L. WHITCOMB.

BUSHING FOR PULLEYS.

APPLICATION FILED MAY 20, 1910.

989,676.

Patented Apr. 18, 1911.

Fig. 1.

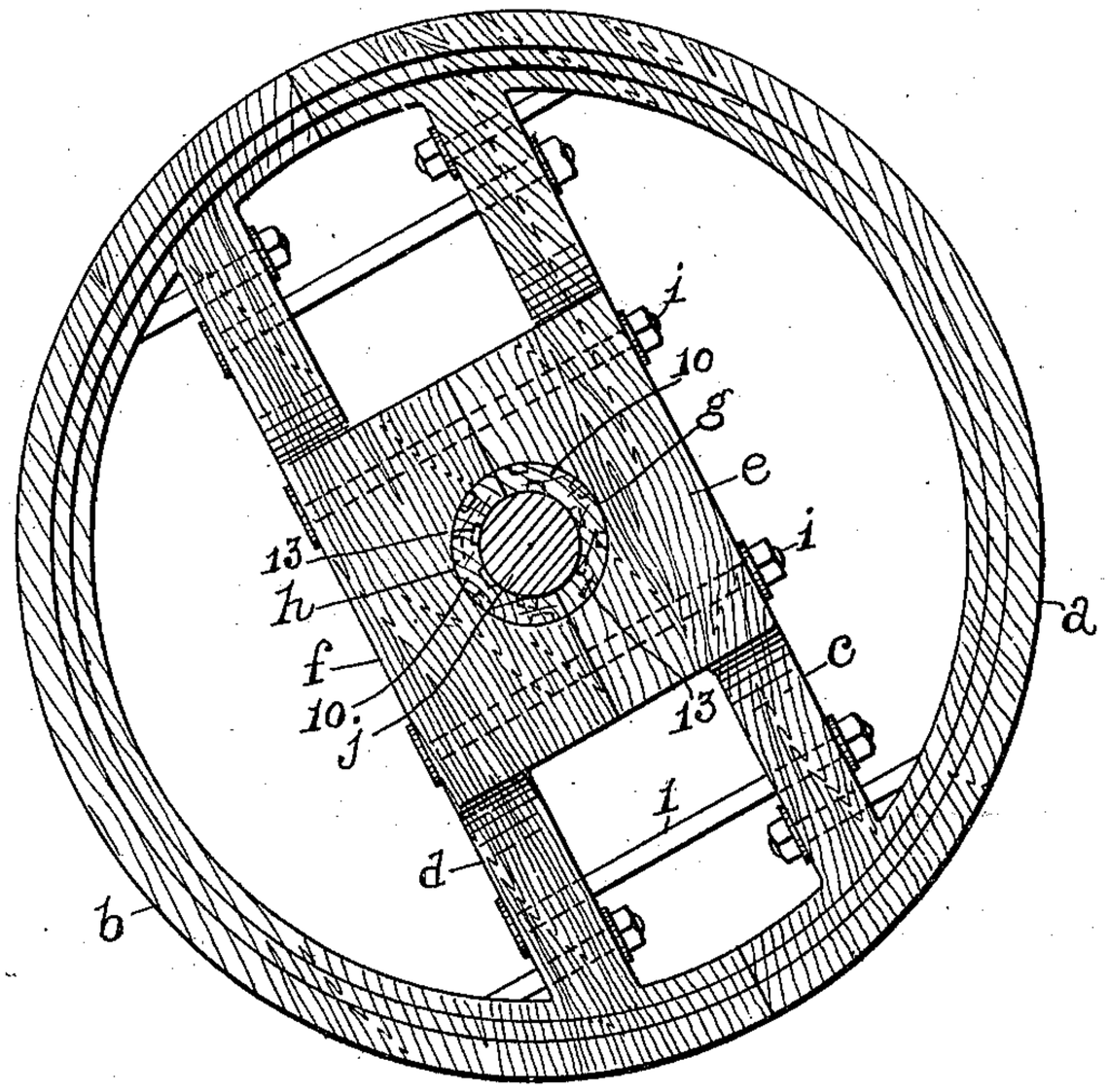


Fig. 2.

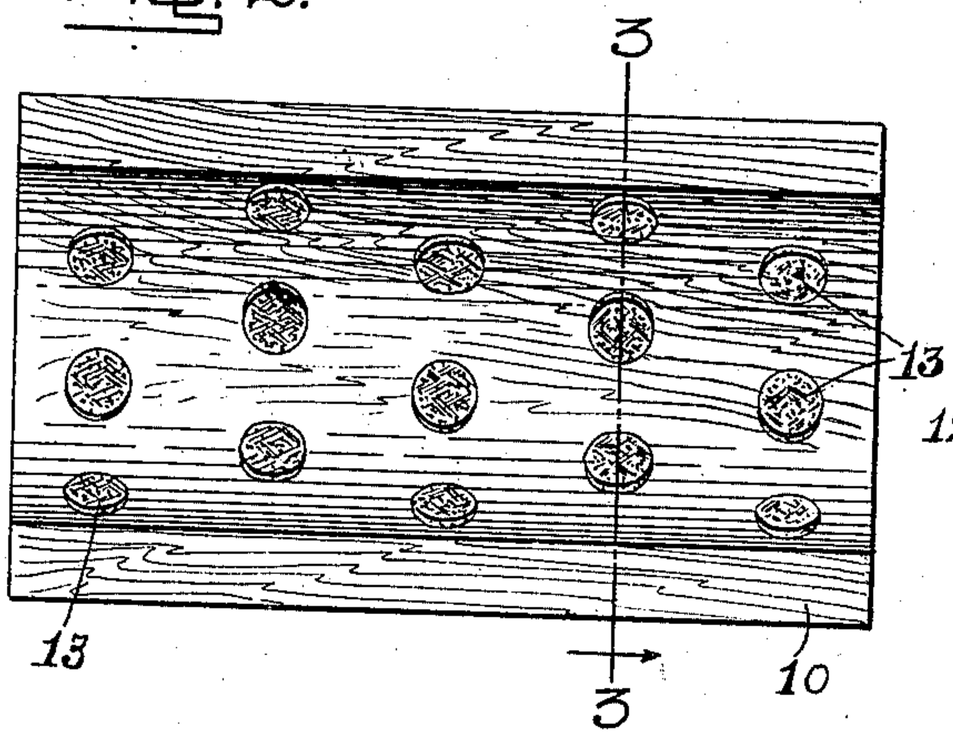
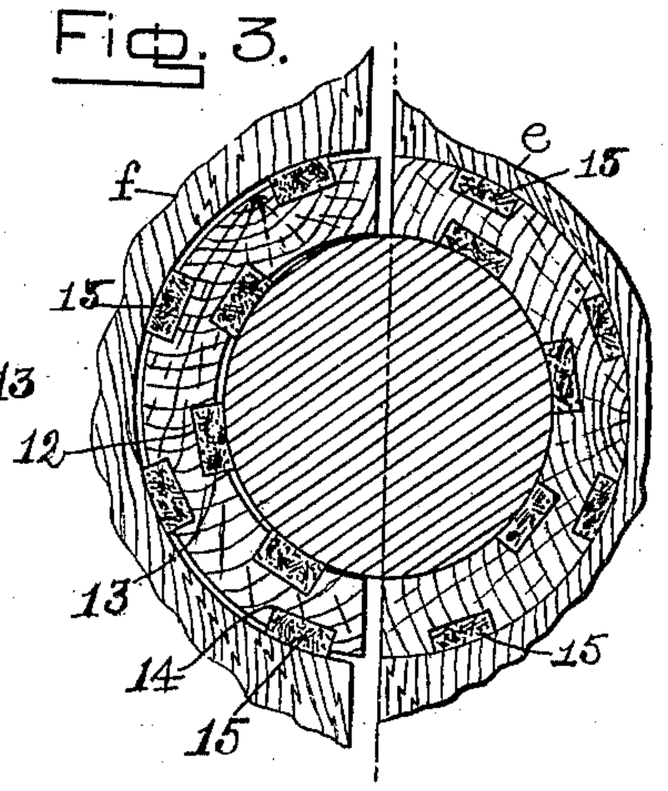


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

LAWRENCE WHITCOMB, OF BROOKLINE, MASSACHUSETTS, ASSIGNOR TO NATIONAL BRAKE & CLUTCH COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION.

BUSHING FOR PULLEYS.

989,676. Specification of Letters Patent. Patented Apr. 18, 1911.

Application filed May 20, 1910. Serial No. 562,391.

To all whom it may concern:

Be it known that I, LAWRENCE WHITCOMB, a citizen of the United States, residing in Brookline, county of Norfolk, and State of Massachusetts, have invented an Improvement in Bushings for Pulleys, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a novel bushing for use in connection with pulleys of that class which are secured to metal shafts by compressing the bushings onto the shafts so as to frictionally secure the pulleys to the same.

Pulleys of the class described are commonly made in two parts or halves and are of wood or steel. Prior to the present invention, plain wood and metal bushings have been employed with pulleys of the class described, and it is customary to insert the bushings into the hub of the pulley after the latter has been placed on its shaft, and then set up the clamping or compression screws to cause the bushings to grip the metal shaft and secure the pulley thereon. Plain wood and metal bushings are defective in gripping the metal shaft, and in the case of plain wood bushings this defect is augmented by the nature of the material, which yields under compression and also is influenced by heat and age, which cause the wood bushings to shrink and contract away from the metal shaft.

The present invention has for its object to provide a bushing for pulleys of the class described, with which the above noted defects are overcome, and the pulley is gripped to the metal shaft so as to prevent turning or slipping thereon, thereby enabling the shaft to transmit more power and also avoid the delays and losses consequent thereto caused by pulleys slipping on metal shafts. To this end, the bushings are provided with sockets on their inner and preferably on their outer surfaces, into which cork inserts are forced under compression, said inserts being retained in their sockets by the expansion of the cork, and for the best results, said cork inserts are made of sufficient length so that they project slightly beyond the surfaces of the bushing, for a purpose as will be described.

Figure 1 represents in side elevation one form of wood pulley provided with a bushing embodying this invention. Fig. 2, a plan of one half of the bushing shown in Fig. 1, and Fig. 3, a detail in cross section to be referred to, the section being taken through the corks on the line 3—3, Fig. 2.

In Fig. 1, I have represented a wood pulley of well-known construction and comprising the two halves *a*, *b*, provided with the cross bars *c*, *d*, having the blocks *e*, *f*, provided with semicircular recesses *g*, *h*, said halves being secured together by the screws or bolts *i*. The semi-circular recesses *g*, *h*, are made of larger radius than that of the shaft *j*, and into the space between the said shaft and the blocks *e*, *f*, which form the hub of the pulley, are inserted two substantially semi-circular bushings 10, prior to the compression screws *i* being set up. The bushings 10 may be made of wood, iron or other material, and in accordance with this invention are provided on their inner circumference with sockets 12, into which are forced inserts 13 of cork, which are preferably made longer than the depth of the sockets so that the cork inserts project a short distance beyond the inner face of the bushing. The bushings 10 may and preferably will be provided with sockets 14 on their outer circumference in which are forced inserts 15 of cork, and both sets of cork inserts are forced into their sockets under compression and are retained therein by the expansion of the cork.

After the cork insert bushings have been slipped into place in the semi-circular recesses *g*, *h*, the screws *i* are set up and a firm, non-slipable connection is effected between the bushings and the metal shaft *j* and also between said bushings and the pulley. As a result, the pulley is firmly attached to the metal shaft. The cork inserts on the inner surface of the bushing are especially advantageous because they increase the gripping efficiency of said inner surface, which is relatively small, and inasmuch as the corks are not influenced by atmospheric conditions, water or oil, they serve to firmly secure the pulley to the metal shaft and thereby avoid loss of power transmitted by the shaft, and also avoid the delays now common where wood or other bushings in pulleys mounted on metal shafts are employed, the number of such pulleys being innumerable. The cork inserts on the inner circum-

ference of the bushing also serve to counteract the yielding nature of the wood bushing, which has heretofore been one source of trouble in securing wood pulleys to metal shafts when the clamping devices or compression screws are set up, and they further counteract the contraction or shrinkage of the wood bushings away from the metal shaft due to the influence of heat and age, which condition is represented at the left in Fig. 3, for in this case, as the wood bushing shrinks away from the metal shaft or away from the pulley itself, as represented in Fig. 3, the cork inserts are uninfluenced by such contraction and remain in contact with the metal shaft in one instance and with the pulley in the other, and remain effective to firmly secure the pulley to the metal shaft and prevent said pulley slipping or turning thereon. The cork inserts also counteract the spring of the substantially thin hubs of steel pulleys, which springing action causes the metal bushings retained in the hubs to lose their grip on the metal shaft.

I may prefer to use the cork inserts on the exterior of the bushing, but I do not desire to limit the invention in this respect, as they may be omitted where the contacting surfaces of the bushing and pulley are both of non-metallic material, as the exterior surface of the bushing is of greater area than the inner surface which contacts with metal.

The cork inserts may be arranged in rows after the manner represented in Fig. 2, or they may be otherwise arranged.

Claims.

1. As an improved article of manufacture, a bushing for pulleys comprising a substantially semi-circular bushing having sockets on its inner and outer circumferences, and provided with cork inserts located in said sockets and retained therein by the expansion of the cork.

2. As an improved article of manufacture, a bushing for pulleys comprising a substantially semi-circular bushing having sockets on its inner circumference and provided with cork inserts located in said sockets and retained therein by the expansion of the cork, substantially as described.

3. As an improved article of manufacture, a bushing for pulleys comprising a substantially semi-circular bushing having sockets on its inner circumference and provided with cork inserts located in said sockets and retained therein by the expansion of the cork, said cork inserts normally projecting beyond the inner circumference of the bushing, substantially as described.

4. As an improved article of manufacture, a bushing for pulleys comprising a substantially semi-circular bushing of non-metallic fibrous material having sockets on its inner circumference and provided with cork inserts located in said sockets and retained therein by the expansion of the cork, substantially as described.

5. The combination with a rotatable shaft, of a split non-metallic pulley mounted thereon, substantially semi-circular bushings interposed between the hub of the pulley and said shaft and provided on their inner circumference with cork inserts which engage the said shaft, and means to secure the parts of the pulley together and cause the cork inserts to firmly grip the shaft to turn therewith and to secure the pulley in fixed relation thereon.

6. The combination with the hub of a pulley, of a plurality of bushing members within said hub, provided on their inner surfaces with cork inserts capable of engaging a shaft extended through the said hub, and means for forcing said bushing members toward the said shaft and into frictional engagement therewith to secure the pulley in fixed relation to the said shaft to revolve therewith, substantially as described.

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

LAWRENCE WHITCOMB.

Witnesses:
JAS. H. CHURCHILL,
J. M. MURPHY.