

No. 726,373.

PATENTED APR. 28, 1903.

A. J. THEIRING.
HUB AND AXLE BEARING.
APPLICATION FILED OCT. 16, 1899.

NO MODEL.

Fig. 1.

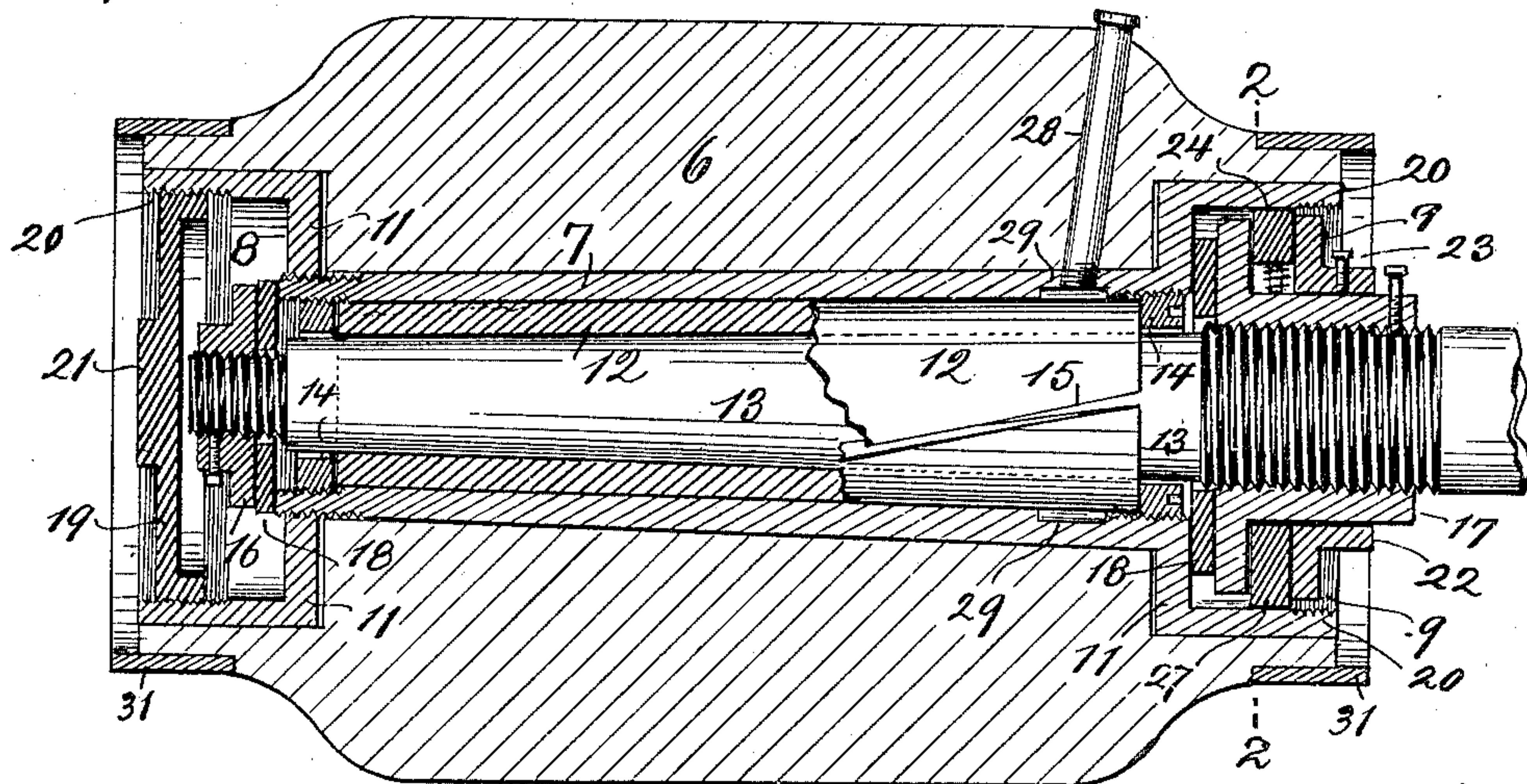


Fig. 2.

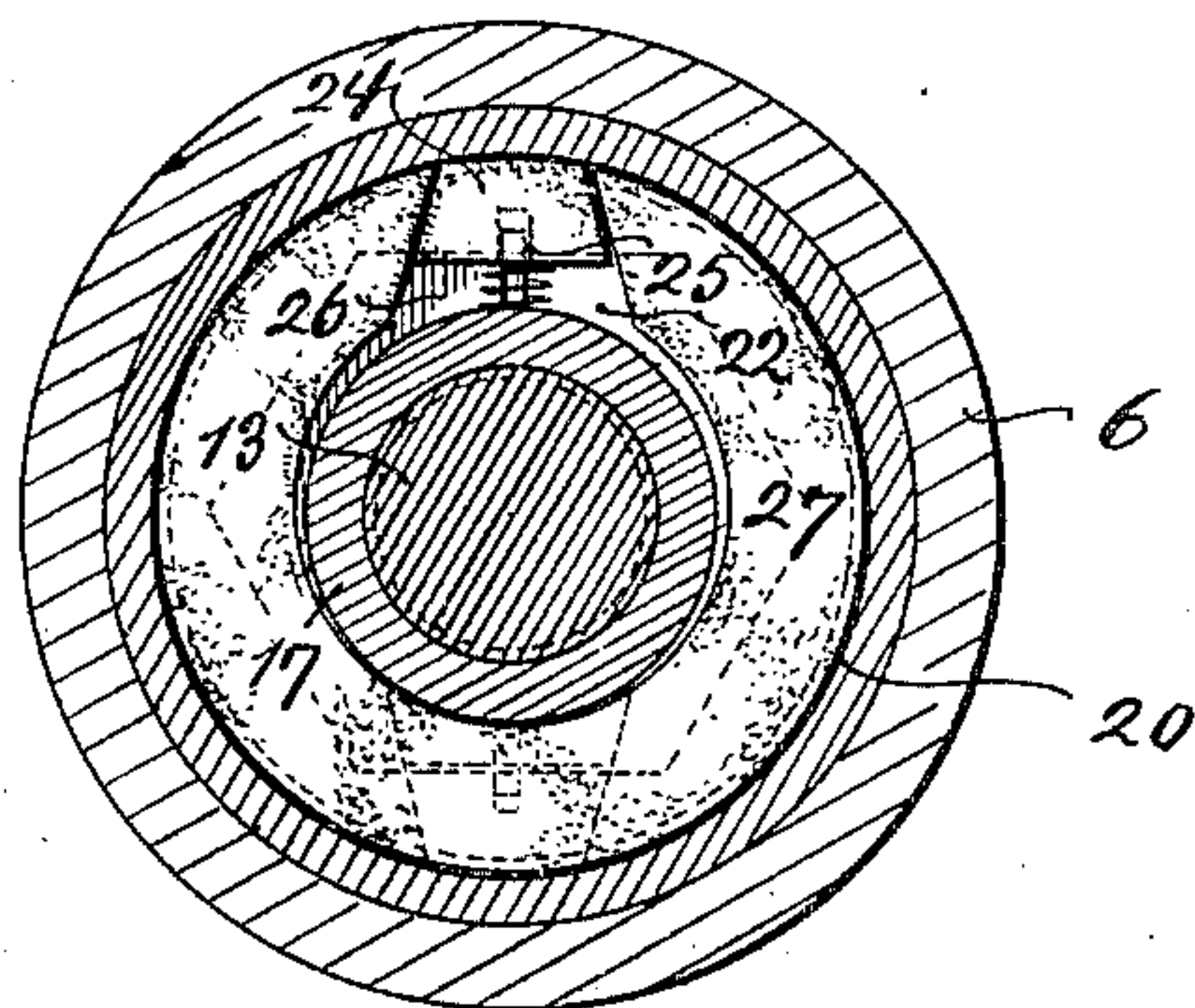
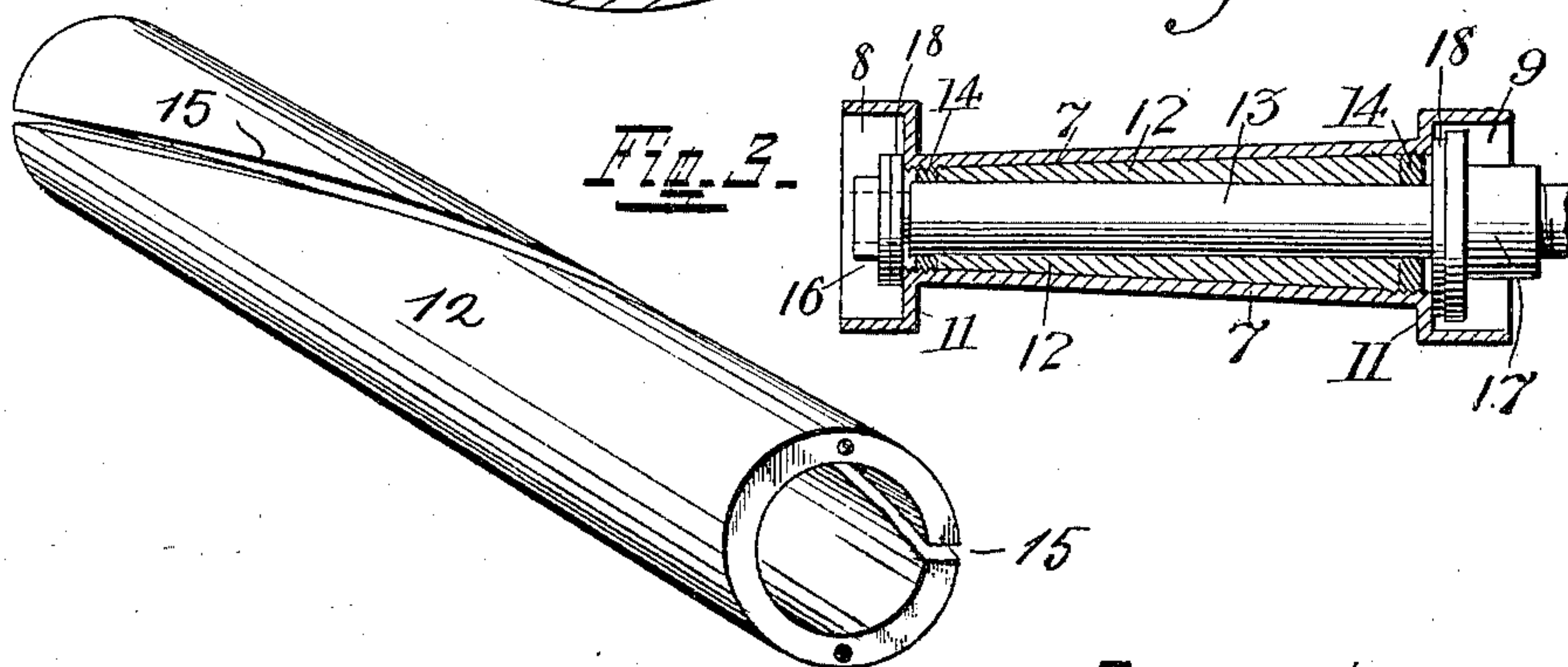


Fig. 4.

Fig. 3.



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HUB AND AXLE-BEARING.

SPECIFICATION forming part of Letters Patent No. 726,373, dated April 28, 1903.

Application filed October 16, 1899. Serial No. 733,742. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. THEIRING, a citizen of the United States, and a resident of Cincinnati, Hamilton county, State of Ohio, have invented certain new and useful Improvements in Hubs and Axle-Bearings; and I do declare that the following is a clear, full, and exact description of the invention, such as to enable others skilled in the art to which it appertains to make and use the same, attention being called to the accompanying drawings, with the reference-numerals marked thereon, which form also a part of this description.

This invention relates to improvements in hubs and axle-bearings and comprises several features, of which one concerns the box of the hub, with the means of securing the former within the latter and the means for holding the whole hub complete in position on the axle-journal.

Another feature is a separate lining within the box, which is adjustable to compensate for wear of the bearing and may be independently renewed if worn beyond adjustment.

My improved hub and axle-bearing may be used in connection with either straight or tapering axle-journals, and the construction is such that when used in connection with the former, and the wheel otherwise permitting, this latter may be put on from either one of its sides and may be reversed from time to time to insure an equal wear of all the parts.

In the following specification, and particularly pointed out in the claims at the end thereof, is found a full description of my invention, together with its operation, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 shows a longitudinal section of my improved hub and axle-bearing. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a perspective view of the separable box-lining. Fig. 4 in a sectional view shows part of my invention as to the adjustable wearing-sleeve 12 applied to an axle with a straight journal.

6 is the body of the hub, having its bore provided with a box 7, which is tapering on its outside, thereby permitting it to be tightly drawn into the bore of the hub or its box until it becomes seated therein with a snug

fit. At each end this bore is enlarged in diameter, forming cup-shaped chambers 8 and 9 thereat, which contain the parts whereby the hub is confined on the axle. At the same time part 11 of the walls of these chambers, by bearing against an offset where the bore of the hub is enlarged in order to receive such chambers, serves as a shoulder at each end to hold the box in place. To permit insertion of this latter, it is of course necessary that the structure forming chamber 8 is detachably connected, for which purpose it is connected to the end of the box by means of a screw-thread, the attachment taking place after the box has been inserted into the bore of the hub. The bore of the box is also tapering and contains a separable sleeve or lining 12, fitted on its outside to this taper and fitted on its inside to receive the axle-journal 13. Accordingly the bore of this sleeve will be straight for a straight axle-journal, as shown in Fig. 4, and tapering for a tapering one—such as, for instance, is shown in Fig. 4. The sleeve is shorter than the box, permitting nuts 14 to be threaded into each end of the former, which by bearing against the ends of sleeve 12 confine this latter endwise in position. Part of this sleeve is removed throughout its entire length in form of an open cut 15, disposed spirally around it in a suitable pitch. If the contacting surfaces of the bearing wear, such wear may be taken up by partly closing this open cut and advancing the sleeve accordingly deeper into the tapering bore of the box. For such purpose nut 14 at the larger end has been previously removed to permit access for manipulating the sleeve. Nut 14 at the smaller end has been moved outwardly to clear the end of the advancing sleeve. The sleeve after its adjustment is followed up by nut 14 at the larger end, which is inserted again. The parts moved during such adjustment are manipulated by spanner-wrenches, the necessary socket-holes being provided for such purpose. It will be noticed that the position of the wheel is in no wise disturbed during this adjustment for the purpose of taking up wear in the bearing, since the sleeve is the only part moved. The hub is confined on the axle-journal between shoulders which may be formed by nuts 16 and 17, the first bear-

ing against the outer, the latter against the inner, end of the box and occupying, respectively, chambers 8 and 9. Devices to reduce the friction between the contacting parts in shape of balls or washers 18 may be interposed. Nuts 16 and 17 are held in position by suitable locking devices—as, for instance, by set-screws. For closing these chambers to keep dust and water from entering the bearing and to prevent any possible loss and waste of the lubricant used I provide suitable means, which in case of chamber 8 consist of a screw-cap 19, provided on its outside with a nut 21 for manipulation. In case of chamber 9 it consists of a washer having an inherent tendency to move outwardly—that is, against the inner side 20 of the wall of said chamber—so that notwithstanding the continual wear a tight joint is nevertheless maintained at all times. This washer is supported on nut 17 and confined in position by a follower 22, also held on said nut by means of a set-screw 23. The desired outward action of this washer, as above mentioned, is obtained by having springs acting against parts of the washer and having these parts transmit their spring action to the other parts of the washer. My preferred construction consists of having the washer in two sections, one, 24, resting loosely on a pin 25 and having a spring 26 behind it, which presses it outwardly. The sides of this section are sloping, as shown, and have the ends of the other section 27 resting against them. This spring-actuated section 24 by tending to spread the ends of section 27 crowds this latter constantly against the inner side 20 of chamber 9. Instead of having only one spring-actuated section 24 two, as shown in dotted lines, or more may be used.

Lubricant may be supplied through a fill-tube 28 to an annular recess 29, from which it is transferred to the bearing by means of cut 15. Any lubricant escaping at the ends of the bearing accumulates in chambers 8 and 9, where it is held and confined by the means closing these chambers, as described.

Nuts 14, 16, and 17 being in all cases fitted to the size of the axle at the particular points and sleeve 12 being fitted to the axle-journal, be the same straight or tapering, it is plain when the same is straight that the hub may be reversed, whereby the wear of the parts is more evenly divided. For such purpose the inner side 20 of each of the chambers is provided with a screw-thread, so that either may receive cap 19.

31 represents the hub-bands.

It is plain that lining 12 is not dependent on the particular construction of the box or other parts shown. Cut 15 might be on a line shaped or curved otherwise than spiral; but I prefer the form shown. In an all-metal hub, requiring no separate box, the metal hub is the equivalent of such box with reference to sleeve 12 and takes the place thereof.

Having described my invention, I claim as new—

1. In a hub and axle-bearing, the combination of an axle-journal, a hub provided with a box, the diameter of which is enlarged at each end forming chambers thereat, part of the enlarged part forming shoulders 11, by which the box is held within the hub, nuts to confine this latter on the axle-journal, occupying one each the chambers at the ends of the hub and means removably secured to close the open parts of each of the chambers.

2. In a bearing, the combination of a box being tapered inside, a separable sleeve with the thickness of its wall also tapering fitted on its outside to this taper and on its inside to the journal to be received, said sleeve being provided with an open cut throughout its entire length and means to confine the same endwise within the box.

3. In a hub and axle-bearing, the combination of an axle-journal, a hub, means to hold the latter on the former, a box fitted to this hub and the diameter of which is enlarged at each end, the enlarged portions forming shoulders and chambers, the first holding the box within the hub and the others occupied by the means mentioned, a separable sleeve fitted to the inside of the box and to the outside of the axle-journal and means to hold the sleeve in position.

4. In a hub and axle-bearing, the combination of an axle-journal, a hub, a box fitted thereto, the front end of which is enlarged forming a chamber 8 thereat, a nut 16 mounted on the front end of the axle and occupying this chamber thereat and a cap 19 fitted within said chamber to close the open part thereof.

5. In a hub and axle-bearing, the combination of an axle-journal, a hub, a shoulder on the former, against which the latter rests, a box fitted to the hub, a nut 16 to hold the latter on the axle-journal, a chamber 9 formed by an enlargement of the box at the rear end thereof and occupied by the shoulder mentioned, and a spring-pressed washer closing the open part of this chamber.

6. In a hub and axle-bearing, the combination of an axle-journal, a hub, a box fitted thereto, nuts 16 and 17 between which the hub is confined on the axle-journal, a chamber 9 formed at the rear end of the box by an enlargement of this latter, and which chamber is occupied by nut 17, a spring-pressed washer for closing the open part of this chamber and a follower whereby the former is held in position within the latter.

7. The combination with the hollow or recessed part at the end of a hub, of a spring-pressed washer occupying this recess and consisting of sections, part of which is supported on a spring thereby imparting to it a tendency to move outward, while the other part receives its outward action from the spring-actuated part and whereby the above-mentioned recess is closed.

8. In a hub and axle-bearing, the combination of an axle-journal, a hub, means at each end of this latter whereby it is confined on the former, a box within the hub the diameter of which is enlarged at each of its ends to form chambers which are occupied by the means referred to for the purpose of holding the hub in position, means to close these chambers, the diameters of which latter are alike whereby they are rendered capable of receiving these means at either end of the box in case the hub is reversed.

9. In a hub and axle-bearing, the combination of the axle-journal, the box of the hub tapering inside and of a size to leave a space between it and the axle-journal, a separable

sleeve fitted into this space so as to be in contact on its inside with the axle-journal and on its outside with the bore of the box, said sleeve being provided with an open cut throughout its length and means for gradually advancing this sleeve bodily into this space as the parts wear, and for holding it to its advanced position, the open cut in it permitting it to yield diametrically.

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

ANDREW J. THEIRING.

Witnesses:

C. SPENGEL,
ERNEST G. SIMON.