, a plan view showing an alternative method of imparting the traversing movement to the die-carriage and die; Fig. 5, an edge view of the rack-bar shown at Fig. 4.

Like numerals denote the same parts in each of the figures.

The bed of the machine, denoted by 1, and the general construction of the parts mounted thereon, except as hereinafter provided, are similar in construction to those shown in the patent hereinbefore referred to.

2 denotes the wire-block, which is mounted upon the extremity of the shaft 3 in any suitable manner. To this wire-block, which may or may not be provided with a recess for its accommodation, is attached a chain 5, bearing on its free end a grasping-vise 4 of any suitable construction. The inner end of the wire-block is provided with a face-cam 6 of a single spiral.

7 is a bar secured upon the bed of the machine, and 8 is a die-holding carriage adapted to hold a suitable die, and arranged to traverse the bar 7 in the direction of its length, said carriage being in all substantial respects the same as the like part in the patent above referred to.

9 is a lever fulcrumed upon the bed, as at 10. One end of this lever, which, by preference, carries a roll 11, engages against the face-cam 6, and the other end of said lever, by preference, bearing a roll 12, engages against the side wall of the carriage 8.

The operation of my invention is as follows: The end of the wire to be drawn is protruded through the die from the rear and the vise and chain drawn outward to engage and grasp its end, as shown at Fig. 3, the

block being backed up slightly for this purpose. At the same time the operator pushes the die-holding carriage toward the position shown at Fig. 1, whereby the side wall of said carriage abuts against the roll on the lever and forces the other end of the latter against the lowest end of the face-cam, as clearly appears at Fig. 3. The wire-block is then set in motion in the direction of the arrow, Fig. 1, thereby drawing in the wire. As the block rotates, the cam, in passing under the lever, moves the said lever about its fulcrum, and thereby in the first revolution of the block, by pushing against the die-carriage, causes the latter to traverse its bar, whereby the wire at the beginning of its second turn will have passed spirally around the block, so that, as shown at Fig. 2, it clears and avoids contact with the vise and the chain. Thereafter it continues to wind in a spiral of less pitch, the lead of the wire gradually traversing the carriage on the bar, so that to the end of the coil said wire passes axially through the die, after the manner described in the Letters Patent aforesaid.

Of course it will be understood that after the first turn of the wire the lever performs no further function until a new drawing operation is commenced.

While the lever furnishes an exceedingly simple and practical device for transmitting the initial traverse to the die, I do not wish to be confined to any specific means for this purpose, since various other devices controlled by the wire-block may be used without departing from the spirit of my invention, which resides in means operated in proper time with the wire-block for imparting during the first turn of the latter a relatively-rapid traversing movement to the die-carriage.

As one alternative construction, I have in Fig. 4 shown the shaft 3 as provided with a gear 13.

14 is a rack-bar adapted to engage, as to its toothed surface, with the gear 13. This bar is guided longitudinally in any suitable manner, as by the pin-and-slot connection 15 and the rolls 16. The rear end of the bar is provided with an inclined surface 17, which engages a roll 18, secured upon the side of the carriage.

19 are handles upon the rack-bar.

The method of operating this construction is as follows: When a new piece of wire is to be drawn, the rack-bar is lifted out of contact with the gear by means of one of the handles moved backward to the position shown at Fig. 4, and then dropped into engagement with the gear. The carriage is then moved into engagement with the end of the incline on the bar, the vise is caused to grasp the wire, and the machine is started. The first revolution of the wire-block draws forward the rack, whose inclined surface imparts the requisite traversing movement to the carriage. After one revolution the rack has been drawn far enough forward, so that the gear enters a smooth and rounded seat 20 at the end of the teeth and therein revolves idly until it is desired to commence a new drawing operation when the rack is moved back to the position shown in the drawings.

I claim—

1. In a wire-drawing machine, the combination, with the rotative wire-block having a grasping device and the traversable die, of means interposed between the block and die and controlled by the former, whereby a definite traversing movement is imparted to the latter, substantially as set forth.

2. The combination, with the wire-block having means for the attachment of the wire, of a cam carried by the block, a traversable die, and a lever operated by the cam and adapted to move the die, substantially as specified.

3. The rotative wire-block having means for holding the wire, and a cam operating in time with said block, of a laterally-traversable die and means interposed between said cam and die whereby the movement of the latter is effected by the action of the former.

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

JOHN F. ELLIS.

Witnesses:
JOHN GATH,
L. R. VINCENT.