

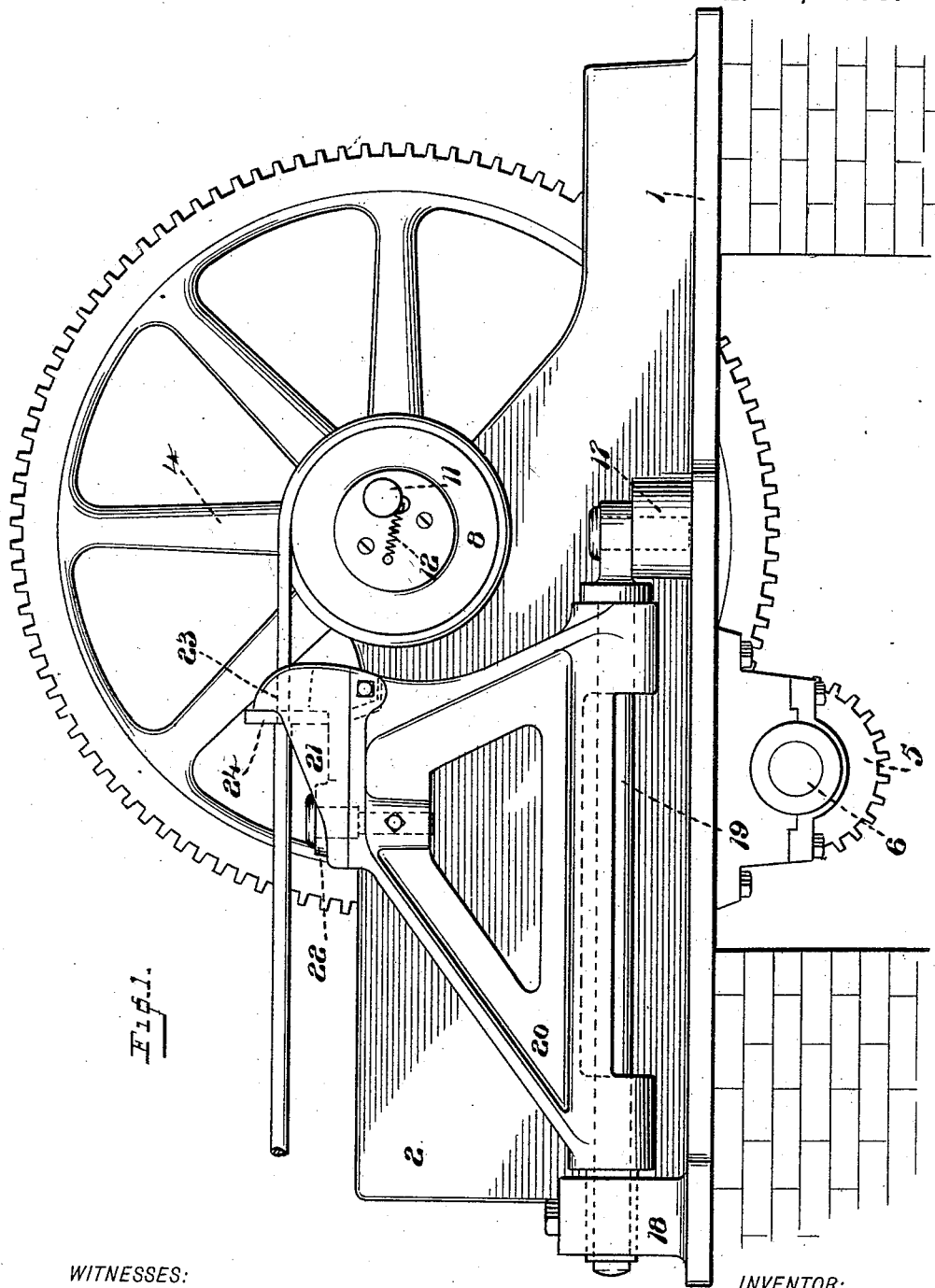
(No Model.)

3 Sheets—Sheet 1.

G. B. LAMB.
WIRE DRAWING MACHINE.

No. 489,588.

Patented Jan. 10, 1893.



WITNESSES:

C. M. Newman,
A. J. Tanner.

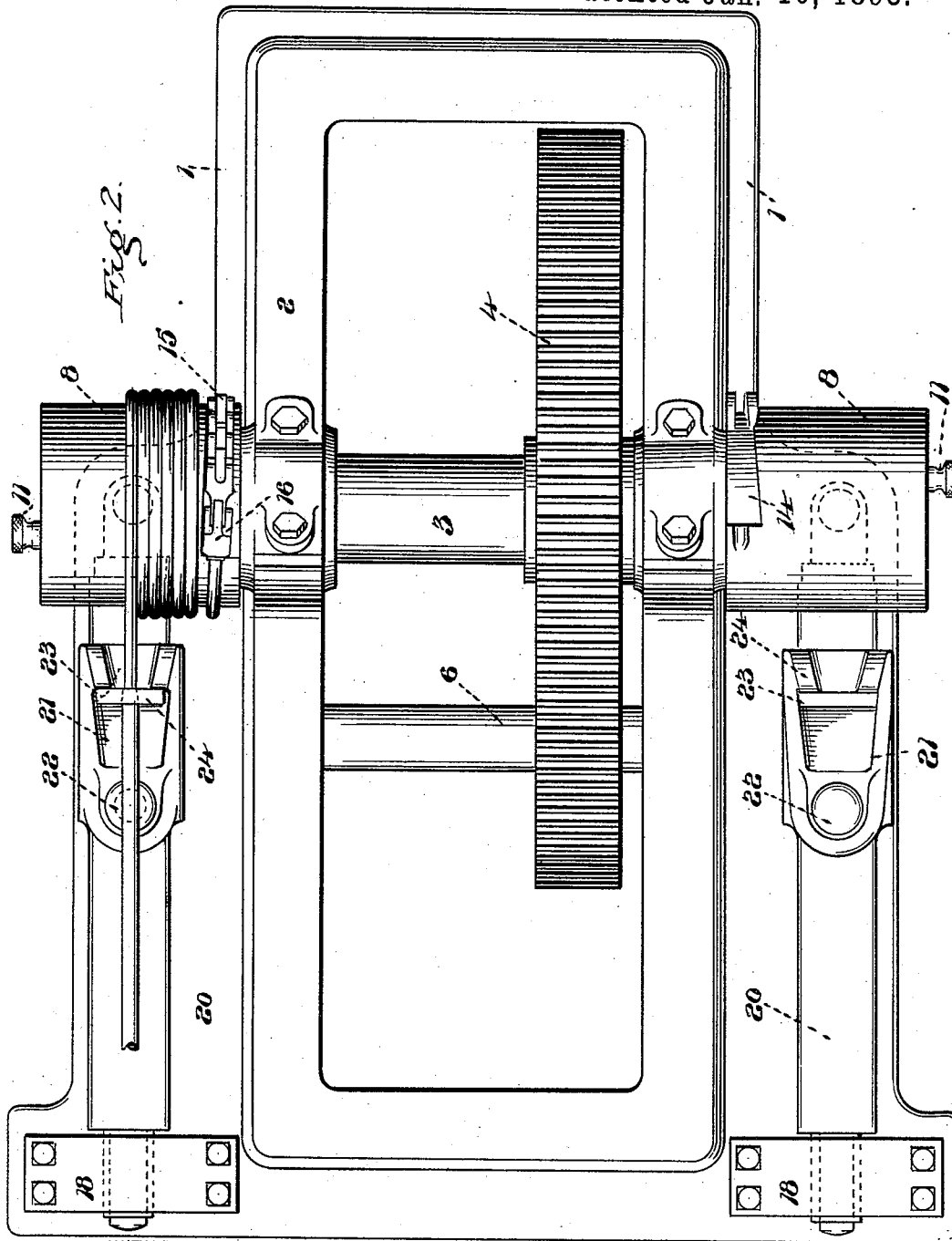
INVENTOR:

George B. Lamb,
BY
O. H. Hubbard,
ATTORNEY

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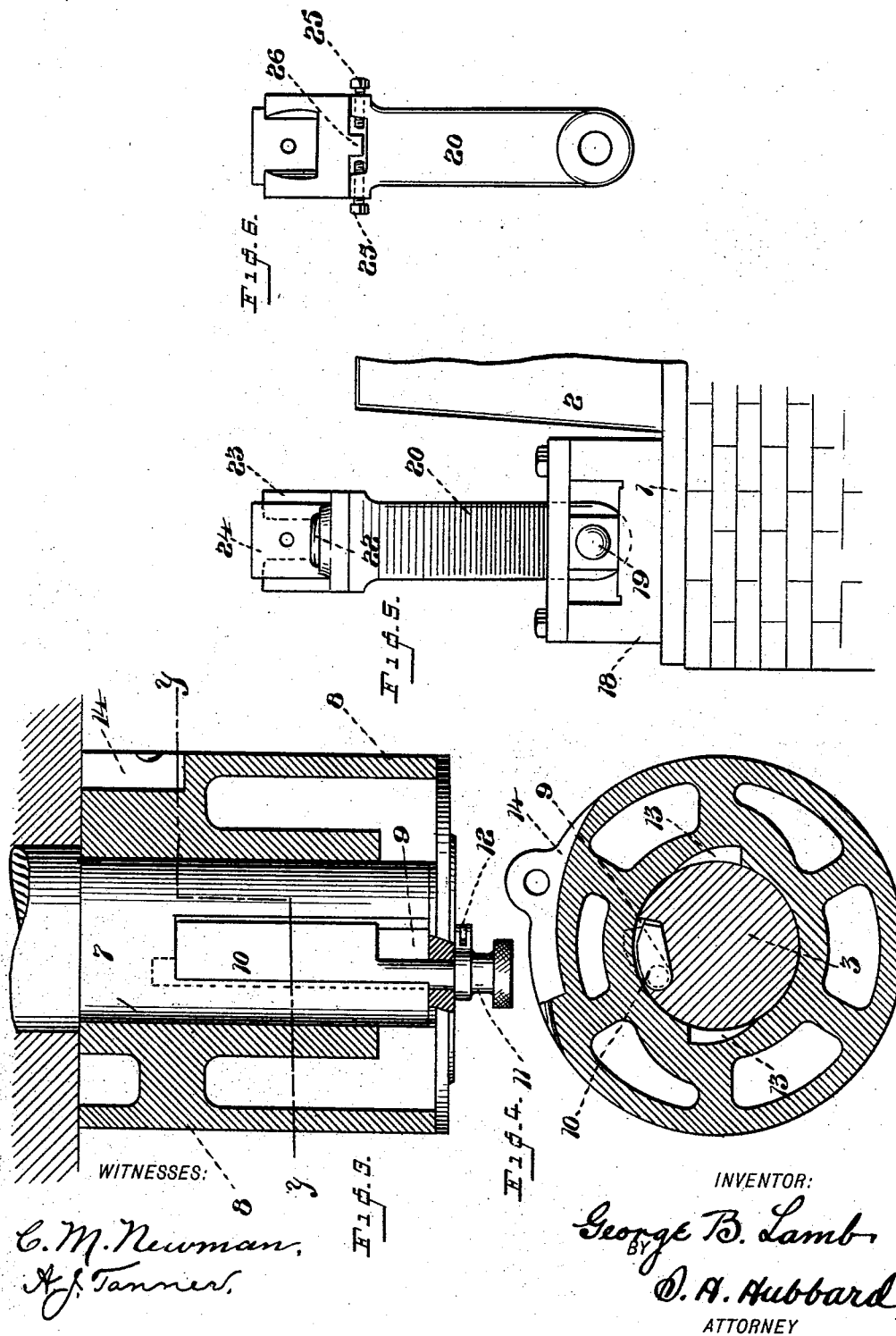
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UNITED STATES PATENT OFFICE.

GEORGE B. LAMB, OF WATERBURY, CONNECTICUT.

WIRE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 489,588, dated January 10, 1893.

Application filed June 22, 1892. Serial No. 437,568. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. LAMB, a citizen of the United States, residing at Waterbury, in the county of New Haven 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, but more particularly is it designed for use as what is known as a "breaking-down draw bench," the same being particularly intended for the reduction of rods of brass, copper or other metal, of an inch or more in diameter and which require a machine of high power.

It is the object of my invention to provide a machine of great simplicity and strength, which shall embody simple means for imparting the initial spiral movement to the rod as it is wound upon the block, and which shall also embody a simply constructed die-holder traversable laterally in front of the block so that the lead of the wire shall always be axial with the drawing hole; and with these ends in view my invention consists in the construction and combination of elements hereinafter to be fully described and then recited in the claims.

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 side elevation. Fig. 2, is a plan view of a double machine embodying my improvement. Fig. 3, is a detail horizontal section through one of the wire blocks. Fig. 4, is a vertical section on the line $y-y$ of Fig. 3. Fig. 5, is a detail end elevation of the rocker from the left of Fig. 1, and Fig. 6, is a similar detail elevation looking in the other direction.

By the numeral 1 I denote a suitable base from which rises a supporting frame 2, and in bearings formed transversely of this frame

the main shaft 3 of the machine is journaled. This shaft may, as is shown in the drawings, carry a wire block on each end, or, for purpose of a single machine, it may be furnished with one block only. This main shaft may be driven in any suitable manner, but my preference is for the means commonly in use on heavy drawing machines and which consists of the large gear 4 mounted on the shaft and driven from a smaller gear 5 carried by a jack shaft 6 beneath the floor. This precise arrangement, however, is not material. The end of the shaft 3 is shouldered and reduced, as seen at 7, Fig. 3, and upon this shouldered portion is journaled a wire block 8.

Between the shaft and block there is interposed a clutch whose construction is as follows. The shaft has formed therein a longitudinal seat or recess 9 whose general shape and dimensions may be gathered from Figs. 3 and 4. In this seat is arranged a clutch key 10 hinged to the shaft, as shown in dotted lines at Fig. 3, and provided with a handle 11 which projects outwardly beyond the end of the shaft. By means of this handle the key may be turned outwardly to substantially the extent shown at Fig. 4 in dotted lines, as will be presently explained, but said key normally remains wholly within its seat, as seen at Fig. 4, and is there held by means of a small spring 12 which is shown at Fig. 1. For the purpose of co-operating with this clutch key the interior of the wire block is furnished with two or more recesses 13 having substantially square abutment walls at one end and tapering thence toward the bearing. The shaft 3 is constantly rotative and normally the block hangs idly upon it, but when it is desired to connect the two the operator by means of the handle 11 attempts to turn the key outward. This he may accomplish as soon as the key comes into coincidence with one of the recesses 13, when by the abutment of its end against the shoulder at the end of said recess the shaft will carry the block so long as there is sufficient strain upon the block to overcome the force of the spring, which constantly tends to throw the key out of engagement. When the strain ceases the force of the spring will withdraw the key and the block again becomes idle.

In the periphery of the drawing block I form

a recess 14 shown at Figs. 2, 3 and 4, the line of the length of said recess being spiral with relation to the axis of the block. In this recess I secure a short length of drawing-in chain 15 whose extremity is provided with a gripping vise 16 which is preferably of the sliding jaw wedge type common to testing machines. This chain and vise lie in a spiral line, as will be seen by an inspection of Fig. 2, the pitch of the spiral being sufficiently sharp so that the first turn of wire above the block will lay the second turn outside the edge of the gripping vise, so that the latter shall not be fouled by the wire. Adjacent to the periphery of this block is arranged a die through which the wire or rod to be reduced is drawn by the block.

For the purpose of securing the best results I mount this die in the following manner. Upon the bed 1 are standards or blocks 17 and 18 between which is secured a longitudinal shaft 19, as appears at Fig. 1. Upon this shaft is journaled a rocker 20 in such manner that it may have a swinging movement from side to side to, say twenty or twenty-five degrees. Upon the top of this rocker, which is flattened, as appears at Fig. 1, is a die-holder 21. Near its rear end this die-holder is swiveled to the rocker upon a heavy vertical bolt 22, and the top of the die-holder is recessed and provided a little forward of the bolt with a bifurcated abutment 23 against which the die-block 24 is adapted to rest. This permits to the die-holder a slight swinging movement upon the top of this rocker, and this movement is adapted to be limited or entirely done away with if required, by means of a pair of stops shown as consisting of the two adjusting screws 25 which enter the rocker from the sides and co-operate with a lug on the lower end of the die-holder. The height of the rocker is such that the opening in the die will be in approximately the same horizontal plane as the top of the drawing block.

The operation of my invention is as follows. The end of the wire or rod to be drawn is first pointed or slightly reduced, and is then introduced through the opening in the dies. Then the drawing block, which, as heretofore explained, is normally idle upon the shaft, is backed up and its chain drawn out at a tangent thereto so that the vise may be engaged with the protruding end of the rod. Then the operator, in the manner heretofore explained, operates the clutch key so as to cause its engagement with one of the recesses in the wire block which thereafter rotates with the shaft, pulling the rod or wire through the dies. As the block rotates the chain and vise sink into the spiral recess provided for their accommodation, and which is just deep enough at the point beneath the vise to lay the wire smoothly onto the surface of the block without any sharp bend or offset. The fact that the recess is spiral around the block imparts to the first turn of the wire a spiral lead upon

the surface of the block which is sufficient to cause the wire at its second turn to clear the vise, as shown at the upper part of Fig. 2; after this the successive turns of wire are wound close together upon the periphery of the block until the whole length of wire has passed through the die. During this drawing operation the rocker, by means of its sectoral movement upon its fulcrum will keep the die opposite the draft line of the wire until the entire length has been drawn, and this automatic adjustment is rendered more sensitive and accurate by the slight swinging movement which the die-holder has relative to the rocker. Another object is to make the spiral first turn. As soon as the last end of the wire has passed the die the strain upon the block is relieved and the spring throws the clutch out of engagement, thereby leaving the block idle upon the end of the shaft as the latter continues to revolve. The release of the wire will also effect the automatic disengagement of the vise from the end of the wire so that the operator may freely remove the coil. Before commencing the next operation the rocker may be readily swung back to its original position so as to bring the end of the next piece of wire opposite to the vise. The bearing of the rocker is very long and easy and it is consequently sensitive to the lead of the wire to which it automatically adjusts itself with great nicety.

I claim,

1. In a machine for drawing wire, a wire block both revolvably supported and having a peripheral recess formed in a line spiral to the axis of said block, and a drawing-in chain having a suitable vise said vise secured to the block and adapted to be contained within said recess, in combination with a drawing die and a rocking support for the same, substantially as specified.

2. In a wire-drawing machine, the combination with a revolvably supported wire block, of a die-carrying rocker, mounted upon the base with its axis at right angles to and below the plane of the wire block, and in line with the die opening said rocker extending upward in front of the wire block, and a die-holder mounted upon the top of said rocker, substantially as and for the purpose set forth.

3. In a wire drawing machine, a revolvable wire block provided with a gripping device for drawing-in and holding the wire, in combination with a shaft mounted on the bed below the wire block and extending parallel to the lead of the wire, a laterally swinging rocker mounted on said shaft, and a die holder secured upon and carried by said rocker in proper juxtaposition to the wire block, substantially as specified.

4. In a wire drawing machine, the combination with the main shaft, of the wire block provided with means for engaging it with said shaft, and provided also with a spirally arranged peripheral recess, the drawing-in chain and vise adapted to lie in said recess, the

rocker arranged upon a shaft at right angles to the main shaft and below the plane of the latter, and a die-holder supported upon the top of the rocker, the whole arranged and adapted to operate substantially as specified.

5 5. In a wire-drawing machine, the combination with a revoluble wire block having means for holding and drawing in the wire, of a rocker having its axis below the plane of the wire block and at right angles to the axis of the latter and in line with the lead of the wire and having its upper end extending upward to a point above the axis of the block said rocker provided at its top with means for supporting a die, the whole arranged substantially as described, whereby the die as carried by the rocker may have a traversing

motion parallel with the winding surface of the block, as and for the purpose specified.

6. In a wire-drawing machine, and in combination with a suitable rotative wire block, the pivotally mounted rocker substantially as described, the die holder pivotally secured upon the top of said rocker, and adjustable stops interposed between the rocker and holder, whereby the movement of the latter on its axis may be controlled and varied, substantially as specified.

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

GEORGE B. LAMB.

Witnesses:

A. C. CAMPBELL,
GEO. ROWBOTTOM.