

F. B. TORREY.  
Pulley-Sheave.

No. 221,879.

Patented Nov. 18, 1879.

Fig. 1.

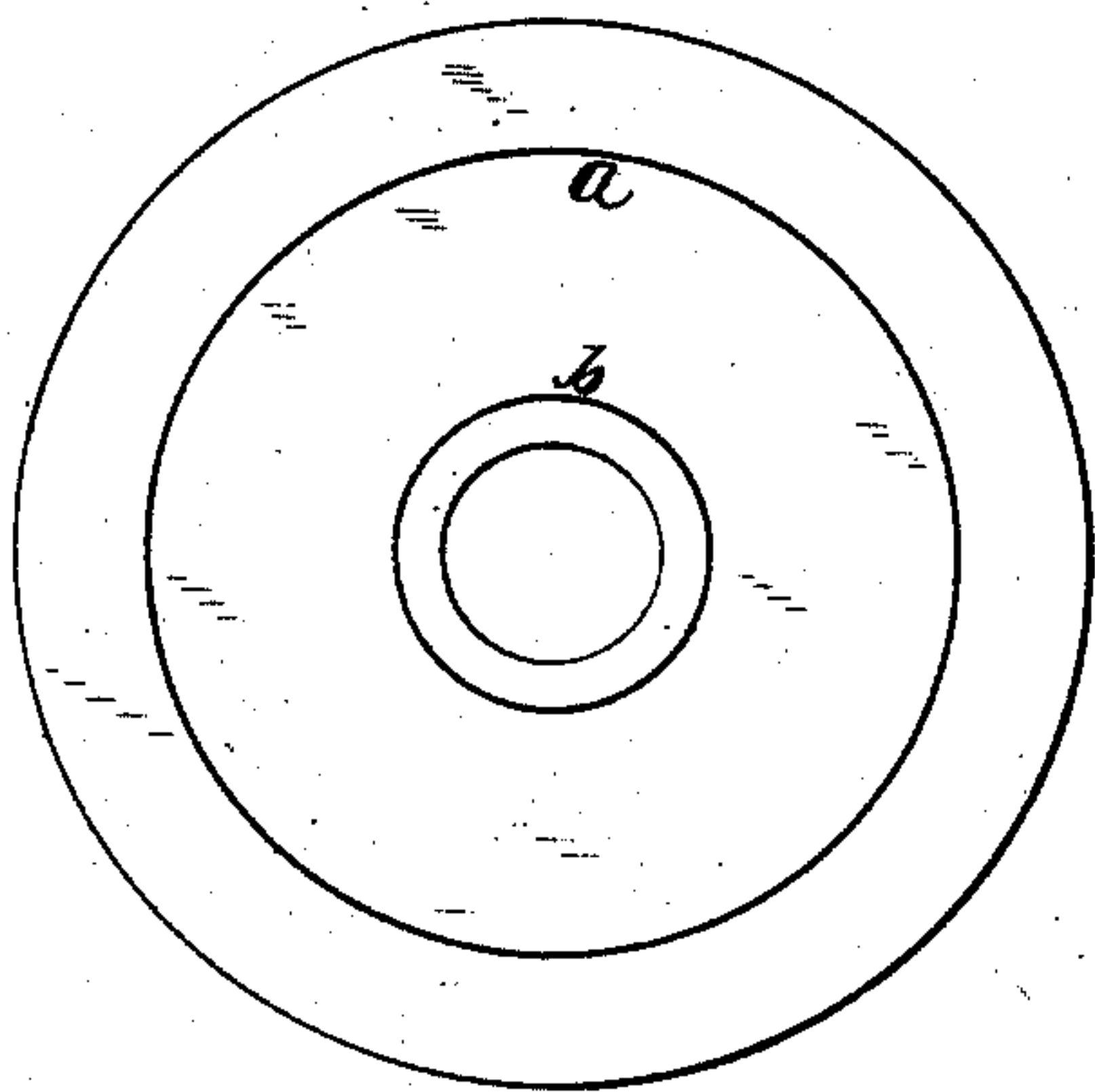


Fig. 3.

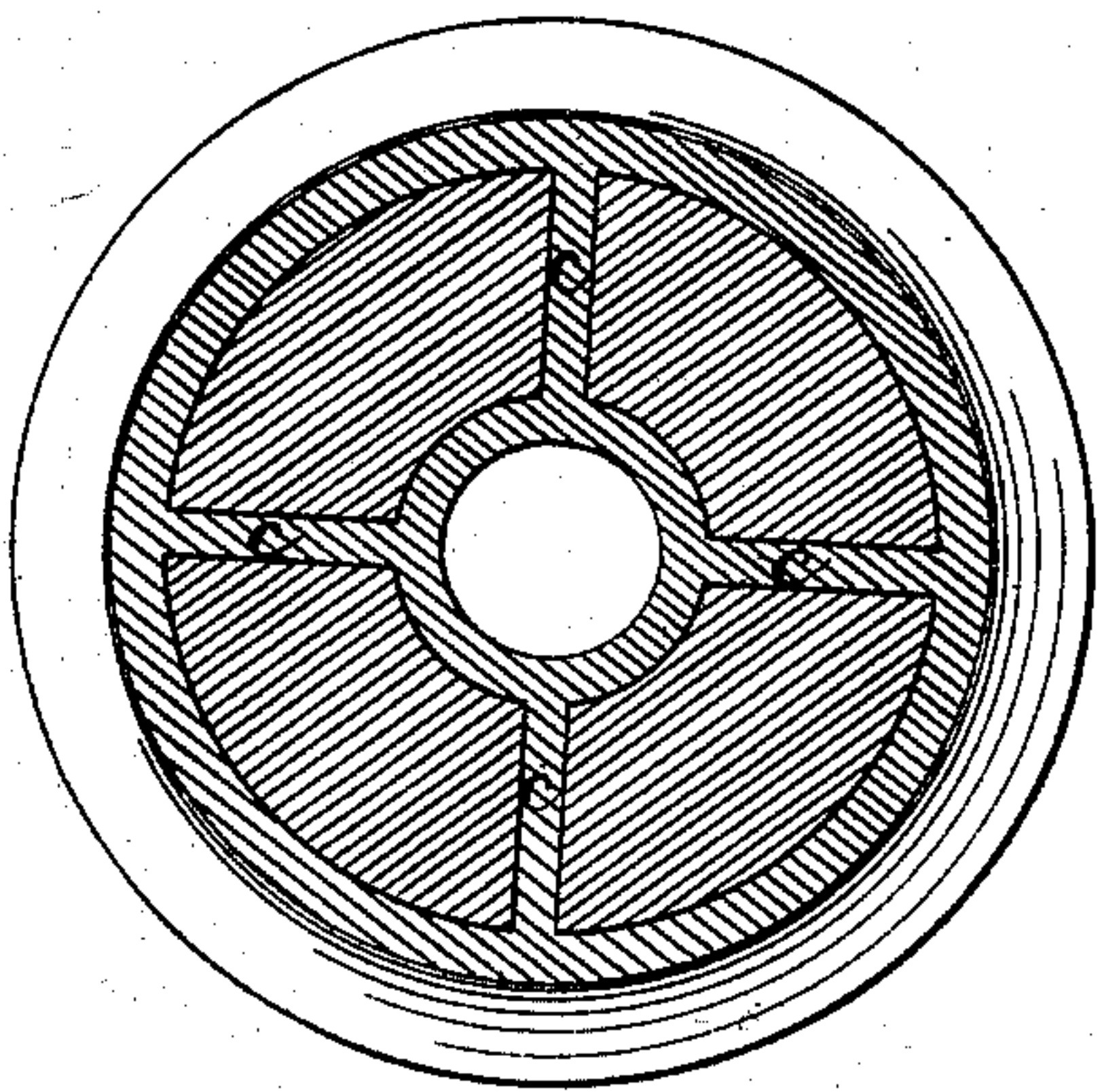
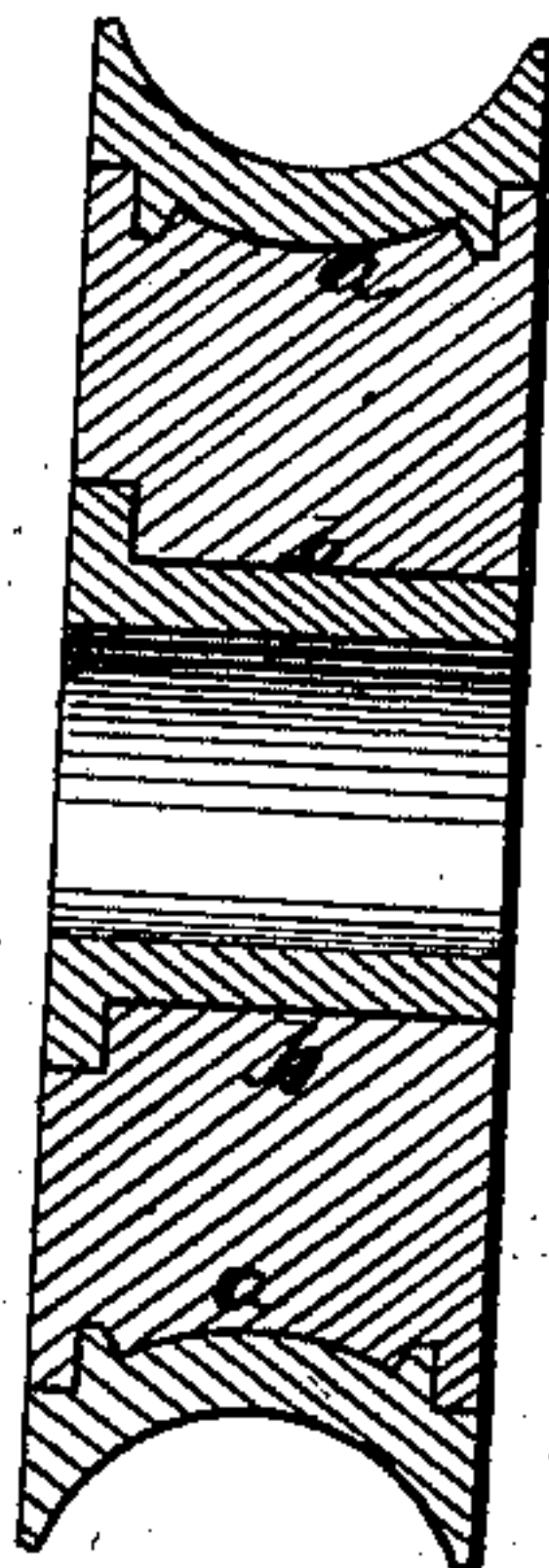


Fig. 2.



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# UNITED STATES PATENT OFFICE.

FRANCIS B. TORREY, OF BATH, MAINE.

## IMPROVEMENT IN PULLEY-SHEAVES.

Specification forming part of Letters Patent No. **221,879**, dated November 18, 1879; application filed April 11, 1879.

*To all whom it may concern:*

Be it known that I, FRANCIS B. TORREY, of Bath, Sagadahoc county, Maine, have invented an Improvement in Sheaves for Pulleys, of which the following is a specification.

My invention relates to sheaves for pulleys; and the object of it is to produce a sheave lighter than those made wholly of metal, and more durable than sheaves made wholly of wood.

It consists of a sheave the body of which is formed of wood of a lighter and cheaper kind than those ordinarily used for sheaves, with a rim of metal cast upon the wooden disk, having flanges, or an equivalent construction, to retain the rim upon the wood.

It also consists of metal spokes formed integral with the rim or bushing, or with both, all as hereinafter set forth.

In the accompanying drawings, Figure 1 represents a side view; Fig. 2, a central section through the axis of the sheave, and Fig. 3 a sectional section across the axis.

Heretofore sheaves have been made commonly either wholly of metal or wholly of wood. When made of metal they are necessarily very heavy, and are objectionable for that reason. When made of wood they have been made of very hard, heavy, and expensive kinds of wood, the objections to the use of which are well known. It has also been suggested that wooden sheaves might be covered with a band of sheet metal spun upon the wood, so as to cover the edges and prevent the wear and breakage to which a wooden sheave is liable.

I seek to obviate the defects in sheaves heretofore known or used by surrounding the wooden sheave with a band of metal cast thereon, using for that purpose those compositions of metal which melt at a low temperature, and which would not, therefore, seriously injure the wood by burning it when cast thereon.

In carrying out my invention I take woods of the lighter kinds which are firm and strong, such as ash and similar woods. It is not necessary that the wood which forms the body of the sheave should be of the very hard and heavy varieties which have heretofore been used in making sheaves formed wholly of wood, the lack of hardness and toughness being compen-

sated for by the metal rim which is placed about it.

I form the sheave by turning the periphery into suitable shape. This may be the form which is ordinarily given to the periphery of sheaves for receiving and retaining the rope, or it may approximate thereto; or, if desired, the sheave may be turned with the ordinary peripheral groove, and narrow rabbets may be turned in the outside of the flanges on each side of the groove. Upon this wooden sheave I cast the metal rim, giving to it the form in which sheaves are ordinarily made. In case rabbets have been turned on the outer edges of the flanges of the wooden sheave the metal rim is formed with a flange on the outside, which protects the wood from any abrasion at the edge. When the wooden disk is formed with the ordinary groove the metal rim is held securely in place, and cannot be removed without breaking or crushing the wood. The precise form of this groove in the wood is not material, it being only necessary that there should be some flange, or the equivalent of a flange, to hold the metal rim upon the wooden disk. When the metal band is cast upon the disk the natural shrinking of the metal in cooling causes the band to bind firmly and closely upon the wood, and renders the finished sheave solid and durable. As the wood furnishes a solid backing for the metal, the band may be made thin, not exceeding, in the larger size of sheaves, one-fourth of an inch, except at the flanges.

I have shown in the drawings a convenient form both of the wooden disk and the metal band which incloses the disk. This is shown in Fig. 1, in which *a* represents the form of the disk in section, and *b* a cross-section of the surrounding band.

In Fig. 3 I have shown an additional strengthening device which may be advantageously used in connection with my improved metal rim. This device consists of spokes, (indicated in the drawings at *c c*,) formed in the casing and integral with the metal of the band or of the bushing. When the sheave is to be formed with these spokes the wooden disk is drilled radially from the periphery to the center with a number of holes equal to the



number of spokes to be formed, four ordinarily being sufficient. When the metal band is cast upon the wood the metal will fill the holes and form spokes extending from the band to the bushing.

I contemplate ordinarily using the kind of bushing commonly adopted for such purpose; but instead of the ordinary kind of bushing I may form the bushing of the same kind of metal as that used for the band. In that case the spokes may be cast integral with the bushing, or the whole may be cast in one piece.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A sheave consisting of a central wooden disk and a metallic band surrounding said disk, and cast thereon, with flanges or equivalent form to hold the metal upon the wood, as set forth.

2. A sheave consisting of a central wooden disk, a metallic band, and spokes cast integral with the said band, as set forth.

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

FRANCIS B. TORREY.

Witnesses:

F. L. MIDDLETON,

J. W. HAMILTON JOHNSON.