(No Model.)

# P. JENNINGS.

## PULLEY.

No. 413,723. Patented Oct. 29, 1889.

Fig. 1.

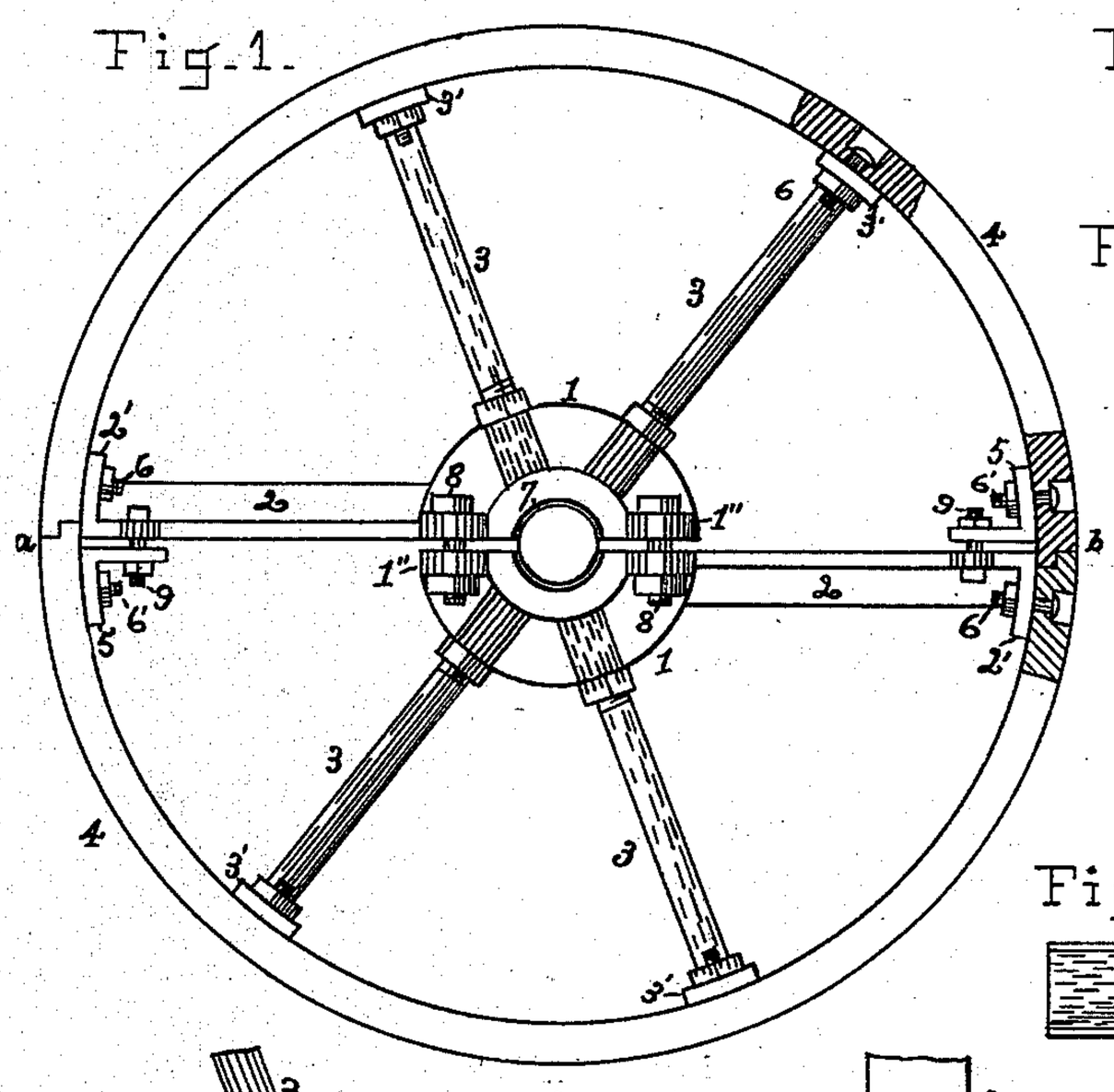



Fig. 2.

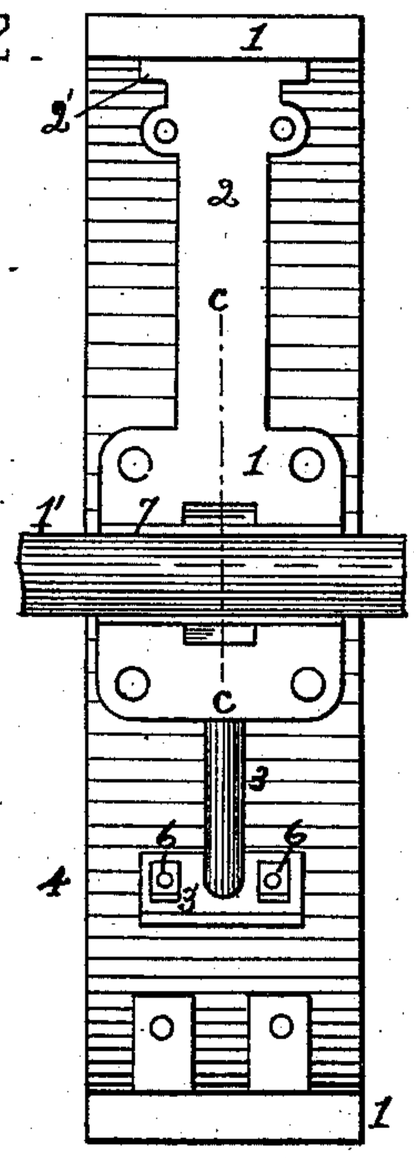



Fig. 6.


Fig. 5.

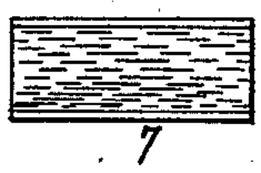



Fig. 3.

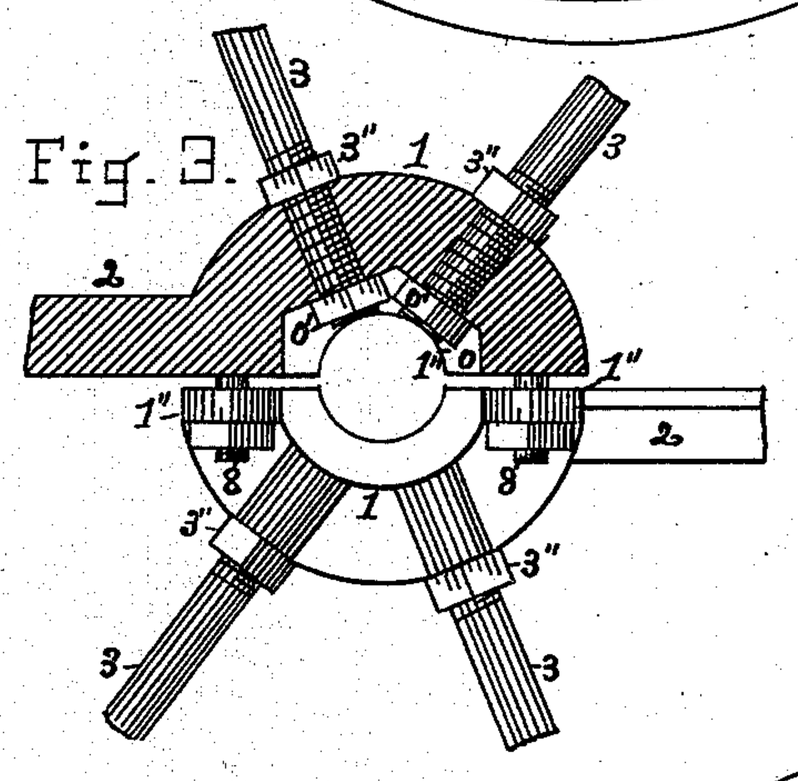



Fig. 4.

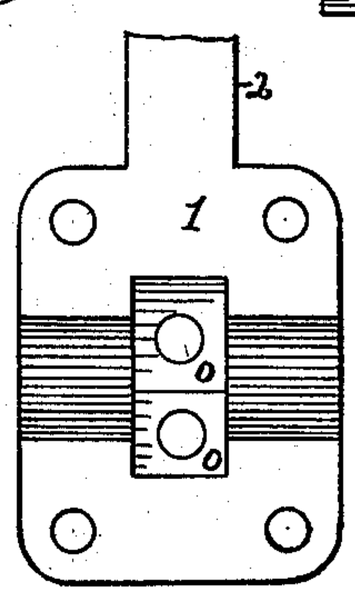



Fig. 9.

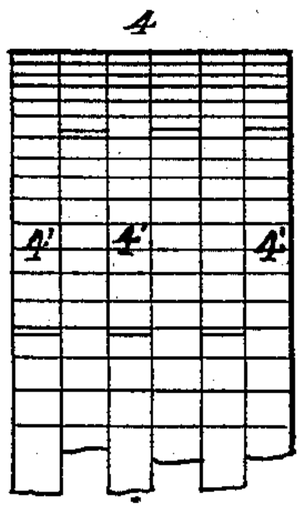



Fig. 7.

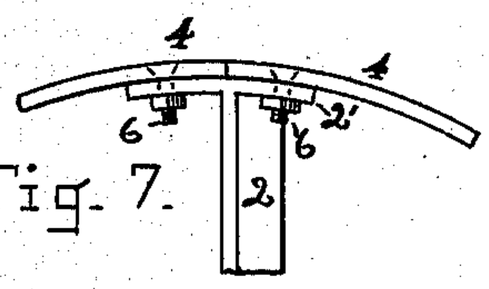
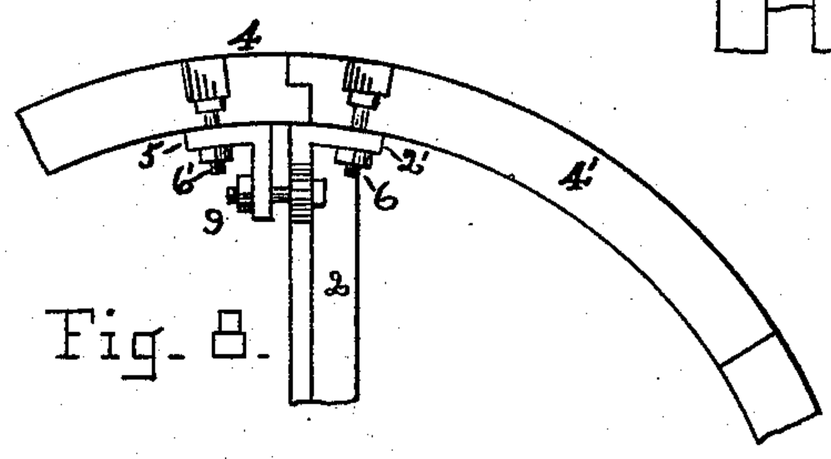



Fig. 8.

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# UNITED STATES PATENT OFFICE.

PETER JENNINGS, OF MENASHA, WISCONSIN.

## PULLEY.

SPECIFICATION forming part of Letters Patent No. 413,723, dated October 29, 1889.

Application filed July 16, 1889. Serial No. 317,663. (No model.)

*To all whom it may concern:*

Be it known that I, PETER JENNINGS, a citizen of the United States, residing at Menasha, in the county of Winnebago and State of Wisconsin, have invented a new and useful Improvement in Pulleys, of which the following is a specification.

My invention relates to a separable pulley having a metallic hub and a wood bushing therefor, one of the pulley-arms being cast integral with the hub, and the others having their inner end threaded and secured therein, with a nut upon said end; and the object of my invention is to produce a light and strong pulley the bore of which is adapted to be placed upon shafts of different diameters, and when so placed can be secured quickly and firmly, and can also be manufacured at a low cost. I attain these objects by the method of construction illustrated in the accompanying drawings, in which—

Figure 1 is an end view of a pulley embodying my invention, portions of the pulley-rim being shown in section. Fig. 2 is a vertical section of the same, looking downward, upon the line *a b* of Fig. 1, the end *b* being at the top. Fig. 3 is a view of the two sections of the pulley-hub, the lower one being an end view thereof, and showing a part of the pulley-arms, and the upper one a vertical section through its center, at right angles with its bore, and upon the line *c c* of Fig. 2, and showing the means of securing the detachable arms to the hub-sections. Fig. 4 is a plan view of the inner face of one of the hub-sections, a portion of the arm cast with it being broken off; Fig. 5, a plan view of one section of a pulley-bushing; Fig. 6, an end view of the same; Fig. 7, a modification of the outer end of the pulley-arm, which is cast integral with the hub-section, in its adaptation for receiving and having secured thereon a thin sheet of metal or other material, which may be adapted for a pulley-rim in any particular use it may be desired to apply it; Fig. 8, a detail showing another modification of a pulley-rim and its application to the arm integral with the hub, and Fig. 9 a view of a portion of the face of the pulley so made. Figs. 3 and 4 are upon a larger scale than the others, which are upon the same scale with respect to each other.

Similar figures of reference indicate like parts in all the views.

The figure 1 represents the pulley-hub; 1′, a shaft therein; 2, a pulley-arm cast integral with one section of the hub; 2′, ears upon said arm; 3, detachable arms; 3′, ears upon said detachable arms; 4, the pulley-rim; 5, tie-plates secured upon the pulley-rim; 6, bolts securing the pulley-rim to the ears of the pulley-arms; 7, a bushing to be placed within the bore of each hub-section and upon the shaft; 8, clamping-bolts for connecting the two hub-sections together and clamping them upon the shaft; 9, bolts used with one modification in drawing together the rim-sections and securing them in position.

In the formation of the pulley the hub 1, consisting of two equal parts and having an arm of the pulley 2 cast with it, is prepared, the two sections being put together so that said arms extend in opposite directions. Each section has also bosses 1″ for receiving the bolts 8, by which the two sections are bolted together and clamped upon a shaft.

Upon the interior of the hub-sections are cavities or sockets O, for receiving the nuts O′, and extending outward from these sockets are one or more holes for receiving the detachable arms 3. The arms 3 may be formed of metal rounded only upon their inner end for receiving the nuts thereon, or their entire length may be round, and they may consist of gas-pipe, round iron, or of steel. Upon the outer end of the arms are ears 3′, which may be formed integral with the arms, cast upon, or drilled, threaded, and screwed thereon, as the size and purpose of the pulley demand. These arms are shown as having two nuts upon their inner ends—one 3″ outside and the other O′ inside of the hub and within the cavities or sockets O. A fixed collar in the place of the outside nut will answer the same purpose as the nut, the inner one, upon being screwed up securing the arm to the hub as effectively as a nut in said place. Upon the arms being secured in position in the two hub-sections, the sections are bolted upon a mandrel, and the ends of the arms dressed to a circle if the inequalities of their length requires said proceeding. The semi-circular rim-sections are then prepared and

made of the required length, when they are bolted to the ends of the pulley-arms, as shown. This method of constructing the hub-sections and arms therein is adapted for receiving semicircular rim-sections of various material and structure. In Fig. 1 is shown a bent-wood rim; in Fig. 7 a thinner rim, which may be of thin metal or wood, and if of the latter may consist of layers of thin veneering, the grain of the several layers running across each other; or the rim-sections may consist of segments of wood 4′ 4′ 4′, as shown in Fig. 9, and said segments may be put together with glue or nails in a manner well known to all pulley-makers. Our invention is not confined in its application to a rim of a particular material or construction, as many are adapted for use with the hub, as are herein shown and described.

If the rim-sections are of thick material, as shown in Figs. 1, 8, and 9, they may have their meeting ends rabbeted and be bolted to the end of the pulley-arms with carriage or machine bolts having their heads countersunk, as shown, and to each other by means of the tie-plates 5 and bolts therein. If said rim-sections are of material of insufficient thickness for being rabbeted and bolted as just described, the arms integral with the hub-sections may be provided with ears, as shown in Fig. 7, extending from two of their sides, and the rim-sections secured to the ears by stove-bolts, or those having heads of the form of said bolts, and the heads left flush with the outer surface of said rim-sections, the tie-plates and bolts connecting them with the arms 2 being in this modification dispensed with. After the rim-sections are secured in position the outer surface of the rim and its edges are finished by being turned or ground to the exact contour desired, when by loosening the clamp-bolts 8 the mandrel may be removed and the pulley further finished by painting, &c., if desired.

The bushing 7, of semicircular or cylindrical form, is produced from a piece of wood of the desired length and of a uniform thickness, the grain thereof running longitudinally of said cylindrical form. It is made soft by steaming or otherwise and pressed into a mold of about the diameter its outer surface is desired to be, in which form it is allowed to dry, when it is ready for use. One or more thicknesses of the bushing can be inserted in each half of the hub, as the diameter of the shaft and the bore of the pulley require to adapt one to the other. Being clamped between said parts, a slight degree of elasticity therein produces a perfect joint between the metallic surfaces of the shaft and hub and a high degree of adhesion to the shaft. It will be evident that other sets of arms can be formed upon and inserted in these hub-sections for the purpose of producing greater width of face to the pulley than one set of arms is adapted to properly support, and that the number of detachable arms can be increased or diminished to adapt their number to the diameter and width of face required.

I am aware that it is not new to make a separable pulley; neither is it new to make one having a metallic hub and arms and a bent rim of wood or metal; and I do not claim, broadly, this particular method of construction, as it is shown that rims of various kinds are adapted to be used in connection with the hub and arms herein described and shown. The use with a pulley of a bushing of wood is also old; but they have been made, as far as I am informed, by sawing or cutting them of the circular cross-section required to fit a pulley from a block of wood, whereby the grain of the bushing was cut in a circular direction, separating the grains, and thereby making the compressibility of the bushing uneven and the bushing more easily broken into pieces in packing or transporting it or in applying the same to use.

Having described my invention and the manner of its construction, what I claim, and desire to secure by Letters Patent, is—

The combination, in a separable pulley, of a hub divided longitudinally of its bore and comprising two similar sections, having bosses formed thereon for receiving bolts for clamping the sections together and sockets within their bore adapted to receive a nut, each section having a pulley-arm cast integral therewith and one or more detachable arms inserted therein, said detachable arms each having near its inner end and outside of the hub-section a collar or nut and upon its extreme inner end and within the socket aforesaid a nut securing the arm and hub-section together, and the outer ends of the pulley-arms being provided with ears adapted to and receiving semicircular pulley-rim sections, and means, substantially as shown, for securing the arms to the pulley-rim sections and to each other, and the clamp-bolts 8, for securing the hub-sections together and clamping them upon a shaft, substantially as described.

PETER JENNINGS.

Witnesses:
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