

(No Model.)

2 Sheets—Sheet 1.

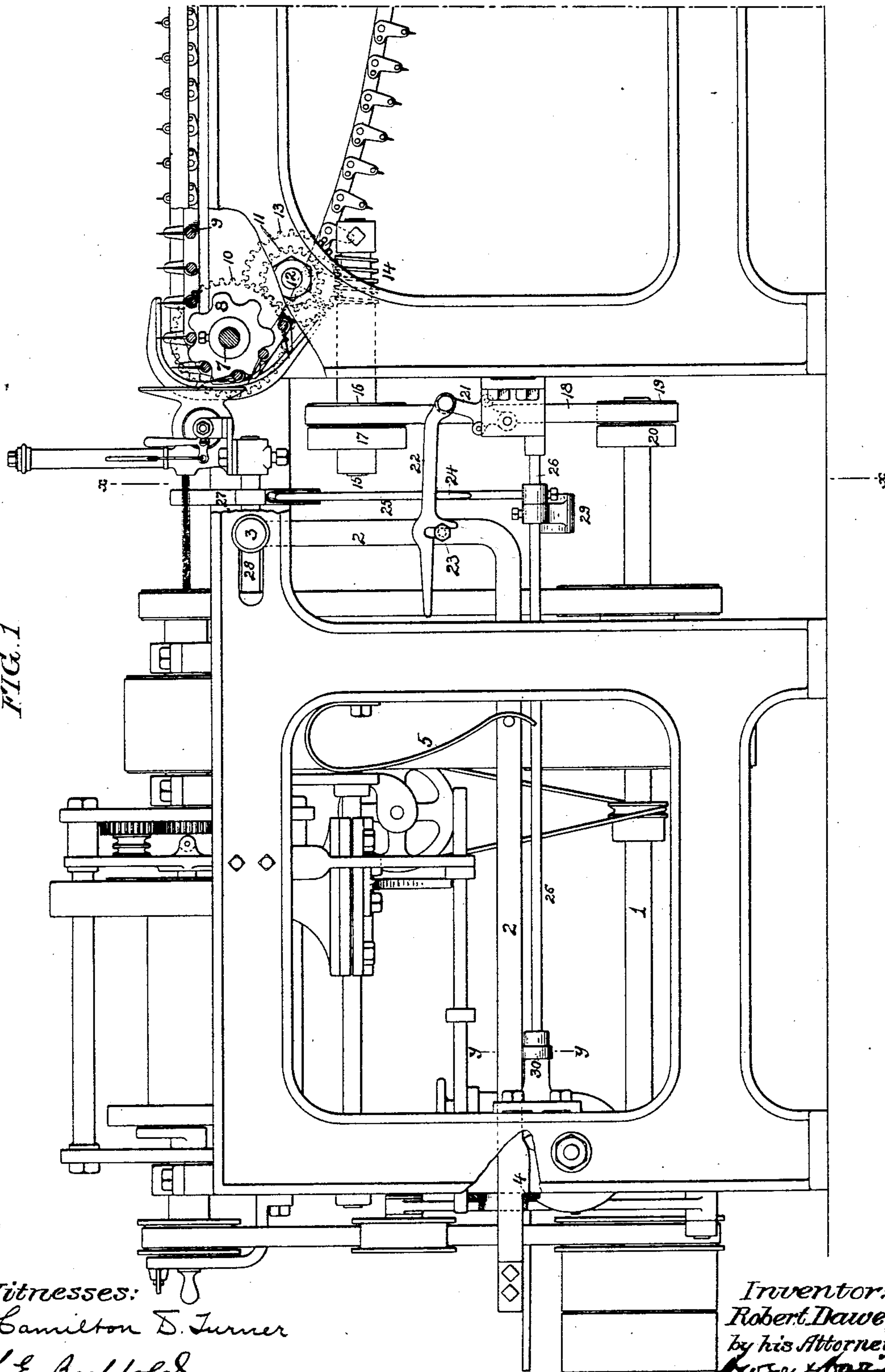
R. DAWES.

SPINNING OR TWISTING AND DRAWING MACHINE.

No. 587,650.

Patented Aug. 3, 1897.

FIG. 1



Witnesses:  
Hamilton D. Turner  
L. E. Beckhold

Inventor:  
Robert Dawes  
by his Attorneys  
H. S. & P. S.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 4.

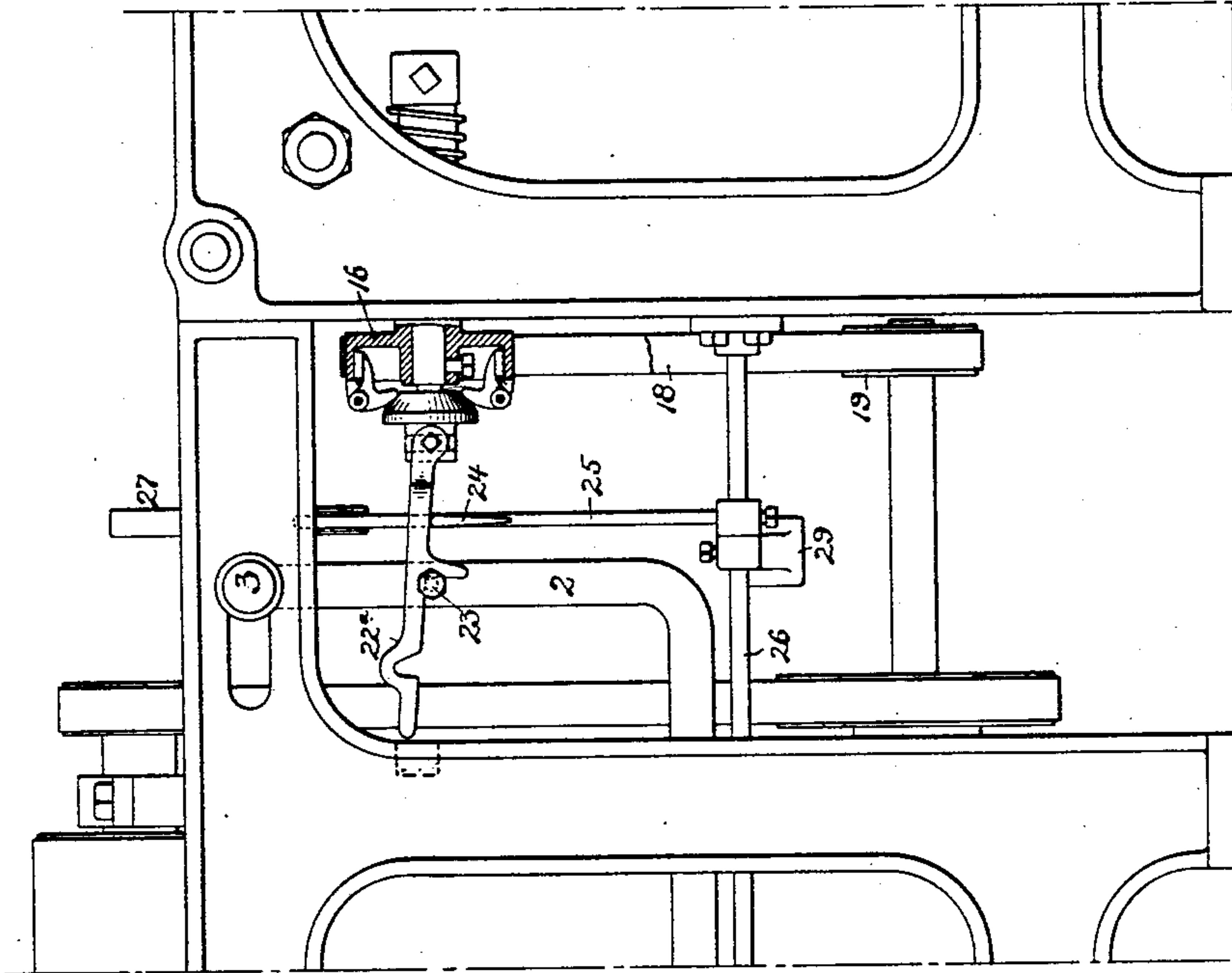


FIG. 3.

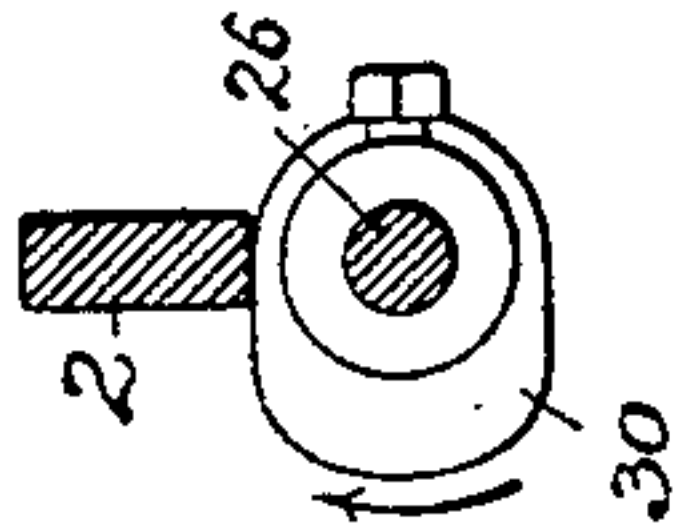
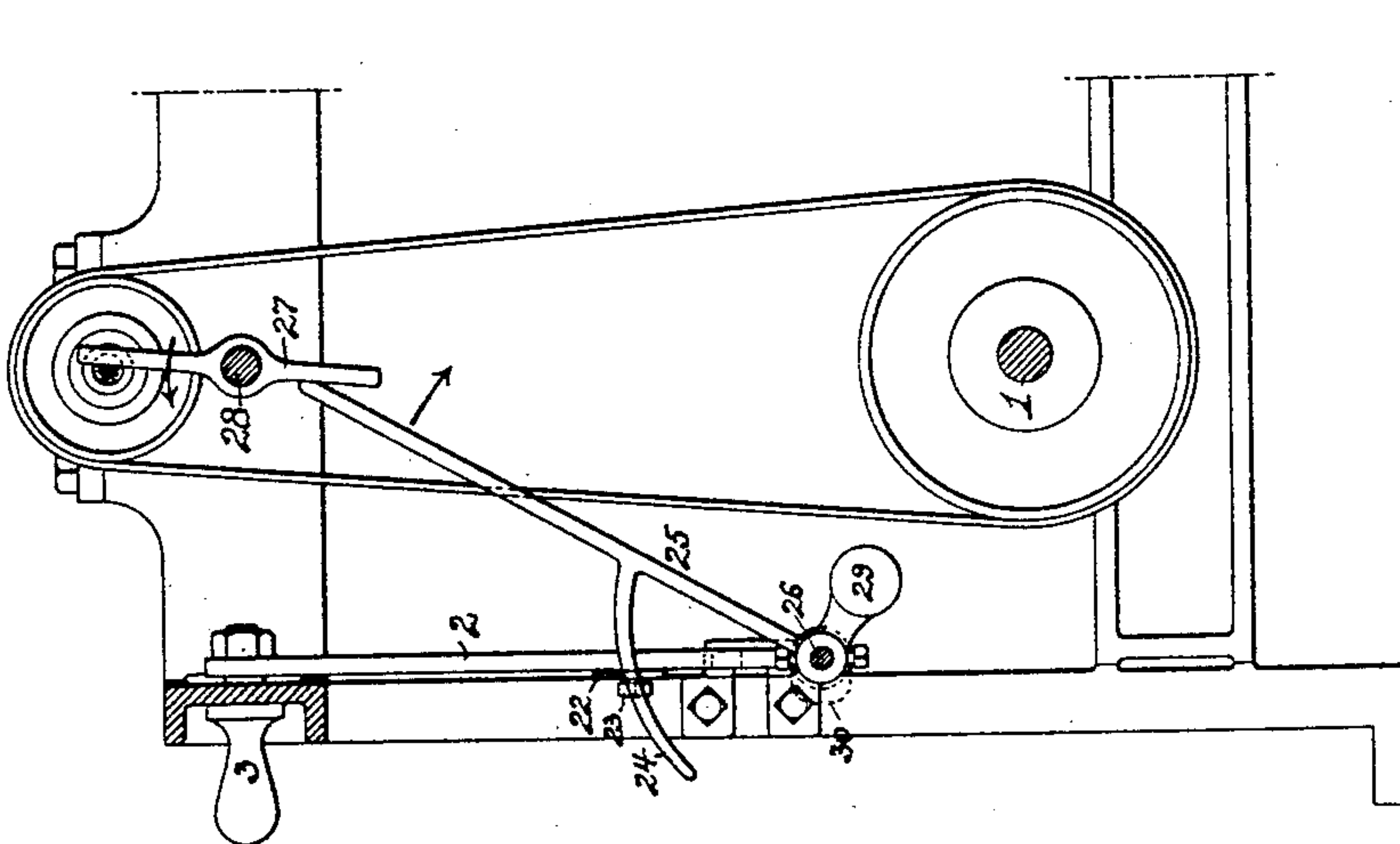


FIG. 2.



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# UNITED STATES PATENT OFFICE.

ROBERT DAWES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO EDMUND DAWES, OF SAME PLACE, AND EDWARD H. HASKELL, OF BOSTON, MASSACHUSETTS.

## SPINNING OR TWISTING AND DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 587,650, dated August 3, 1897.

Application filed October 27, 1896. Serial No. 610,213. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT DAWES, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain  
5 Improvements in Spinning or Twisting and Drawing Machines, of which the following is a specification.

My invention relates to that class of machines which not only spin or twist the strands  
10 upon which they act, but at the same time draw the fibers through the teeth of traveling gill bars or boxes used in conjunction with the spinning or twisting machine, the object of my invention being to provide for the stop-  
15 page of the spinning or twisting machine upon the breaking of a strand which is being fed thereto and at the same time to insure the instantaneous stoppage of the movement of the gill-bars, so as to prevent the accumulation  
20 of fiber due to the continued forward movement of said gill-bars without any corresponding draft of the spinning or twisting machine. This object I attain in the manner hereinafter set forth, reference being had to the accom-  
25 panying drawings, in which—

Figure 1 is a side view of sufficient of a spinning and drawing machine to illustrate my invention, part of one of the side frames being broken away to show parts behind it.  
30 Fig. 2 is a transverse section on the line *xx*, Fig. 1, showing, however, only such parts of the spinning-machine as are required for a proper understanding of the invention. Fig. 3 is an enlarged transverse section on the line  
35 *yy*, Fig. 1; and Fig. 4 is a side view illustrating a modification of the invention.

The spinning and twisting machine shown in the drawings is similar to that set forth in my previous patents, No. 481,787, of August  
40 30, 1892, and No. 552,217, of February 4, 1896. Hence no detailed description thereof will be necessary in this specification further than to say that 1 represents the driving-shaft of the machine, and 2 a bar carrying a belt-shifter,  
45 this bar being hung to the main frame of the machine at 3 and being normally held in position to direct the belt to the fast pulley on the shaft 1 by reason of the engagement of the bar with a catch 4, a spring 5 serving,  
50 when the bar is released from engagement

with said catch, to move the bar and its shipper, so as to transfer the belt from the fast pulley to the loose pulley. When such machines are intended for drawing the fiber as well as for spinning or twisting the same, they are  
55 sometimes combined with traveling gill bars or boxes, the latter being operated by connection with the driving-shaft 1 of the spinning-machine, and even if the driving-belt of the latter is shifted onto the loose pulley immediately upon the breaking of a strand which is  
60 being fed to the draft mechanism of the spinning-machine the driving-shaft will, owing to the momentum acquired by the heavy flier and other parts of the spinning-machine, con-  
65 tinue to rotate for some time after such shifting of the belt. Hence the traveling gill bars or boxes will continue operative while the strand is relieved from the pull of the draft mechanism, and there will be an accumu-  
70 lation of fiber which must be disposed of before the machine can be again started. In order to overcome this objection, I provide a connection between the gill-frame and the spinning-frame which can be rendered oper-  
75 ative or inoperative simultaneously with the throwing of the spinning-machine into or out of action, so that continued rotation of the driving-shaft of the spinning-machine after the belt has been shifted onto the loose pulley  
80 will not effect any corresponding operation of the gill bars or boxes.

As shown in the drawings, 7 is a shaft carrying sprocket-wheels 8 for engagement with the toothed gill-bars 9, said shaft 7 having a  
85 spur-wheel 10, which meshes with a pinion 11, loose on a stud 12 and connected to a worm-wheel 13, driven by a worm 14 on a shaft 15, the latter having fast and loose pulleys 16 and 17 for receiving a belt 18, which  
90 is adapted also to either a fast pulley 19 or a loose pulley 20 on the driving-shaft 1.

The belt 18 is under control of a belt-shifting lever 21, which has a pivoted catch-bar  
95 22, notched for engagement with a pin 23 on the shipper-bar 2, and normally this notched bar 22 is supported so as to be free from engagement with the pin 23 by means of a finger  
24 on an arm 25, which is secured to a rock-shaft 26 and bears at its upper end against  
100



one arm of a lever 27, hung to a rod 28 of the spinning-machine.

The rock-shaft 26 has a weighted arm 29, which tends to constantly move the arm 25 in the direction of the arrow, Fig. 2, thereby pressing the upper arm of the lever 27 against the strand which is being drawn forward from the toothed gill-bars and into the draft mechanism of the spinning-machine. If, however, the strand breaks, the lever 27 is released from the control of the same and said lever is permitted to move in the direction of the arrow, Fig. 2, so as to permit the arm 25 to drop and withdraw its finger 24 from beneath the catch-bar 22, the latter thereupon falling so as to bring its notched portion into engagement with the pin 23 of the shipper-arm 2.

The continued movement of the arm 25 and rock-shaft 26 causes a cam 30 on said rock-shaft to act upon the shipper-bar 2 and lift the same, so as to free it from the control of the catch 4, whereupon the shipper-bar 2 is moved forward by the spring 5, and, owing to its connection with the bar 22, is caused to impart like movement to the shipper 21, so as to carry the belt 18 from the fast pulleys 16 and 19 onto the loose pulleys 17 and 20, and thereby effect an instantaneous stoppage of the movement of the toothed gill-bars. When the strand has been properly pieced, the parts are again restored to their normal position and the operation of the machine is resumed. When in its normal or raised position, the bar 22 is free from connection with the shipper-bar 2. Hence the movement of the said bar by hand or by the ordinary stop mechanism of the machine when the spool is full will not disconnect the driving mechanism of the gill-bars from the shaft 1, since under these circumstances the draft mechanism of the spinning-machine retains its control over the strand and there is no necessity for stopping the movement of said gill-bars independently of the stoppage of movement of the spinning-machine.

Although I have shown fast and loose pulleys and a connecting-belt as a means of starting and stopping the movement of the gill-bars, it will be evident that any known form of clutching mechanism may be employed in place of the same without departing from the main feature of my invention. For instance, in Fig. 4 I have shown a catch-bar 22<sup>a</sup>, which serves to operate a friction-clutch on the worm-shaft 15 and is operated by the bar 2 in substantially the same manner as the bar 22. When the arm 22<sup>a</sup> is in the elevated position shown in Fig. 4, longitudinal movement of said arm with the shipper-bar 2 is prevented by contact of the outer end of said arm with a suitable lug on the frame of the machine—such, for instance, as is indicated by dotted lines in Fig. 4. When, however, the support of the finger 24 is withdrawn, the arm 22<sup>a</sup> can, when the pin 23 of the bar 2 reaches the notch in the under side of the arm, drop so

as to clear the lug on the frame, and the arm 22<sup>a</sup> can then partake of the movement of the bar 2, so as to release the clutch. The use of the lever 27 in connection with the arm 25 lessens the side pressure upon the strand, but in some cases such lever may be dispensed with, the arm 25 bearing directly against the strand.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of a spinning or twisting machine, a gill-frame operating in conjunction therewith, independent starting and stopping devices for said spinning or twisting machine and gill-frame, and means for connecting said stopping and starting devices so as to cause them to operate simultaneously, substantially as specified.

2. The combination of a spinning or twisting machine, a gill-frame operating in conjunction therewith, a driving-shaft common to both machines, a starting and stopping bar whereby said spinning or twisting machine is thrown into or out of operation, and means whereby the movement of said starting and stopping bar is caused to connect or disconnect the driving devices of the gill-frame simultaneously with the throwing of the spinning machine into or out of operation, substantially as specified.

3. The combination of a spinning or twisting machine, a gill-frame operating in conjunction therewith, starting and stopping devices for each machine, connections between said starting and stopping devices whereby they are simultaneously operated, provision for retaining said starting and stopping devices normally in position to cause the driving of both machines, and means under control of the strand which is being fed to the spinning or twisting machine whereby said starting and stopping devices are released from the control of said retainer on the breaking of said strand, substantially as specified.

4. The combination of a spinning or twisting machine, a gill-frame operating in conjunction therewith, starting and stopping devices for each machine, a bar serving to connect the starting and stopping devices of the two machines, an arm having a portion adapted to hold the said bar out of operative position, and provision whereby the strand passing to the spinning or twisting machine is caused to retain the arm, substantially as specified.

5. The combination of a spinning or twisting machine having a longitudinally-movable shipper-bar, a catch for retaining the same in the retracted position, a rock-shaft having a cam for lifting the bar out of engagement with said catch, an arm on said rock-shaft, and a lever having one arm adapted to bear against the strand which is being fed to the spinning or twisting machine, and another arm in engagement with the arm on the rock-shaft, substantially as specified.



6. The combination of a spinning or twisting machine, a gill-frame operating in conjunction therewith, starting and stopping devices for each machine, a shipper-bar forming an element of the starting and stopping devices of the spinning-machine and having a projecting pin, a catch-bar forming an element of the starting and stopping devices of the gill-frame, and notched to engage with said pin, a catch for retaining the shipper-bar of the spinning-machine in position to cause the driving of the same, a rock-shaft having a cam for lifting the shipper-bar out of engagement with said catch, an arm on said rock-shaft having a finger for holding the catch-bar free from engagement with the pin of the shipper-bar, and provision whereby the strand which is being fed to the spinning-machine restrains the movement of said arm, the parts being so disposed that when the arm is permitted to move on the breaking of the strand, its finger will be withdrawn from beneath the catch-bar preparatory to the release of the shipper-bar by the cam on the rock-shaft, substantially as specified.

7. The combination of a spinning or twisting machine having a driving-shaft with pulleys side by side thereon, a gill-frame operating in conjunction with said spinning or twisting machine and having a power-receiving shaft with pulleys in line with those of the driving-shaft of the spinning or twisting machine, a belt connecting said pulleys, a belt-shipper, a starting and stopping bar on the spinning or twisting machine, provision for connecting said bar to said belt-shipper, means for retaining said stopping and starting bar normally in position for causing the driving of the machines, and releasing devices for said bar normally prevented from acting by engagement with the strand which is being fed to the spinning-machine, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT DAWES.

Witnesses:

JOS. H. KLEIN,  
F. E. BECHTOLD.