

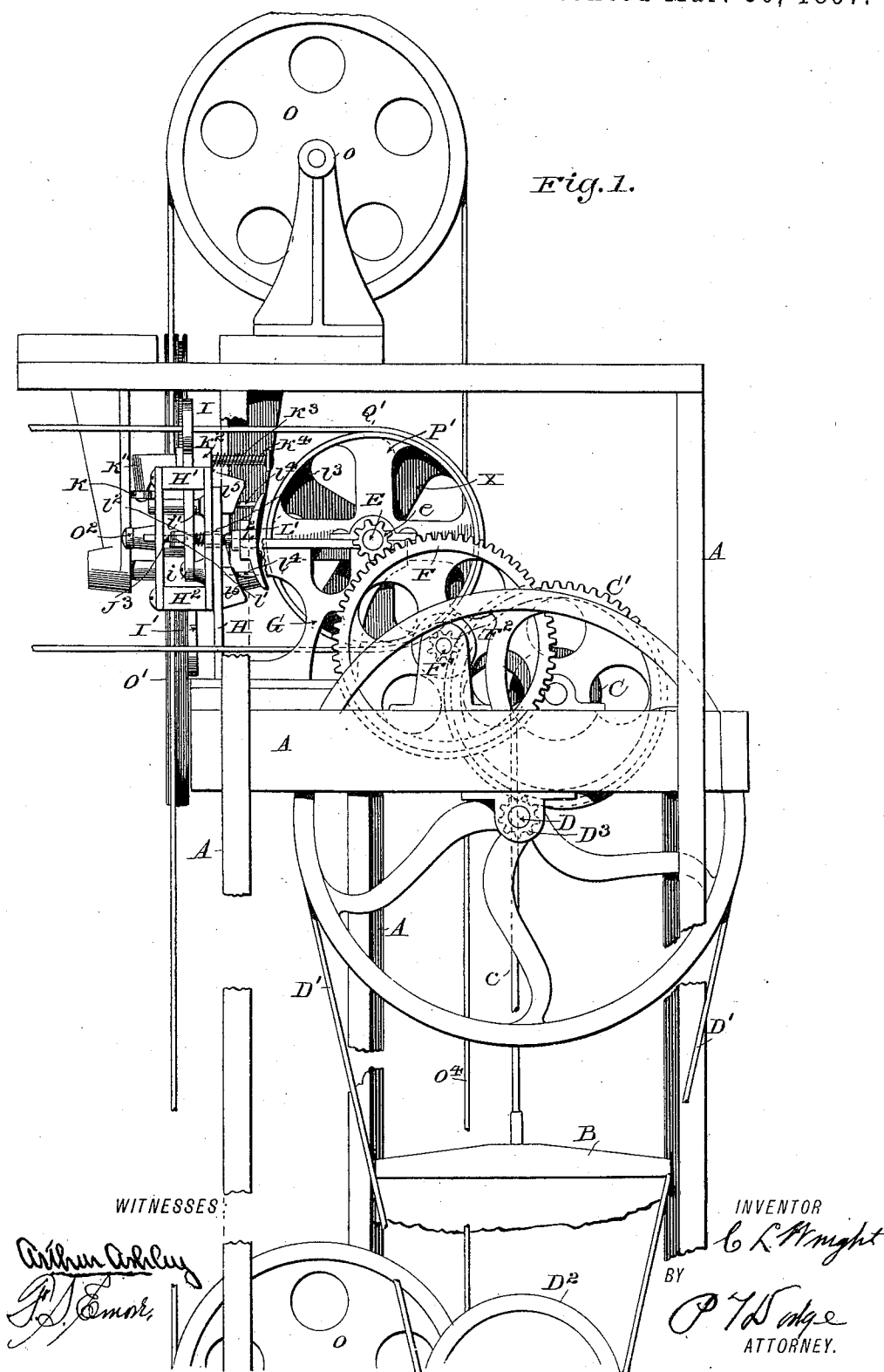
(No Model.)

4 Sheets—Sheet 1.

C. L. WRIGHT.
ELEVATOR.

No. 579,661.

Patented Mar. 30, 1897.



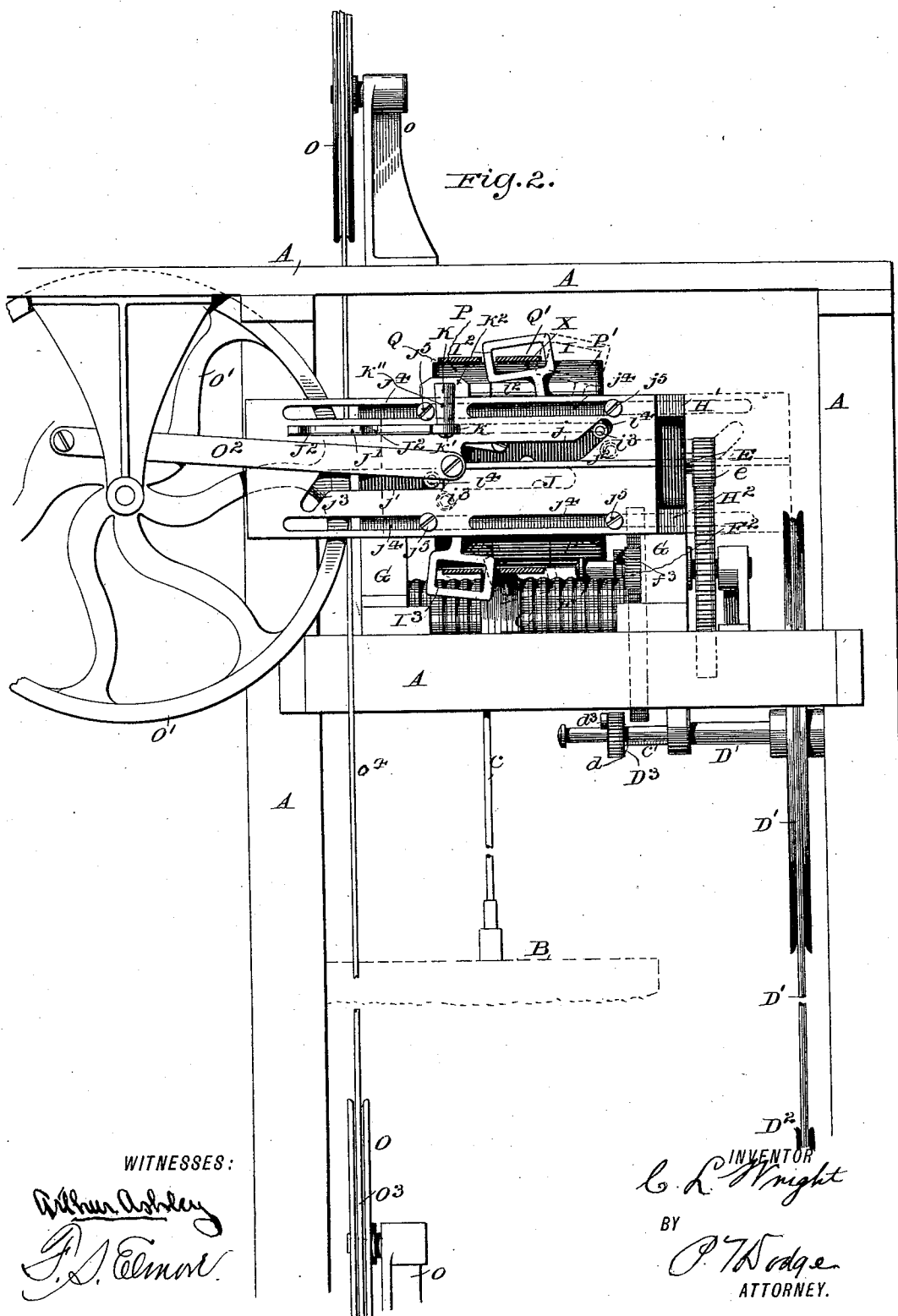
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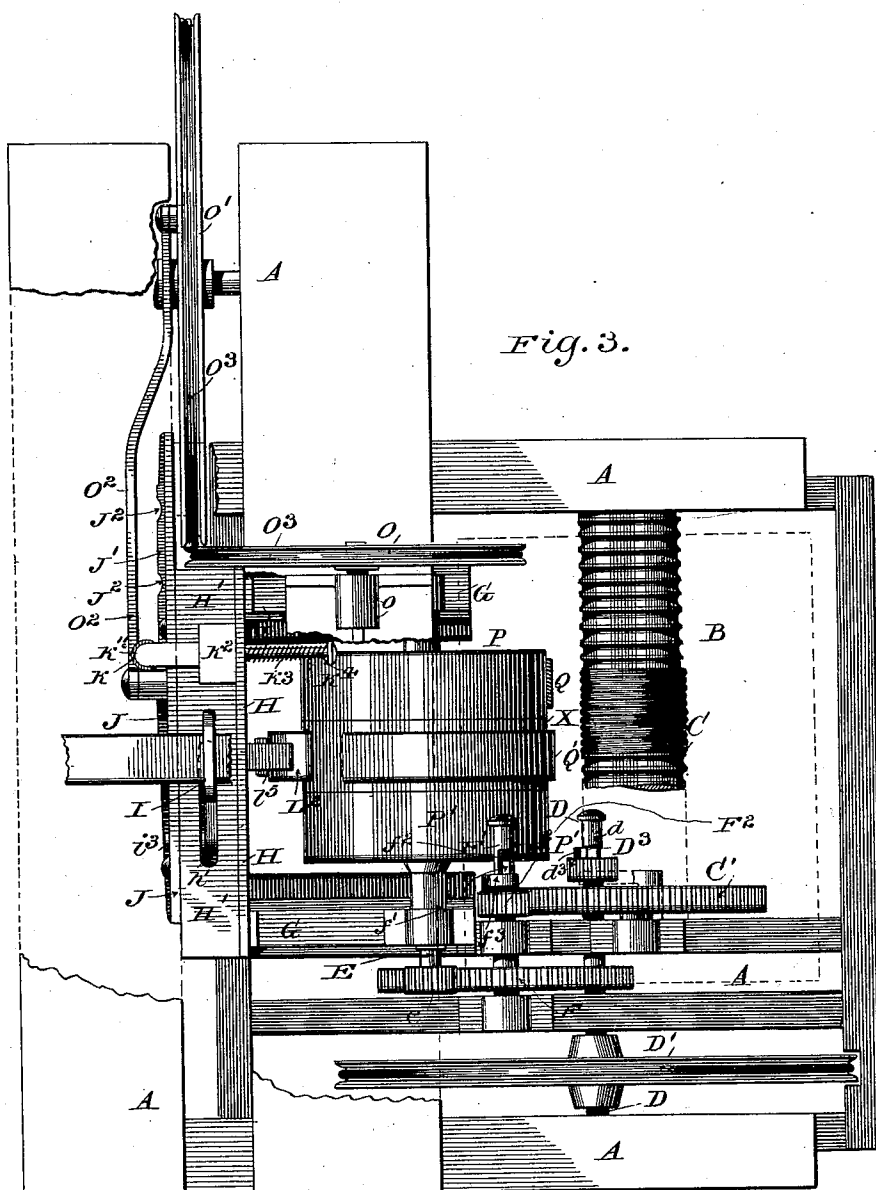
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J. J. Elmore

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ATTORNEY.

(No Model.)

4 Sheets—Sheet 4.

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Fig. 4.

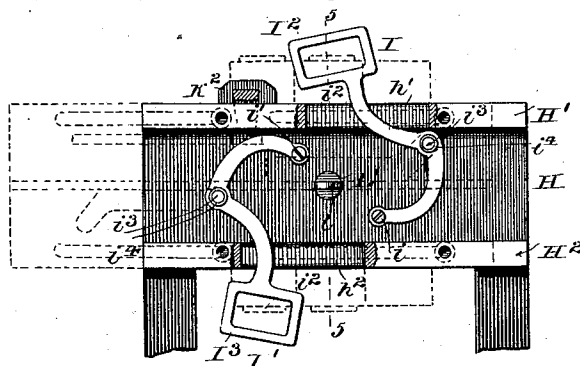


Fig. 5.

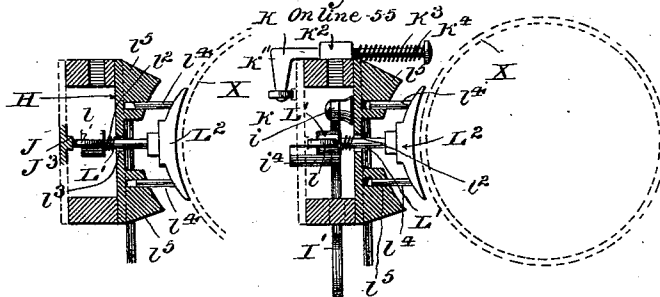


Fig. 7.

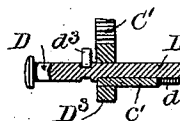
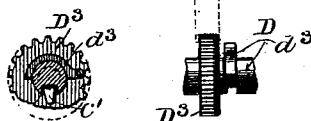


Fig. 6.



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UNITED STATES PATENT OFFICE.

CHARLES L. WRIGHT, OF MOLINE, ILLINOIS, ASSIGNOR OF ONE-HALF TO
W. P. DAEBELLIEHN, OF SAME PLACE.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 579,661, dated March 30, 1897.

Application filed May 18, 1896. Serial No. 591,961. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. WRIGHT, of Moline, county of Rock Island, and State of Illinois, have invented a new and useful Improvement in Elevators, of which the following is a specification.

The invention relates to that class of hoisting apparatus in which the hoisting-drum is adapted to be operated by hand-power or from an engine-shaft.

The object of the invention is to wholly disconnect the engine-shaft from the hoisting-drum and hand-operated shaft when said drum is operated by hand-power, and also to wholly disconnect the hand-operated shaft from the engine-shaft and drum when the latter is geared to the engine-shaft.

A further object is to provide an improved belt-shifting and brake mechanism.

The invention will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of the improved elevator or hoisting mechanism. Fig. 2 is a similar view at right angles to Fig. 1 and showing the belt-shifting mechanism. Fig. 3 is a plan. Fig. 4 is a face view of the belt-shifting mechanism with the reciprocating slide removed. Fig. 5 is a section on line 5 5, showing the brake-operating shoe in its operative and inoperative positions. Fig. 6 is a detail of one of the sliding pinions, showing the drop-collar. Fig. 7 is a vertical sectional elevation of the end of the hand-power shaft and the sliding pinion thereon, showing the connection of the pinion with the shaft and the means of locking it in place.

In the drawings, A represents the framework of the elevator, and B is the car, guided as usual therein.

C is the hoisting-drum, having a cable *c* connected at its lower end to the car.

C' is a gear-wheel secured to the shaft of the hoisting-drum. The hand-power for operating the drum comprises the short shaft D, having a large operating-pulley, over which passes the endless hand-rope D', extending down to the lower end of the shaft, where it passes under a guide-pulley D². The shaft D is mounted below the drum at one end thereof and is provided with a small slid-

ing pinion D³, adapted to be moved into and out of engagement with drum-pinion C', which is connected to the shaft by means of a feather *c'* on the shaft extending in a groove *d* in the hub of the pinion, this connection insuring the rotation of the pinion by the shaft and permitting the longitudinal movement of the pinion along the shaft into or out of engagement with the pinion C'. A drop-collar *d*³, pivoted to the sliding pinion, engages the shaft D and locks the pinion *d*³ when it is in mesh with drum-pinion C' and also when it is slid out of engagement therewith.

E represents the engine-shaft above and parallel with the hoisting-drum and provided at one end with a small fixed pinion *e* in mesh with a gear-wheel F, fixed to a short transmitting-shaft F', journaled between the engine-shaft and gear-wheel C'. This transmitting-shaft F' is provided with a small sliding pinion F², adapted to be slid into and out of engagement with the gear-wheel C', and when in mesh with said wheel to be rotated by the shaft F' by means of the feather *f'* and groove *f*². This pinion F² is also provided with a pivoted drop-collar *f*³ to engage the shaft F' and hold said pinion from longitudinal movement thereon. When the hoisting-drum is to be operated by hand, the pinion F² is slid out of engagement with the gear-wheel C' and the small pinion D³ on shaft D is slid into engagement with said gear-wheel, and vice versa. It follows therefore that the drum-shaft will always be disconnected either from the engine-shaft or the hand-operated shaft D, which allows the engine-shaft to remain inoperative when the drum is operated by hand-power.

The engine-shaft is provided with a fixed pulley X and loose pulleys P P' at opposite sides thereof, and Q Q' are the oppositely-traveling driving-belts for rotating the pulley X in opposite directions. The engine-shaft E is mounted in bearings at the inner upper corners of two parallel brackets G G, to the vertical outer sides of which is bolted a plate H, having parallel upper and lower longitudinal flanges H' H², each having a longitudinal slot *h'* *h*², respectively, near its middle portion, through which project the free ends

of the belt-shifting levers I I'. These belt-shifting levers are bowed, are oppositely arranged, and are pivoted at their inner ends, as at i' , to the plate II at opposite sides of its middle and above and below a longitudinal central line therethrough. The free ends of the belt-shifting levers are provided with lateral extensions i^2 , extending through the slots $h' h^2$ and terminating in the belt-loops I² I³. From the outer sides of these levers I I' at their bends project pins or studs i^3 , on which are mounted antifriction-rollers i^4 , which work in slots $j j'$ in the reciprocating slide J, mounted on the flanges H' H². These slots $j j'$ extend in opposite directions from the middle of the slide J toward the ends, where they are inclined upwardly and downwardly, respectively, as at $j^2 j^3$. The slide J is further provided with four longitudinal guide-slots j^4 , through which pass the four headed guide pins or studs j^5 , carried by the flanges H' H².

Just below and parallel with the upper left-hand slot j^4 is a rib J', provided with middle and end recesses or notches J² to receive the antifriction-roller k , carried by a screw or pin k' at the lower end of the depending member k'' of an angular locking-arm K, sliding through a bearing k^2 , formed on the upper edge of the plate or casing II and provided in rear of the plate with a coil-spring k^3 , bearing against said plate and the head of a screw k^4 at the inner end of the arm K, so as to force the arm K inwardly and cause its roller k to snap into the notches or recess J² and hold the belt-shifting slide J in its opposite and middle positions against accidental movement and yet allow the slide to be operated when necessary. The slide J not only operates the belt-shifting levers, but it also operates the brake-shoe L² and forces it against the fixed pulley X when the belts are on the loose pulleys P P'. To accomplish this, the inner face of the slide at its center is provided with a ridge or cam J³, which is adapted to work against the inner end of the brake-stem L' or a roller l' , carried thereby, and force the brake-shoe L² against said fast pulley, a coil-spring l^2 on the inner end of the brake stem or shank serving to retract the brake when the cam J³ passes from behind the roller l' . The brake-stem L' passes through a central aperture l^3 in the plate II, and the brake is maintained from rotating by means of the parallel pins l^4 , sliding in the apertured guide-lugs l^5 on plate II. (See Fig. 5.)

The belt-shifting and brake-operating slide may be operated by any suitable mechanism, but that shown is preferred, and comprises upper and lower pulleys O O, journaled in bearings $o o$, parallel with the engine and drum shafts, and a larger crank-pulley O', journaled at right angles to the pulleys O O and beyond one end of the plate II and connected, preferably, to the center of the slide J by means of the pitman O², as clearly shown in Fig. 3.

O³ is a cable passing around the pulleys O O

and thence in opposite directions around the crank-pulley O', to which its ends are secured.

The run or length o^4 of operating-cable O³ extends up through the elevator-shaft within reach of the operator. Suppose the parts to be in the position shown in Fig. 2 and the drum geared to the engine-shaft. The car will then be ascending, and if it is desired to stop the car the operator gives an upward pull on the run o^4 of the cable sufficient to throw the slide J to its central position. This movement of the slide J throws the loop end of shifting-lever I to the right, carrying the belt Q' to loose pulley P', while the cam J³ forces the brake-shoe L² against fixed pulley X, causing the elevator to stop, and the locking-arm K will enter the middle notch J² and hold the slide. The studs i^3 now stand in the straight portions of the slots j and j' and both belts are on the loose pulleys. To cause the car to ascend or descend, the part o^4 of the cable is pulled down or up, causing the slide to be moved to the left or right, respectively, while the brake-shoe L² is withdrawn from fixed pulley X and the middle notch J² is withdrawn from the locking-arm K. If the slide is moved to the left, the parts will be in the position shown in full lines in Fig. 2 and the car will ascend. If the slide is moved to the right, the angular portion j^3 of slot j' moves the loop portion I³ of shifting-lever I' to the right and shifts belt Q from pulley P to the fixed pulley X, while belt Q' remains upon loose pulley P', as shown in dotted lines in said Fig. 2. The locking-arm K enters the left notch J² and the car descends. To stop the car, the run o^4 of the cable is pulled down to bring the slide J to its central position.

Having thus described my invention, what I claim is—

1. The combination with the hoisting-drum having a single gear-wheel C', of a pulley-shaft and means for operating the same, a sliding pinion D³ upon said pulley-shaft to be moved into and out of mesh with said gear-wheel C', devices for locking said pinion D³ upon said pulley-shaft, an engine-shaft, a transmitting-shaft F' geared to said engine-shaft, a sliding pinion F² upon said transmitting-shaft F' to be moved into and out of mesh with said gear-wheel C', and devices for locking said pinion F² upon said transmitting-shaft F', substantially as set forth.

2. The combination with the engine-shaft having fast and loose pulleys, of a vertically-disposed flanged plate or casing parallel with said shaft, bowed belt-shifting levers pivoted at their inner ends to said plate and extending at their free ends through slots in the upper and lower flanges respectively to rock toward and from the fixed pulley, studs or pins projecting outwardly from said levers, a reciprocating slide having longitudinal slots provided with oppositely-inclined ends or branches and receiving said studs or pins, said slide having guide-slots for and pins secured to said plate-flanges and situated with-

in said slots for holding the said slide to the plate-flanges, and means for operating the said slide, substantially as set forth.

3. The combination with the engine-shaft having fast and loose pulleys, a spring-retracted brake for said fast pulley, belt-shifting levers, and a reciprocating slide for operating said brake and said belt-shifting levers, substantially as set forth.

4. The combination with the engine-shaft having fast and loose pulleys, a spring-retracted brake for said fast pulley having a stem, belt-shifting levers, and a reciprocating slide for operating said belt-shifting levers having a cam adapted to engage the stem of said brake, substantially as set forth.

5. The combination with the engine-shaft having fast and loose pulleys, of a vertically-disposed plate or casing parallel with said shaft, a spring-retracted brake for the fixed pulley, provided with a transverse stem passing through an aperture in said plate or casing, the oppositely-operating belt-shifting levers mounted on said plate or casing and a slotted slide also mounted on said plate or casing and having a cam on its inner face between its ends to force the brake against the fixed pulley when the slide throws either shifting-lever away from the fixed pulley and to release the brake when either lever is moved toward the fixed pulley and means for operating said slide, substantially as set forth.

6. The combination with the engine-shaft having fixed and loose pulleys, of a flanged plate or casing parallel with said shaft and having a central transversely-sliding spring-retracted brake movable toward and from the fixed pulley, a slide mounted on said plate or casing, and having a central cam on its inner face to engage the brake-stem and force it toward the fixed pulley, said slide having parallel slots at opposite sides of its center and provided with oppositely-inclined outer ends, belt-shifting levers pivoted at their inner ends adjacent to the center of the plate,

curved in opposite directions and projecting through slots in the upper and lower flanges, respectively, of the plate or casing, operating pins or studs on the said levers and projecting into the slide-slots for operation by the inclined ends thereof, substantially as and for the purposes set forth.

7. The combination with the longitudinally-flanged plate or casing having slots in its upper and lower flanges, belt-shifting levers pivoted at their inner ends to said plate bowed outwardly toward the ends of the plate and having extensions projecting through said slots and provided with belt loops or yokes, a reciprocating slide guided on the said flanges and having longitudinal slots receiving pins or studs projecting from said levers; the outer ends of said slots being inclined in opposite directions to effect the rocking of said levers, a central cam on the inner face of the slide, a transversely-sliding brake mounted on the plate or casing in the path of said cam, a notched rib on the slide, a spring-pressed locking-arm mounted in a bearing on said plate and having a depending member to snap into any one of said notches, substantially as and for the purpose set forth.

8. The combination with the engine-shaft having fast and loose pulleys, of the belt-shifting levers, a brake to engage the fixed pulley, an operating-slide connected with said levers at opposite sides of its center and having a central cam to operate the brake, a series of notches on the slide, and a spring-pressed latch or locking-arm to snap into the said notches and hold the slide frictionally at its extremes of movement and at its intermediate position, substantially as set forth.

In testimony whereof I hereunto set my hand, this 10th day of April, 1896, in the presence of two attesting witnesses.

CHARLES L. WRIGHT.

Witnesses:

P. B. FISK,
H. H. HALEY.