No. 76,680. PATENTED APR. 14, 1868.

S. WHEELER.

PULLEY AND GEARING FOR MACHINERY.

Fig. 3.

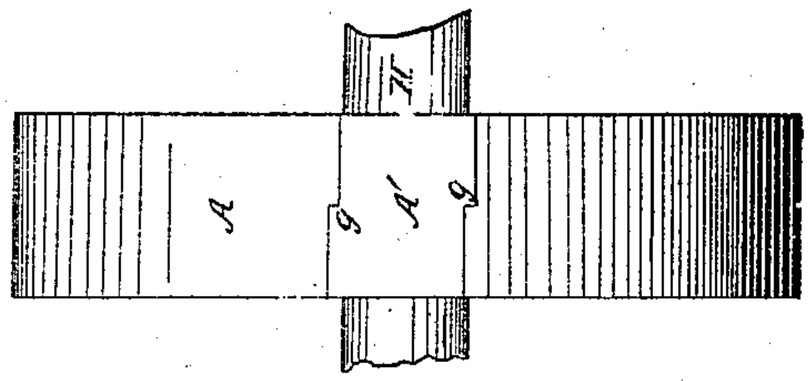


Fig. 4.

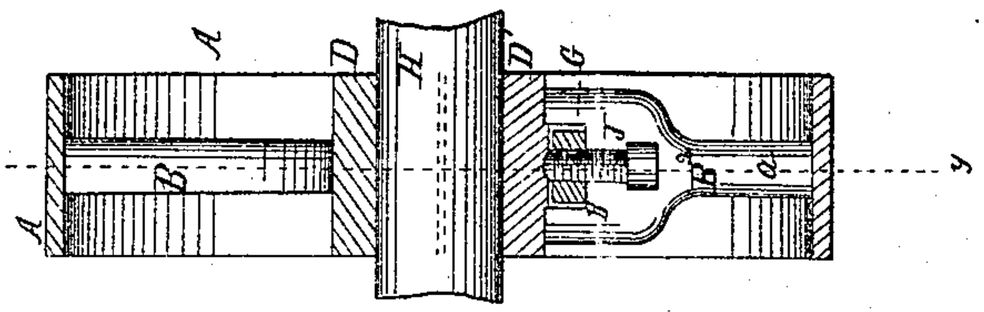


Fig. 3.

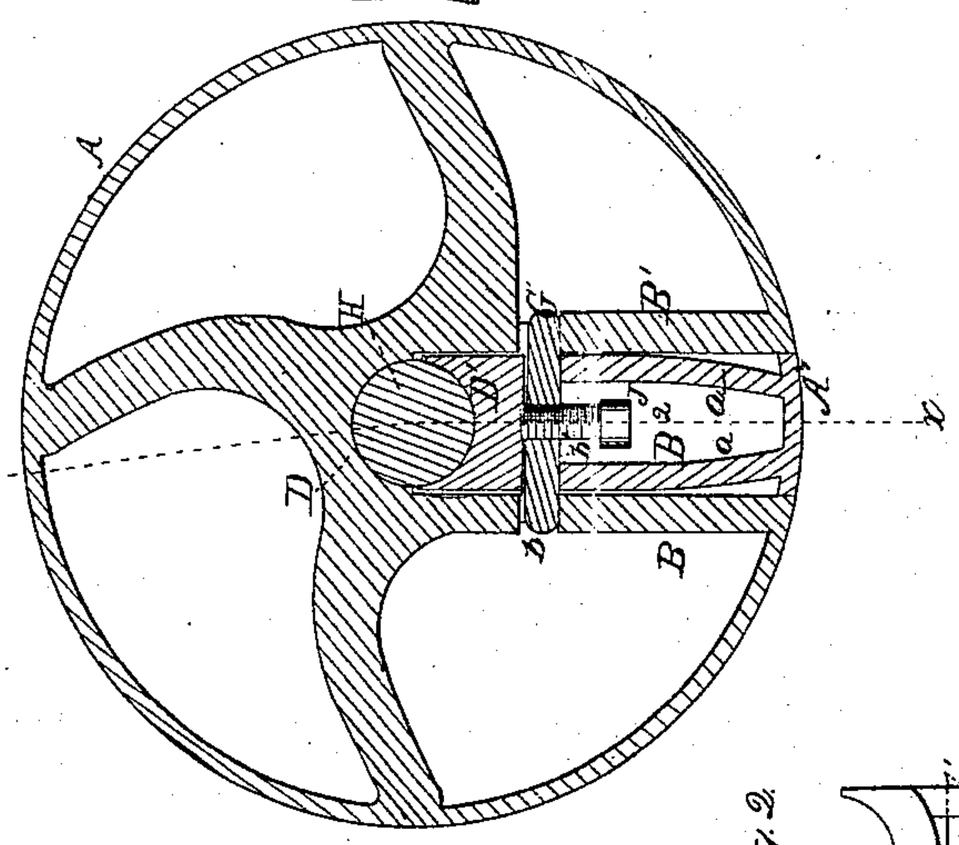


Fig. 2.

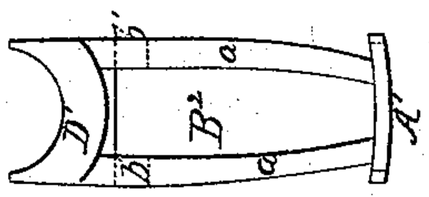
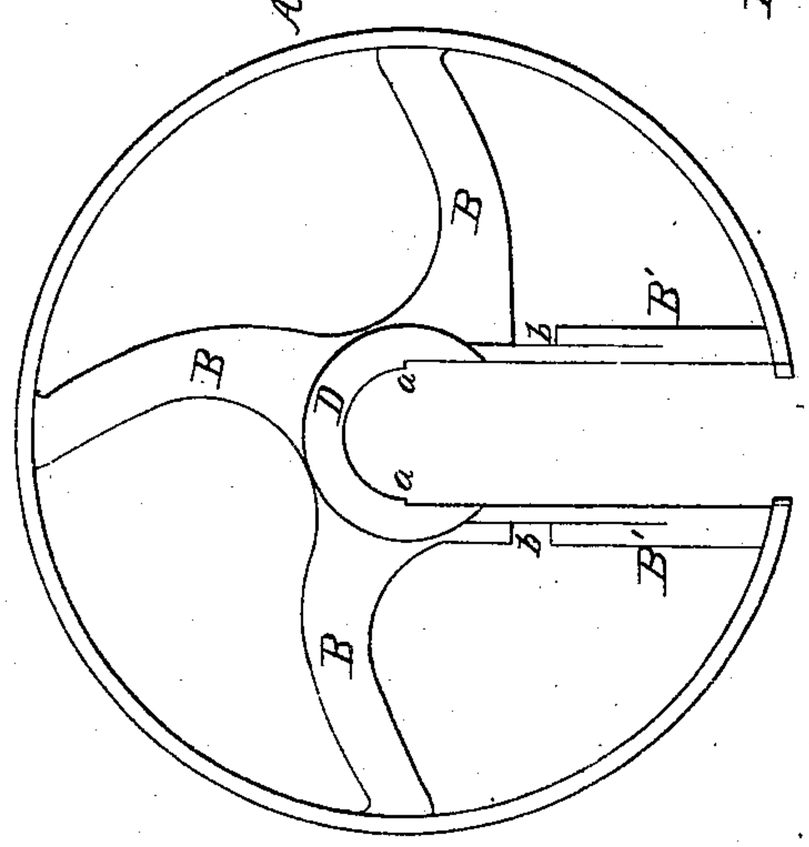


Fig. 1.



Witnesses.
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Letters Patent No. 76,680, *dated April* 14, 1868.

IMPROVEMENT IN PULLEYS AND GEARING FOR MACHINERY.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, SETH WHEELER, of the city and county of Albany, and State of New York, have invented a new and useful Improvement in Pulleys and Gearing for Machinery; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of a pulley with the removable portion thereof removed.

Figure 2 is the removable portion.

Figure 3 is a vertical central section in the line $y\,y'$ of the pulley, with both parts thereof brought together.

Figure 4 is a vertical section of the same, in the line $x\,x$ of fig. 3.

Figure 5 is a view of the periphery of the pulley.

Similar letters of reference in the several figures indicate corresponding parts.

The nature of my invention consists in so forming one or more of the arms of a pulley or wheel, that the same will form a box or boxes for receiving and sustaining a movable section or sections, which constitute a portion of the eye or hub of the pulley or gear-wheel, and also a portion of the rim of the same, and likewise a brace or stay auxiliary to the arm within which it is confined.

It further consists in a movable section, constructed with jogs for preventing its lateral displacement, and a key or wedge for confining it against radial movement, in combination with the arm or plate of a pulley or wheel, and the rim and hub or eye thereof, whereby a pulley which forms nearly a complete circle can be readily applied and detached from a shaft on which there are a number of other pulleys, without disturbing any of said other pulleys, and thus much labor and time saved, and inconvenience avoided, and whereby, also, the pulley can be confined in position.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with references to the drawings.

The pulley is constructed with five arms, B B B B^1 B^1, as represented, and with a rim, A A^1, and an auxiliary arm, B^2, which with its section A^1 of the rim is fitted within the arm B^1, and confined in place by means of a key-plate, G, and a set-screw, J, as represented.

It will be seen that the arm B^2 has its inner end D′ made concave, so as to correspond to the circular or cylindric form of the shaft H, on which the pulley runs or is fastened, and that shoulders, $a\,a$, are formed on the sides of the eye or hub D, for the said end of the arm B^2 to abut against, when the pulley is applied on its shaft as a loose pulley.

It will further be seen that the section A^1 of the rim has angles $g\,g$, formed on its edges, and that female angles are formed on the open portion of the rim A, in order that this angular section may be fitted to it, as shown in fig. 5.

In the drawing, the arm B^2 is shown as formed of two bars $a\,a$, but it is obvious that it might be made solid.

The key-plate passes transversely through slots $b\,b'$, formed in the arms B^1, and in the auxiliary arm B^2, and is tightened by means of the radial screw J being set up against the solid part D′ of the movable arm.

Instead of using a set-screw, I shall in some instances make the slots $b\,b'$ of taper form, and make the key-plate wedge-shaped, and thus make the parts hold firmly together by friction; or, if desired, a pin may be passed through the key-plate outside of the arm, the plate being extended for the reception of such key.

It will be evident that the same key which confines the section B^2 A^1 in its place, also serves as the means by which to confine the pulley proper upon its shaft.

The pulley herein described is designed more especially for use on lines of shafting, where the placing or removal of a pulley usually involves the taking down of one or more sections of the line—an undertaking, to a superintendent, as annoying, as it is expensive to the owners. Its great advantages over the ordinary close pulley will, however, commend it for general use. There is often much trouble in removing the common pulley, even when the set-screw is out, caused by the marring of the shaft by the screw. It will sometimes slip under heavy

strain, raising a ridge that renders lateral movement of the pulley exceedingly difficult. In this pulley the screw does not bear upon the shaft, nor can the shaft be injured in securing the pulley. It is also admirably adapted for a loose pulley, in which case the two parts are brought to a bearing in the centre, before boring, that the pulley may be free upon the shaft, or the eye, instead of being bored, may be made square, and a box in two parts inserted, which, when worn, may be set up by the set-screw *J*; that is to say, the part *D'* might be made separate from part B^2, and of a piece of "bearing" metal. This, in quick-running pulleys, is a great advantage, as they ordinarily soon become so loose as to be worthless without expensive repairing.

In large pulleys, the piece through which the set-screw passes, as shown in drawings, may, as before stated, be made in the form of a key or wedge, one side of it bearing upon the pulley proper, and the other upon the detachable portion, thus doing away entirely with set-screws. In very wide pulleys it is well to insert two keys or screws, one upon each side.

The jog in the rim is a preventive against lateral movement, but does not prevent a radial movement when the key is withdrawn. In this connection, in very large pulleys, it would be desirable to have projections cast on the detachable portions, and corresponding recesses at or near the extremities of the pulley proper, provided for the reception of such projections, in order to overcome any tendency there may be to draw apart under heavy labor, or the projections might be upon the pulley, and the recesses in the detachable portion. In either construction, the projections and recesses must not be so disposed as to interfere with the detachment of the removable portions when the key is withdrawn.

As regards cost, there is little if any difference between my pulley and the common one. The parts are cast so that there is no fitting except at the rim, and that is trifling. The keys require no fitting if well forged, and if not, the labor is hardly as much as making and fitting set-screws.

I am aware that "half pulleys" are in general use, but my invention compared with these is vastly cheaper, lighter, and much neater in appearance, besides being much more readily put into position.

I contemplate making toothed gear-wheels on the same principle as herein described and shown.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The mode, substantially as herein described, of constructing a pulley or gear-wheel, so that a portion of its rim, and of the metal forming its hub or eye, may be readily removed for the purpose of getting it on and off of a shaft or axle.

2. The construction of a pulley or gear-wheel, in such a manner that its detachable part or parts are held in their proper relation, and the pulley held on the shaft by the action of the same key or screw, or keys or screws, substantially as described.

3. The jogs *g g'*, in combination with a key, or screw and key, in the construction of a two-part pulley or gear-wheel, substantially as and for the purpose described.

4. The construction of the arm B^1 of a pulley or gear-wheel, substantially in the manner and for the purpose described.

5. The pulley or gear-wheel, made in two parts, one of which parts constitutes more than half of the pulley, and the other part less than half, the parts being united and held together, substantially as described.

6. The construction of the part B^2 of the pulley or gear-wheel, substantially as and for the purpose described.

SETH WHEELER.

Witnesses:

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