

J. W. PACKER.  
PAPER MAKING MACHINE.  
APPLICATION FILED JULY 1, 1908.

913,670.

Patented Feb. 23, 1909.

3 SHEETS—SHEET 1.

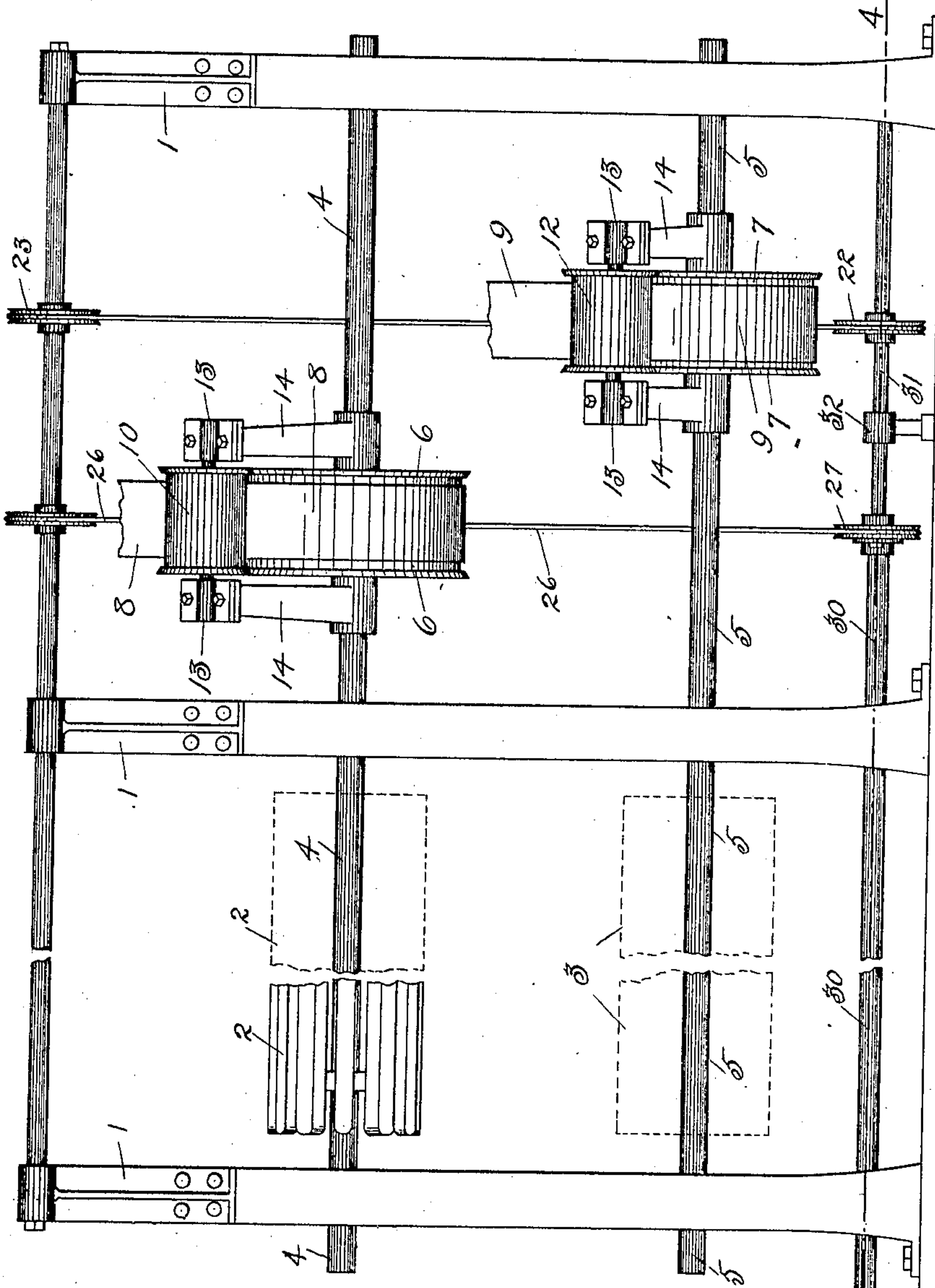


Fig. 1

WITNESSES

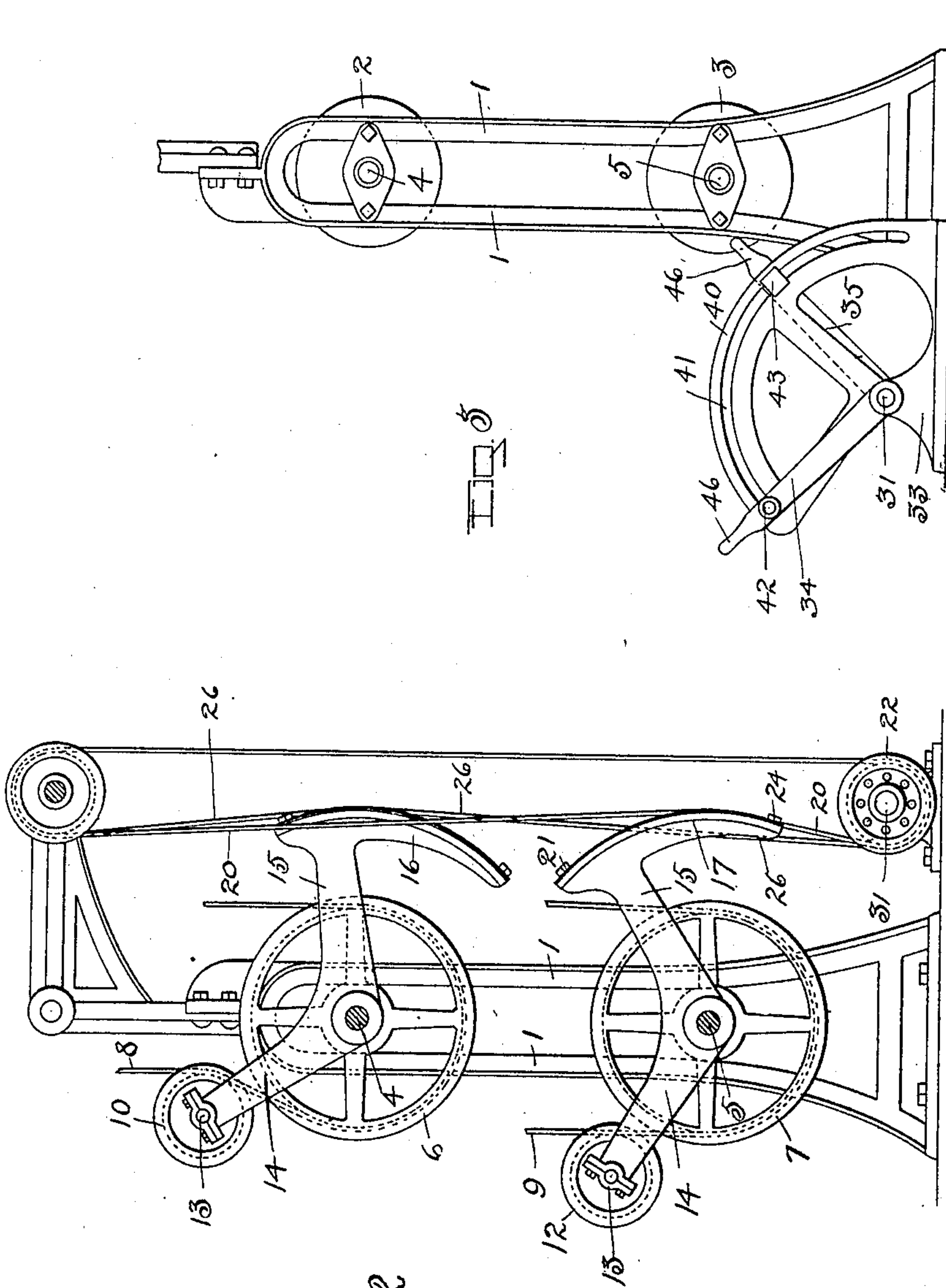
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FIG. 2

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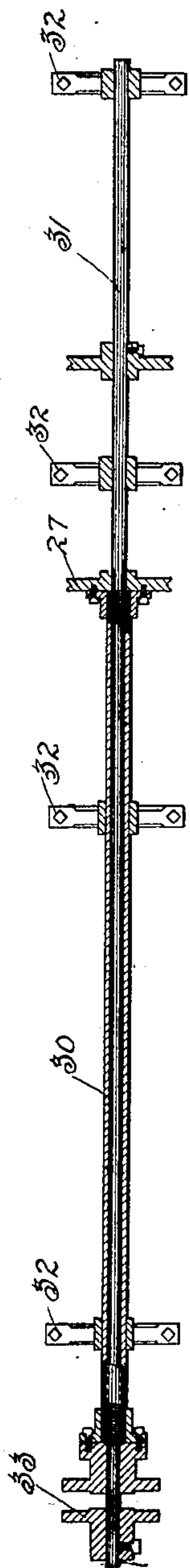


FIG. 4

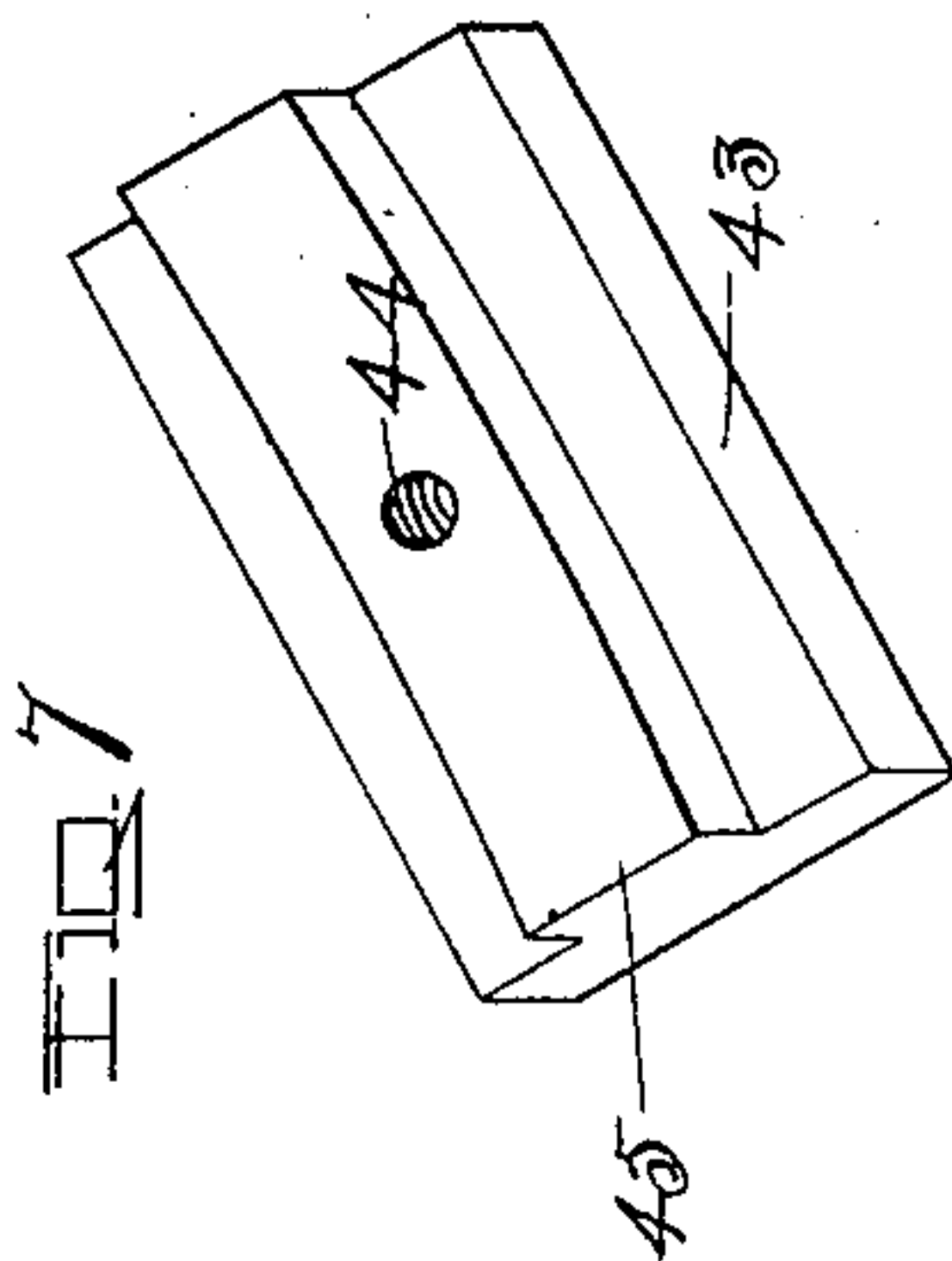


FIG. 7

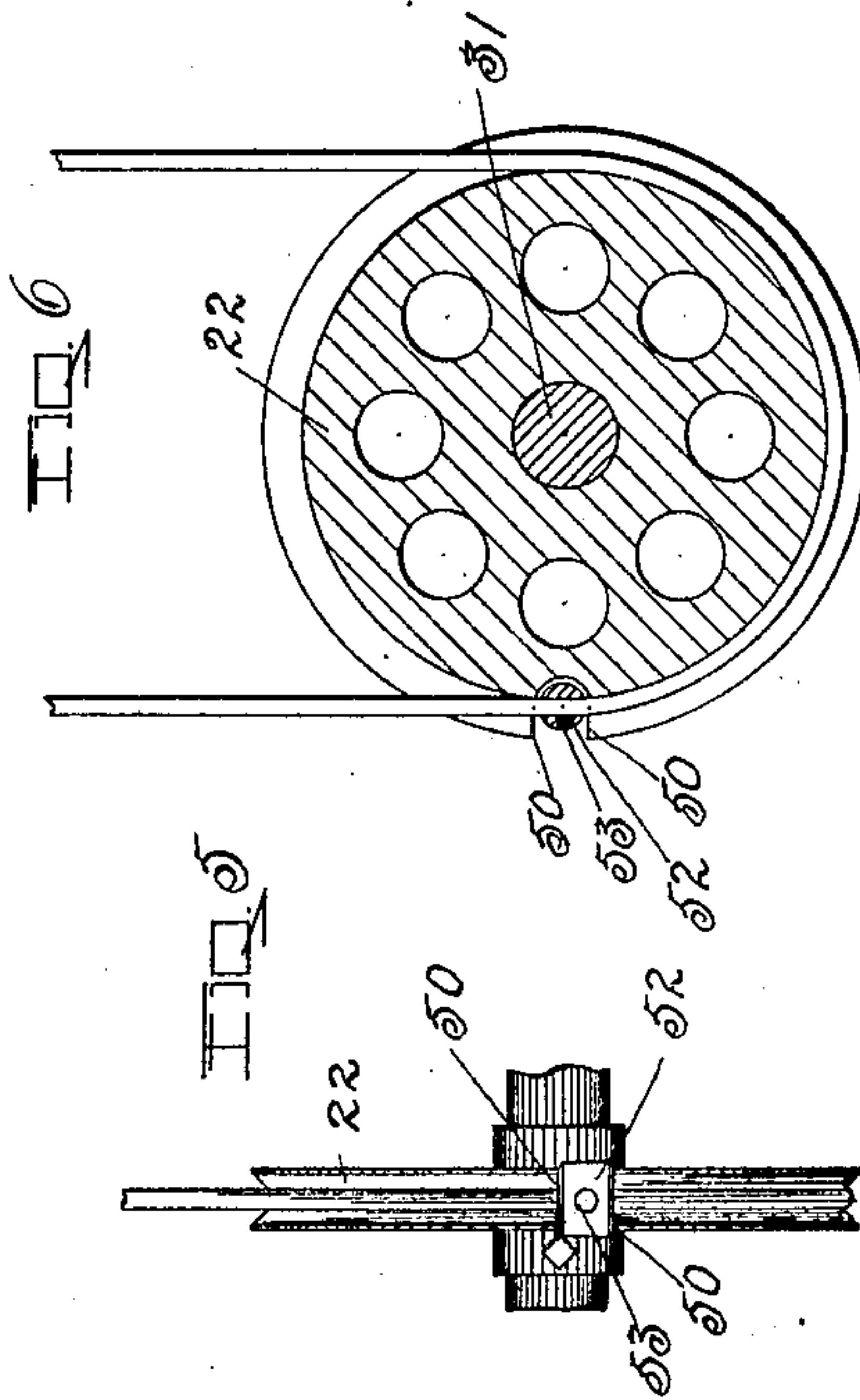


FIG. 6

FIG. 5

WITNESSES

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# UNITED STATES PATENT OFFICE.

JAMES W. 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.

## PAPER-MAKING MACHINE.

No. 913,670.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Original application filed August 22, 1906, Serial No. 331,617. Divided and this application filed July 1, 1908. Serial No. 441,290.

*To all whom it may concern:*

Be it known that I, JAMES W. 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 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.

The subject-matter of this application is a divisional part of the original application filed by this applicant Aug. 22, 1906, for improvements in reel-belt tighteners for paper-making machines, and given the Ser. No. 331,617.

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 greater than the diameter of the reel more power will be required to produce the same tension upon the paper between the paper-rolls 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 a 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 mech-



anism 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 5 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 10 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 15 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 por- 20 tion 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.

25 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 30 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 35 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 lever being provided with segments, 16 and 17, adapted to receive 40 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 45 wheel, 22, and up 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 man- 50 ner 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 55 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 rotatory in 60 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. 65 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, 70 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 75 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 80 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, 85 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 90 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 95 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 100 having the arms, 14 and 15, to move the loose pulley, 10, from the position shown in Fig. 4 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 105 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- 110 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 im- 115 mediately 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 120 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 125 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 hav- 130



ing 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.

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

1. In a paper-making machine, the combination with a plurality of reels; reel-shafts; driving-pulleys one on each reel-shaft; a drive-belt for each pulley; levers loosely mounted one upon each reel-shaft, and loose pulleys, one upon each lever, engageable with its appropriate pulley-driving belt; of a plurality of neighboring rock-shafts parallel to, and coextensive with, the reel-shafts; actuating connections between the pulley-supporting levers and the rear ends of the rock-shafts respectively; and means on the front ends of the rock-shafts for operating such shafts successively and independently, one of another, whereby a sheet of paper continuously fed with constant speed upon such reels can be easily and quickly transferred from one reel to the other with a minimum waste of paper, and a practically constant winding or unwinding tension maintained upon both reels at the same time.

2. In a paper-making machine, the combination with a reel-supporting frame having front and rear ends; a plurality of reel-shafts extending from front to rear; reels

fixed one upon the front end of each reel-shaft; reel-driving belt-pulleys fixed, one upon the rear end of each reel-shaft; levers, loosely mounted, one upon the rear end of each reel-shaft; and loose belt-engaging pulleys, one upon each lever; of a plurality of neighboring rock-shafts extending from front to rear of the reel-supporting frame; actuating connections between the pulley-supporting levers and the rear ends of the rock-shafts, respectively; and means on the front ends of the rock-shafts for operating such shafts independently one of another.

3. In a paper-making machine, the combination with a reel-supporting frame having front and rear ends; a plurality of reel-shafts extending from front to rear; reels fixed, one upon the front end of each reel-shaft; reel-driving belt-pulleys fixed, one upon the rear end of each reel-shaft; levers, loosely mounted, one upon the rear end of each reel-shaft; and loose belt-engaging pulleys, one upon each lever; of a plurality of rock-shafts concentric to one another, one shaft, or more, being tubular and rotatory about another; suitable bearings for the rock-shafts; actuating connections between such shafts and pulley-supporting levers respectively; and means for operating the rock-shafts successively.

In testimony whereof, I have hereunto set my hand this 30th day of June, 1908.

JAMES W. PACKER.

Witnesses:

GEO. A. MOSHER,  
J. DONSBACH.