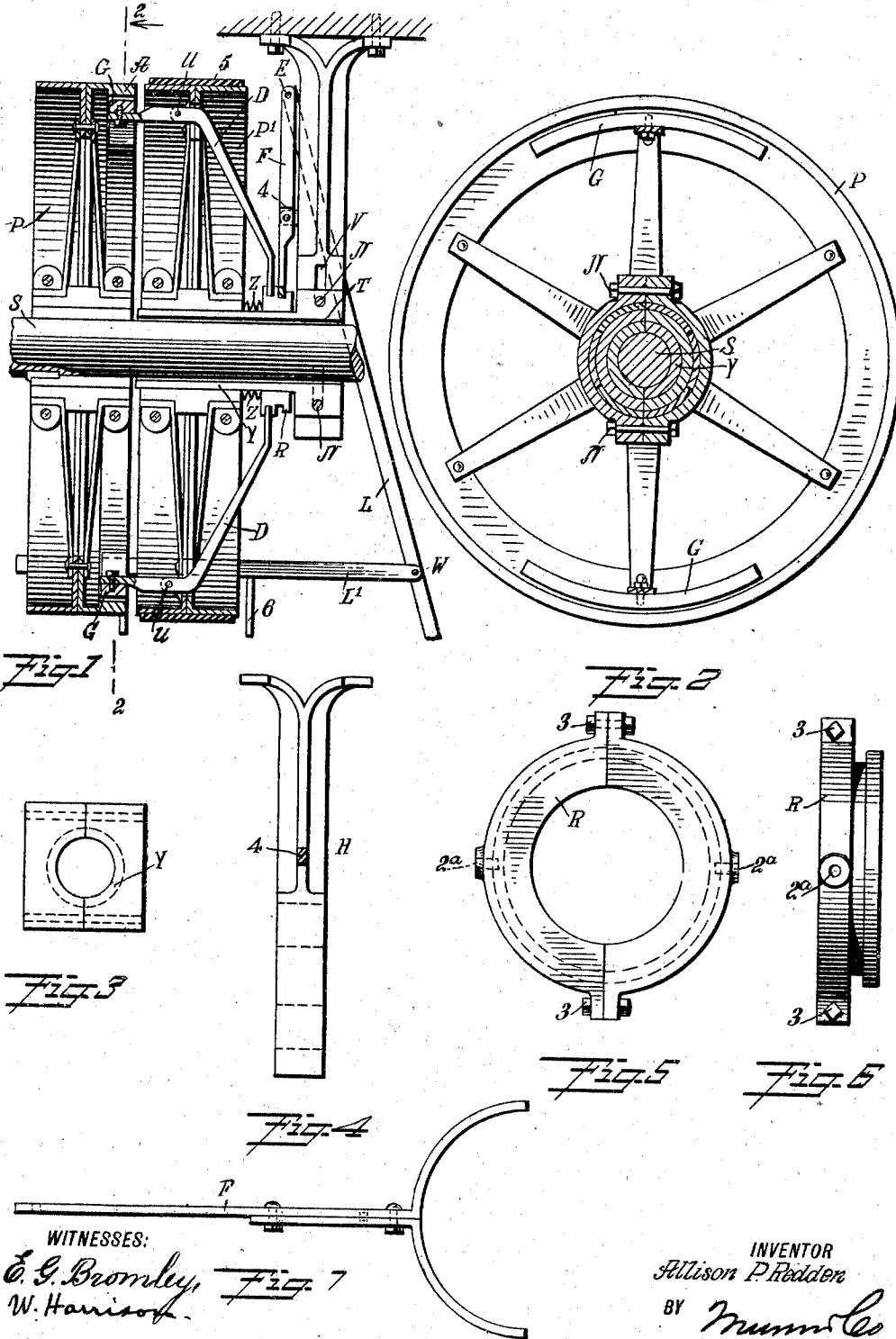


A. P. REDDEN.  
BELT SHIFTER.

APPLICATION FILED JULY 1, 1909.

967,673.

Patented Aug. 16, 1910.



WITNESSES:

E. G. Bromley,  
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Fig. 7

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# UNITED STATES PATENT OFFICE.

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## BELT-SHIFTER.

967,673.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed July 1, 1909. Serial No. 505,534.

*To all whom it may concern:*

Be it known that I, ALLISON P. REDDEN, a subject of the King of Great Britain, and a resident of the city of New York, borough of the Bronx, in the county and State of New York, have invented a new and Improved Belt-Shifter, of which the following is a full, clear, and exact description.

My invention relates to improvements in belt shifters of the type employing a tight pulley mounted upon a revoluble shaft and used in connection with a pulley loose relatively to said tight pulley.

Among the objects of my improvements are the following: I. To conserve the power applied while the machine is not in use. II. To maintain the loose pulley as tight when the machine is in operation. III. To provide means for readily removing the belt while the driving shaft is in motion. IV. To provide mechanism including a shipping lever for stopping or starting the machine with facility at the will of the operator.

In order to attain the objects above enumerated, I employ the mechanism illustrated in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a substantially vertical section through my improved belt shifter, showing the driving shaft, the tight and loose pulleys, and the clutch mechanism; Fig. 2 is a section taken upon the line 2—2 of Fig. 1, looking in the direction of the arrow, and showing the belt to be shifted; Fig. 3 is an end view of the stationary sleeve for encircling the shaft; Fig. 4 is a side view of the hanger; Fig. 5 is a detail showing the shipping ring; Fig. 6 is an edge view of the shipping ring; and Fig. 7 shows the shipping fork.

A driving shaft is shown at S and mounted securely upon it is a tight pulley P, the latter being secured rigidly in relation to the shaft. A sleeve Y is made in halves, as indicated in Fig. 3, and has a bore slightly larger than the shaft S, so that between the shaft and the bore of the sleeve is a space T. The sleeve Y is connected rigidly with a hanger H by aid of bolts N and is adjustable as to height by aid of these bolts co-acting with slots V in the hanger.

At G, G are friction shoes which are mounted respectively upon levers D, D, these levers being mounted upon pivots U

carried within a loose pulley P'. At A is an annular flange forming a part of the pulley P and having a smooth inner surface.

At R is a shipping ring mounted to slide freely on the sleeve Y. This shipping ring R is connected with the ends of the levers D, D, which are socketed in the ring by aid of holes 2<sup>a</sup>.

Mounted upon the hanger H is a stationary lug 4 and journaled upon the latter is a shipping fork F. A shipping lever L is attached to the shipping fork F by aid of a pivot pin E.

Journaled to the shipping lever L by aid of a pivot pin W is a shipper bar L'. The shipper bar L' carries guide pins 6 which may be of ordinary construction and engage the belt. Bolts 3 are used for holding together portions of the shipping ring which is made in halves, as indicated in Fig. 5.

At Z, Z are two springs which are mounted upon the shipping ring R and engage the hub of the loose pulley P'. This tends to keep the friction shoes G, G drawn inwardly away from the annular flange A, and in doing this tends to make the loose pulley and the tight pulley temporarily independent of each other.

The operation of my device is as follows: The belt 5, I will say, is at the start on the loose pulley P'. The shipping lever L is in the position indicated in Fig. 1. To throw the loose pulley into action, or, in other words, to start the machine, the operator pushes the lower end of the lever L to the left according to Fig. 1. The guide pins 6 lodge against the adjacent edge of the belt, thus forming a fulcrum at the pivot pin W and causing the upper end of the lever L to move to the right according to Fig. 1. The shipping fork F now forces the shipping ring R to the left according to Fig. 1, and in doing this operates the levers D, D. This forces the friction shoes G, G, radially outward and causes them to engage the inner surface of the flange A. This being done, rotation of the tight pulley P causes the loose pulley P' to turn. This allows the belt 5 to be guided onto the tight pulley P. As soon, however, as the pressure is relieved from the lever L, the shipping ring R is, by action of the springs Z, Z, forced to the right according to Fig. 1—that is, away from the hub of the loose pulley. The pressure exerted by the friction shoes G being thus relaxed, the loose pulley P' is free, and conse-

quently ceases to rotate with the shaft S. In order to stop the machine, the lower end of the lever L is moved to the right according to Fig. 1. This guides the belt 5 onto the loose pulley, so that both the belt and the loose pulley will stop.

From the above description, it will be noted that the loose pulley P' is mounted to rotate freely on the sleeve Y and is therefore supported entirely free of the driving shaft S. Such being the case, the only wear upon the loose pulley P', takes place while the machine is being started or stopped. The belt may be removed, repaired, and put back on the loose pulley, while the shaft 5 is running, and this, too, without any danger to the operator.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination of a revoluble shaft, a pulley secured rigidly thereto and revoluble therewith, another pulley revoluble independently of said shaft, levers pivoted upon said last-mentioned pulley, friction shoes carried by said levers and adapted to engage said first-mentioned pulley, a belt to be shifted back and forth from one of said pulleys to the other, and means co-acting with said belt for actuating said levers.

2. The combination of a revoluble shaft, a pulley fixed thereupon so as to turn therewith, another pulley loose relatively to said shaft and adapted to turn independently of the same, levers pivoted upon one of said pulleys, shoes mounted upon said levers and adapted to engage the other of said pulleys, a belt shifter for moving a belt from one of said pulleys to the other, and connections from said belt shifter to said levers.

3. The combination of a stationary bracket,

a sleeve supported thereby, means for holding said sleeve in adjusted position relatively to said bracket, a shaft extending through said sleeve, a pulley fixed upon said shaft, another pulley loose upon said sleeve, and mechanism mounted upon one of said pulleys and including shoes for engaging the other of said pulleys for the purpose of temporarily locking said pulleys together.

4. The combination of a stationary bracket, a sleeve supported thereby, means for holding said sleeve in adjusted position relatively to said bracket, a shaft extending through said sleeve, a pulley fixed upon said shaft, another pulley loose upon said sleeve, mechanism mounted upon one of said pulleys and including shoes for engaging the other of said pulleys, for the purpose of temporarily locking said pulleys together, and a belt shifter connected with said mechanism for the purpose of moving a belt at the same time that said mechanism is actuated.

5. The combination of a bracket, a normally stationary sleeve mounted thereupon and adjustable relatively thereto, a revoluble shaft extending into said sleeve, a pulley fixed rigidly upon said shaft, another pulley mounted loosely upon said sleeve and adapted to turn independently of said shaft, a lever pivoted upon one of said pulleys, a shoe mounted upon said lever and adapted to engage the other of said pulleys for the purpose of locking said pulleys together, a belt shifter, and mechanism connected with said belt shifter and with said lever for the purpose of actuating said lever whenever said belt shifter is operated.

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Witnesses:

A. TRUBE,

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