

**No. 627,177.**

**Patented June 20, 1899.**

A. DE W. CYPHER.  
PULLEY.

(Application filed Mar. 23, 1898.)

(No Model.)

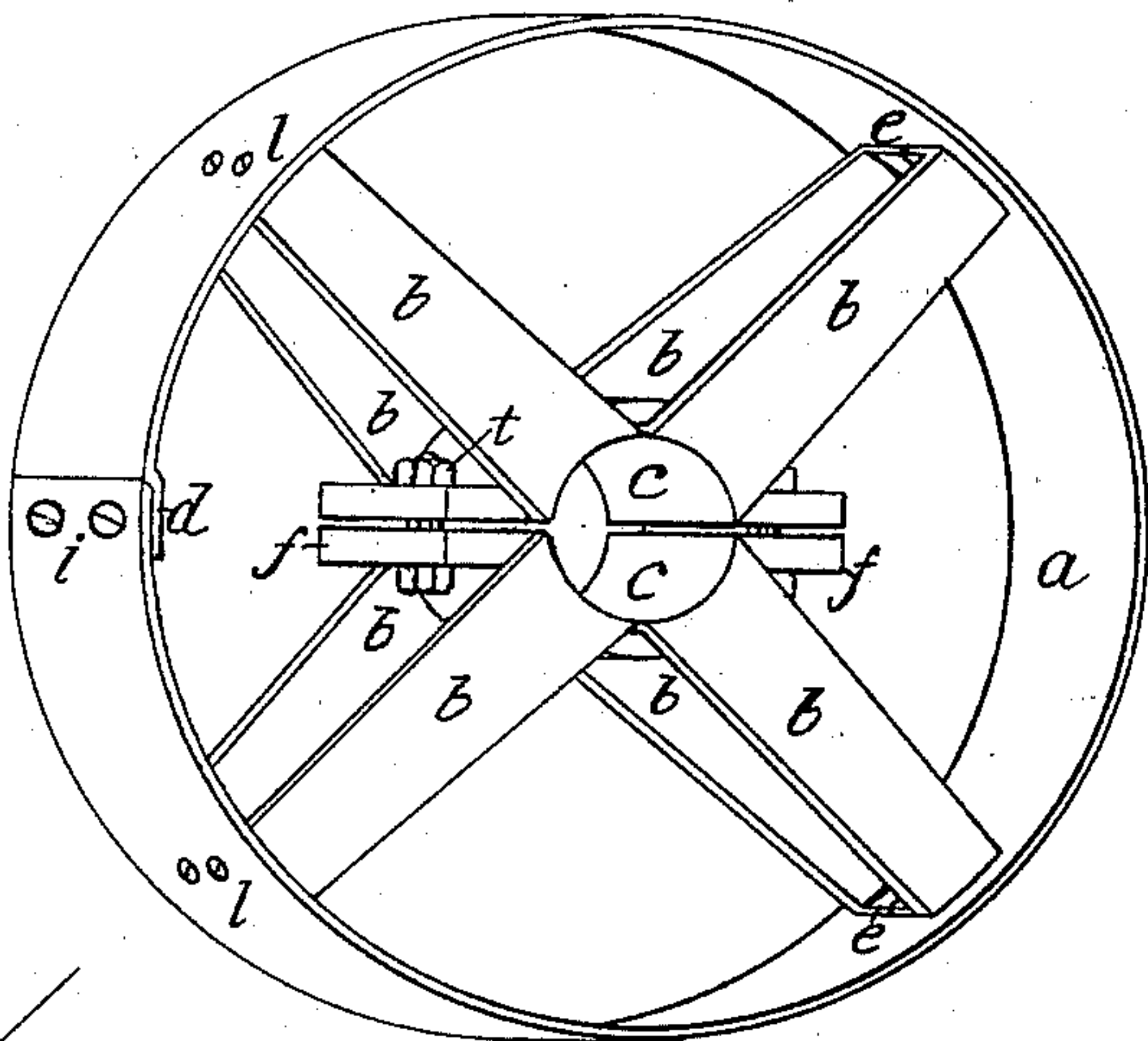


Fig. 1

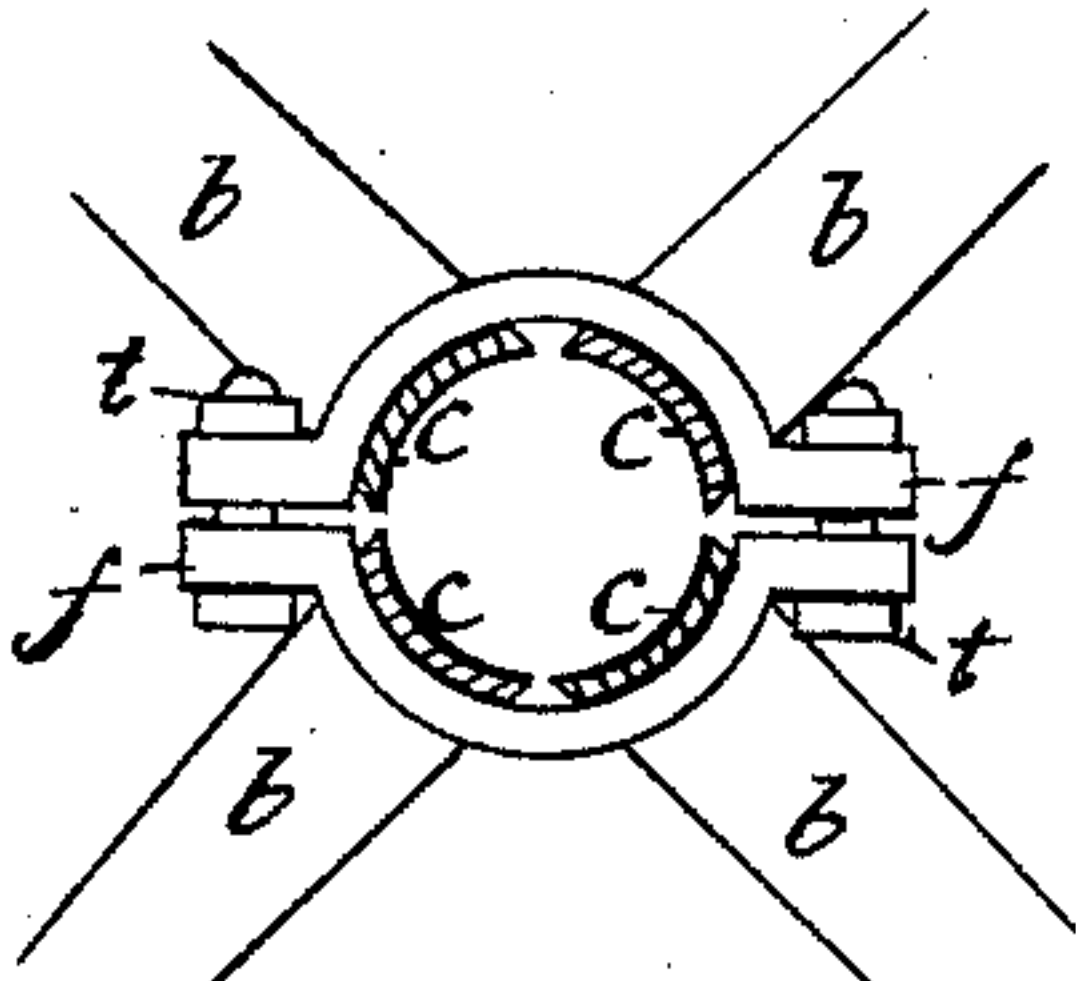
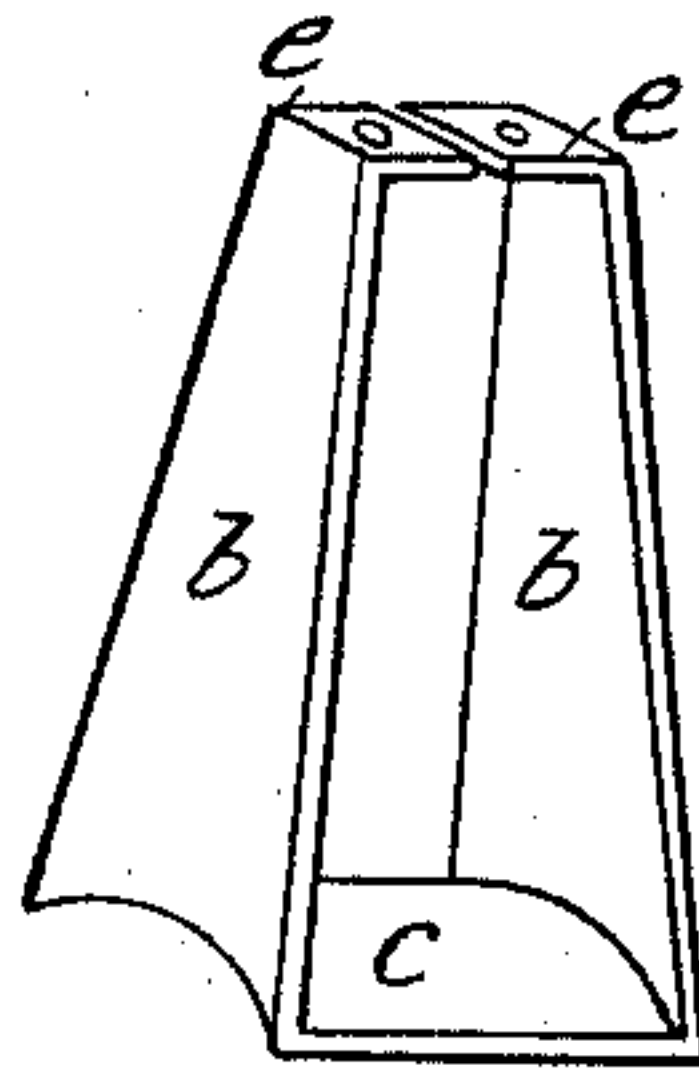
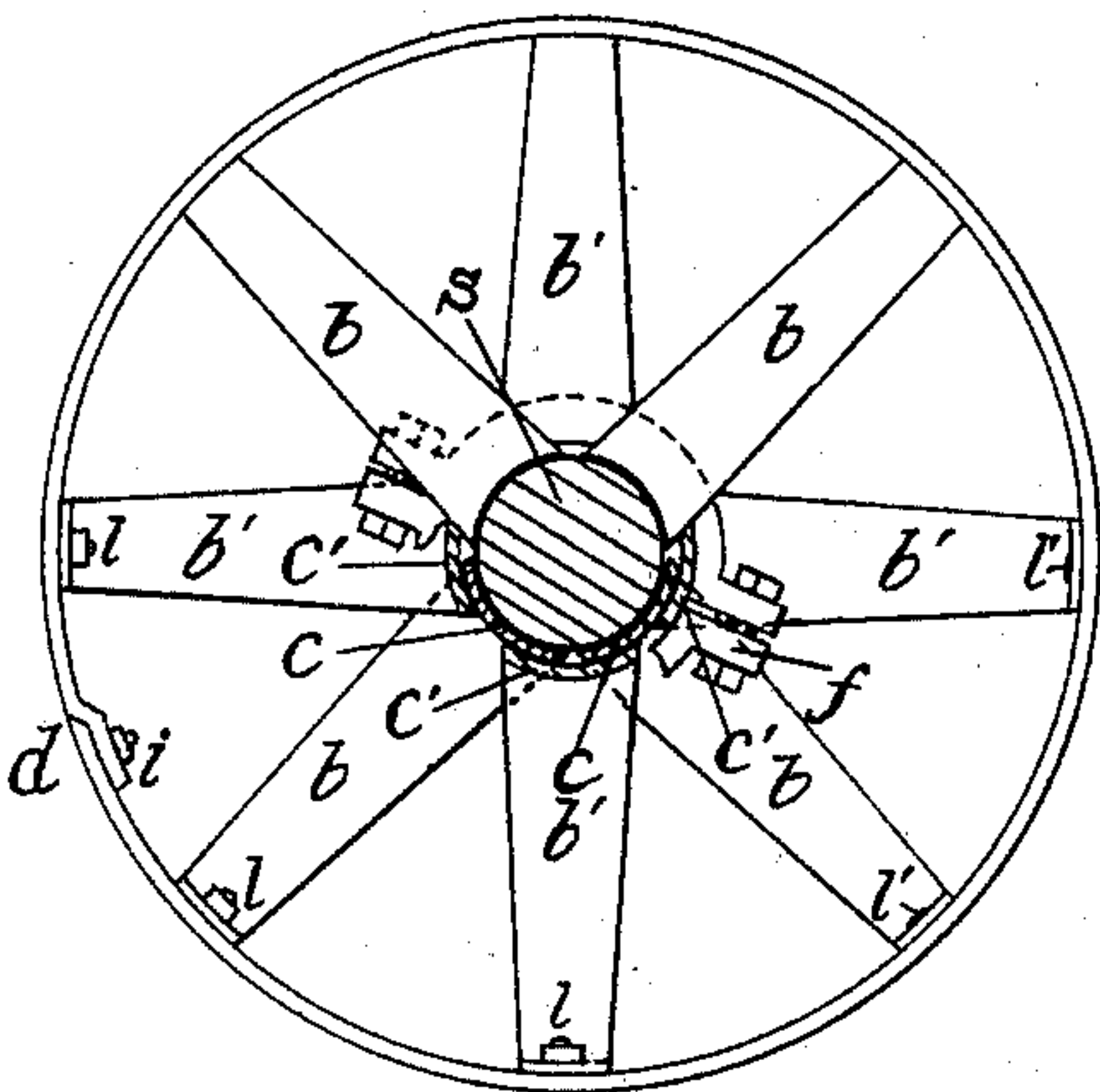


Fig. 11



*Fig. III*



*Fig. IV*

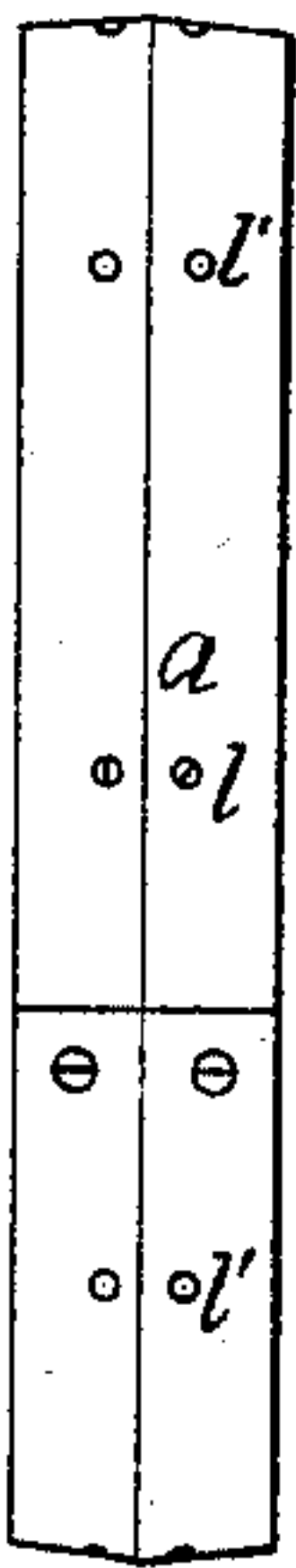
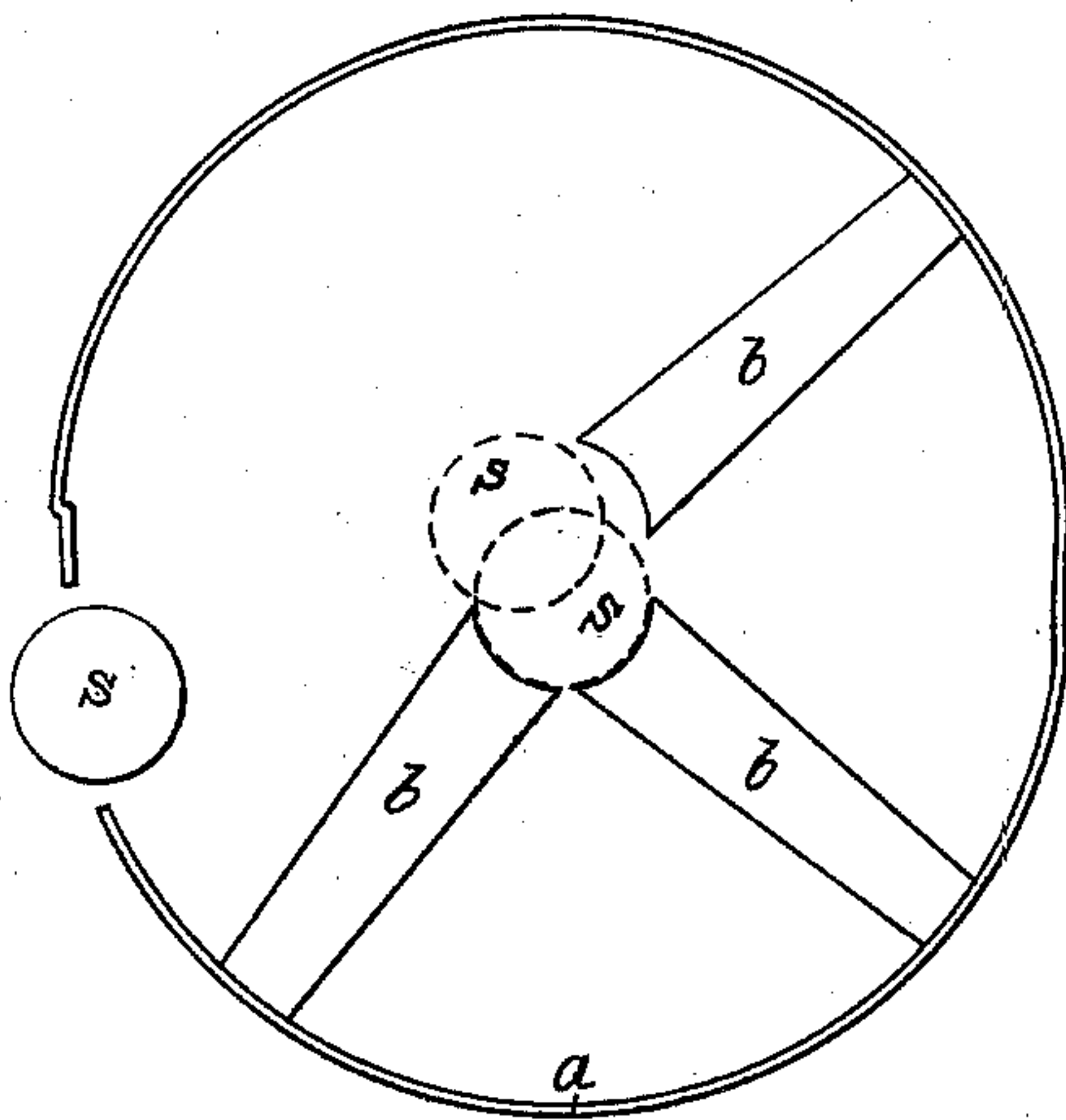


Fig. V



*Fig. VI*

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# UNITED STATES PATENT OFFICE.

ALBERT DE WITT CYPHER, OF NEW YORK, N. Y.

## PULLEY.

SPECIFICATION forming part of Letters Patent No. 627,177, dated June 20, 1899.

Application filed March 23, 1898. Serial No. 674,937, (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT DE WITT CYPHER, a citizen of the United States, and a resident of New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Pulleys, of which the following is a specification.

This invention relates to pulleys made of sheet metal, and has for its objects, first, a pulley that shall possess a minimum of weight without loss of strength requisite for its work; second, a pulley that shall present the least possible frictional resistance to the atmosphere in running, and, third, a pulley that shall constitute a split pulley with only one parting in the rim, admitting, at the same time, of the pulley being placed on a shaft without wide opening of the rim. These objects are attained by the means set forth in the accompanying drawings, in which—

Figure I is a perspective view of the pulley. Fig. II represents the means for clamping the pulley to a shaft. Fig. III shows the form of the arms of the pulley. Fig. IV indicates the construction when a multiplicity of arms may be required. Fig. V is a front elevation of the pulley, showing the "crowning" of the rim of the pulley. Fig. VI shows how the pulley is applied to a shaft.

Like letters refer to similar parts throughout the several views.

In Fig. I it will be seen that the rim *a* of the pulley consists of a single piece of sheet metal bent into a circle, having its ends united by a lap-joint *d*, making a smooth joint on the face of the pulley. The ends are held together by means of screws *i*, having flat heads countersunk into the rim and fastening with nuts on the inside of the rim, as in Fig. IV.

The arms *b* of the pulley may be of any number, four being shown in Fig. I and eight in Fig. IV. The arms are made double, as in Fig. III—that is, the segment *c*, which forms part of the hub of the pulley, and the arms *b* are made in one piece, the extreme ends of the arms having perforated flanges *e* turned on them, by means of which the arms are fastened to the rim.

In Fig. I four of the arms, as shown in Fig. III, are employed, and it will be observed that the four segments *c* very nearly form a com-

plete circle. Whether they shall join each other is a matter of constructive detail. Of course the more nearly the segments completely cover the shaft the more firmly the hub thus formed may be made to grip the shaft; but there must necessarily be enough space between the several segments to admit of their being clamped to the shaft without crowding one against the other.

The flanges *e* of the arms *b* may be secured to the rim by either rivets *l* or bolts *l*, or part of them may be fastened with rivets and the others with bolts; but for convenience in applying the pulleys to shafts a part of them only are riveted.

A clamp, as at *f*, Figs. I and II, is used to secure the pulley to the shaft in the manner shown in Fig. I, and in the sectional view Fig. II the front part of the arms is removed, exhibiting the clamp *f*, inclosing the segments *c*. It is plain that a firm grip may be established by screwing up the bolts *t*.

Fig. IV represents a pulley secured to a shaft *s*. This figure is partly in cross-section, the front portions of a part of the arms being removed to show the means employed for placing the arms when their number would necessitate such a contraction of the segments *c* as to make the arms too narrow for strength. Eight arms are shown in the figure, four of them occupying relatively the same positions and spaces on the shaft as shown in Fig. I. The additional four arms are placed midway between the first four and have their segments *c* shortened laterally to admit of their going in between the first set of arms, the segments of the second set covering portions of the segments of the neighboring sets of arms. Thus segments *c' c' c'* are imposed on segments *c c c*. The clamp *f* is then placed over the last set of segments, as shown.

In placing this pulley on a shaft the best method is shown at Fig. VI. This represents a four-armed pulley. The rim-screws *i* are removed and one arm is also removed, the one arm (or set of arms) being fastened to the rim with screws, so it may be thus removed. With the usual wrought-rim split pulley in which the rim separates only at one point, as in this, it is necessary to spring the rim enough to open the hub sufficiently to pass it over the shaft, the extreme amount



of bending making a permanent distortion of the rim liable. By the removal of one of the arms in this pulley, as shown, it is only needful to open the rim enough to admit the shaft through the rim. Fig. VI clearly shows that such opening will readily admit the shaft to the hub, different stages of the advancement of the hub to the shaft being indicated by representations of the shaft by broken lines.

In rolling the rims for these pulleys they can easily be made crowning when required, as in Fig. V.

Having described my invention, what I claim, and desire to secure by Letters Patent, without being limited to the precise forms of construction herein shown so long as I embody the principles of the invention, is—

1. In a sheet-metal pulley the combination of a sheet-metal rim with sheet-metal double arms secured thereto, the metal integrally uniting the inner ends of the arms forming

parts of the hub, substantially in the manner shown, and a clamp completely embracing the portions of the arms forming the hub, substantially as herein shown and described.

2. In a sheet-metal pulley having double arms made of single pieces bent back upon themselves and provided with flanges for attachment to the pulley-rim, and their inner ends bent to conform to the hub substantially as shown and described, one double set of arms having their ends superposed upon the shaft ends of the other set, and a clamp securing the whole substantially as herein shown and described.

Signed at Brooklyn, in the county of Kings and State of New York, this 11th day of March, A. D. 1898.

ALBERT DE WITT CYPHER.

Witnesses:

PHILIP EVANS,  
H. W. HORTON.