(Model.) 2 Sheets—Sheet 1.

W. R. FEE.

WOODEN SPLIT PULLEY.

No. 379,198. Patented Mar. 6, 1888.

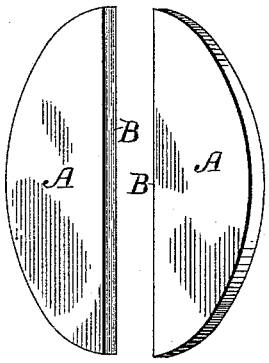


Fig. 1.

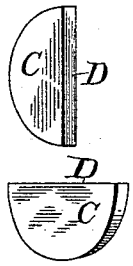


Fig. 2.

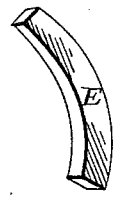


Fig. 3.

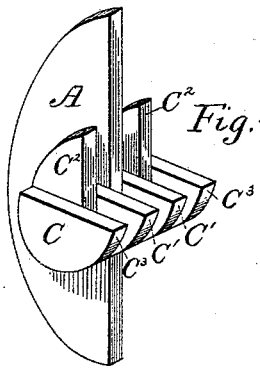
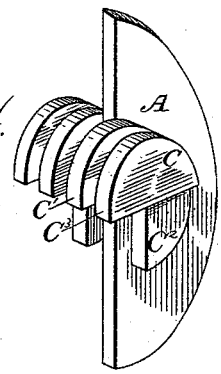


Fig. 4.



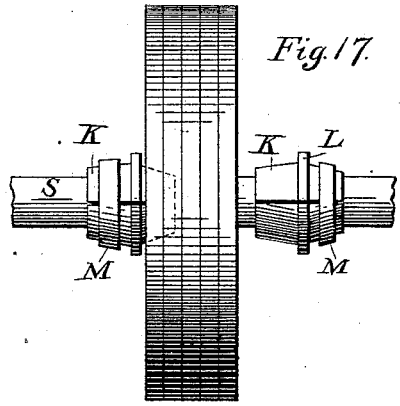


Fig. 17.

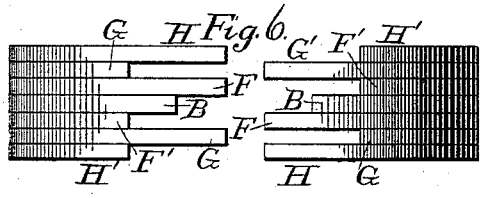


Fig. 6.

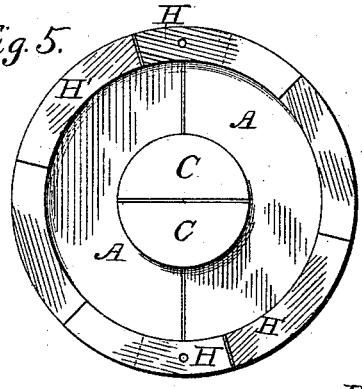


Fig. 5.

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Geverance.

L. L. Whiting

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By L. Deane

his Attorney.

(Model.) 2 Sheets—Sheet 2.

W. R. FEE.

WOODEN SPLIT PULLEY.

No. 379,198. Patented Mar. 6, 1888.

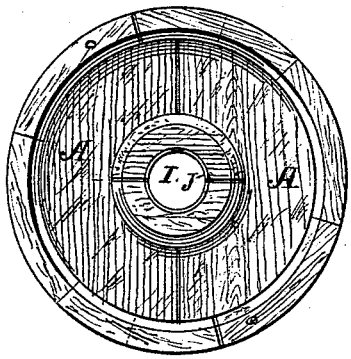

Fig. 7.

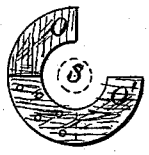

Fig. 8.

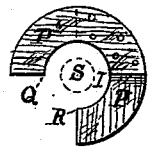

Fig. 9.

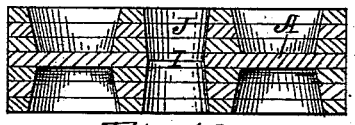

Fig. 10.

Fig. 15.

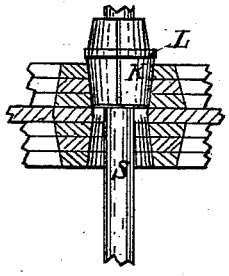

Fig. 11.

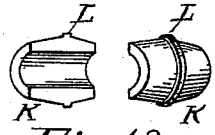

Fig. 12.

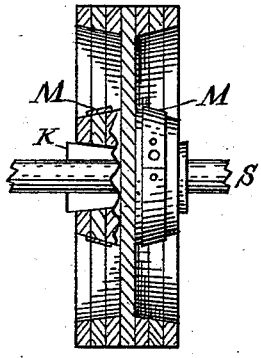

Fig. 16.

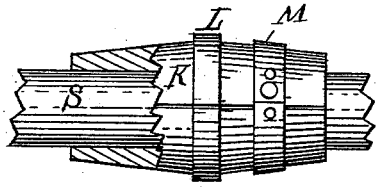

Fig. 14.

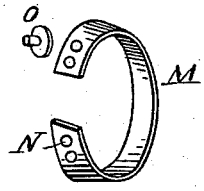

Fig. 13.

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Inventor:
W. R. Fee
by Chas. S. Burke
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM R. FEE, OF CINCINNATI, OHIO, ASSIGNOR TO HENRY MALEY, HENRY C. BAILEY, AND GUILFORD E. MAYFIELD, OF EDINBURG, INDIANA.

WOODEN SPLIT PULLEY.

SPECIFICATION forming part of Letters Patent No. 379,198, dated March 6, 1888.

Application filed September 6, 1887. Serial No. 248,953. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM R. FEE, of Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Wooden Split Pulleys, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a perspective view of the web-sections of my improved pulley; Fig. 2, a perspective view of portions of the blanks or parts (unbored) of which the hub-section is made; Fig. 3, a perspective view of one of the rim-segments; Fig. 4, a perspective view of a pair of webs having the parts or blanks of which the hub-section is made built up thereon, but not yet bored; Fig. 5, a side view of a pulley complete, ready for turning up and boring the shaft-hole; Fig. 6, an edge view of parts shown in Fig. 5, showing the two sections separated and illustrating the manner in which the rim-segments interlap; Fig. 7, a side view of the pulley turned up and bored; Figs. 8 and 9, side views of the hub-sections and end of the shaft; Fig. 10, a central sectional view of parts shown in Fig. 7; Fig. 11, a section of hub, showing application of tapering bush between shaft and hub; Fig. 12, a perspective view of tapering bush; Fig. 13, a perspective view of tightening-band; Fig. 14, a side view, partly in section, of tapering bush and band; Fig. 15, a side view of a double pair of lapped semicircular pieces, showing the application of the bushing; and Fig. 16 shows manner of attaching a tightening-band to the hub. Fig. 17 is an elevation showing the edge of the pulley and the shaft and bushing thereon ready to secure the pulley to the shaft.

This invention belongs to that class known as "separable" or "split" pulleys, and the object is to construct a wooden split pulley in which the hub is made with interlocking sections, so that when placed together on the shaft and tapering sleeves are driven in the flaring ends of the hub around the shaft the sleeves or bushing will so lock the hub that it cannot be driven apart, and will also at the same time bind the hub to the shaft, thus obviating the use of bolts or keys in clamping and holding the pulley to the shaft.

My invention consists in first forming a web composed of two semicircular boards, which, when placed edgewise, together are of the required diameter of the pulley. Centrally on this web, on each side, is built up the hub. The pieces forming this hub are semicircular in form, and are lapped over each other at right angles, one-half of each alternate semicircular piece projecting over the inner line of the web, and the other alternate pieces have their straight edges even with the straight edge of the web. The circular edges of the webs have built up on each side circular segments, so as to form the rim or face of the pulley, and each alternate segment has one of its ends projecting over the straight edge of the web, while its opposite end terminates at a point short of the edge, the next segment being so located that it projects over the retreating end of the former segment at one end and retreats at the other end. After the two sections of the pulley are thus constructed, they are placed together, the right-angled hub-pieces and the projecting and retreating ends of the rim-segments of each half-section of the pulley respectively interlapping and forming a complete pulley. Afterward a central bore is formed through the pulley-hub, and each end of this bore is reamed out tapering or flaring of a larger diameter than the shaft, so as to receive tapering bushes or sleeves, which are placed around the shaft at each end of the hub.

In the accompanying drawings, A A represent the web of an improved pulley. The web is composed of two pieces, each semicircular in form, having one straight edge, B. When the straight edges of the two pieces are put together, their diameter represents the size of the pulley to be made. They are preferably constructed of inch boards, although any thickness will answer. It will be observed that the grain of the wood runs lengthwise of these pieces. In Fig. 2 I show smaller pieces, C, but of the same form as the web, Fig. 1. These pieces C are designed to form the hub of the pulley. Thus in Fig. 4 the web-sections

A are shown with the hub-sections attached. As the grain in the hub-sections also runs lengthwise, it will be observed that in building up the hub the different sections are to be lapped across each other, so that the grain of the wood will be at right angles. Thus the first hub-section C on each side of the web is laid on the web so that the straight edge D is midway between the ends of the web on the edge B. One half, C′, of the hub-section therefore projects over the edge B, while the other half is glued and nailed or otherwise secured to the web. The next section or half-segment is laid on the section just secured to the web so that its edge D will be on a line and even with the edge B of the web. One-half of this section, as shown at C^2, projects over the edge D of the preceding section. The third hub-section is then placed on this last section, with its end C^3 projecting over in like manner as shown at C′ of the first section. Both sides of the web are therefore built on, and the webs, Fig. 4, are complements of each other. The sections C are so placed on the center of the other web that their projecting ends C′ C^3 will enter the recesses formed by the projecting end C^2 of the other half of the pulley.

The segments E (shown in Fig. 3) are next secured to the circular edges of the web A, as shown in Fig. 5. In placing them on the web the first segment, as shown at F, projects beyond the edge B of the web A, while its opposite end is located back of the edge B. An illustration of this is given at F′. The next segment, G, is placed on the segment F so that its end not only is placed to the rear of the end of segment F, but it is located back of the edge B a distance equal to the projection of the segment F beyond the edge B. The opposite end G′ projects beyond the edge B, so as to fill the space caused by placing the end G to the rear of the end segment, F. The next segment, H, projects over the edge B to a point even with the end of segment F, and the opposite end at H′ is placed at a point even with the end F′. When, therefore, the two halves or completed sections are placed together, as shown in Fig. 5, the hub-sections C′ interlap, as well as the segments which form the rim or face of the pulley. It is obvious that in building up the rim care must be taken to so lap the segments as to break joints and cross the grain of the wood, and in building up the hub the grain of the wood in the alternate semicircular pieces C must be exactly at right angles to each other.

The next step in constructing the pulley is to chuck it in a lathe and bore out the center, as shown in Fig. 7. Each end of the bore I is made flaring, as shown at J, Fig. 10. When this is done, the pulley is placed on a shaft and secured thereto by means of taper sleeves, and the rim and hub turned up true. The pulley is then ready for the market.

The device for fastening the pulley to the shaft will now be set forth.

In Fig. 12 is shown a split bush or sleeve, K. These two parts, when placed together, have a central rib, L, and from this rib is a taper toward each end. The taper of either one or both of these ends is the same angle as the flare J in the bore of the hub.

In Fig. 13 is shown a band, M, having at each end a series of holes, N. This band is designed to be placed on one end of the tapering bush when the bush is on the shaft, and a rivet, O, employed to hold the two ends together. After the other end of the tapering bush has been driven into the flaring bore of the hub, the band M is driven tightly on the projecting end of the bush, thereby holding the bush tightly to the shaft.

In order that the construction of the flaring bush and the tapering bore of the hub may be understood, it is necessary to refer to the peculiar feature of the hub-sections, caused by lapping them over each other at right angles. Figs. 8 and 9 will explain this. It will be noticed that the two semicircular pieces O O′ in Fig. 8, and P P′, Fig. 9, when placed together, will exactly fit each other and form a perforated disk of two thicknesses of boards. For convenience, we will refer to these two sections O O′ as one half of the disk, and the other sections, P P′, as the other half of the disk. As each half of the disk is bored, it is obvious that the bore I in each half presents a surface equal to three-fourths of the circumference of the shaft. Therefore the lapping of the semicircular pieces O O′ P P′ at right angles and boring them so the center of the hole is located at the intersection of the lapped pieces produce a hole the walls of which extend around three-fourths of a complete circle, leaving an opening on one side equal to one-fourth of a circle. It is obvious, therefore, that if the pulley is to be placed on or removed from a shaft the bore would necessarily have to be larger than the diameter of the shaft. In Fig. 9 the distance between the points Q R represents the largest size shaft which can be used. When the two sections of the pulley-hub are placed on the shaft S and the projecting sections and segments are interlapped, the tapering bushing K is placed on the shaft and driven into each end of the hub. It should be observed that in Figs. 8 and 9 the bore is not shown to be flaring, as in Fig. 10, because they are merely given to illustrate the manner in which the projecting ends of the semicircular pieces are lapped together.

By referring now to Fig. 15, it will be seen how the lapped and projecting ends of the two halves, Figs. 8 and 9, when placed together on a shaft, S, lock around the bushing K.

In placing a pulley on a shaft, no bolts or screws are necessary. As the tapering bushes are fitted upon the shaft, their outer tapering faces fit the flaring portions of the bore of the hub, and are then driven into the hub on each side and complete the locking of the halves of the pulley together.

It is sometimes advisable, as shown in Fig. 16, to put the band M around the ends of the pulley-hub as well as around the projecting

tapering end of the bush. This adds additional strength to the hub, and is useful when it is necessary to force the taper bush into the hub with great force. Generally, however, this is not necessary.

What I claim as new is—

1. A wooden split pulley having a web centrally divided, on each half-web of which is built up on both sides a hub composed of semicircular pieces, each alternate piece being at right angles to the inner straight edge of the web, and so disposed that the projecting ends of the pieces of the opposite half-webs interlap, substantially as herein set forth.

2. In a pulley, a web centrally divided and having a separable interlapping hub, as shown, provided with a central bore flaring at each end, in combination with a tapering bush at each end of the hub, substantially as herein set forth.

3. In a pulley, a separable interlapping hub on a centrally-divided web, composed of semicircular pieces secured together alternately at right angles to each other on both sides of the web, and provided with a central flaring bore, in combination with a split tapering bush, substantially as set forth.

4. A wooden split pulley composed of a web centrally divided, and provided with a separable hub built up on both sides of each half of the web of semicircular pieces disposed at right angles to each other, as shown, in combination with the rim, formed of segments, the ends of which overlap beyond the central dividing-line of the web, substantially as herein set forth.

5. In a wooden pulley, the divisible hub having a central bore flaring at each end, in combination with a double tapering split bush and a tightening band or strap on the outer tapering end of the bush, substantially as herein set forth.

6. In a pulley, a separable hub having a central bore flaring at each end, in combination with double tapering bushes and tightening bands or straps on the outer ends of the bushes, and a band or strap on the ends of the hub, substantially as herein set forth.

7. A split pulley having a separable hub and a central flaring bore, in combination with a tapering bush in each end of the hub and a tightening band or strap on each end of the hub, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand.

WILLIAM R. FEE.

Witnesses:
HERMAN O. SUMMERS,
J. S. ZERBE.