

(No Model.)

A. C. HODGE.  
SEPARABLE PULLEY.

No. 519,331.

Patented May 8, 1894.

Fig. 1.

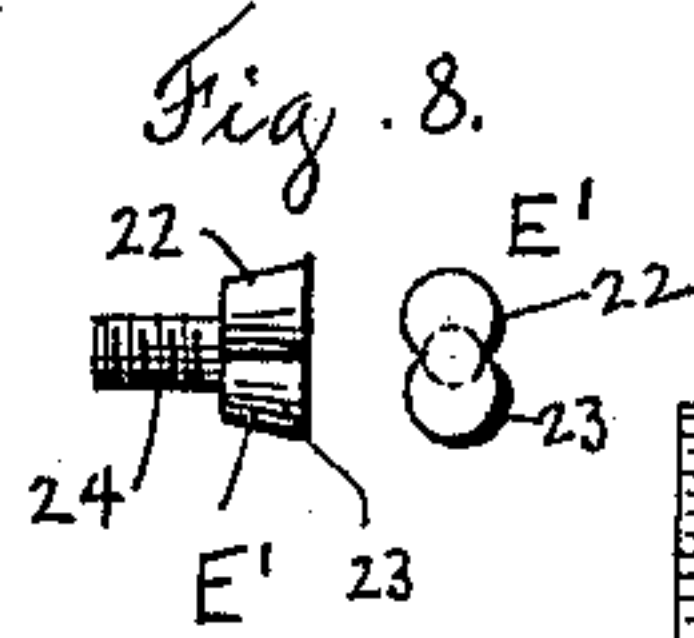
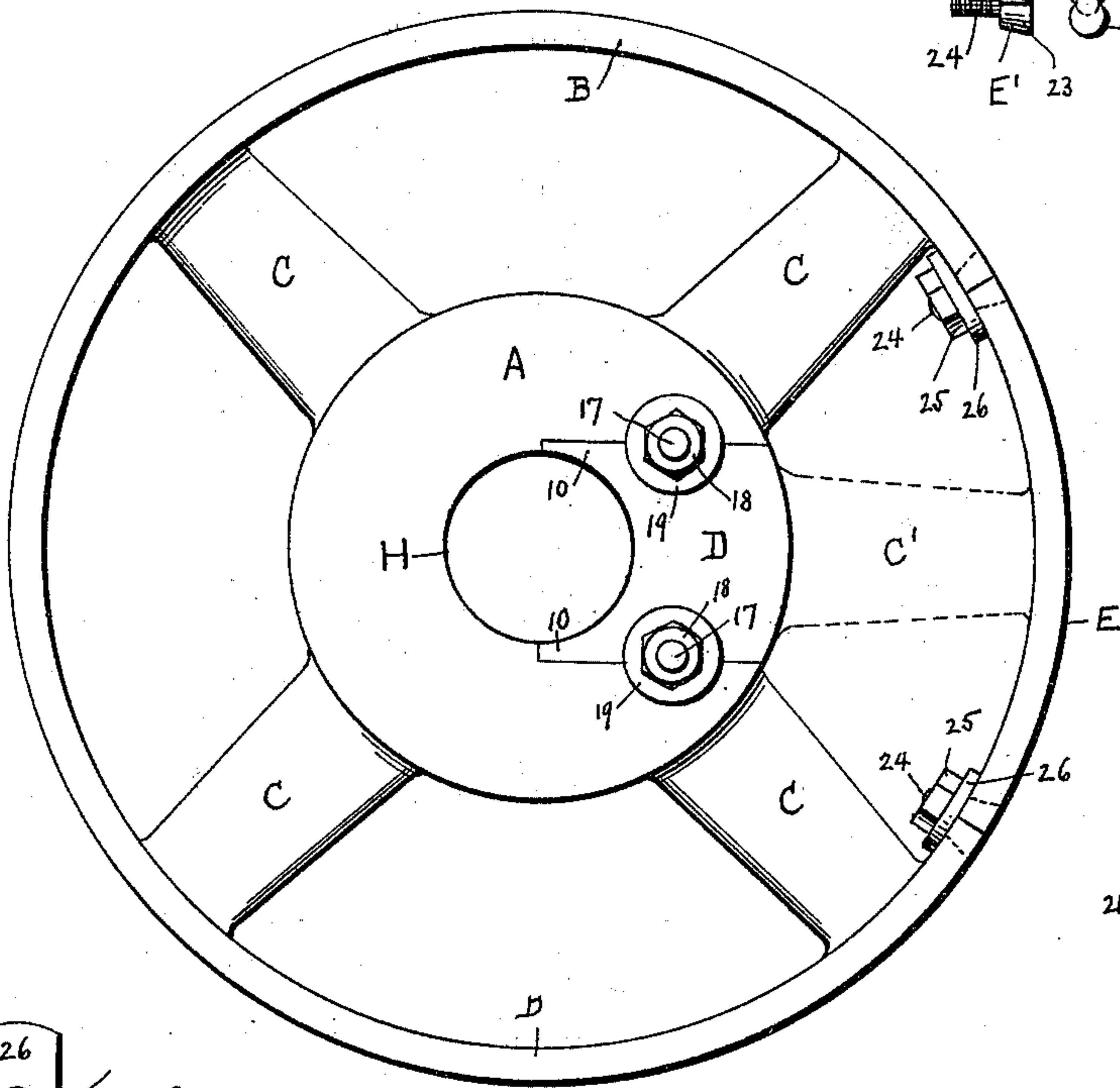


Fig. 2.

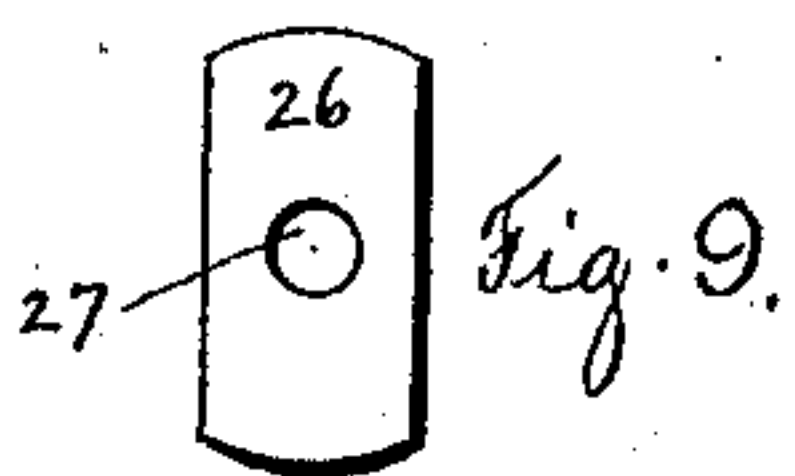
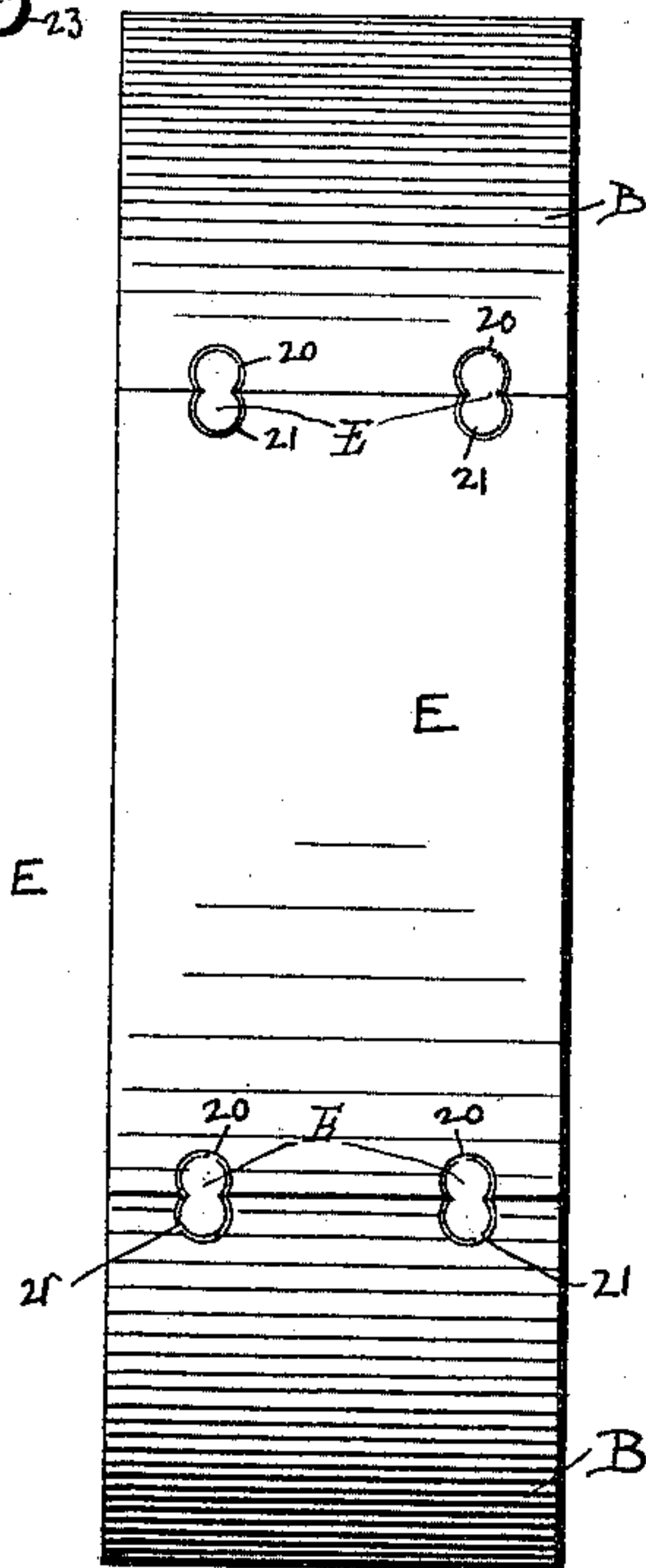
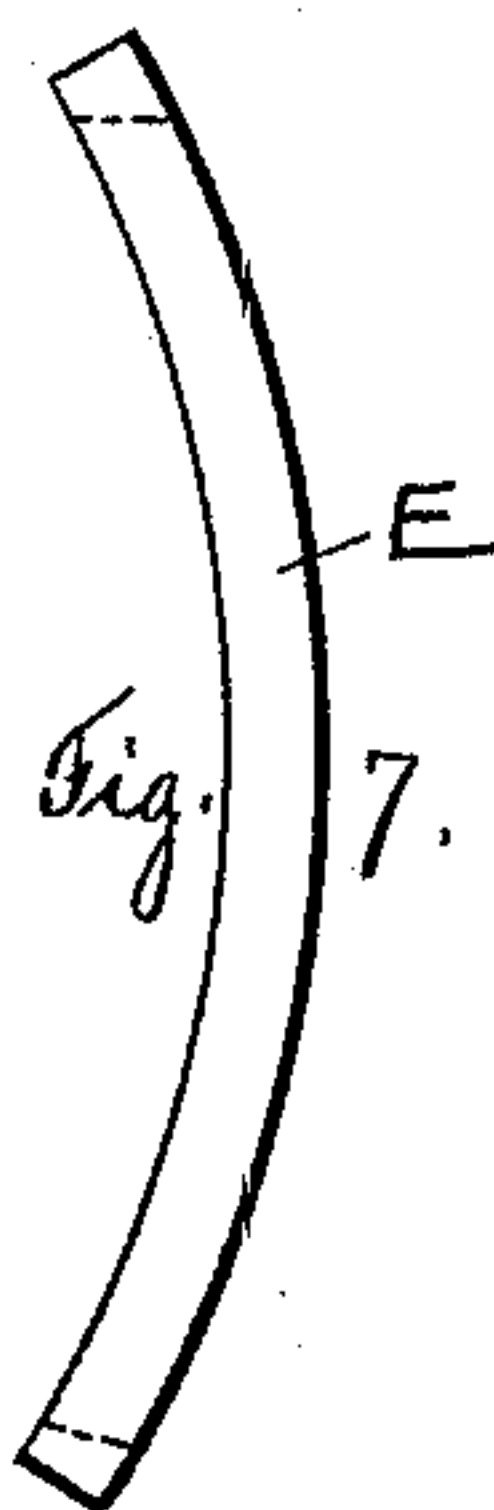
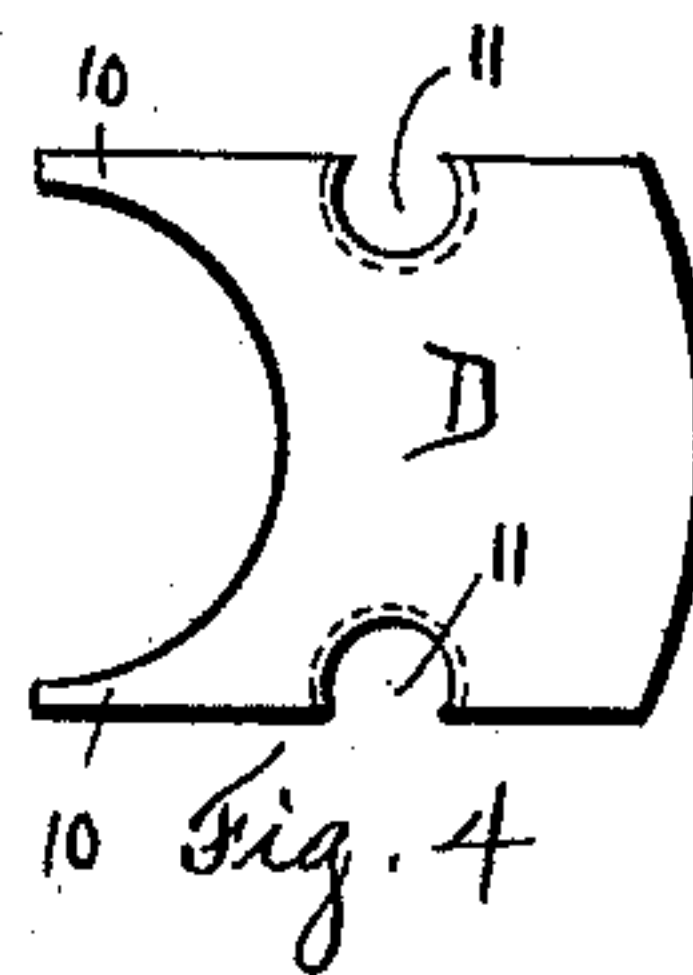
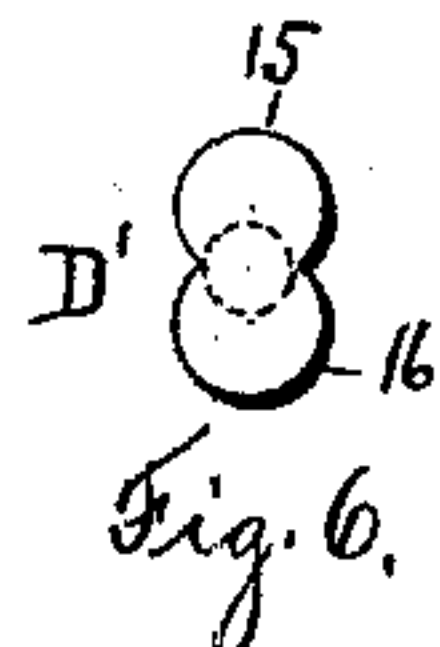
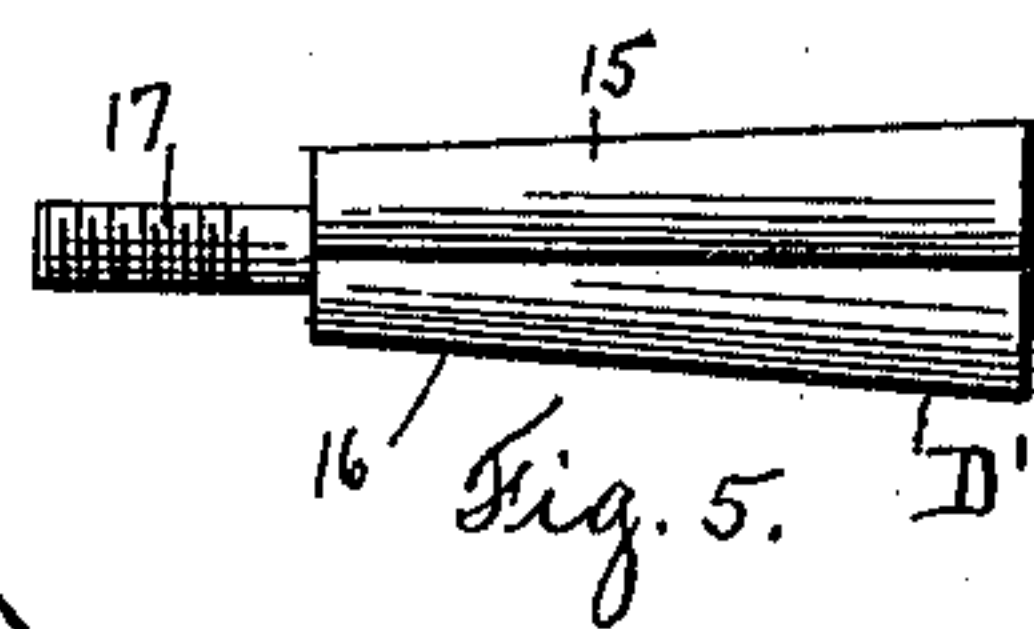
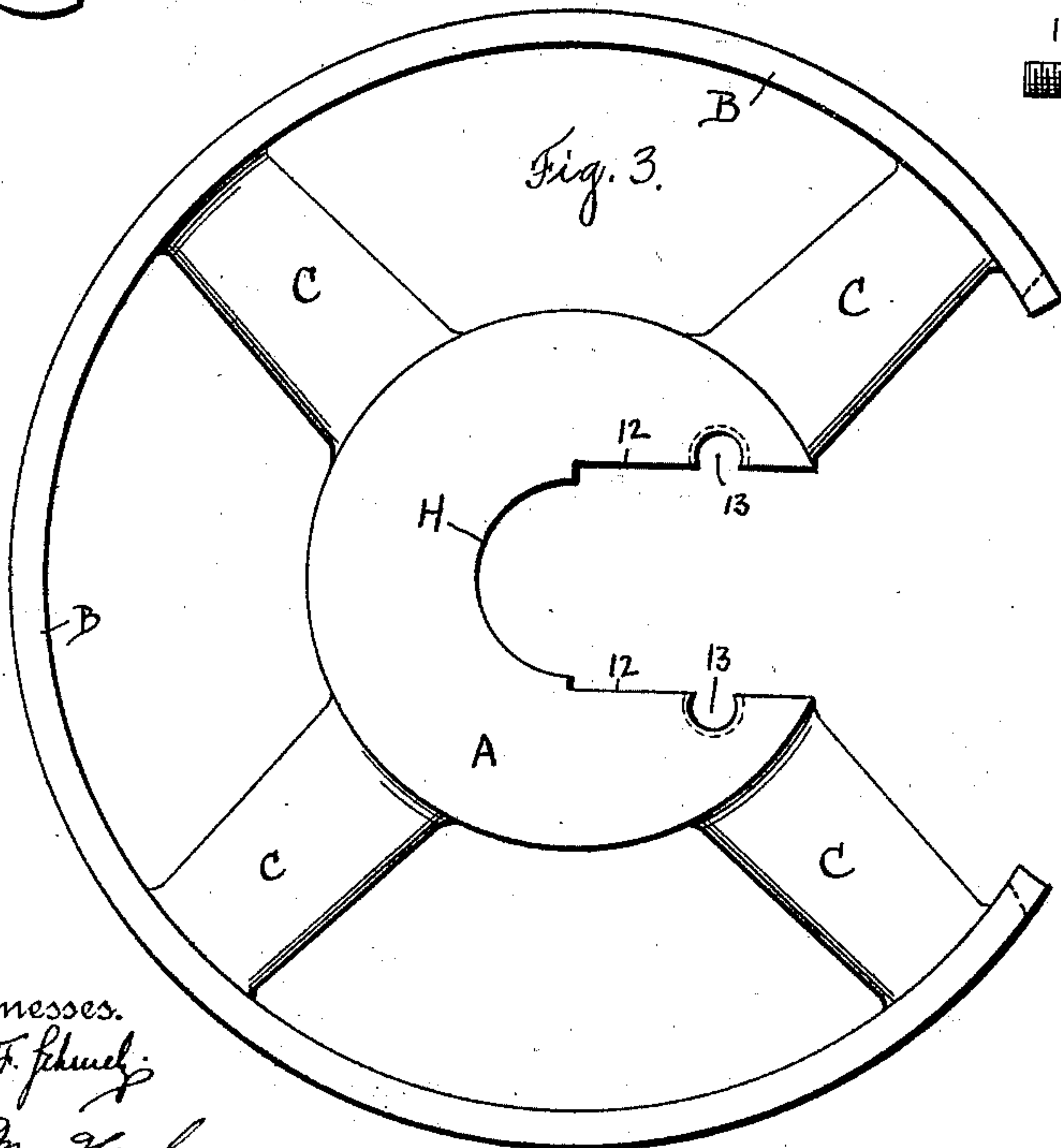


Fig. 3.



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# UNITED STATES PATENT OFFICE.

ALEXANDER C. HODGE, OF MENASHA, WISCONSIN.

## SEPARABLE PULLEY.

SPECIFICATION forming part of Letters Patent No. 519,331, dated May 8, 1894.

Application filed May 15, 1893. Serial No. 474,253. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER C. HODGE, 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 Separable Pulleys, of which the following is a specification.

The aim of this invention is to provide a new and simplified separable or split pulley, so constructed that the same shall be easy and simple of manufacture, and so that the same can be easily and nicely applied to a shaft or to a line of shafting.

To this end the invention consists of the device described and claimed in this specification, and illustrated in the accompanying drawings, in which—

Figure 1 is an end elevation of my complete device. Fig. 2 is a side elevation. Fig. 3 is an end elevation of the pulley with the separable parts removed. Fig. 4 is a view of the removable block. Fig. 5 is a side elevation of the locking-pins for the removable block. Fig. 6 is an end elevation of the same. Fig. 7 is an end elevation of the removable piece of the pulley-rim. Fig. 8 shows the tightening blocks for the pulley-rims, and Fig. 9 is a view illustrating the washer that is used to hold the removable rim-section in place in the pulley.

Referring to the drawings and in detail, it will be seen that my invention consists in taking a pulley of any desired size or shape, as shown in Fig. 1, and in constructing the same as follows.

In the drawings, A represents the pulley-hub, which has a suitable hole H, whereby the pulley can be fastened to the shaft. The hub A is connected to the rim B by means of the usual arms C. I cut a section of the hub away, and make the same a removable piece as D. This removable piece D has extending arms 10 which fit into guide-ways or slots 12 in the pulley-hub A, as shown, and by this means, the complete hub is formed.

Cut in the side of the pulley-hub A are tapered holes 13, which are so centered that they will form a recess, as shown, the mouth of which is narrower than the center. Similar holes 11 are cut into the removable block D, and it will be seen that when the block D is in place, the holes 11 and 13

practically form a tapered dove-tail. I form these holes 11 and 13 on each side of the removable block D and of the slot into which the removable block fits, for a purpose hereinafter described. Adapted to fit into these holes 11 and 13 thus formed, are peculiarly shaped pins D', as shown, which pins consist of an integral piece comprising two conical shaped pieces 15 and 16, which are made to fit the holes 11 and 13, and an extended screw-threaded shank 17, which is arranged in the center of the piece, as shown. When the pins D' are inserted into the holes 11 and 13, the piece 15 will engage the hole 13, and the piece 16 the hole 11, and as the same is firmly inserted into the hub, it will draw the removable piece D firmly in place to bite the shaft; and will firmly draw the ends of the cut-away portion of the hub A down to the removable section D. This will accurately and tightly bring the parts together.

On the ends of the shank 17 are fitted nuts 18, under which are placed washers 19, and by means of these nuts, the block D can be securely clamped in place, as before described. The block D is clamped to both sides of the slot in the hub so that the hub will be tightly pulled together, and the complete hub firmly held in any direction. The pins D' are, therefore, practically, a double dove-tail in cross section; and any shape which will give this double dove-tail so as to engage both parts to pull them together, is within the scope of my invention. The rim D has the removable section E, and in this removable section E are formed partial conical-holes 21, which mate with partial conical-holes 20 formed in the rim B, as shown in Fig. 2, there being as many of these conical-holes 20 and 21 as desired, depending upon the width of the face of the pulley. Fitting into these holes 20 and 21 are the peculiarly shaped pins E', which consist of two sections 22, 23, which are made conical, as shown, and which sections fit into the conical holes. These pins E' have extending screw threaded shanks 24, under which are placed washers 26, and upon which are fitted nuts 25. The washers 26 have holes 27 to accommodate the screw-threaded shanks 24, and the washers, when in place, act as flanges to properly support and guide the separable rim E into place. It will be seen



that these pins E' are double dove-tailed in cross section, and that they will act in the same manner as the pins D', in drawing the parts, which they connect, together, and, of course, any other shape, that will accomplish the same function, may be used. In some cases, I intend making the separable rim E and the separable block D in one piece, and connecting the same together by a pulley-arm C', as shown in dotted lines in Fig. 1.

My pulley may be made in various ways: One economical way to make the same is to turn up a pulley in the usual manner, and then to cut the rim E and the block D out of the pulley; or another way is to make the separable rim and separable block D and the pulley in separate pieces, and plane them up, and the pulley out, and fit them. It will be seen that two jointing bolts are used in connection with the separable piece D, so that the hub A will be drawn tightly together in both directions. This will, in most cases, clamp the pulley tight enough on the shaft to avoid the use of keys or similar devices, although, in some cases, I may use the ordinary key to hold the pulley in place on the shaft, if so desired. The jointing bolts for the separable rim are made tapered enough so as to draw the rim tightly together, the washers acting as flanges, as before described. It is a very economical way to make the jointing bolts both for the hub and the rim in the form of a double cone, as described, as the holes into which they are to fit can be very easily and nicely made by means of tapered reamers. I have found in actual practice that a pulley constructed in this manner is fully equal in strength to a pulley cast solid, and by using the jointing bolt there is less chance of splitting the hub than in connection with the ordinary separable pulley.

The tapered shape of the jointing bolts makes a better fitting than the headed bolts used in the ordinary pulleys, and the same leaves no sharp edges on the outside of the pulley to cut the belt.

One way my pulley is applied is as follows: The removable block D and the removable rim E are simply put in place after the main part of the pulley has been placed upon the shaft, and thereby the pulley is locked to the shaft. The shape of the jointing bolts may, of course, be varied, the broad scope of my invention contemplating any means; but, as before stated, I prefer the conical double shape.

While I have shown the separable part of the hub and the separable rim as considerably smaller than the main portion, still it is within the scope of my invention to make the removable part of the hub and rim, if desired, the same size as the main part of the pulley, when my invention will truly be a split pulley; and some of my claims are broad enough to cover this construction, but it is preferred to make the separable part of

the rim and the separable part of the hub much smaller than the main part of the pulley, so that the pulley will be very strong, and so that the main part of the pulley cannot get twisted or displaced. For that reason, I preferably make the removable parts of just about width enough to let the shaft fit into the pulley holes.

The details of the invention herein shown and described may be greatly varied by a skilled mechanic without departing from the scope of my invention as expressed in the claims.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a separable pulley, the combination of the hub having partial transversely tapered holes as 13, and a removable section as D having the partial transversely tapered holes 11, pins as D', consisting of two tapered pins 15 and 16 adapted to fit into the partial holes 13 and 11 to hold the section D in place, and means for holding the pins, substantially as described.

2. In a separable pulley, the combination of a rim having partial conical holes 20 formed therein, and a removable section of rim having the partial conical holes 21 formed in the same, the pins E' having two sections adapted to fit into the holes 20 and 21, and means for holding the pins securely in place, substantially as described.

3. A separable pulley having a portion of its rim removable, and having the partial conical holes 20 and 21 formed in the pulley rim and the removable portion respectively, the tapered pins E' having a section adapted to fit into each of the holes 20 and 21, and an extending screw-threaded portion 24, the washer 26 placed upon this extending screw-threaded portion 24, and the nuts 25 threaded thereon, whereby the removable section will be held in place and the face of the pulley left flush, substantially as described.

4. A separable pulley consisting of the hub A, rim B and arm C, the hub A having a removable section D, the hub A and the removable section D having mating partial conical holes 13 and 11 on their joining edges, the double conical pins D' adapted to fit into these holes 13 and 11, a portion of the rim B also being removable, the removable portion of the rim and the rim of the pulley having the partial conical mating holes 20 and 21 and the double conical pins E' fitting in these holes 20 and 21, and means for securing the pins D' and E' in place, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALEXANDER C. HODGE.

Witnesses:

WILLIAM ROBERTSON,  
WILLIAM STEWART.