

(No Model.)

4 Sheets—Sheet 1.

G. B. LAMB.  
WIRE DRAWING MACHINE.

No. 525,348.

Patented Sept. 4, 1894.

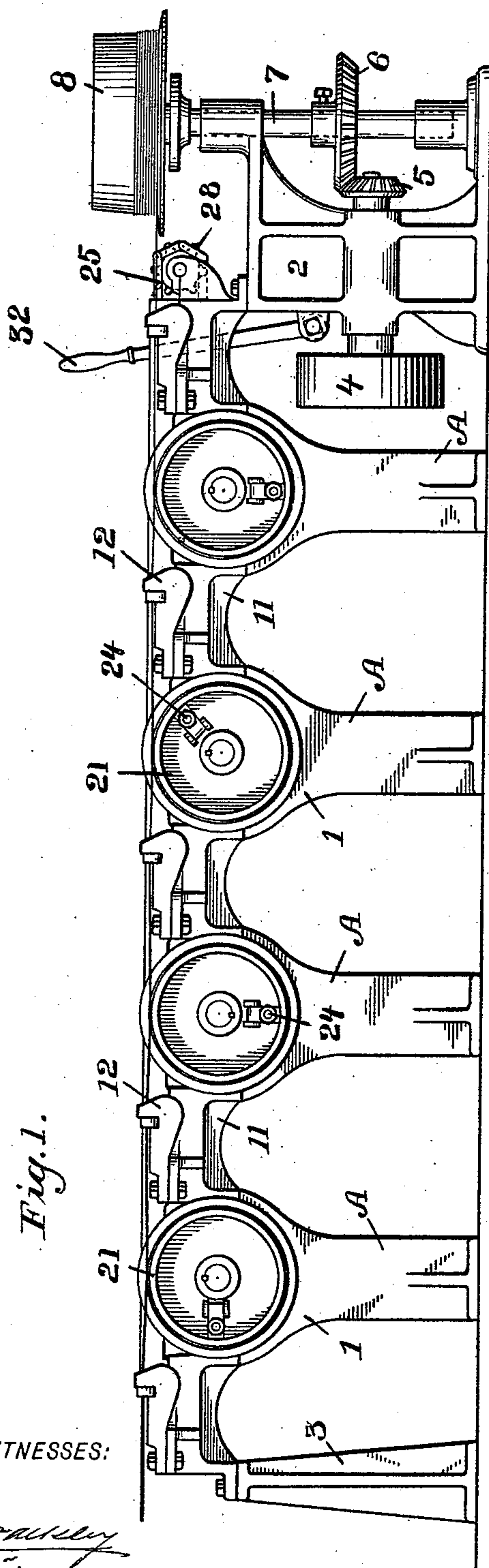


Fig. 1.

WITNESSES:

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*E. S. Newman*

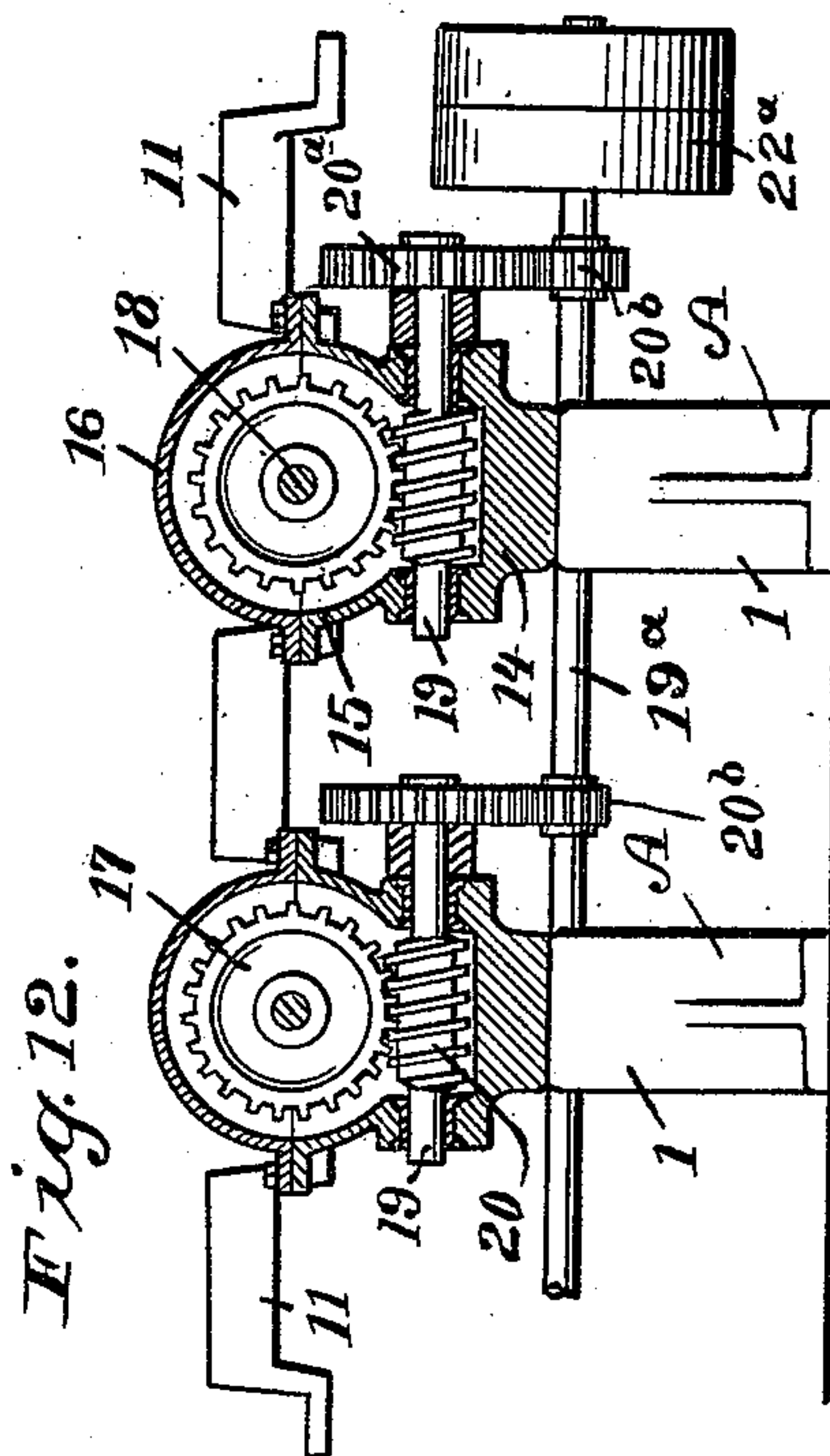


Fig. 12.

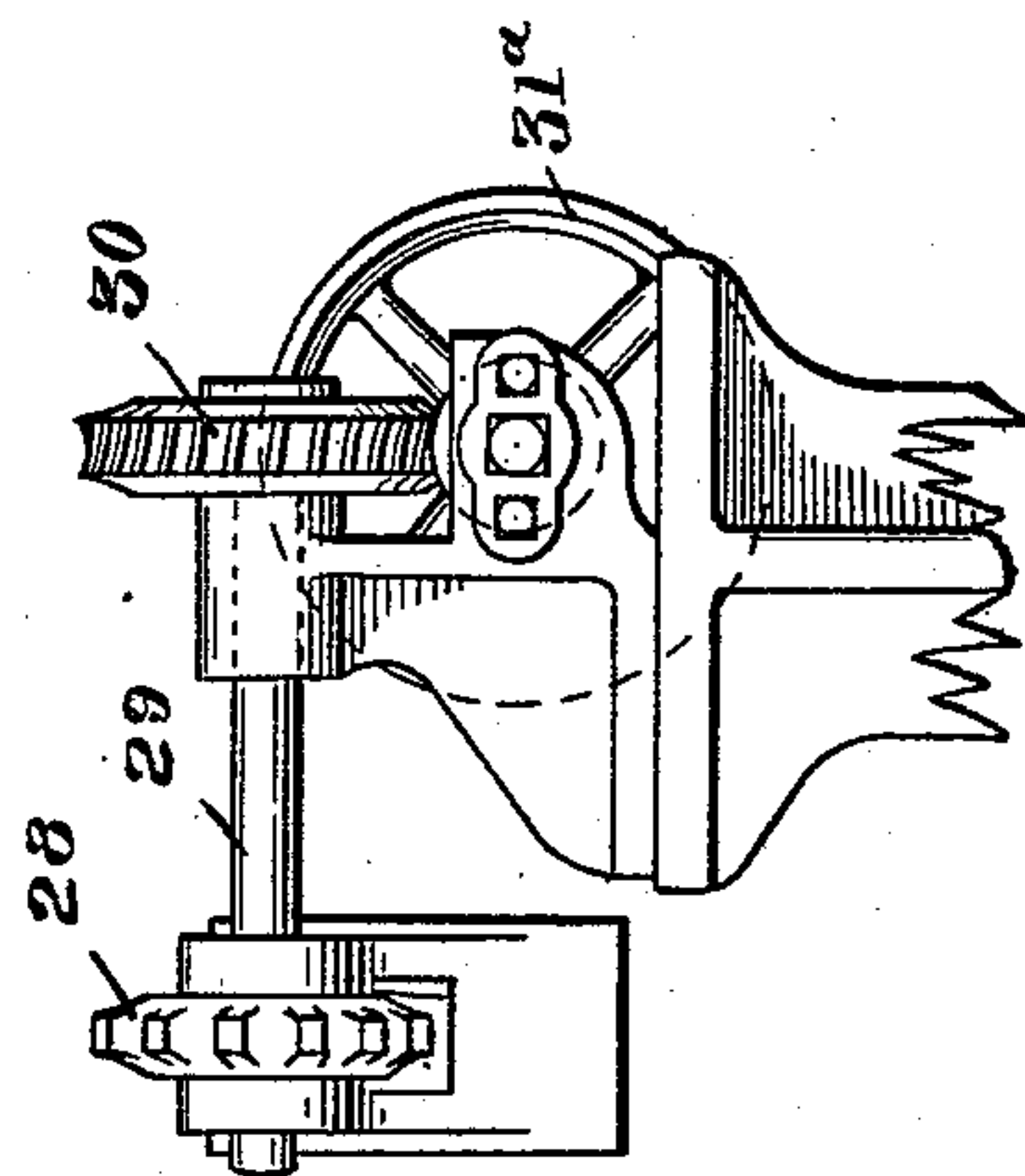


Fig. 11.

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(No Model.)

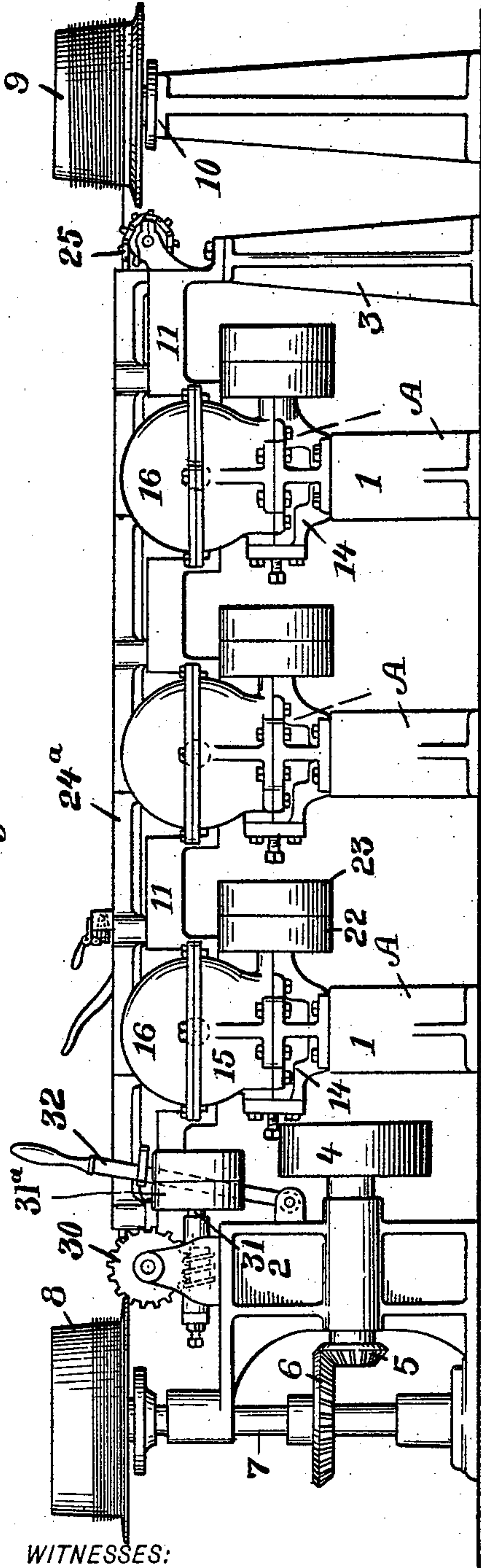
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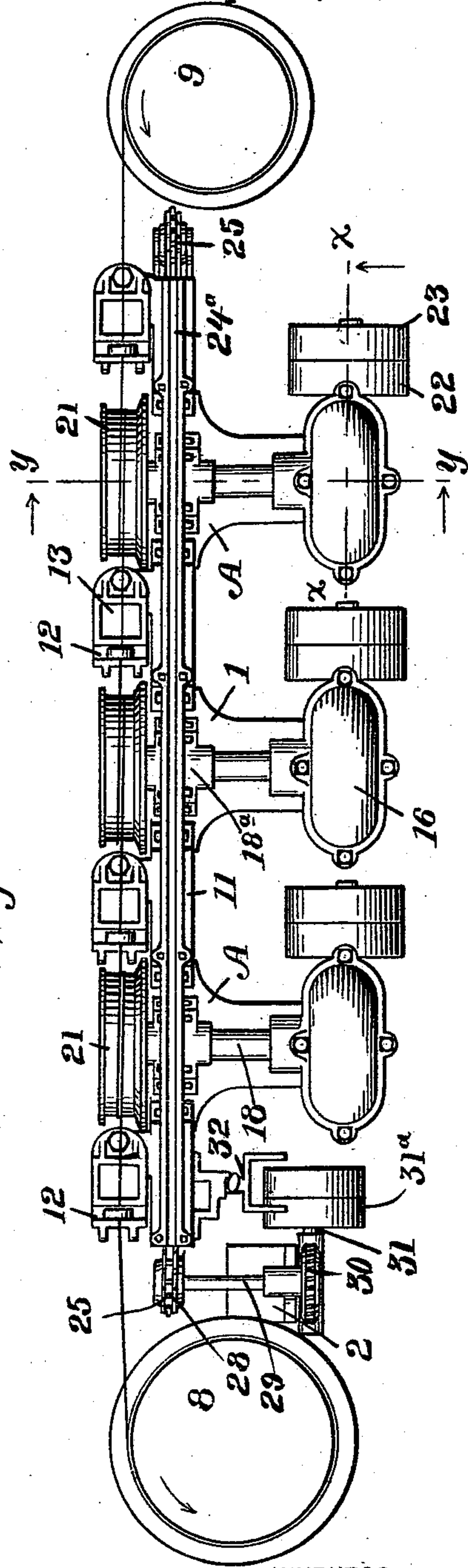
Fig. 2.



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Fig. 3.



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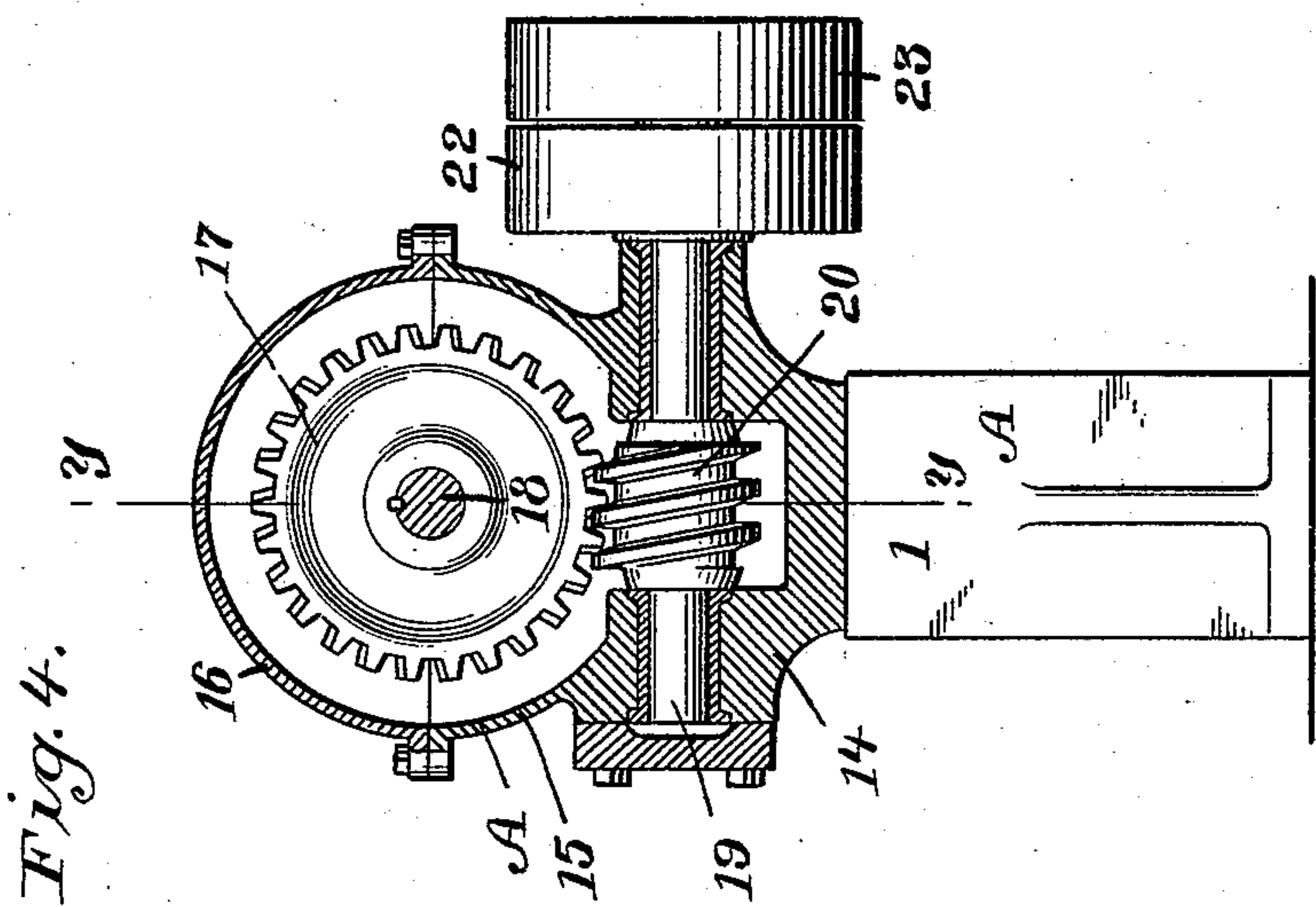
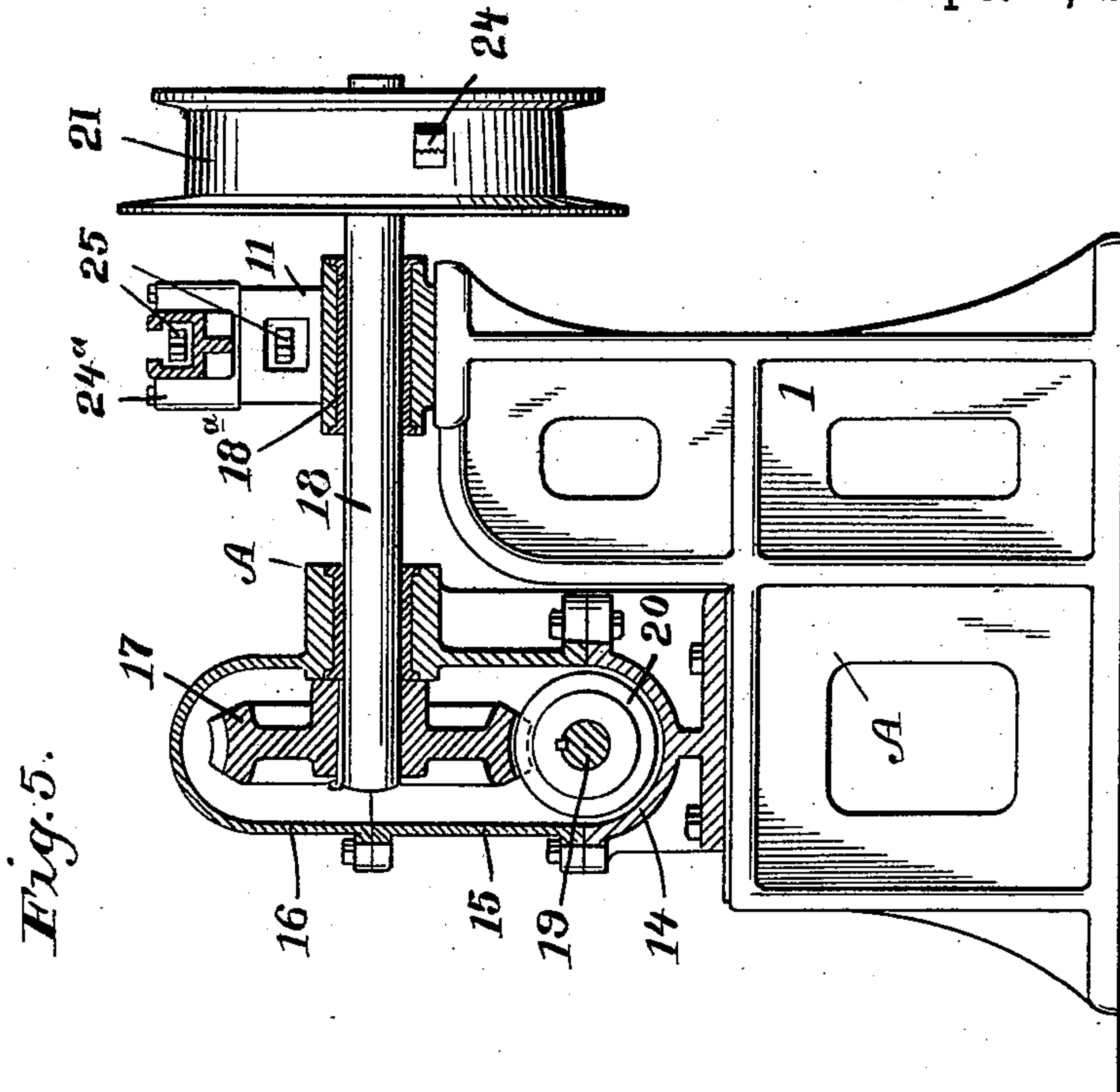
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G. B. LAMB.  
WIRE DRAWING MACHINE.

No. 525,348.

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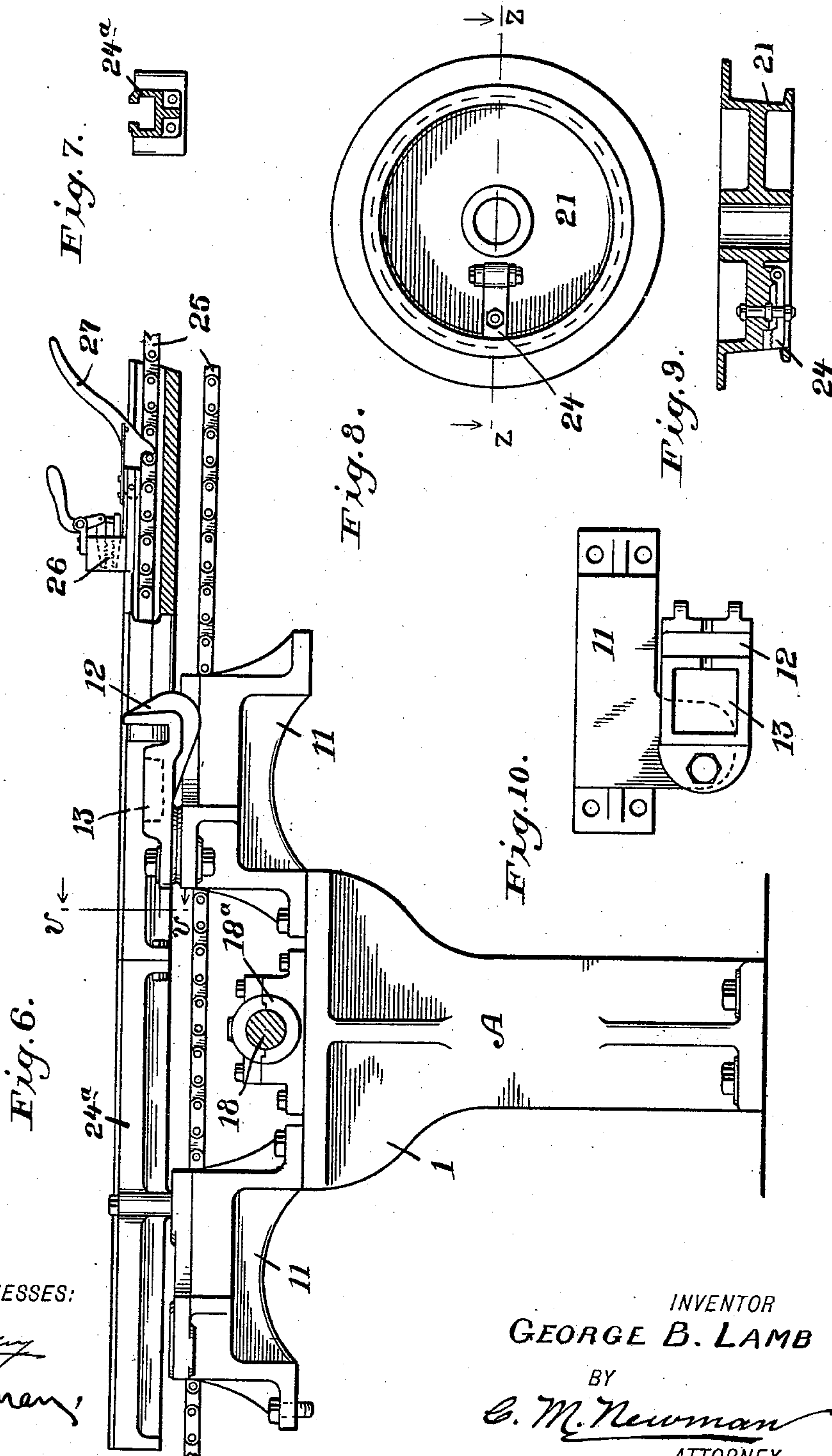
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WIRE DRAWING MACHINE.

No. 525,348.

Patented Sept. 4, 1894.



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# UNITED STATES PATENT OFFICE.

GEORGE B. LAMB, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE  
WATERBURY MACHINE COMPANY, OF SAME PLACE.

## WIRE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 525,348, dated September 4, 1894.

Application filed December 22, 1893. Serial No. 494,441. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE B. LAMB, a citizen of the United States, and a resident of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Wire-Drawing Machines, of which the following is a specification.

My invention relates to improvements in wire drawing machines, and to that class of machine in which a successive number of dies and rolls are employed, by which wire may be reduced to any desired size and to any degree of excellence and fineness. I have shown and described in this application some of the mechanism illustrated and claimed in my former patent, No. 487,844, patented December 15, 1892. These machines are quite different however, in detail of construction and result of production.

It is also an object in this invention to so construct the machine that the successive dies and rolls may be readily assembled in sections, any number of which may be employed, each section being independently formed and linked together and yet each section being capable of being operated independently.

With the ends heretofore recited in view the invention consists in the construction, arrangement and combination of elements described, and which will more fully be explained and then recited in the claim.

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—

Fig. 1—is a side elevation of my improved wire drawing machine complete. Fig. 2—is an opposite side elevation of the machine it being also complete, although having one less drawing section than is shown in Fig. 1. Fig. 3—is a plan view of a completed machine and corresponds with Fig. 2 of the drawings. Fig. 4—is an enlarged detail sectional view on a line  $x-x$  of Fig. 3. Fig. 5—is also an enlarged sectional view and taken on a line  $y-y$  of

Figs. 3 and 4. Fig. 6—is an enlarged detached view of one of the sections of the machine, together with a portion of the threading mechanism. Fig. 7—is a cross section of the track and taken on a line  $v-v$  of Fig. 6. Fig. 8—is a detached side elevation of one of the winding blocks. Fig. 9—is a section of the winding block taken on a line  $z-z$  of Fig. 8. Fig. 10—is a detached plan view of one of the spans by which the several sections of the machine are connected, and which also shows the pivoted die holder. Fig. 11—is a detail end view of the machine as seen from the left in Fig. 3. Fig. 12—shows a slight modification of the machine, in connection with the driving mechanism. In this view I have shown the several sections connected by means of gear wheels, with a power shaft instead of belting each separately as in the other drawings.

It will readily be understood with reference to the drawings that the construction of this machine is such that the several sections may be easily assembled, and all, or any number of sections may be employed. It is therefore particularly advantageous to build a machine in this manner, having a great number of dies and blocks, so as to do away with the necessity of changing the wire from one machine to another, as has heretofore been so frequently done, and also to obviate the necessity of having a great number of different machines to draw the wire to the desired size.

Upon the accompanying drawings, A indicates the several sections of the machine, 1 the frame work of the same, which is identical in each section. Upon the right hand of the machine is a special frame or support 2, and at the opposite end of the machine is a standard or post 3, upon which the end of the last span is mounted.

4 indicates the main driving pulley by which the wire is finally wound upon its block. This last pulley is mounted upon a shaft which is journaled in the frame work 2, said shaft having upon its outer end a bevel pinion 5 meshing with a bevel pinion 6 which is mounted upon a vertical spindle 7, said spindle having mounted upon its upper end the



main winding block 8, which block is detachable and may be lifted off the spindle when it is filled. A block 9 at the opposite end of the machine is also detachable and is simply supported on a post 10, and is free to revolve by the drawing of the wire from it. For convenience I will describe the several sections of the machine as one, since they are exact duplicates of each other, except when the machine be driven by a worm as in Fig. 12; in which case the pitch of the worm would be different to conform to the desired speed of the several machines. These sections as before stated, are united together by means of a span or link 11, as clearly appears in Figs. 6 and 10.

Upon the frame work 1 is bolted a casing formed of three sections, a base section 14, an intermediate section 15, and a top section 16; within the lower portion of this casing is suitably journaled a shaft 19 having upon it a worm 20 which meshes with a gear 17 upon a shaft 18; this shaft 18 is mounted at a right angle to the shaft 19, one end of said shaft 18 being journaled within the casing, the other end being journaled with a boxing 18<sup>a</sup>. Upon the outer end of this shaft 18 is mounted a drawing roller 21 to which power is imparted through the shaft, &c., just described, from a tight pulley 22 upon the shaft 19; this shaft 19 is also provided with a loose pulley 23 upon which the driving belt, not shown, is thrown at such times as it may be desired to stop the movement of the machine. Each of the drawing rollers are provided as usual with a suitable clamp 24 by means of which the wire is first drawn around the several drums; these clamps are employed in connection with the threading of the machine after which they remain idle.

The spans 11 are provided with a suitable extension (see Figs. 6 and 10), to which I pivot a self-adjusting die-holder 12, said die holder being provided with a lubricant chamber 13. I mount a track 24<sup>a</sup>, which as seen is also made in sections and of a length corresponding with the length of each section of the machine so it may be assembled any desired length, upon spans 11. This track is provided with an endless chain 25, also a suitable clamping device 26, which said clamp is provided with ways to suitably fit in the track 24<sup>a</sup> and is connected to the chain by means of a spring actuated lever 27; this chain is mounted upon the sprockets at either end of the machine, and movement is imparted to it through the sprocket 28 upon a shaft 29 which shaft is driven by a gear 30, and a worm upon a shaft 31; said shaft 31 being provided with a tight pulley 31<sup>a</sup> and a loose pulley by means of which pulleys a belt may be attached, and is further provided with a belt shifting lever 32. It will be seen from the construction just described that the threading of the machine is accomplished by the assistance of the chain, its clamping device, and

the connection of the sprocket wheel upon which this chain is mounted, in the following manner: The wire is forced through the first die sufficiently far to permit the clamp to take hold of it, when the belt shifting lever 32 would be operated throwing the belt or the tight pulley 31<sup>a</sup> and starting the endless chain, drawing the wire a sufficient distance to allow it when released to be wrapped upon the drum as many times as it may be deemed advisable; then it would be put through the next die, when it would again be necessary to take hold of it with the clamp of the threading device. These operations would be repeated until these several dies were threaded, and the wire was wound upon the several drums; they would then be started up and allowed to rotate thus drawing the wire through the dies in their successive order. After the machine is threaded it will readily be understood that the movement of the chain and its connections would cease for the time and they would be idle during the drawing down of the wire, the driving belt being thrown upon the loose pulley of the shaft 21.

The several sections of the machine as shown in the first figures of the drawings would be driven from a counter shaft, and would each be successively and separately connected with a slightly increased speed. In Fig. 12 however, it will be observed that the shaft 19 is driven by a gear 20<sup>a</sup>, which meshes with a pinion 20<sup>b</sup> on the shaft 19<sup>a</sup>, the shaft 19<sup>a</sup> serving to communicate power to the various sections of the machine, and being driven by its pulley 22<sup>a</sup>. This means of driving differs slightly from that shown in the other figures, and does away with the necessity of duplicating the belts upon each section. In this construction the increased speed of the successive sections is gotten by means of the varying pitch of the worm 20.

The operation is as follows: The wire is drawn from the reel 9 and, with the assistance of the threading mechanism, is lapped upon the successive drawing rolls 21 and passed through the reducing dies carried by the die-holders 12, after which it is connected to the winding block 8 on the spindle 7. This spindle is driven by the pulley 4 and serves to wind the finished wire upon the block 8. After the machine has been threaded the belt (not shown) would be thrown off the tight pulley 31<sup>a</sup> by means of the shifting lever 32, this stopping the movement of the threading mechanism. The movement of the several sections would be started simultaneously, as would also the block.

Having thus described my invention, I claim—

In a machine of the character described, the combination of the winding block and its driving mechanism, and a series of drawing benches comprising a series of independent machines, each composed of a frame, a sectional span, said span being provided with a



suitable extension, carrying a self adjusting die holder, a die and lubricant chamber, a sectional track, a drawing roll and shaft upon which said roll is mounted, a gear upon said  
5 shaft, a worm and powershaft and means by which the drum is driven, substantially as described.

Signed at Waterbury, in the county of New Haven and State of Connecticut, this 7th day of December, A. D. 1893.

GEORGE B. LAMB.

Witnesses:

T. C. LANE,

WM. E. FULTON.