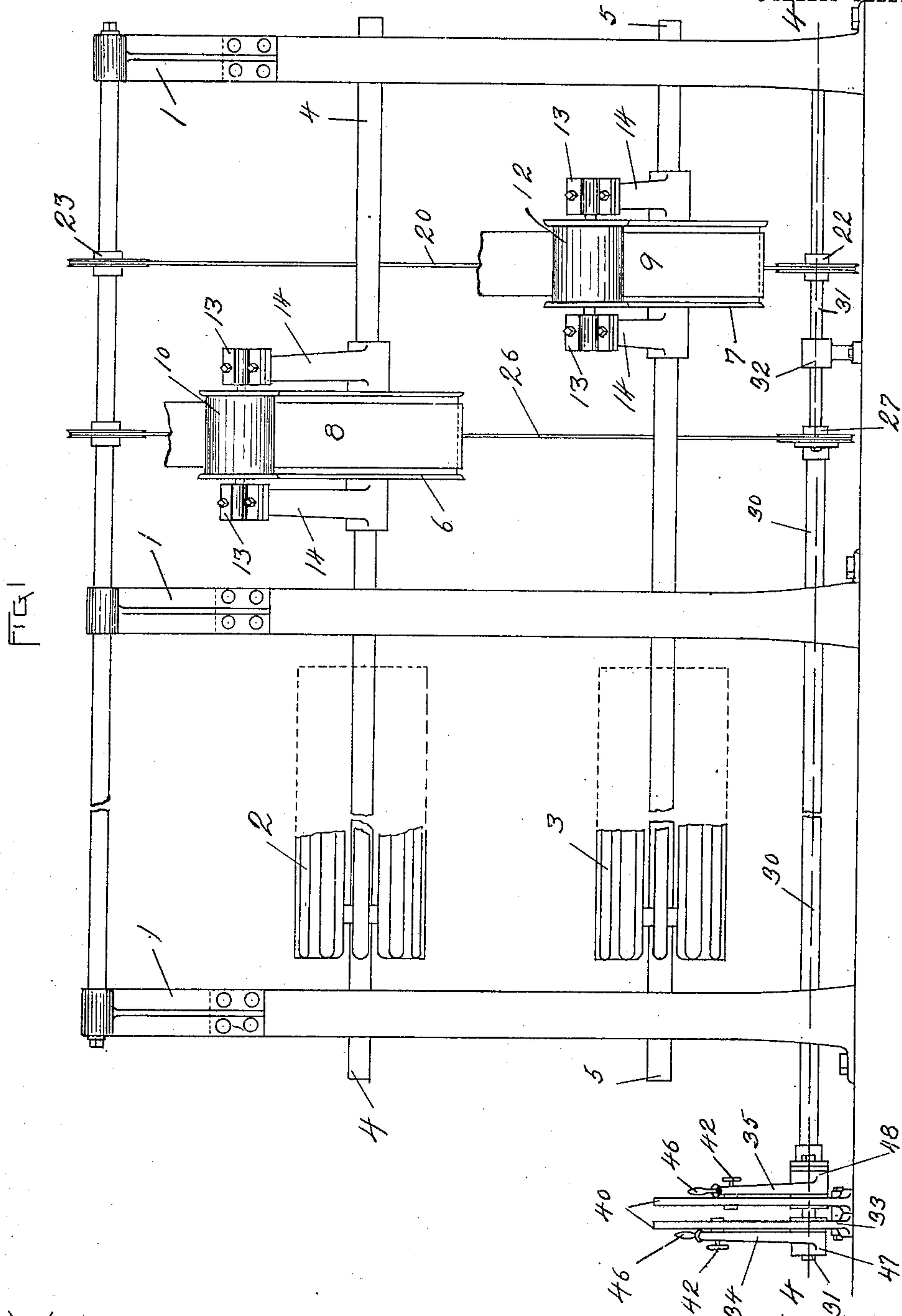


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 APPLICATION FILED AUG. 22, 1906.

913,231.

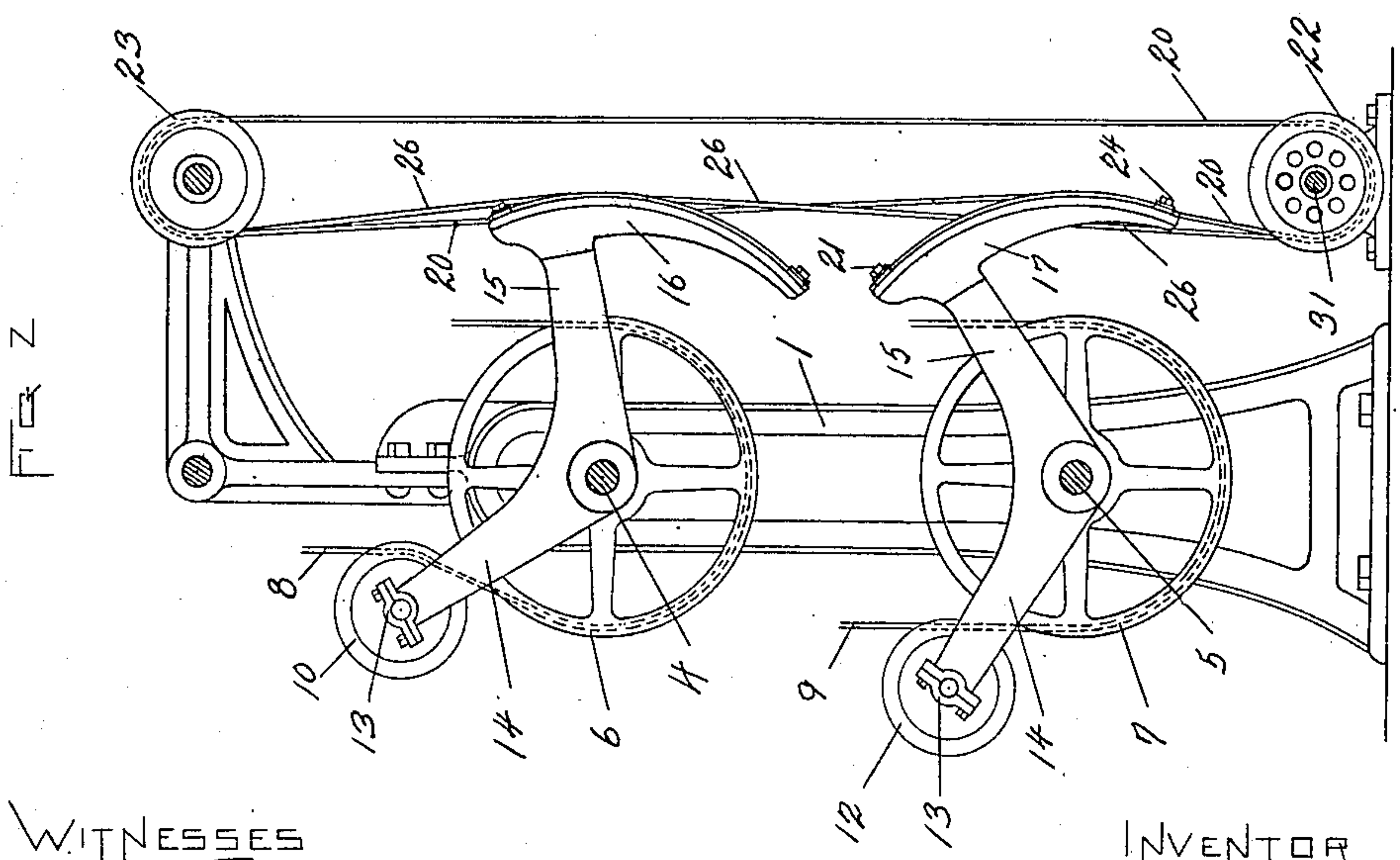
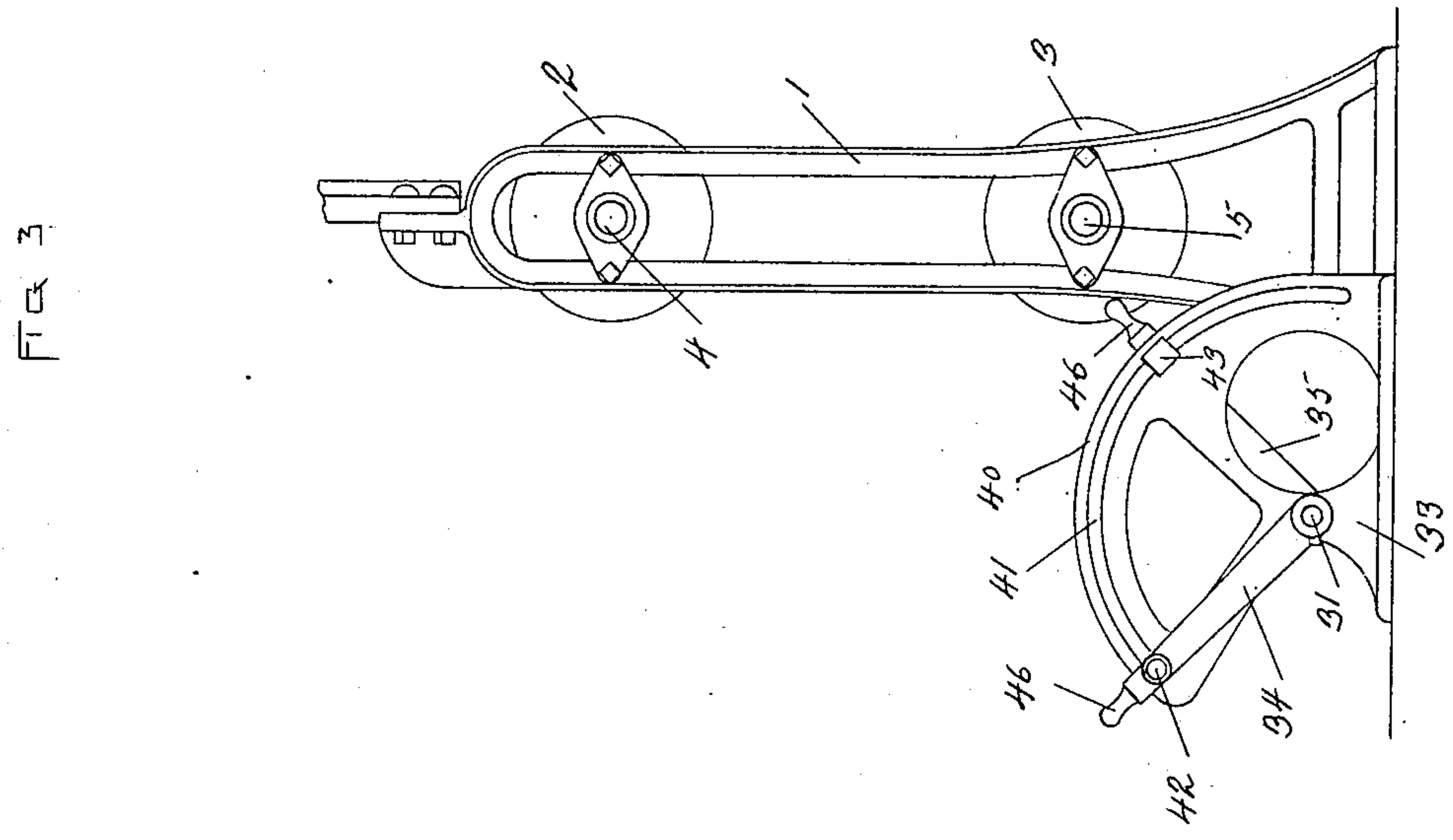
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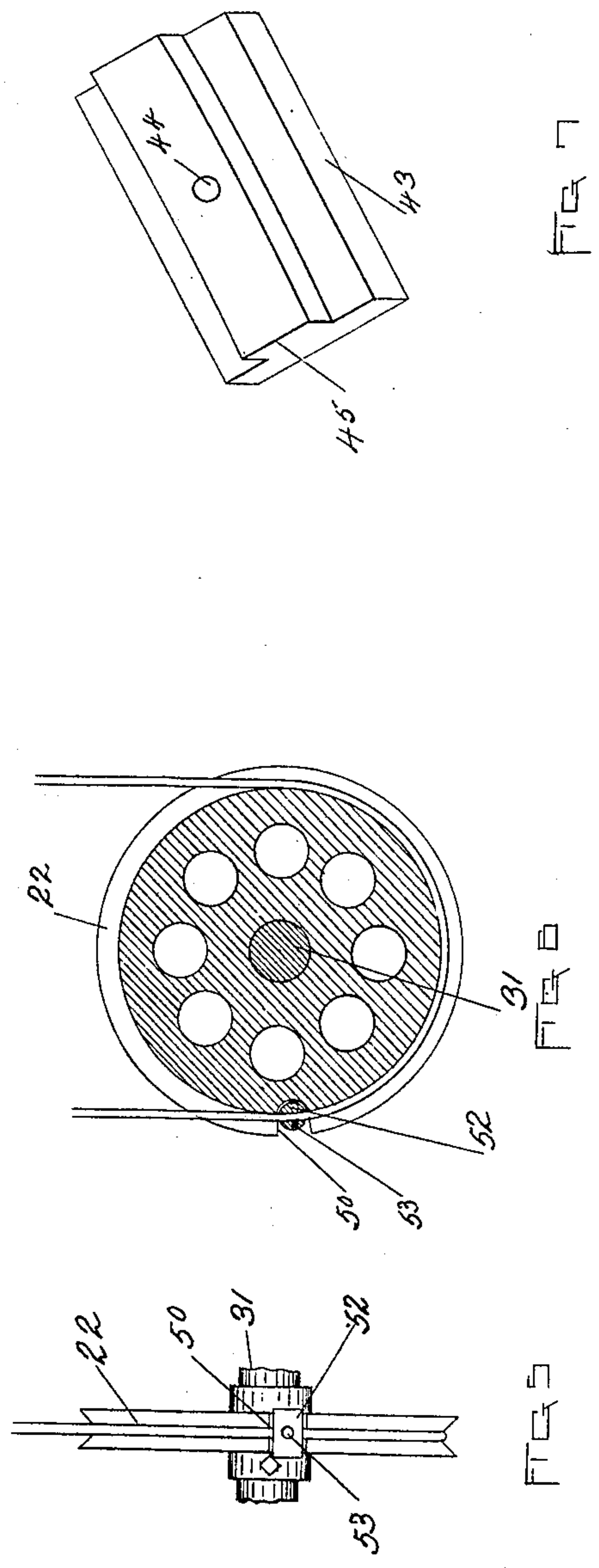
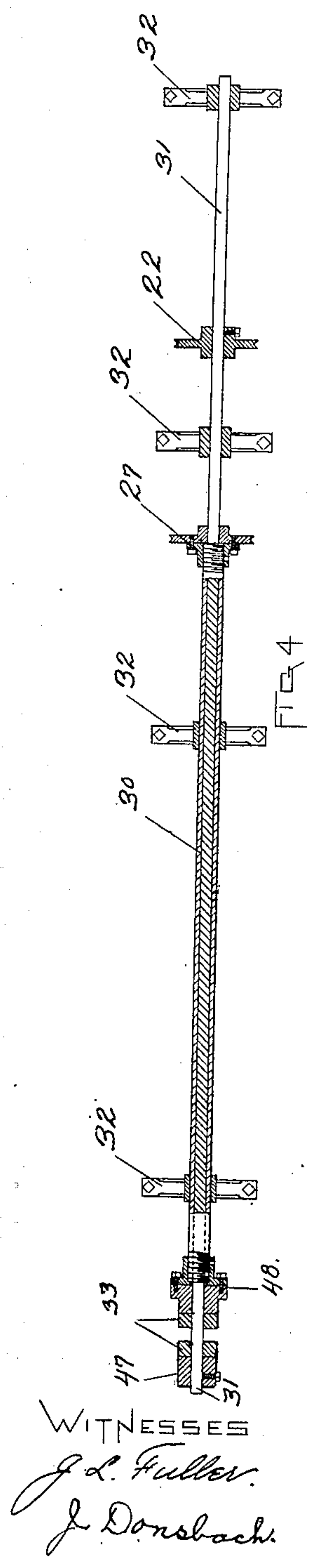
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# UNITED STATES PATENT OFFICE.

JAMES WILLIAM PACKER, OF GLENS FALLS, NEW YORK, ASSIGNOR TO THE SANDY HILL IRON AND BRASS WORKS, OF SANDY HILL, NEW YORK, A CORPORATION OF NEW YORK.

## REEL-BELT TIGHTENER FOR PAPER-MAKING MACHINES.

No. 913,231.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed August 22, 1906. Serial No. 331,617.

*To all whom it may concern:*

Be it known that I, JAMES WILLIAM PACKER, a citizen of the United States, residing at Glens Falls, county of Warren, and State of New York, have invented certain new and useful Improvements in Reel-Belt Tighteners for Paper-Making Machines, of which the following is a specification.

The invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

When calender rolls are used in a paper machine for putting a smooth finish on the paper, the calendered paper is fed from such rolls to a set of drums or reels, first to one reel until filled, and then to another reel. The reels are so arranged that having wound the required amount of paper from the calenders upon one reel, it is possible to stop that reel, and by breaking the sheet of paper and starting the other reel to wind the paper on said other reel without stopping the calender rolls, thus making the paper-making process continuous. After having wound the required amount of paper on one reel, the reel is stopped and connected with a winder or slitter which removes the paper from the reel, leaving it in rolls or sheets as finished product, the reel being emptied to receive the paper from the calender rolls when its companion reel has been filled. The calender rolls of the paper-making machine travel at a uniform rate of speed which necessitates a variable speed in the reels because the diameter of the paper-roll upon the reels increases with each winding of the paper upon the reel. It is necessary therefore to provide means for accommodating the speed of the reels to that of the calender-rolls which has been done by independently driving each reel by means of a slip belt, the tension of the belt being so adjusted by means of belt-tighteners that the belt will slip upon the reel driving pulley sufficiently to accommodate the speed of the reel to that of the calender-rolls, the friction of the slip-belt upon its pulley being sufficient to produce a tension on the paper between the reel and the calender-

rolls. When the diameter of the paper-roll upon the reel becomes much greater than the diameter of the reel more power will be required to produce the same tension upon the paper between the paper and the calender-rolls, and it is frequently necessary to readjust the belt-tightener. The belts and belt-tighteners are necessarily located on the rear or further side of the reeling mechanism, while the attention of the operator is required at the front of such mechanism to inspect the work from time to time and see that the operation is being properly carried on. Every time a reel is filled it is necessary to stop the driving mechanism of that reel and to start the driving mechanism of the empty reel; it is also necessary at times to change the adjustment of the belt-tighteners. To accomplish this work of starting, stopping and readjusting it has heretofore been necessary for the operator to travel from the front to the rear side of the machine, the means for starting, stopping and adjusting, being located on the rear or further side of the machine in proximity to the belts and belt-tighteners.

The object of this invention is to provide means whereby the operator can stop and start the reels, as well as adjust and readjust the tension of the belt-tighteners upon the reel-driving belts from his position in front of the machine, thus saving the time formerly required to pass from the front to the rear end of the machine effecting not only a saving in time of the operator, but saving in the product of the paper-making machine for the reason that when one reel has been filled with paper from the calenders and the sheet of paper delivered from the calenders broken the paper product which is delivered at the reeling mechanism before the empty reel is started will become waste product which is torn from the sheet before the winding upon the empty reel commences.

The invention consists in providing mechanism for operating the belt-tighteners of the two reels which extends to the front of the machine within reach of the operator, as will hereinafter be more fully described and pointed out in the claims.

Referring to the drawings:—Figure 1 is a view in side elevation of the reeling mechanism showing the improved means for operating the belt-tightener. Fig. 2 is a view in elevation of the rear end of the machine



which is the right hand end, as seen in Fig. 1. Fig. 3 is a view in end elevation of the opposite or forward end of the machine. Fig. 4 is a horizontal, longitudinal middle section taken on the broken line 4—4 in Fig. 1. Fig. 5 is a view in side elevation of a cable driving wheel detached. Fig. 6 is a vertical, middle, transverse section of the wheel shown in Fig. 5, showing a portion of the cable attached thereto. Fig. 7 is a view in perspective of the adjusting nut for securing the hand-lever in position, detached. Figs. 5, 6 and 7 are drawn upon an enlarged scale.

The frame, 1, supports the belt-reels, 2 and 3, fixed upon shafts, 4 and 5, rotary in bearings secured to the framework. The driving pulleys, 6 and 7, are also fixed upon the reel shafts and actuated by slip-belts, 8 and 9, shown partly broken away. These belts are adapted to be tightened by means of the loose pulleys, 10 and 12, rotary in supporting bearings, 13, mounted upon the outer ends of arms, 14, oscillatory upon the reel shafts, 4 and 5, in the usual manner of similar belt-tighteners. The arms, 14, each form a part of a bell-crank lever, the other arms, 15, of the bell-crank levers being provided with segments, 16 and 17, adapted to receive the ends of an actuating cable traveling on a loose wheel and a driving-wheel. The cable, 20, secured by bolt, 21, at the upper end of the segment passes down over the face of the segment around the actuating wheel, 22, and up and over the wheel, 23, and down onto the segment, 17, its lower end being secured to the lower end of the segment by means of the bolt 24. The other segment, 16, is connected in a similar manner by cable, 26, with the actuating wheel 27. As a means for operating these two actuating wheels, 22 and 27, a pair of shafts are extended from the wheels out to the front end of the machine where they are provided with operating hand-levers.

The tubular shaft, 30, upon which the wheel, 27, is fixed is rotary upon the shaft, 31, upon which is fixed wheel 22. The latter shaft passes through the tubular shaft and is rotary in stationary bearings 32 and 33. The inner shaft, 31, is provided at its forward end with a hand-lever, 34, fixed thereon, and the tubular-shaft is provided at its forward end with a similar hand-lever, 35, fixed thereon. As a means for securing the shafts and hand-levers in differing positions, segments, 40, provided with annular grooves, 41, one for each handle, are erected from the stationary bearings 33. The hand-levers are each provided with an adjusting-screw, 42, and a screw-threaded nut, 43, having a middle screw-threaded aperture, 44, adapted to receive the adjusting screw and the grooved flange, 45, adapted to enter and travel in the annular grooves 41. The hand-levers

are provided with handles 46, and hubs, 47 and 48.

As a means for preventing the cables from slipping on the actuating-wheels, 22, and 27, a notch 50 (see Figs. 5 and 6) is cut in the periphery of the wheel adapted to receive a cross-bar, 52, through which the cable passes, the cable being prevented from slipping in the cross-bar by means of a pin 53. It is obvious, however, that any form of rope, cable or chain, may be employed, as for example, a sprocket-chain and sprocket-wheels to prevent the cable from slipping on the actuating-wheels.

The operation of the improved reel belt tightening mechanism is as follows:—When one of the reels, as for example, reel, 2, has received the desired amount of paper from the calender-rolls of the paper-making machine, the belt, 8, which drives it is loosened by a movement of the hand-lever, 35, from the position shown in Fig. 3 to the left in line with hand-lever, 34, which rocks the tubular shaft, 30, and through the actuating-wheel, 27, cable 26, and bell crank lever having the arms, 14 and 15, to move the loose pulley, 10, from the position shown in Fig. 2 to the relative position of loose pulley, 12, shown in the same figure which so loosens the driving belt, 8, as to allow the wheel to stop. However, before stopping the filled reel, the empty reel, 3, is started by swinging the hand-lever, 34, from the position shown in Fig. 3 to the right, thereby rocking the inner shaft, 31, and through the actuating-wheel, 22, cable 20, and connecting bell crank lever, forcing the loose pulley, 12, against the belt, 9, to tighten the same sufficiently to drive the reel, 3. When the filled reel is stopped as before described, the sheet of paper being fed to it is broken and immediately transferred to the empty reel which has been put in motion, as before described, and the paper sheet fed to that belt-reel until such reel is filled, the previously filled reel having been emptied in the meantime, or an empty reel substituted for it, whereupon the sheet of paper is again broken and transferred to the empty reel, the filled reel being stopped simply by reversing the actuating hand-lever as previously described. In this way, the sheet of paper coming from the calender rolls is transferred from one empty reel to another without stopping the paper-making machine, thereby rendering the paper-making process continuous.

By having the hand-levers, by means of which the reels are respectively, started, stopped and speed-regulated, located at the front end, or side, of the machine, within easy reach of the operator while he is in position to watch the operation of the machine and break and transfer the sheet of paper from one reel to another much time is saved in effecting such changes and the



same can be accomplished with little or no waste of paper.

Division having been required in this case, a divisional application was filed July 1, 1908, and given the Serial No. 441,290.

What I claim as new and desire to secure by Letters Patent is—

1. The combination with a supporting frame; a shaft; a driving pulley fixed thereon; and a driving belt; of a bell-crank lever loosely mounted upon the rear end of the shaft; a loose pulley mounted on one arm of the lever and engageable with the driving belt; a rock-shaft extending lengthwise of the supporting frame; lever-actuating connections between one end of the shaft and the other arm of the bell-crank lever; a hand-lever at the other end of the shaft for operating the shaft; and means for securing the hand-lever in differing positions.

2. The combination with a shaft; a driving-pulley fixed thereon; and a driving-belt; of a bell-crank lever loosely mounted upon the rear end of such shaft; a loose pulley on one arm of the lever adapted to engage the driving-belt; a segment upon the other arm of the lever; a rock-shaft; cable connections between the ends of the segment and rock-shaft, whereby to-and-fro rocking movements of the shaft will communicate to the segment and pulley-supporting arms of the lever oscillatory movements; and means for rocking the rock-shaft.

3. The combination with a shaft; a driving-pulley fixed thereon; and a driving-belt; of a bell-crank lever loosely mounted upon

the rear end of such shaft; a loose pulley on one arm of the lever adapted to engage the driving-belt; a segment upon the other arm of the lever; a cable secured, one end to one end of the segment and the other end of the cable to the other end of the segment; a guide-wheel and actuating wheel adapted to guide and actuate the cable, whereby oscillatory movements are communicated to the bell-crank lever; a rock-shaft upon which such actuating wheel is fixed; and means for rocking the rock-shaft.

4. The combination with a plurality of drive-shafts capable of being operated independently, each of another; a driving-pulley fixed on each shaft; pulley-driving belts, one for each pulley; levers, one for each belt; loose pulleys mounted, one upon each lever, and engageable with its appropriate belt; of a plurality of rock-shafts concentric to an axial line common to each shaft, one shaft, or more, being tubular and rotatory about another; suitable bearings for the shafts; actuating connections between the rock-shafts and pulley-supporting levers, respectively; and means for operating the rock-shafts successively, or simultaneously, whereby successive or simultaneous movements may be imparted to the drive-shafts at differing speeds.

In testimony whereof, I have hereunto set my hand this 9th day of August, 1906.

JAMES WILLIAM PACKER.

Witnesses:

RICHARD C. TEFFT,  
OSCAR K. CROSS.