July 1, 1930. L. J. OLLESHEIMER 1,769,160

DEVICE HAVING WEAR RESISTANT SURFACE

Filed Dec. 21, 1927

Fig. 2.

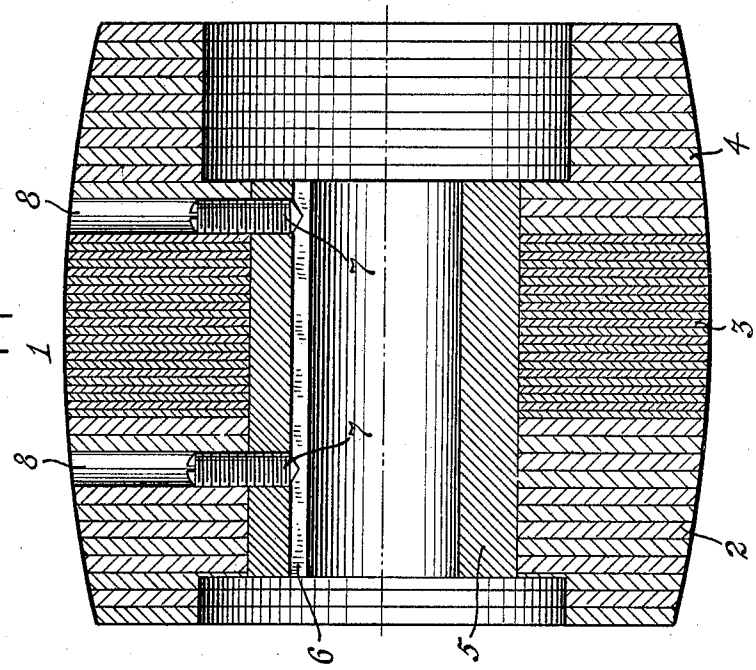
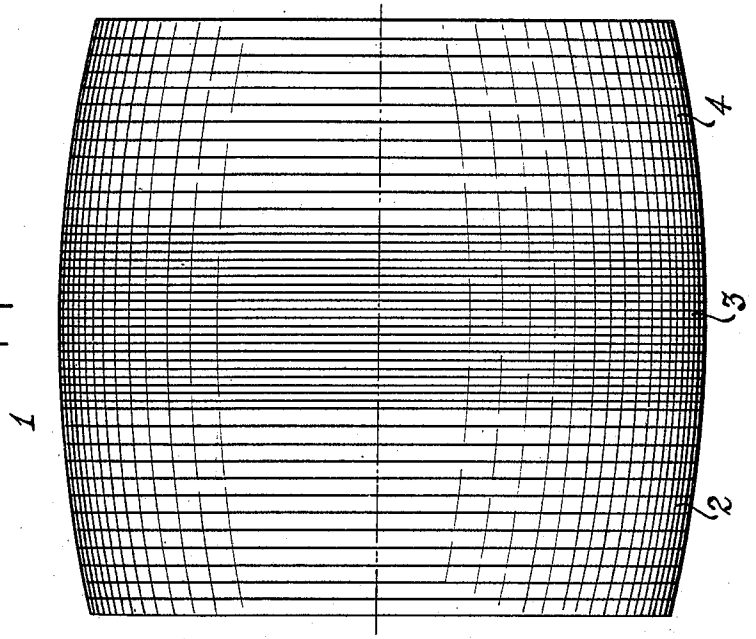


Fig. 1.



WITNESS

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DEVICE HAVING WEAR-RESISTANT SURFACE

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This invention relates to devices having wear-resistant surfaces, and more particularly to crown pulleys constituted of fibrous material.

An object of the present invention is to provide a pulley whose constitution is such that the driving face of the pulley wears substantially evenly without any material change in the surface contour.

A further object of the invention is to provide a crown pulley having such a construction that the crown of the pulley is always preserved and maintained in spite of the accentuated wear to which the crown is subjected in excess of the wear on the outer portions of the pulley.

My invention comprises, generally speaking, in fabricating a pulley of a plurality of elements having different characteristics with respect to the rate of wear, and in arranging the elements in such a manner as to position those elements having the lowest rate of wear, i. e., the most durable, at the portion or portions of the pulley subject to the greatest wear, and the elements having the highest rate of wear, i. e. less durable than the aforesaid portion, at the portion or portions of the pulley subjected to the least wear. By incorporating the principles of my invention in any type of pulley, I give the latter such a constitution that even under the most adverse circumstances of operation, as where abrasive dust comes into contact with the pulley, all portions wear away at such rates that the general contour of the face of the pulley remains unchanged. This preservation of surface contour is brought about by the fact that although the pulley wears away fastest at certain portions, the latter are constituted of more resistant material than the portions not subjected to accentuated wear, thus the surface of the pulley as a whole wears away substantially evenly. In the aforesaid manner I can select materials having proper and appropriate characteristics for the function that they are to perform and then arrange these materials in a pulley so as to preserve any desired shape.

The invention as well as features and advantages thereof will be made clear by a description of a certain preferred embodiment thereof, as illustrated in the accompanying drawings, in which Fig. 1 is an elevational view of a crown pulley embodying my invention; and Fig. 2 is a sectional view of the pulley illustrated in Fig. 1 showing the internal construction thereof.

Referring to the drawings, the numeral 1 generally designates a crown pulley embodying my invention. In fabricating the crown pulley, a multiplicity of sections of material having varying characteristics are preferably used. The number and kind of sections used may vary depending on the particular conditions and circumstances, but in the present instance, a pulley is shown as constituted of three sections or laminæ 2, 3, and 4, which are firmly united and secured together. Sections 2 and 4 are made of similar material and construction and constitute the outer portions of the pulley, whereas section 3 is made of a different material and construction than sections 2 and 4 and constitutes the central or crown portion of the pulley. Any well known method may be employed to secure the sections or laminæ to each other, but I prefer to unite the various sections together by surfacing them with a binder and then subjecting them to hydraulic pressure for a suitable period of time. In this manner a laminated pulley embodying my invention may be easily, economically, and conveniently manufactured on a commercial scale.

The selection of the material and the type of construction of the individual elements depends on the particular conditions and circumstances. In the case of crown pulleys, for example, I have found that composite lumber made in accordance with the Patent No. 1,465,383, issued to Walsh and Watts on August 21, 1923, is a satisfactory material. Lumber of this type which has been compressed to about 50% to 60% of its original thickness may be employed for the central or crown portion 3 of the illustrated pulley and lumber compressed to about 70% of its original thickness for the outer portions 2 and 4. Crowns made in the aforesaid manner are hard and resistant and wear away very much more slowly than the less resistant outer por-

tions of the pulley. By constructing pulleys in the aforesaid manner, it is possible to produce a crown pulley which will retain throughout the useful life thereof its original, general form and particularly its crown.

The pulley 1 is provided in the usual manner with a metal hub 5 of any appropriate type which has a standard keyway 6 incorporated therein. Projecting into the keyway are set screws 7 which are intended to hold a key in position when the pulley is mounted on a shaft. These screws can be inserted through holes 8 extending through the wooden pulley and the wall of the metal hub. As is well understood, these screws are removed when putting the pulley on a shaft and inserting a key to lock the pulley to the shaft. After the pulley and key are in position, the set screws are screwed in holes 8 so that they abut and make a holding contact with the key.

When using my improved pulley it tends to wear away like any other pulley made of fibrous material or any other material, but due to the fact that the central portion of my pulley is harder than the outer portions, it wears away at a lower rate than the outer portions. Due to the aforesaid difference in the wearing rates of the central and outer portions, the crown as well as the general contour of the face of the pulley is maintained and preserved.

It is to be noted that although the invention has been described with particular reference to pulleys, the principles of my invention may be incorporated in any device having a wear-resistant surface which is subject to varying degrees of wear at different portions of the surface.

It is to be observed that my invention may be incorporated in any type of pulleys, all or any of which have surface contours and shapes and constructions different from that possessed by a crown pulley and that the shapes of the faces of these pulleys will be retained because of the arrangement of a multiplicity of elements composing each pulley and because of the special constitution of each element to meet the wear to which it is subjected.

It is also to be understood that although certain types of compressed composite lumber and a certain arrangement thereof in a pulley have been specified, other materials, such as compressed paper, leather, fabric, etc., and other arrangements may be employed to carry out my invention and are to be considered within the scope of the appended claims.

I claim:

1. A crown pulley constituted of compressed composite lumber comprising a plurality of elements of such lumber, the most compressed element constituting the central portion of the pulley and the lesser compressed elements constituting the outer portions of the pulley.

2. A power-transmitting device including an axis about which the device is adapted to rotate, said device having a face with a predetermined contour presenting a continuous contact surface to the element through which driving pressure is transmitted, and adapted to be subjected to different degrees of driving pressure on different parts of the continuous contact surface of said face and harder at those parts of said continuous contact surface subjected to the greatest driving pressure while less hard at the other portions of the said continuous drive-affected surface of said device.

3. A power-transmitting pulley having a face with a predetermined contour which is subjected to different degrees of driving pressure on different parts of the face thereof which comprises a multiplicity of sets of power-transmitting laminæ having different degrees of hardness and firmly united and secured together to present a substantially continuous driving face, the sets having the greatest hardness constituting the portion of the pulley subjected to the greatest driving pressure and the sets having lesser hardness constituting the other portions whereby the original predetermined contour of the face of the pulley is substantially maintained and preserved as the pulley wears away.

In testimony whereof I have hereunto set my hand.

LAWRENCE J. OLLESHEIMER.