

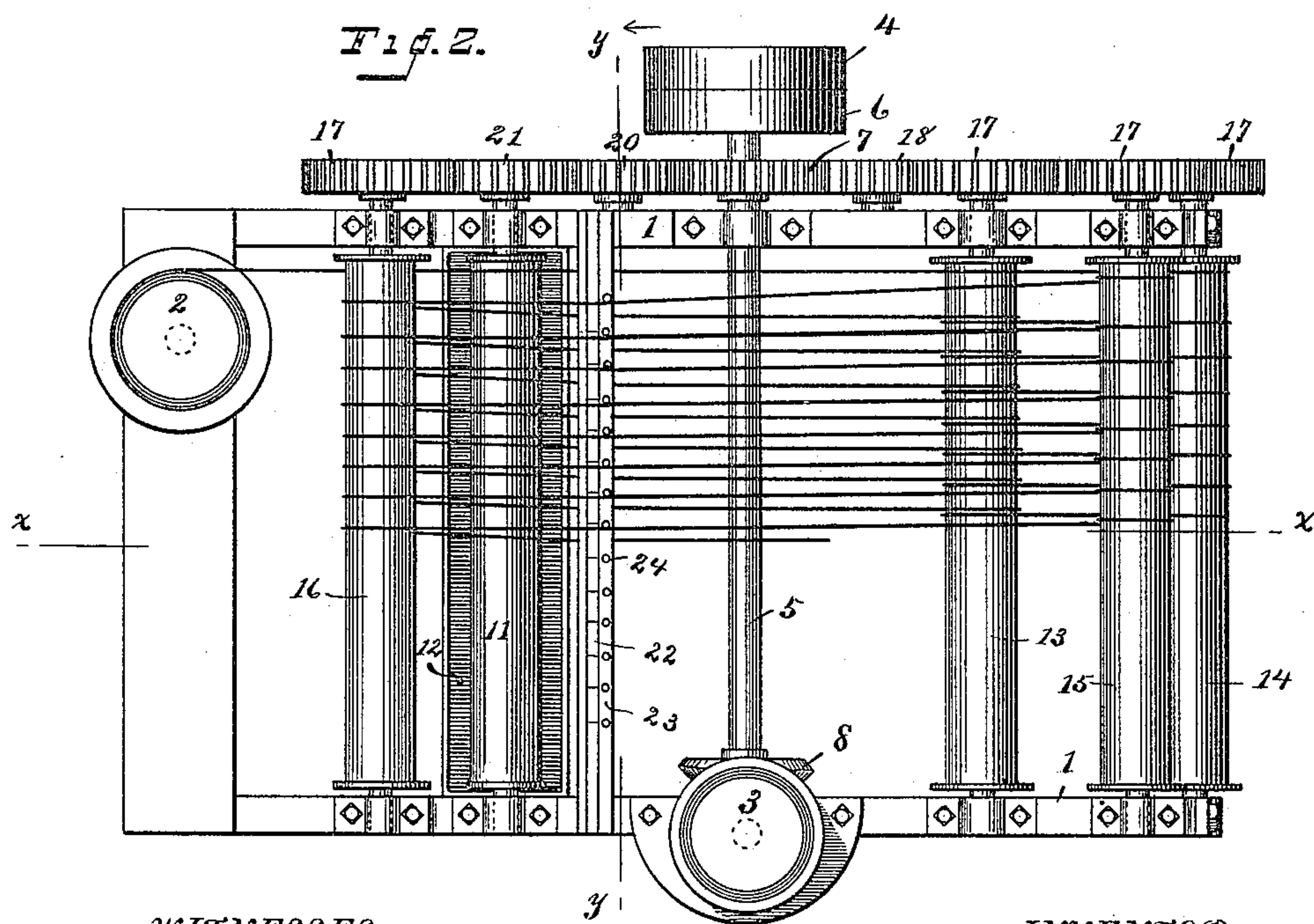
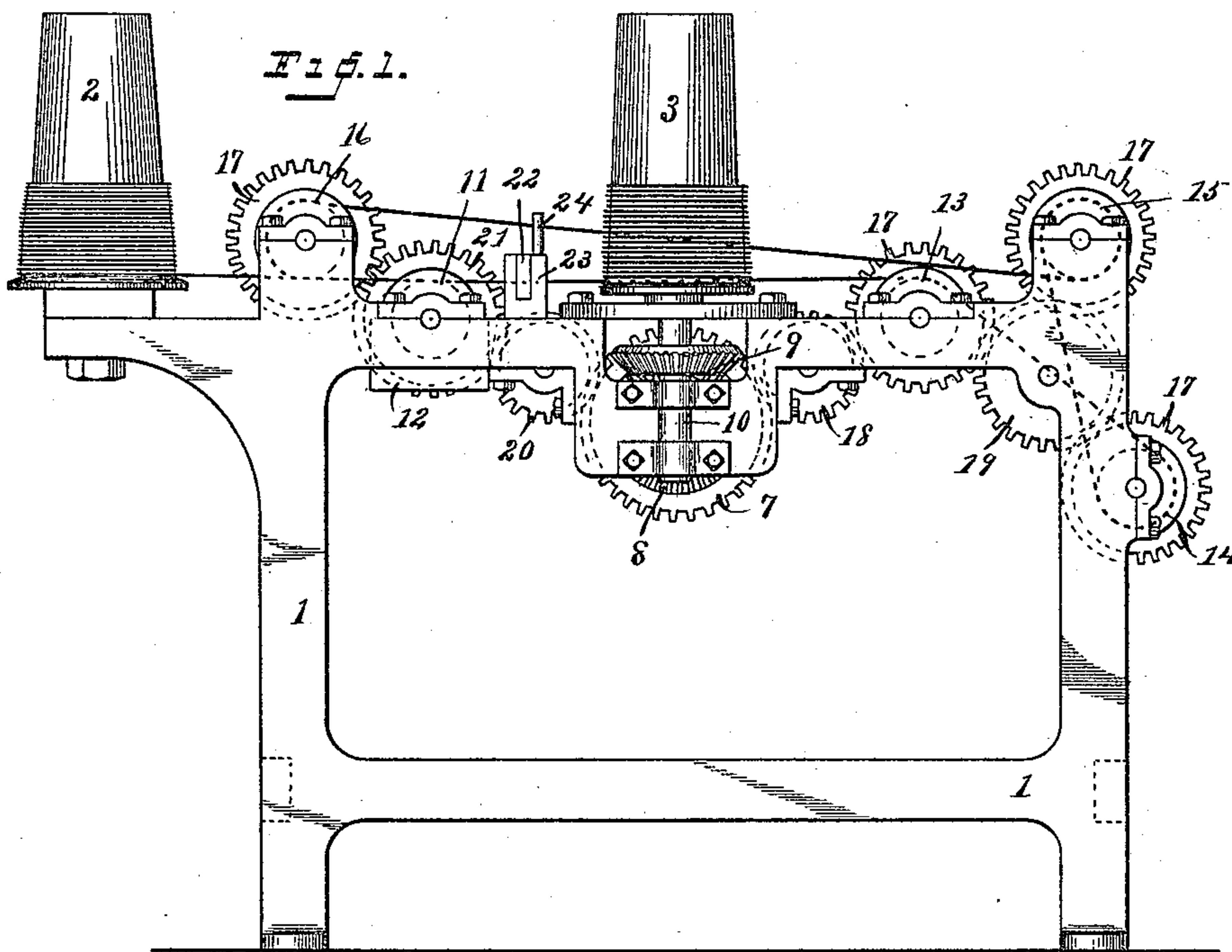
(No Model.)

2 Sheets—Sheet 1.

J. E. BURNES.
WIRE DRAWING MACHINE.

No. 440,133.

Patented Nov. 11, 1890.



WITNESSES

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INVENTOR

James E. Burnes
By A. M. Wooster
Atty.

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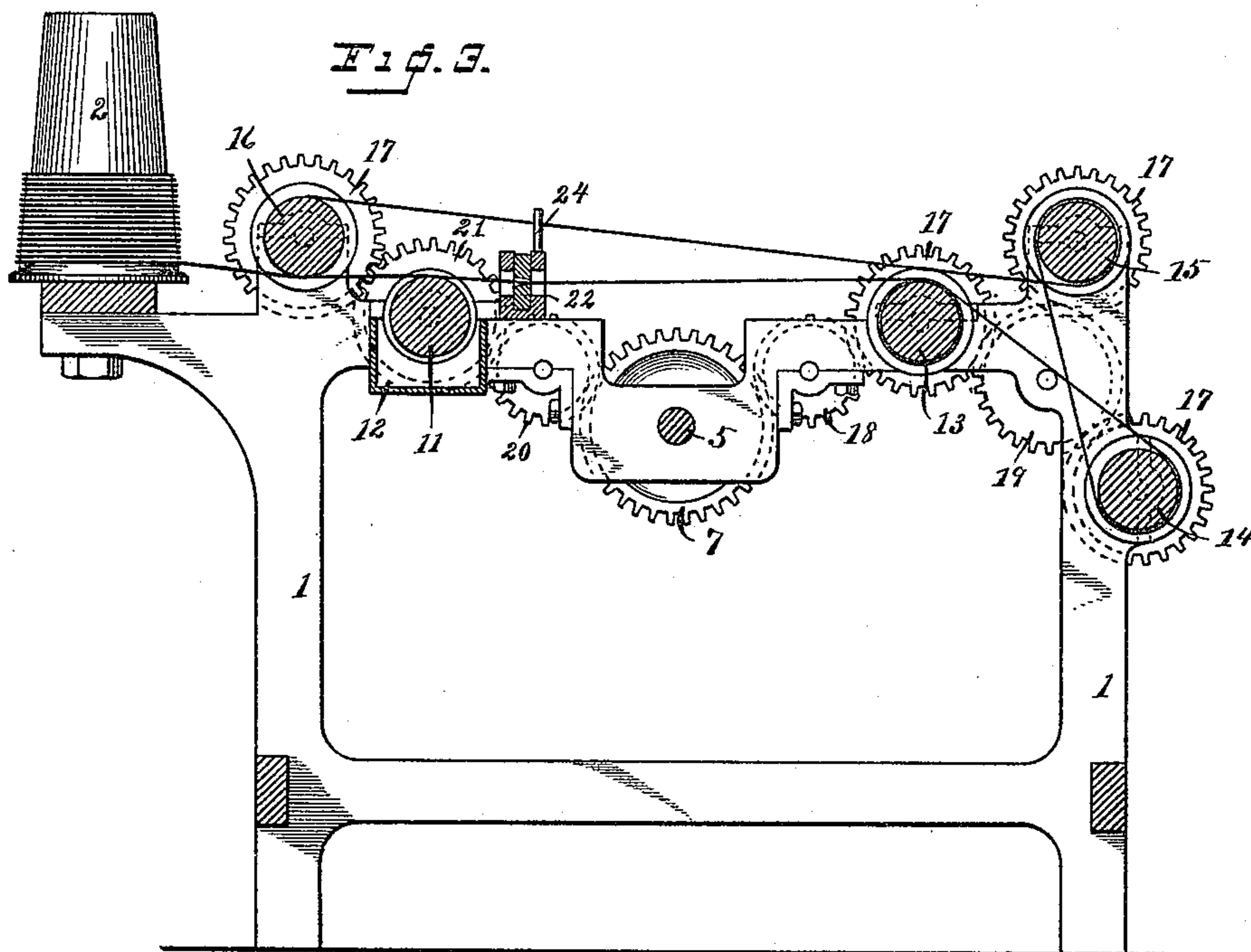
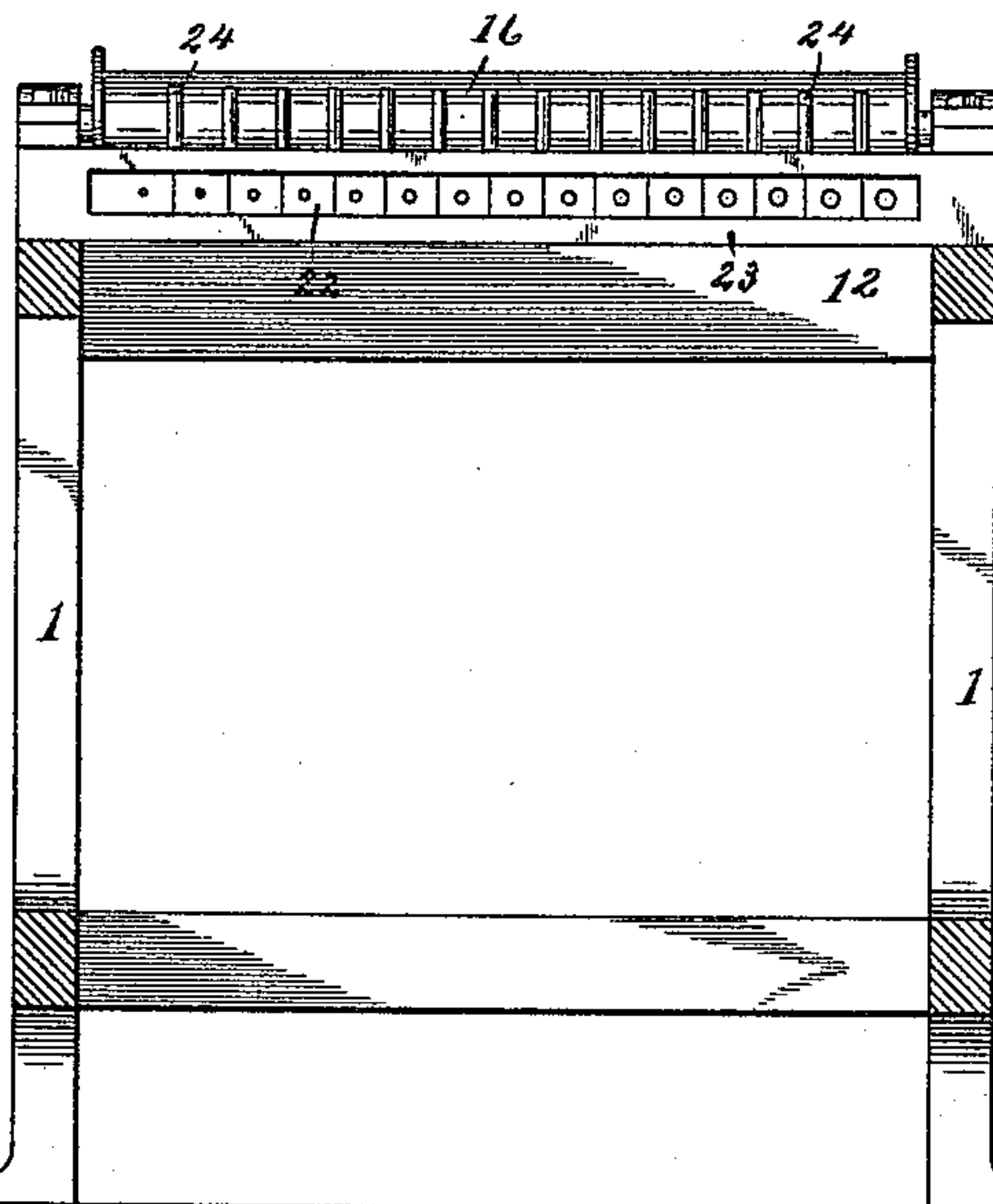


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES E. BURNES, OF WATERBURY, CONNECTICUT.

WIRE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 440,133, dated November 11, 1890.

Application filed December 4, 1889. Serial No. 332,498. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. BURNES, 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.

My invention has for its object to produce a machine adapted to all classes of wire drawing, but more especially to drawing the finer grades of wire, the object being to reduce the wire a number of gages at a single operation and at a high rate of speed, and to produce a machine for this purpose that will do its work uniformly and accurately and will not require constant watching.

With these ends in view I have devised the simple, novel, and inexpensive machine of which the following description, in connection with the accompanying drawings, is a specification, numbers being used to denote the several parts.

Figure 1 is a side elevation of the machine complete; Fig. 2, a plan view; Fig. 3, a longitudinal section on the line *xx* in Fig. 2; and Fig. 4, a transverse section, looking toward the left on the line *yy* in Fig. 2.

1 denotes the frame-work of the machine, which may be of any suitable construction.

2 denotes a reel, by which the wire to be drawn is carried, and 3 a block upon which the drawn wire is wound.

Motion is imparted to the machine by means of a belt (not shown) passing over a pulley 4 on shaft 5. 6 denotes a loose pulley on said shaft, to which the belt is shifted when it is desired to stop the machine.

7 denotes a gear on the shaft, by which motion is communicated to the different rollers, and 8 a bevel-gear on the shaft, which meshes with a bevel-gear 9 on a vertical shaft 10, by which the block is carried, the block being detachably secured thereto in the ordinary or any preferred manner.

11 denotes an oiling-roller, which travels in a pan 12, in which sufficient oil is placed to

partially submerge the roller. The drawing is done by rollers 13, 14, 15, and 16, the three former being located in front of the dies and the latter in the rear of the dies. Each of these rollers is provided with a gear 17, all of said gears being of the same size, so that the speed of rotation of the rollers is the same.

Motion is communicated from gear 7 to roller 13 by means of an idler 18, and an idler 19, meshing with the gears on rollers 13, 14, and 15, communicates motion from roller 13 to the other two. Motion is communicated from gear 7 to roller 11 by means of an idler 20, engaging a gear 21 on said roller, which in turn meshes with the gear on roller 16 and imparts motion thereto.

22 denotes dies, through which the wire is drawn to reduce it. Each die is an independent block, and each die in the series is adjustably secured in a die-carrier 23. This die-carrier is, in fact, a cross-piece extending from side to side of the machine, and is secured in any suitable manner to the framework. The dies may be secured in the carrier in any ordinary or preferred manner, no special means of securing the dies being shown in the drawings.

It will of course be understood that the dies must be adjustable in the carrier, in order to provide for using any required number at a time, so that I may be enabled to change the size of the wire, more or less, as may be required, at a single operation. The fact of the rollers being all of the same size and working perfectly evenly and at a uniform rate of speed renders this machine especially valuable in drawing the finer grades of wire. In fact, I have produced with this machine a finer grade of wire than I have been able to produce with any other machine now upon the market.

24 denotes guide-pins, which I place in corresponding holes in the top of the die-carrier. These guide-pins act to turn the line of draft of the wire as it passes backward, so that the line of draft through the dies will always be straight.

The operation is as follows: The reel containing the wire to be drawn is placed upon a spindle or turn-table, if preferred, at the

end of the machine. The wire passes under roller 16, then over roller 11, then through the first die, then entirely around roller 13, making slightly more than a complete lap, then around roller 14, making a partial lap, then around roller 15, making a partial lap, then backward to the opposite end of the machine, and partially around roller 16, the wire on its passage from roller 13 to roller 16 being deflected by the first guide-pin, as clearly shown in Fig. 2. After making a partial lap around roller 16 the wire passes over roller 11 again, then through the second die, then around roller 13, then around rollers 14 and 15, and back to roller 16 again, being deflected this time by the second guide, and after passing around roller 16 the second time it passes over roller 11 the third time, and then through the third die, and so on through the entire series, a sufficient number of dies of course being placed in the die-holder to reduce the wire to the desired number, and the wire passing over roller 11 just before it enters each die. It will be noticed that, with the exception of roller 13, the wire does not make a complete lap around any of the rollers. This enables me to dispense with tapering drawing-rollers and with mechanism of any kind for imparting variable speed to the rollers, one of the most important features of my invention being that the rollers are all of the same size and rotate at the same rate of speed. After passing through the last die and then around the rollers in front of the

dies the completed wire is wound upon the block.

Having thus described my invention, I claim—

1. In a wire-drawing machine, the combination, with a series of dies, of an oil-trough, a roller rotating therein and over which the wire passes to said dies, the rollers 13, 14, and 15 in front of the said dies and the roller 16 rearward of the said dies, all of the said rollers 13, 14, 15, and 16 being of the same size and geared to rotate at the same speed, the wire being passed backward and forward of the machine over the said rollers and through a different die each time it passes forward.

2. In a wire-drawing machine, the combination, with a die-holder transverse thereto and a series of independent dies in said holder, of a series of guide-pins, an oil-trough, a wire-oiling roller rotating therein and in contact with which the wire passes to said dies, the rollers 13, 14, and 15, arranged in front of said dies, and the roller 16, rearward of the dies, whereby the wire may be passed backward and forward successively through the dies, and whereby also any of the dies may be adjusted or removed, as may be desired.

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

JAMES E. BURNES.

Witnesses:

GEO. H. COWELL,
GEORGE HARTLEY.