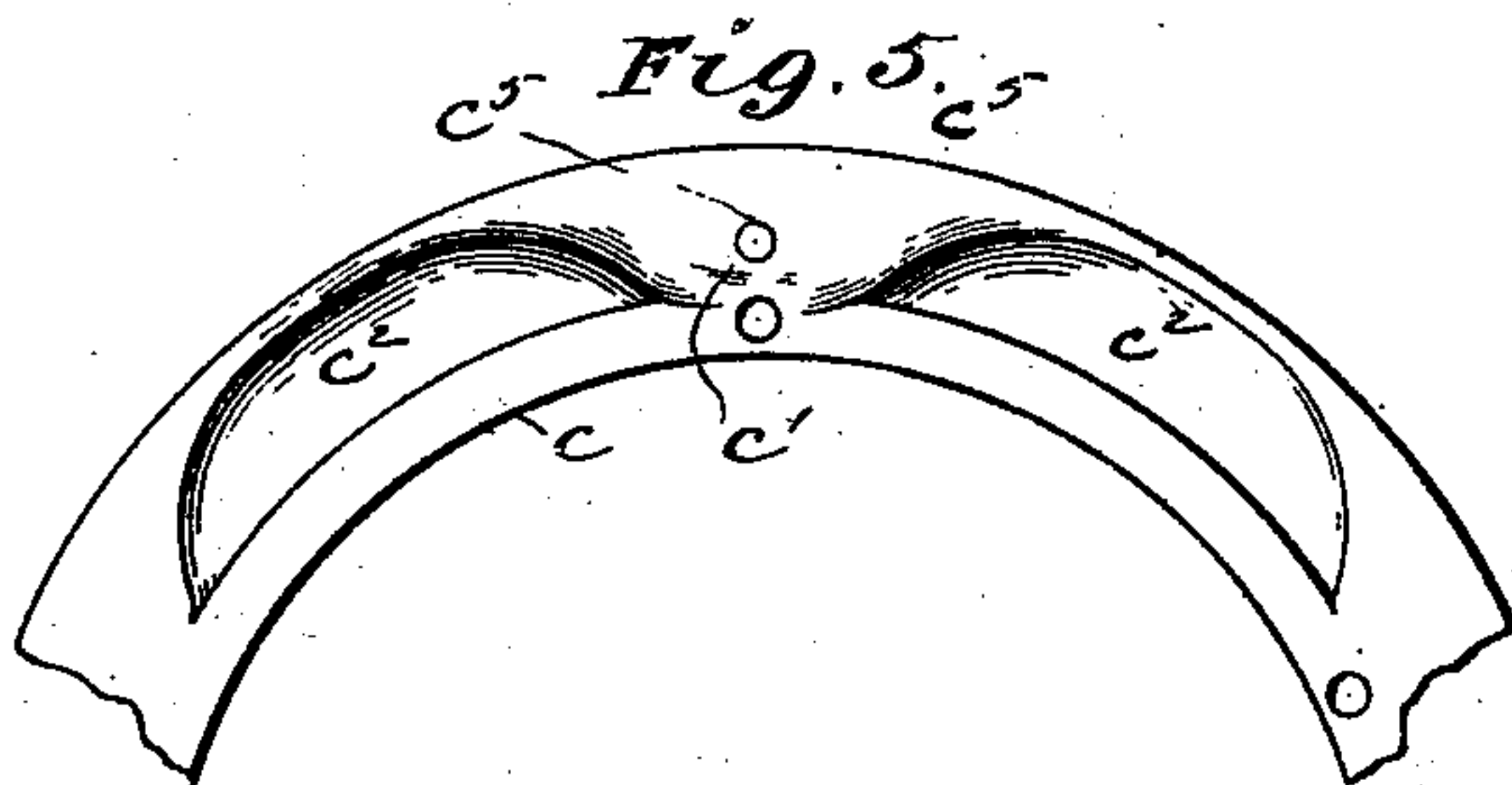
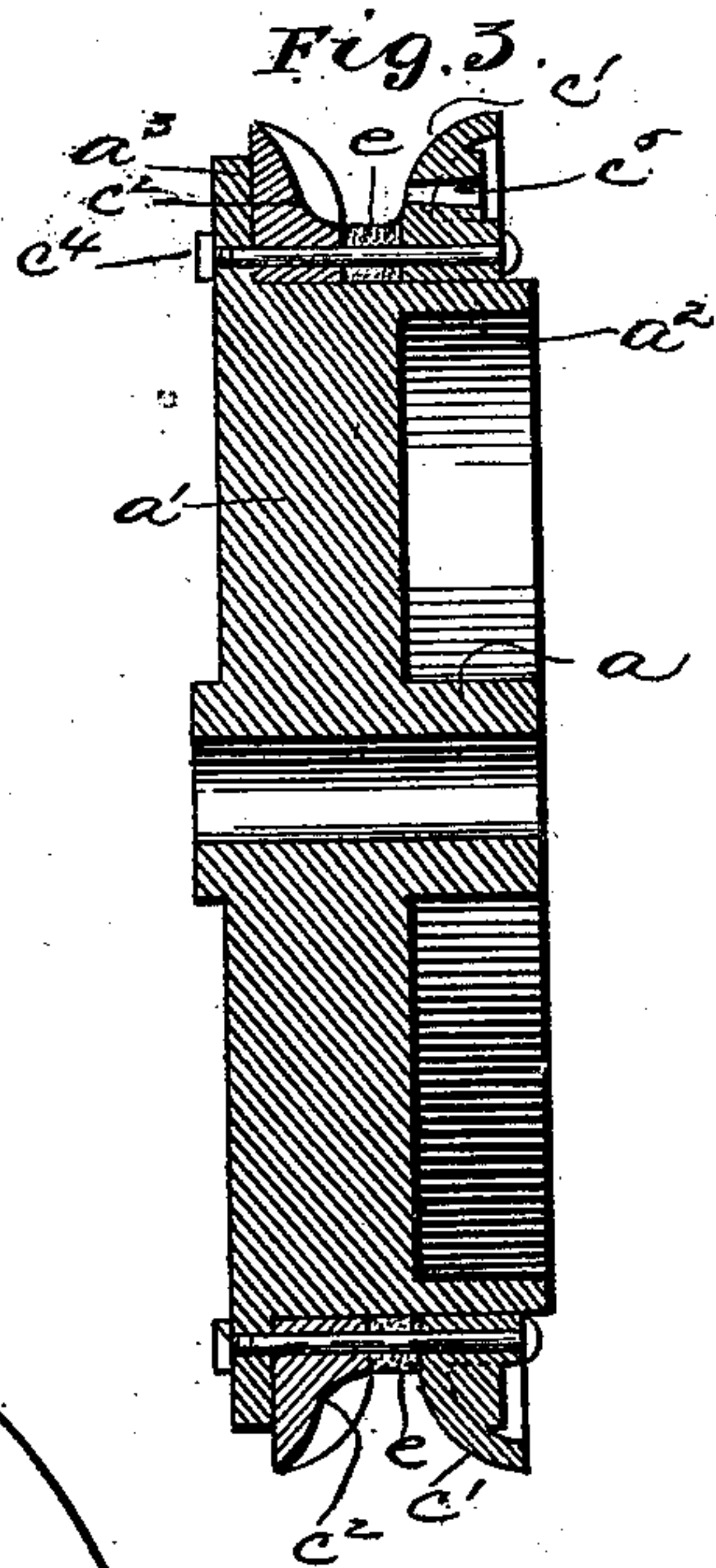
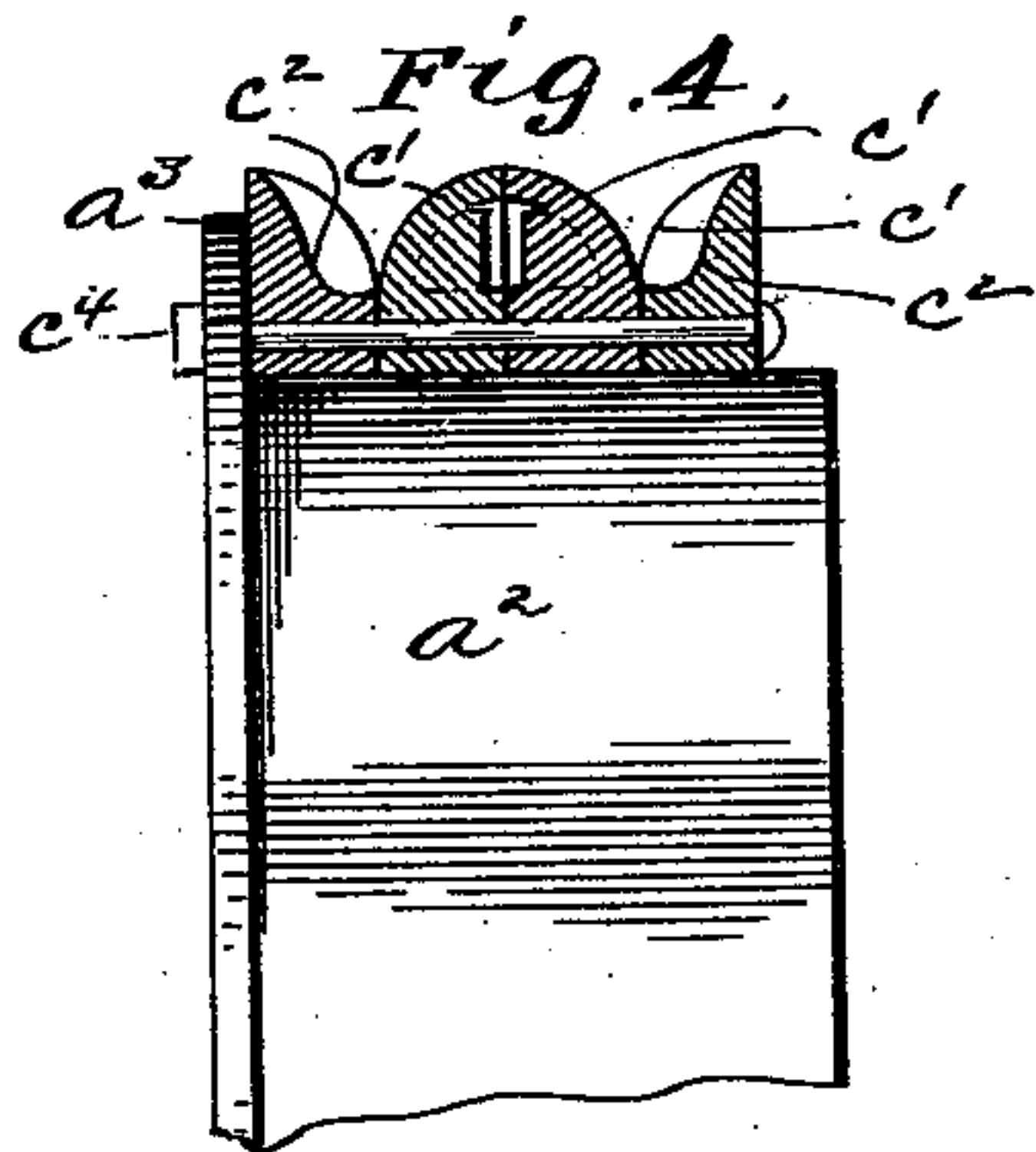
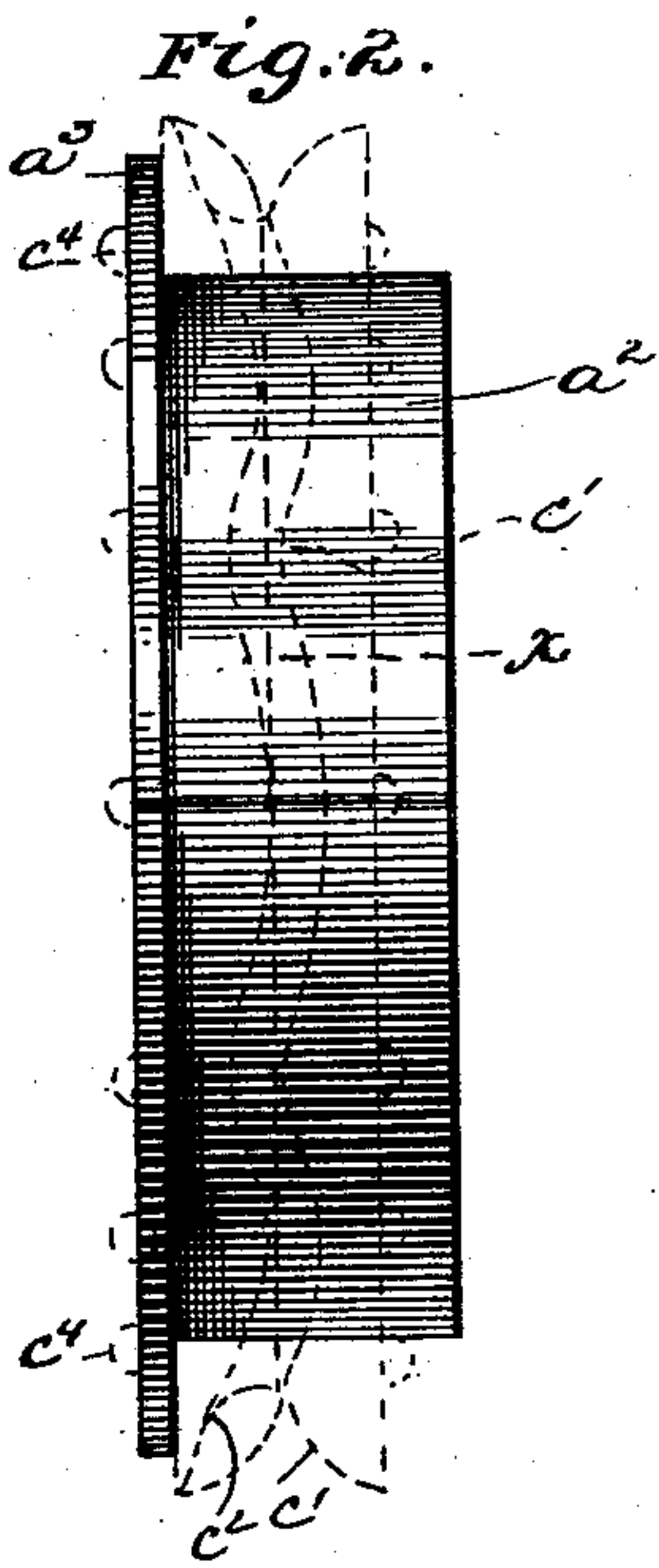
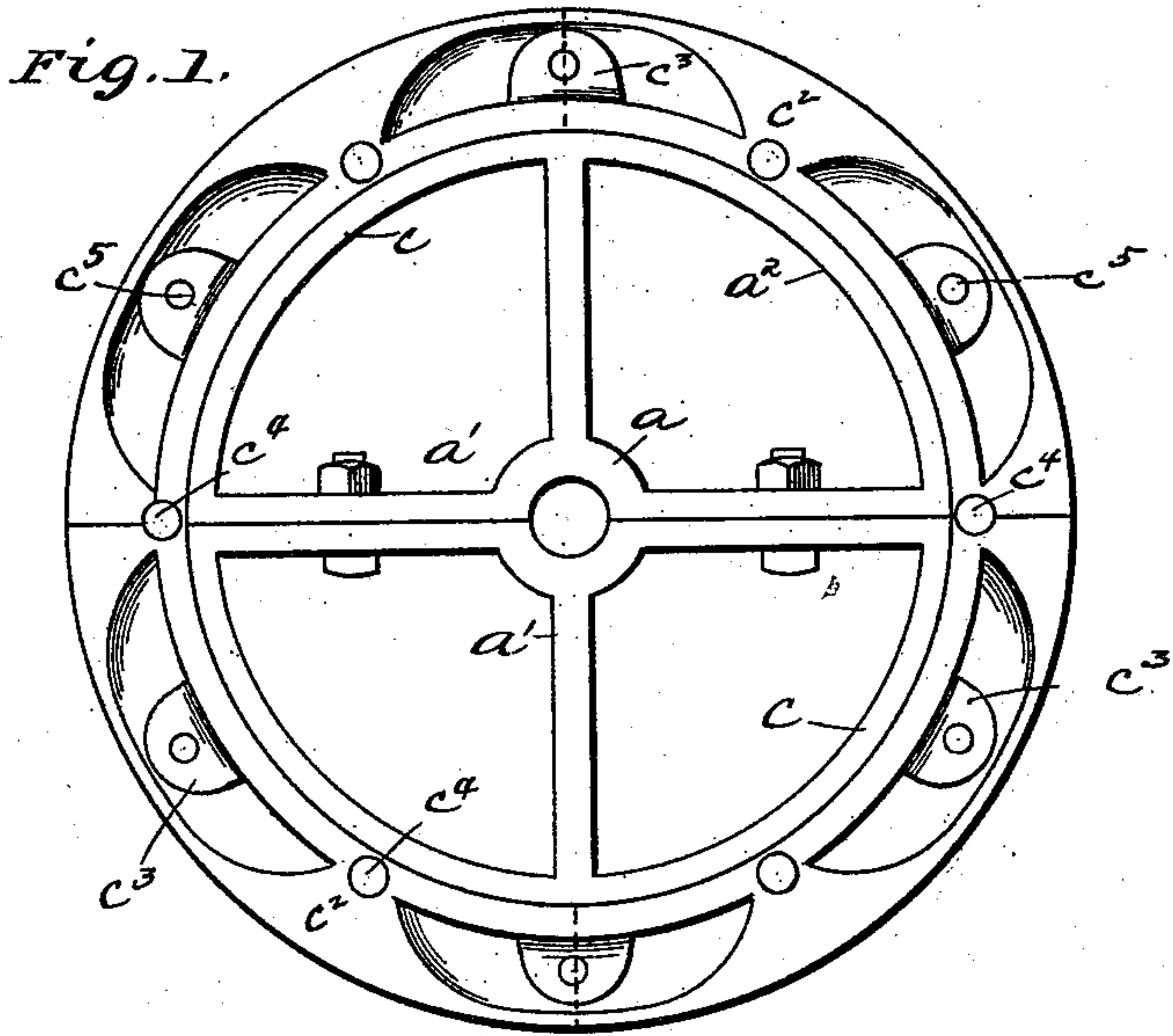


(No Model.)

C. F. WINKLER.  
PULLEY.

No. 466,390.

Patented Jan. 5, 1892.



WITNESSES:

*Frank S. Ober.*  
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# UNITED STATES PATENT OFFICE.

CHARLES F. WINKLER, OF TROY, NEW YORK.

## PULLEY.

SPECIFICATION forming part of Letters Patent No. 466,390, dated January 5, 1892.

Application filed March 2, 1891. Serial No. 383,410. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. WINKLER, a citizen of the United States, residing in Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Pulleys, of which the following is a specification.

My invention relates to the construction of pulleys adapted for use in the transmission of power by ropes or cables.

The object of the invention is to provide a pulley of peculiar construction which is adapted to receive cables of different sizes.

Another object is the construction of a pulley upon which a plurality of cables may be run without occupying an undue amount of space.

The details of the invention will now be described with reference to the accompanying drawings, in which—

Figure 1 represents a side view of the pulley; Fig. 2, an edge view of the same, the rims being shown in dotted lines; Fig. 3, a diametrical section of the pulley; Fig. 4, a section of the rims, showing the pulley in elevation; and Fig. 5 represents a side view of a portion of the inner walls of the groove.

$a$  represents the hub,  $a'$  the spokes, and  $a^2$  a ring or cylinder carried by the spokes. This structure is made in the ordinary way of forming what is known as a "split pulley"—that is, it is divided diametrically, the two parts being bolted together. The cylindrical portion  $a^2$  is made of some considerable width, so that it will accommodate one or more rims, to be hereinafter described. The cylinder is provided with an annular or radial flange  $a^3$  around one edge, against which the said rims are to be placed and through which bolts securing the rims in place are passed. The rim as a whole is an annulus provided with a serpentine groove formed by alternately-placed swells or lugs  $c'$  cast upon the opposite sides of a straight groove—that is to say, a swell located upon one side of the groove stands opposite the space between two swells on the other side of the groove, thus making a deflection in the groove at this point. The groove therefore consists of a series of these deflections first in one direction and then in the other around the pulley.

I have found by experiment that the fabri-

cation of rims constructed as above described is an expensive process by the ordinary methods of casting, and this invention comprehends a method of casting or forming the rims which is very cheap and simple. In carrying out this method certain precautions against warping and destruction in the mold are necessary, and these will be mentioned in the description following. Instead of making the rim in one piece I make it in two pieces, the division being on a plane at right angles to the axis and midway between the edges of the rim, as represented by dotted line  $x$  in Fig. 2. Such a division of the rim produces two parts, which are fac-similes of each other and may be cast in the same mold. This is one advantage which my invention has. Upon an inspection of the figures it will be seen that each half-rim consists of a base portion  $c$  of continuous thickness and swells  $c'$ , placed a slight distance apart, leaving thin places  $c^2$  between the swells. Now in the process of casting I have found that these thin places  $c^2$  would cool more rapidly than the thicker places  $c'$  of the rim, and consequently I hollowed out the backs of the thicker places, leaving the total cross-section through the swells substantially equal to that through the spaces between the swells. In this way the whole rim cooled equally, and breaking and warping were prevented. At  $c^3$  in Fig. 1 I have shown lugs or projections located in the hollow spaces back of the swells. This additional amount of metal is provided for in apportioning the distribution of metal around the rim. When the two parts of the rim are put together to form a complete rim, they are placed face to face and turned upon each other until the swells alternate with one another on the opposite sides of the groove. They are then placed upon a cylinder  $a^2$  and secured together and to the cylinder by means of bolts  $c^4$ . As will be seen, therefore, the pulley consists of a cylinder having a rim or radial flange  $a^3$  and a supplementary rim constructed of two annular parts fitted to the cylinder, each of said parts having its face inclined or beveled on one side, whereby one of the parts, in connection with another facing it, constitutes a complete grooved rim.

Besides splitting the parts  $a$   $a'$   $a^2$  of the pulley, as hereinbefore described, I prefer to



split the two portions of the rim and bring the abutting ends of the sections of the half-rims together ninety degrees apart, thus forming lap-joints, as illustrated in Fig. 1. This construction makes a strong pulley when together.

In Fig. 3 I have illustrated the parts of the rims separated and the gap at the base of the groove filled in with packing material *e*. This is done to accommodate a large-sized cable, which would not enter the groove when the parts of the rim were together. The parts of the rim may be separated by loosening the nuts on the bolts *c*<sup>4</sup>.

In Fig. 4 I show two complete rims mounted upon one cylinder *a*<sup>2</sup>. They are held in place by long bolts *c*<sup>4</sup> and are bound close together. By putting the rims upon the cylinder in this way I am able to bring their centers nearer together than if the rims were carried by separate pulleys having their own hubs and spokes.

This pulley is admirably adapted for the transmission of power through a wire rope. A pulley having a serpentine groove in its periphery, I am aware, is not new; but the same has never been successful commercially, owing to the fact that no way of constructing the pulley in an economical manner has ever been devised. It will be observed that my invention overcomes this difficulty, and therefore provides for the extensive use of the pulley.

The lugs *c*<sup>3</sup> hereinbefore mentioned are for the purpose of providing a bearing for plugs *c*<sup>5</sup>, of tough material, such as rawhide or wood. These plugs extend through cavities in the lugs and are flush with the working faces of the swells. They take the wear caused by the cable.

Having thus described my invention, I claim—

1. A pulley consisting of a cylinder having a rim, a supplementary rim constructed in two annular parts fitted to said cylinder and each of said parts having its face inclined, whereby the two parts constitute a grooved rim, and a packing or spacing ring also fitted to the cylinder between the bases of the parts of the supplementary rim, and means for securing the two parts of the rim and the ring to the cylinder, substantially as described.

2. A pulley consisting of a cylinder having a radial flange, a plurality of supplementary half-rims fitted to said cylinder and adapted to be secured thereto at different distances along its length, each of said half-rims being beveled or inclined on one side, whereby it, in connection with another rim facing it, will constitute a complete grooved rim, and bolts extending through the said flange and half-rims for securing said half-rims to the cylinder, substantially as described.

3. A pulley consisting of a cylinder having an annular radial flange, a plurality of supplementary half-rims fitted to said cylinder and each having alternate inclined swells and depressions on one side, whereby it, in connection with another rim facing it, will form a complete serpentine grooved rim, and bolts extending through the flange and supplementary half-rims for securing the latter in position, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

CHARLES F. WINKLER.

Witnesses:

HERBUT S. HARP,

EUGENE L. MERCHANT.