

(No Model.)

W. A. WILLINGHAM.

SPLIT PULLEY.

No. 383,789.

Patented May 29, 1888.

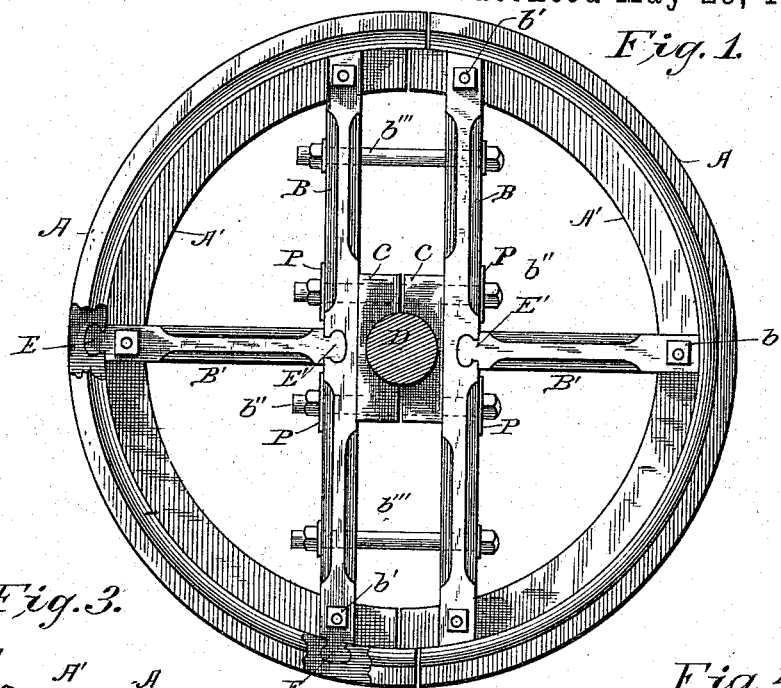


Fig. 1.

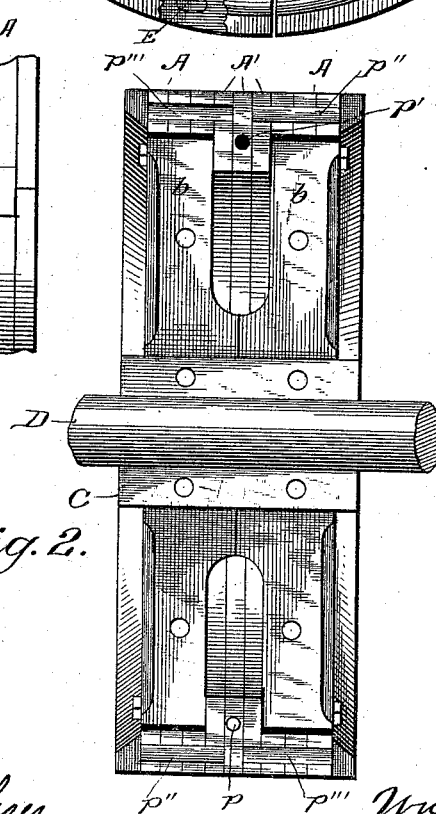
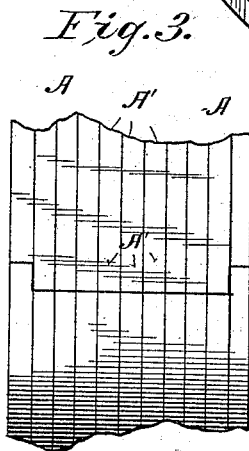


Fig. 2.

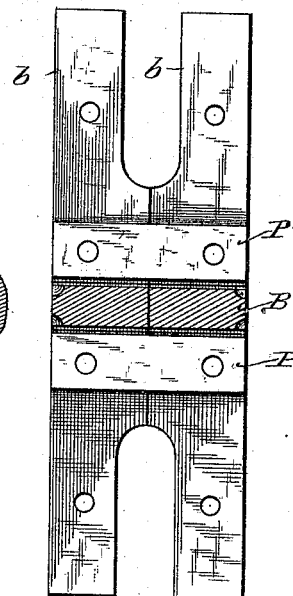



Fig. 4.

Witnesses
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SPLIT PULLEY.

SPECIFICATION forming part of Letters Patent No. 383,789, dated May 29, 1888.

Application filed September 5, 1887. Serial No. 248,838. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. WILLINGHAM, a resident of Chattanooga, in the county of Hamilton and State of Tennessee have invented certain new and useful Improvements in Split Pulleys; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in split band-pulleys, and is fully described and explained in this specification, and shown in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved pulley in position on a shaft, the shaft being shown in vertical section, and parts of the rim of the pulley being broken away to show the connection of the ends of the spokes therewith. Fig. 2 is an internal elevation of one of the two similar parts making up the pulley, the bolts which connect the two parts being removed. Fig. 3 is an external view of the joint at the meeting ends of the two sections of the rim of the pulley when drawn together; and Fig. 4 is an elevation of one of the main spoke-arms B of the pulley, the auxiliary arm or spoke B' being shown in section and the tenons at the ends of the arm B being removed.

In the views, A A' represent one of the two similar parts of the rim of the pulley, each of said parts being made up of a series of semi-annular wooden sections at right angles to the axis of the wheel, and secured together by glue, screws, or other suitable means. All of the semi-annular sections making parts of the rim have substantially the same external diameter; but one or more of the sections A' at the center extend inward beyond the inner face of the corresponding sections A, thus forming an internal flange, A', which greatly strengthens the rim. Each of the parts of the rim is provided with a spoke-arm, B, whose ends are rigidly fastened to the rim-sections at points near the ends thereof, and a short arm or spoke, B', is preferably interposed between the center of the spoke-arm B and the center of the rim, as shown in Fig. 1.

The spoke-arm B may, if desired, be formed of a single piece fastened to the rim in any desired manner; but I prefer to form it in two

similar pieces, b, as illustrated in Figs. 2 and 4, the end of each of said pieces being formed with a suitable locking-tenon inserted in a corresponding groove in the sections A of the rim, and the ends of said pieces b, when in position, being connected by suitable bolts, b', passed through said ends and through the flange A'. The supplemental spoke B' is preferably, also, formed in two pieces, whose outer ends are fastened to the rim-section by means of a groove and tenon; as illustrated in Fig. 1, and connected by a bolt b' in the same manner as the ends of the main spoke-arm B. The inner ends of the spokes B' may be fastened to the center of the spoke-arm B by any suitable means—such as bolts or screws—but I prefer to fasten each of them by means of a tenon, E', inserted in a corresponding groove in the spoke-arm.

Each of the spoke-arms B and each of the spokes B', when its parts are connected by the bolts b', has its outer end bifurcated, as illustrated in Figs. 1 and 2, to receive the flange A' of the corresponding part of the rim.

On the inner face of each of the spoke-arms B is secured, either permanently or detachably, one of the similar parts, C C, of a hub or bushing adapted to embrace a shaft, as D, of any desired size, the inner face of each of said parts C C being formed with a groove parallel to the axis of the pulley, and the surface of the groove being the segment of a cylinder whose axis is coincident with that of the pulley. Correspondingly-placed bolt-holes pass through the two parts C C of the hub or bushing, and bolts b'' pass through these bolt-holes and serve to draw together the spoke-arms B and the parts C C of the hub. Plates P extend across the outer face of each of the spoke-arms and serve as washers for the bolts b'' and at the same time prevent lateral separation of the two parts b b' of each of the spoke-arms when the bolts b'' are in position.

By means of the bolts b'' the two parts of the pulley may be drawn together until the two parts C C of the central hub closely embrace and clamp a cylindrical shaft having a surface corresponding to the inner surfaces of the parts of the hub, when the two cylindrical segments forming such inner surfaces will become concentric, or, in other words, when the axes of said cylindrical segments will become

coincident with each other and with the axis of the pulley. Each of the parts of the pulley-rim is somewhat less than a semi-circumference, or at least the sum of the two parts is somewhat less than an entire circumference, and consequently when the two parts C C of the hub are clamped upon a shaft having the same diameter as the cylindrical opening in the hub the contiguous ends of the two parts of the rim are still slightly separated, as illustrated in Fig. 1. It is therefore necessary after the hub is clamped upon the shaft to draw together the contiguous ends of the rim by means of bolts b''' , which slightly spring the spoke-arms B and increase the force with which the two parts of the hub are pressed upon the shaft. As shown, the bolts b''' pass through the arms themselves, but they may evidently pass through and connect any suitable attachment fastened permanently upon the two parts of the rim. The meeting ends of the two parts of the rim may be provided with any means adapted to prevent their displacement after they are brought into the required working position—as, for instance, by means of pins p , Fig. 2, adapted to enter corresponding sockets p' , or by so forming certain of the sections making up the parts of the rim that they may overlap, as shown in Fig. 3, or by forming the meeting ends with transverse grooves and ribs $p'' p'''$, as shown in Fig. 2. The means for connecting the ends of the spokes and spoke-arms with the parts of the rim and the means for preventing lateral displacement of the meeting ends of the parts of the rim form no part of this invention, and no claim is laid thereto in this application. They are shown and described herein merely as convenient and satisfactory forms making up a part of the entire pulley.

I am aware that it has been proposed to form a split pulley of two wooden rim sections, each provided with a spoke-arm carrying a hub-section grooved to fit a cylindrical shaft. The pulley forming the subject of this application differs from any prior structure in that when the axes of the two rim-sections become coincident (that is, when the grooves in the hub-sections are seated on a shaft of corresponding diameter) the ends of the rim-sections are still separated by a considerable space, and can only be drawn together by springing the spoke-arms slightly. The force required to spring together the outer ends of the spoke-arms and bring the ends of the rim-sections into contact is thus added to the force with which the hub-sections are clamped together on the shaft, and the friction of the hub on the shaft is thus materially increased.

Having now described and explained my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a split pulley, the combination, with

two rim-sections having a combined angular extent slightly less than an entire circumference, of two hub-sections attached by intermediate devices to said rim-sections, respectively, and means, substantially as described, for fastening said hub-sections together and for drawing the meeting ends of said rim-sections together, each of said hub-sections having in its inner face a cylindrical groove whose axis is coincident with the axis of the rim-section, and the meeting ends of said rim-sections being free to approach each other after the axes of said cylindrical grooves become coincident, substantially as and for the purpose set forth.

2. In a split pulley, the combination, with two rim-sections having an angular extent slightly less than an entire circumference, of spoke-arms attached to said sections, respectively, hub-sections attached to said spoke-arms, respectively, and means for fastening together the spoke-arms of the two sections, each of said hub-sections having in its inner face a cylindrical groove whose axis is coincident with the axis of the corresponding rim-section, whereby when the axes of said cylindrical grooves become coincident the contiguous ends of said rim-sections shall still be slightly separate, and said contiguous ends being free to approach each other after said axes become coincident, substantially as and for the purpose set forth.

3. The combination, with the rim-sections A A, of the spoke arms B B, attached to said rim-sections, respectively, the hub-sections C C, attached to the arms B B, respectively, and grooved to form a bushing, and the bolts b'' , connecting said arms B B and hub-sections C C, the groove in each of said sections C C being a cylindrical segment whose axis is coincident with that of the corresponding rim-section, the combined angular extent of said rim-sections being slightly less than an entire circumference, and the contiguous ends of the rim-sections being free to approach each other after their axes become coincident, substantially as and for the purpose set forth.

4. The combination, with the two rim-sections A A, each having an internal flange, A', of the spoke-arms B B, each made up of two parts, $b b$, lying on opposite sides of the flange A', the plates P, extending across the outer faces of the spoke arms, and bolts b'' , passing through the plates P and the spoke-arms, substantially as and for the purpose set forth.

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

WILLIAM A. WILLINGHAM.

Witnesses:

ROBT. H. WILES,
ROBINSON WHITE.