

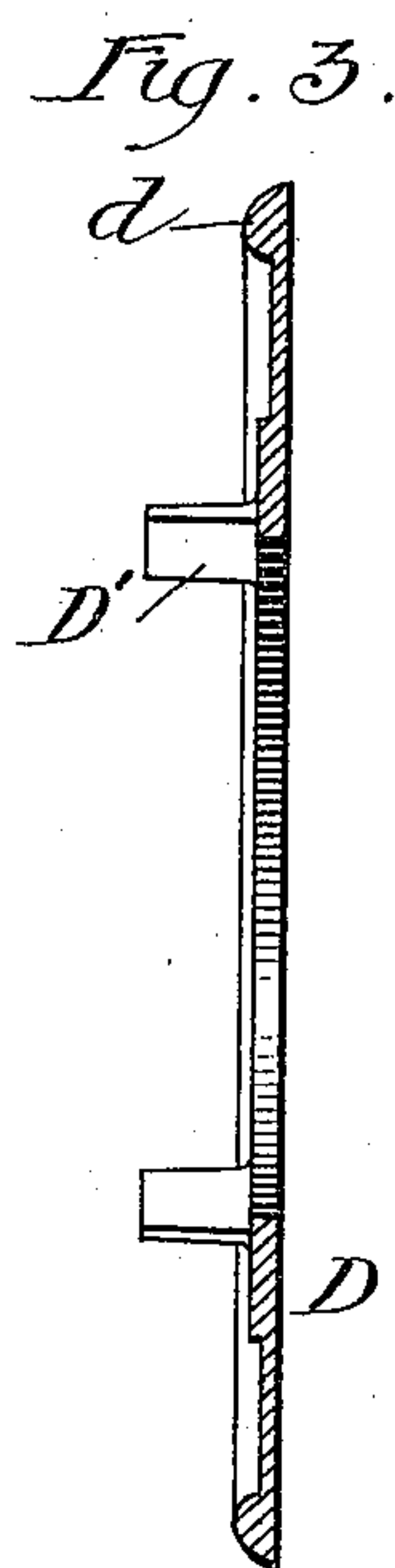
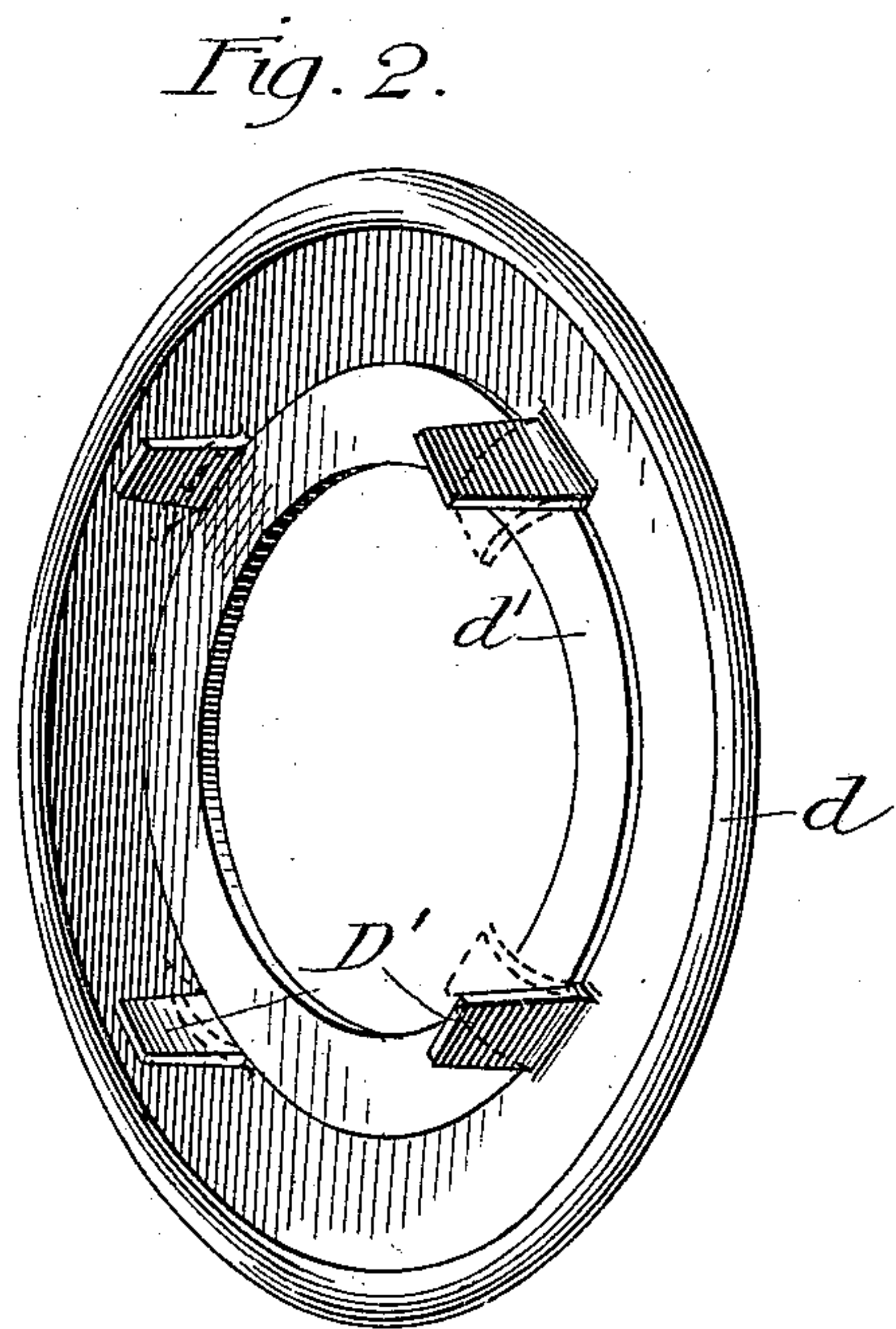
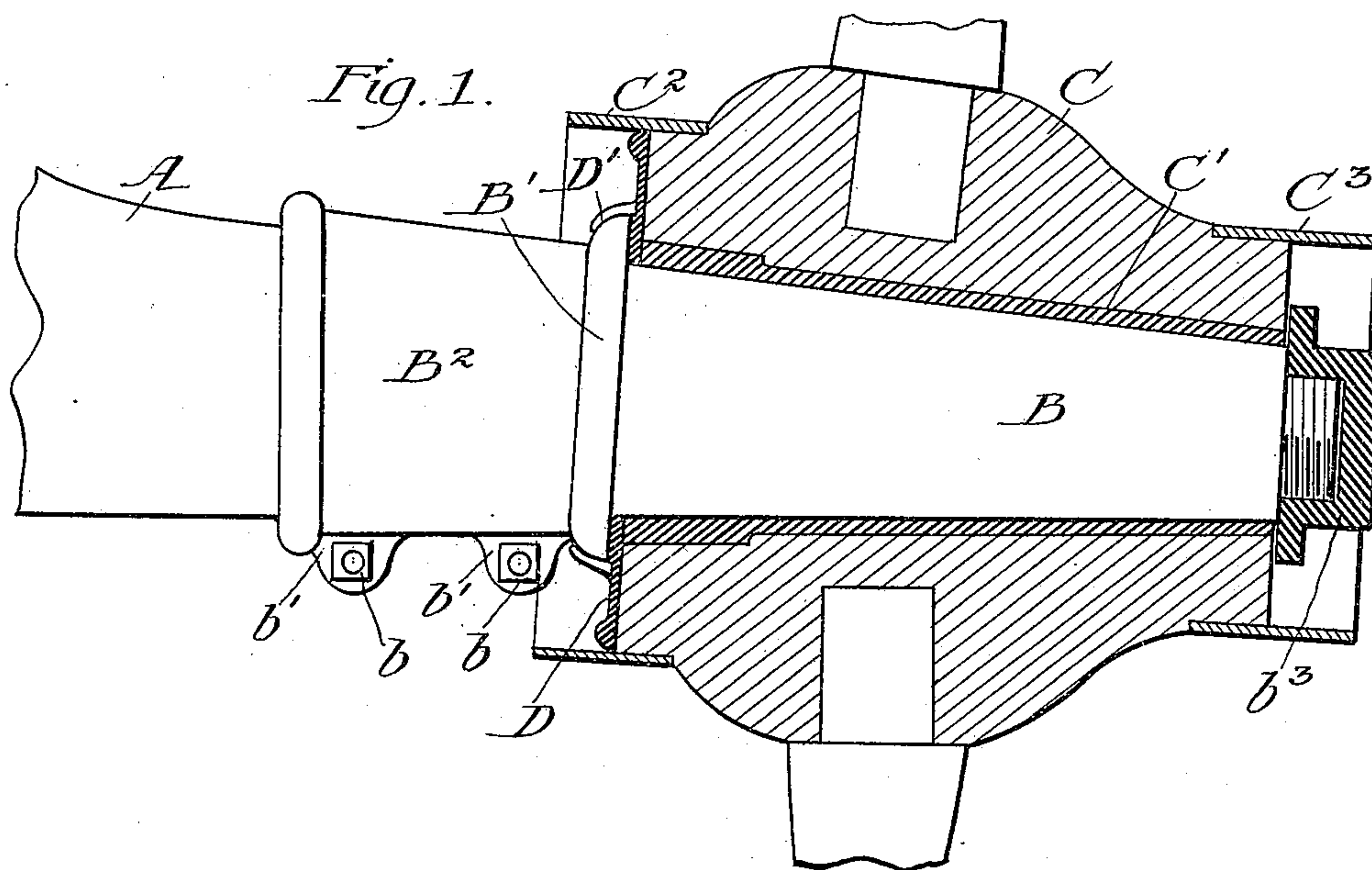
No. 617,746.

Patented Jan. 17, 1899.

C. HOTZ.
SAND BAND.

(Application filed July 5, 1898.)

(No Model.)



Witnesses:

Frank S. Blanchard
William A. Hall

Inventor:

Christoph Hotz
By Attorneys,
Poole & Brown

UNITED STATES PATENT OFFICE.

CHRISTOPH HOTZ, OF CHICAGO, ILLINOIS.

SAND-BAND.

SPECIFICATION forming part of Letters Patent No. 617,746, dated January 17, 1899.

Application filed July 5, 1898. Serial No. 685,128. (No model.)

To all whom it may concern:

Be it known that I, CHRISTOPH HOTZ, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sand-Excluding Devices for Vehicle-Axle Bearings; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved sand-excluding ring or disk designed for use in connection with vehicle-axle bearings and which is adapted to be immovably secured to the axle or spindle and to engage the hub of the wheel of the vehicle in such manner as to prevent sand or dust from entering between the spindle and axle-box.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a fragmentary side elevation of an axle, showing in cross-section a wheel-hub mounted thereon provided with my invention. Fig. 2 is a rear perspective view of the dust-excluding ring removed from the axle. Fig. 3 is a cross-section taken centrally through the ring.

My invention is herein shown as applied to an axle-bearing, in which the axle consists of a wood body portion and a tubular skein placed over and secured to the outer end of the axle, and which forms the spindle or bearing for the hub of the wheel, but may be applied equally well to the axles of other construction.

In said drawings, A designates the wood or body portion of the axle, B a metallic tubular skein which is secured to the outer end thereof, and C the usual wheel-hub which fits and turns on said skein, said hub being provided interiorly with the usual thimble or box C'. Said skein B is provided at the rear end of the hub with the usual collar or flange B', which is made of considerably greater diameter than the adjacent part of the skein and which constitutes a shoulder to limit the inward movement of the hub upon the axle.

In the present instance said collar B is formed on the forward side or margin of a split tube B², which is secured upon the skein B by

means of clamping-bolts *b*, passing through apertured lugs *b'* on the opposite ends thereof beneath the axle-skein. The hub is normally prevented from moving outward upon the spindle by the usual nut *b*³, which has screw-threaded engagement with the outer end of the spindle. Said hub is provided with the usual hub-bands C² C³, which project beyond the inner and outer end surfaces thereof.

D designates my improved sand-excluding ring which is immovably attached to the spindle in contact with the flange B' and in position to bear against the flat rear end surface of the hub when the latter is in place on the said spindle. Said ring consists, essentially, of a relatively thin circular metallic plate which is of such diameter as to fit closely within but not in contact with the rearwardly-projecting portion of the rear hub-band C² and is provided with a flat smooth inner surface which has uniform contact in all its parts with the smooth rear end surface of the hub when the latter is in place upon the spindle. Said plate is provided with a central opening adapted to receive the spindle, said opening being made of such size that the ring will fit closely upon the part of the spindle adjacent to the flange B'. The close fit of the ring on the spindle prevents access of dust or other foreign substances between the said parts and excludes the same from the axle-bearing. The close fit of the ring on the axle also aids in a measure to hold the ring in place upon the spindle. Said ring is interposed between the inner end of the hub and the inner surface of the collar B', by which latter the ring is held from movement toward the center of the axle. The ring is attached in fixed relation with respect to the spindle, so as to be incapable of movement toward the outer end thereof, by means of a plurality of inwardly-directed lugs located on the inner surface of the ring in circular order and concentric with the central opening thereof and adapted to overlap the flange B, said lugs being bent over the outer edge of said flange and serving to hold the ring closely against the flange, and thereby prevent the same from moving away from the collar when the wheel is removed or during any slight movement of the hub endwise upon the spindle, which may occur in the use of the vehicle. Said ring will preferably be

provided adjacent to its outer edge or periphery and on the inner surface thereof with an annular bead or thickened portion *d*, which serves to strengthen or stiffen the ring and prevents the same from being easily bent or distorted. Said bead or thickened portion *d* is located inside of the circumference of the ring, and the periphery thereof adjacent to the inner surface of the hub-band when the wheel is in place is brought to a sharp edge, thereby preventing lodgment of dirt or sand thereon in position to work its way into the bearing. The beveled edge of the ring causes sand or dirt falling thereon to drop outwardly off the same.

As before stated, the external or peripheral diameter of the ring is such that it fits closely within the hub-band, the fit between said ring and band being such as to permit the wheel to be readily removed and replaced, while at the same time effectually preventing the ingress of sand or dirt between the same. The attaching-lugs *D'* will be so arranged that when bent or folded upon the collar *B'* they will hold the ring firmly in place upon the spindle, so that said ring will have no tendency to turn upon the spindle by reason of the friction between the disk and the hub when the latter turns upon the axle. The central opening of said ring will preferably be of such diameter that the same will be moved in its final position upon the spindle by slightly driving the same in place. Said ring will preferably be thickened in its parts around the central opening, as shown at *d'*, so as to strengthen the same and provide a wider bearing-surface between the ring and the skein, and thus more effectively prevent the entrance of foreign substances between said parts.

A device made in accordance with my invention is obviously very effective to prevent the entrance of foreign substances to the axle-bearing, as the periphery of the ring is always in contact with or closely adjacent to the inner surface of the hub-band at a distance inside of the rear or overhanging part of the hub-band, the joint between said ring and band being, furthermore, protected by such projecting part of the band. Moreover, the device being contained entirely within the rear hub-band is out of the way and does not detract from the appearance of the vehicle, as do devices which are located in part or in whole upon the axle outside of the hub-band.

A further advantage of the device is that it consists of a single part only, so that no tendency exists of parts becoming loosened and being shifted from their places, and thereby becoming inoperative, as is liable to occur where a sand-excluding device made up of a number of separate parts is employed.

The device may, furthermore, be cheaply made and readily attached to the spindle, and when once attached becomes, in effect,

a permanent part thereof and will not become loosened and inoperative by wear.

A further and important advantage gained by the use of my device is that it may be applied to the ordinary form of vehicle-axles having a collar or shoulder at the base of the spindle without the necessity of specially preparing the axle for the same or changing its construction in any way, and may therefore be applied equally well to vehicles in use as when being built. Furthermore, in case of accidental breakage of the ring the same may be readily and easily removed and replaced by a sound one.

The ring has been herein shown and described as being made of a malleable casting or equivalent material provided with integral attaching-lugs, but may be made of other material, or it may be provided with lugs made separate from and permanently attached thereto in any convenient manner. The integral form shown is, however, preferred, as it is cheaper to manufacture and possesses greater strength.

I claim as my invention—

1. The combination with a vehicle-axle spindle, provided with a flange and a wheel-hub thereon provided with an inwardly-projecting hub-band, of a thin flat ring mounted on said spindle between said hub and flange, said ring being of such diameter as to closely fit within the projecting part of said hub-band, and a plurality of inwardly-directed lugs on the outer surface of said ring adapted to be folded over said flange.

2. The combination with a vehicle-axle spindle provided with a flange and a wheel-hub thereon provided with an inwardly-projecting hub-band, of a ring mounted on said spindle between the hub and collar, said ring being of such diameter as to closely fit within the projecting part of said hub-band and being provided on its side adjacent to the hub with a smooth surface adapted to engage the rear end surface of the hub, and provided on its opposite side with inwardly-directed lugs which are bent over the flange of the spindle.

3. The combination with a vehicle-axle spindle provided with a flange and a wheel-hub thereon provided with an inwardly-projecting hub-band, of a ring mounted on said spindle between said hub and collar of such external diameter as to closely fit within the projecting part of said hub-band, and a plurality of inwardly-directed lugs on the outer surface of said ring which are bent over said flange, said ring having a thin outer edge adjacent to the inner surface of the hub-band.

4. A dust-excluding ring having a central opening to receive an axle-spindle and a plurality of lugs on its rear surface; said lugs being adapted to be bent over an adjacent axle-flange.

5. A dust-excluding ring provided with a central opening to receive an axle-sleeve and with an annular rib on its rear margin and

provided also with inwardly-extending lugs adapted to be bent over the outer edge of an axle-flange.

6. A dust-excluding device for vehicle-axle bearings comprising a thin, cast malleable disk provided with a central opening, and having on one side a flat, smooth face and on its other side a plurality of integral projections or lugs concentric with said central opening.

7. A dust-excluding ring having a central opening to receive an axle-spindle, and a plurality of lugs on its rear surface adapted to

be bent over an adjacent axle-flange, said ring being provided on its rear surface adjacent to the periphery with an annular outwardly-inclined surface. 15

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 27th day of June, A. D. 20 1898.

CHRISTOPH HOTZ.

Witnesses:

MARTIN CONRAD,
JOHN F. VETTE.