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PATENTED JULY 10, 1906.

J. B. ETTINGER.
LOOSE PULLEY OR WHEEL.
APPLICATION FILED FEB. 28, 1905.

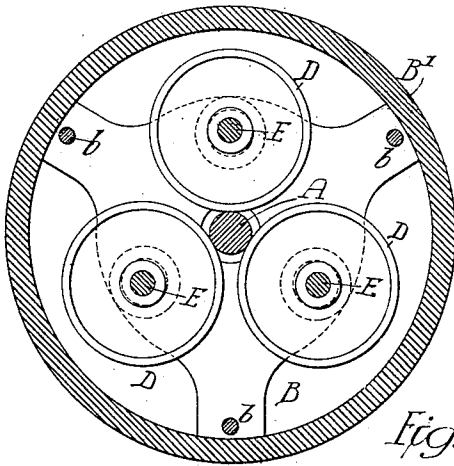
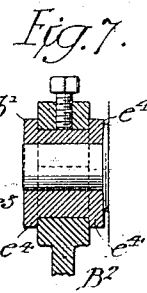
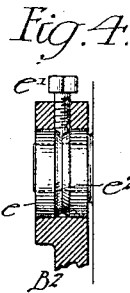
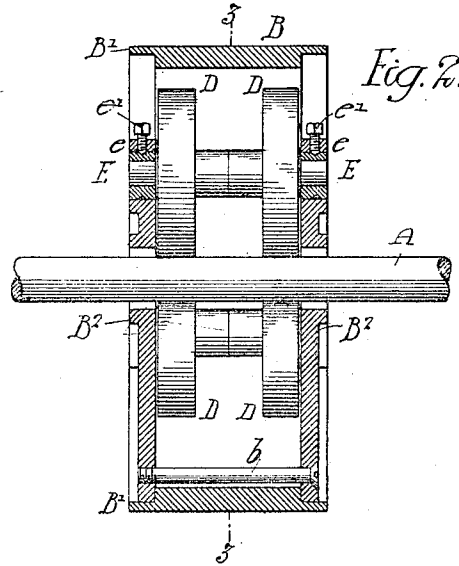
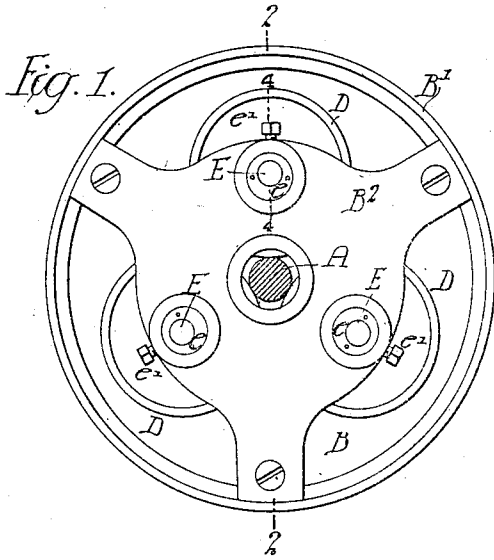
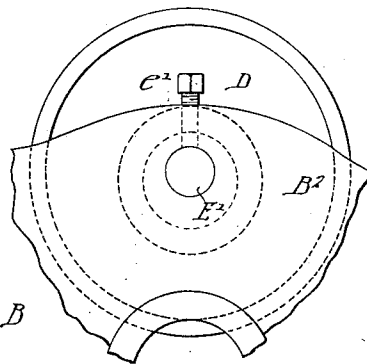
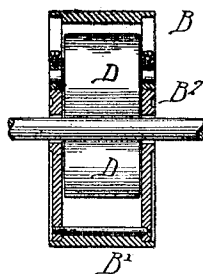


Fig. 8.



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UNITED STATES PATENT OFFICE.

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LOOSE PULLEY OR WHEEL.

No. 825,813.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed February 28, 1905. Serial No. 247,689.

To all whom it may concern:

Be it known that I, JOEL B. ETtinger, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Loose Pulleys or Wheels, of which the following is a specification.

The main object of my invention is to reduce the friction between a shaft or axle and a loose pulley or wheel mounted thereon; and a further object of the invention is to provide means for readily taking up the lost motion occasioned by wear.

Referring to the accompanying drawings, Figure 1 is a side view of my improved loose pulley. Fig. 2 is a sectional view on the line 2 2, Fig. 1. Fig. 3 is a transverse sectional view on the line 3 3, Fig. 2. Fig. 4 is an enlarged sectional view on the line 4 4, Fig. 1. Fig. 5 is a perspective view of one of the bearings, and Figs. 6, 7, and 8 are views of modified forms of details of the invention.

I have illustrated my invention in connection with a loose pulley; but it will be understood that it can be applied to a driven wheel which is loosely mounted on an axle without departing from my invention.

A is the shaft. B is a pulley loosely mounted on the shaft. The pulley has a rim B' and two side plates B² B³, which are attached to the rim in the present instance by screw-rods b. These side plates have three arms in the present instance, leaving three spaces, so that access can be readily had to adjusting screws described hereinafter. The shape of the side plates will vary according to the size and design of the pulley.

Mounted in circular openings in the side plate are boxes e for the spindles E, three in the present instance, and loosely mounted on the spindles are wheels D, as shown in Fig. 2. There are two wheels on each spindle, while in Fig. 6 I have shown one wheel on each spindle. The number of wheels will depend upon the width of the pulley.

The bearings in the boxes e for the spindles E are eccentric to the periphery, so that on turning the boxes the wheels D can be moved toward or from the shaft A. By this means lost motion can be readily taken up.

I make two small holes in one end of each box, so that a forked tool can be used to turn the bearings, and, as shown in Figs. 2 and 4, I secure the bearings to the side plates by set-screws e'.

I preferably make an annular V-shaped

groove e² in each box and taper the end of the screw e', so that when the screw is in position it will prevent the box moving longitudinally in its bearings. Other means for preventing this movement may be resorted to without departing from my invention. For instance, as shown in Fig. 7, the bearing for each box may be made in two parts, with a cap b' and the box e³, provided with flanges e⁴, on each side of the bearings, and in some instances the box may be dispensed with entirely and the shaft may have on each end spindles E', mounted eccentrically in respect to the shaft, and these eccentric spindles may be mounted directly in openings in the side plates and secured in position by means of set-screws, as shown in Fig. 8.

It will be seen that the wheels D do not contact with the rim of the pulley, but are mounted on the spindles E, which are carried by the side plates of the pulley, and that the pulley itself does not bear upon the shaft. Consequently the wheels D freely rotate on their spindles E and travel at a speed differing from the travel of the pulley, so that while the pulley or the shaft is traveling at a high rate of speed there will be a comparatively small amount of friction, as the wheels only have a peripheral bearing upon the shaft.

In some instances the wheels D may be attached to the spindles E and the spindles revolve freely in the boxes e; but I prefer to mount the wheels loosely upon the spindles and the spindles loosely in the boxes.

I claim as my invention—

1. The combination of a shaft, a pulley, a series of spindles carried by the pulley, two antifriction-wheels mounted on each spindle, said wheels being spaced apart and each being loose upon its spindle so that the wheels will rotate independently and each wheel having a peripheral bearing only upon the shaft, the pulley being free of the shaft, substantially as described.

2. The combination of a shaft, a pulley, eccentric bearings carried by the pulley, a series of spindles mounted in the bearings, wheels mounted on the spindles and having a peripheral bearing on the shaft, and means for holding the bearings in their adjusted positions, substantially as described.

3. The combination of a shaft, a pulley having a rim and end plates secured to the rim, three eccentric bearings mounted in each end plate and spaced an equal distance apart, spindles carried by the bearings, and

wheels mounted on the spindles and having a peripheral bearing upon the shaft, substantially as described.

4. The combination of a shaft, a pulley
5 having end plates and a rim, means for securing the end plates to the rim, three spindles mounted in the end plates a given distance apart, a roller carried on each end of each spindle and having a peripheral bearing only
10 on the shaft, the body of the pulley being free of the shaft, substantially as described.

5. The combination of a shaft, a pulley having a rim-section recessed at each edge, side plates having arms resting in the recesses
15 of the pulley, rods extending from one side plate to the other whereby the rim-section of the pulley is clamped to the side plates, said side plates being free of the shaft, adjustable boxes carried by the side plates, spindles
20 mounted in said boxes, and antifriction-wheels carried by the spindles, said wheels having a peripheral bearing only upon the shaft, substantially as described.

6. The combination of a shaft, a pulley
25 having a rim and side plates, openings in the side plates, a box mounted in each opening, spindles carried by the boxes, the bearing-opening in each box being eccentric to its pe-

riphery so that on turning the boxes the
spindles can be moved toward and from the
center of the shaft, set-screws for securing
each box in position, and antifriction-wheels
carried by the spindles, said wheels arranged
to bear only upon the shaft, substantially as
described.

7. The combination of a shaft, a pulley,
circular openings in the side plates of the pul-
ley, cylindrical boxes mounted in said open-
ings, each box having a peripheral groove, a
set-screw carried by the plates of the pulley
40 and arranged to extend into the annular groove in the box so as to lock the box against longitudinal movement and to hold the box in its adjusted position, eccentric bearings in
the boxes, spindles mounted in the bearings,
45 and antifriction-wheels carried by the spindles, said wheels having a peripheral bearing only upon the shaft, substantially as de-
scribed.

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

JOEL B. ETTINGER.

Witnesses:

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JOS. H. KLEIN.