No. 630,948. Patented Aug. 15, 1899.

A. J. THEIRING.

AXLE BEARING.

(Application filed Jan. 9, 1899.)

(No Model.)

Fig. 1.

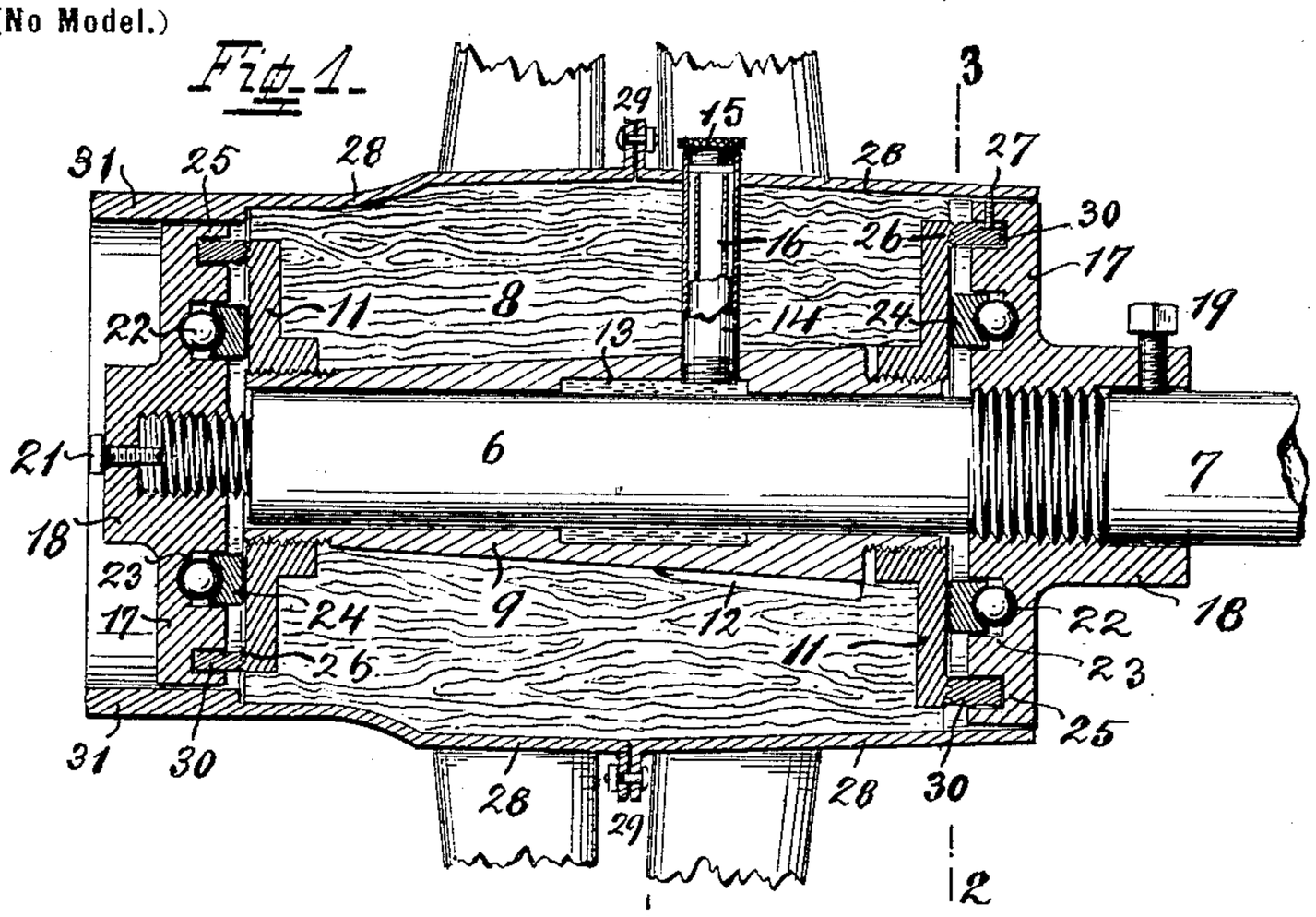


Fig. 2.

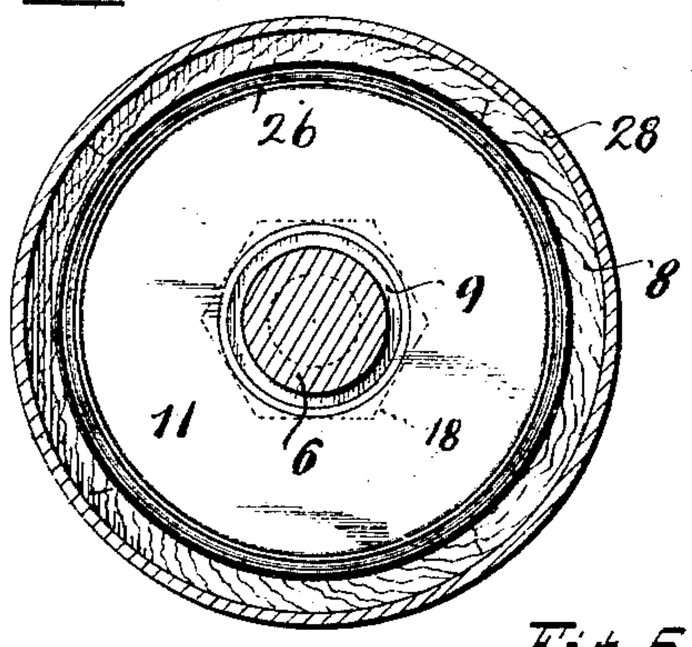


Fig. 3.

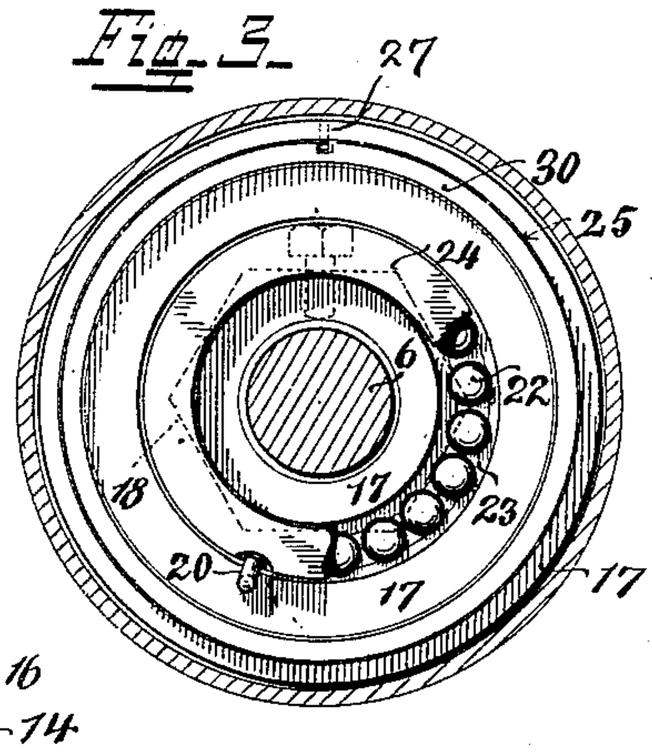


Fig. 5.

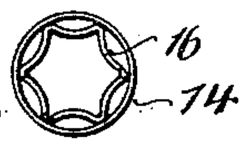


Fig. 4.

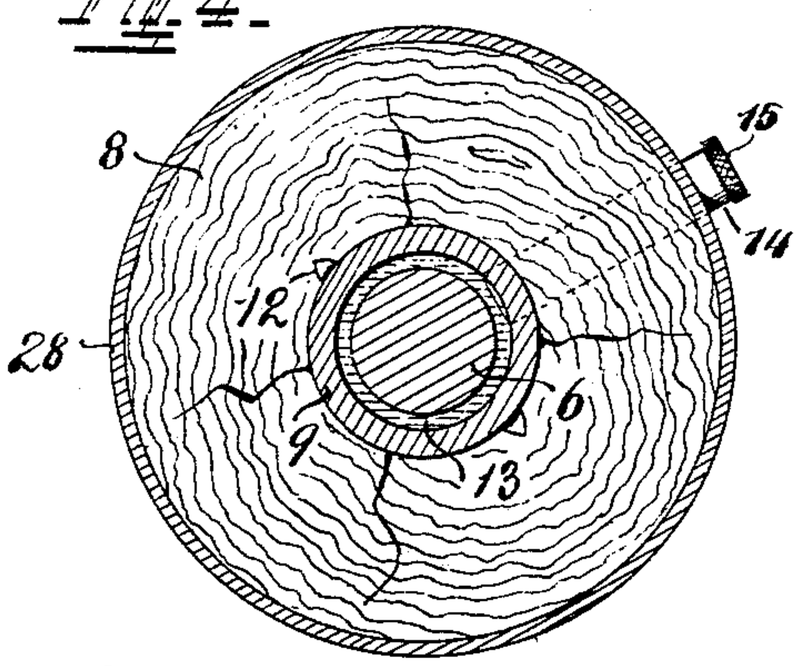
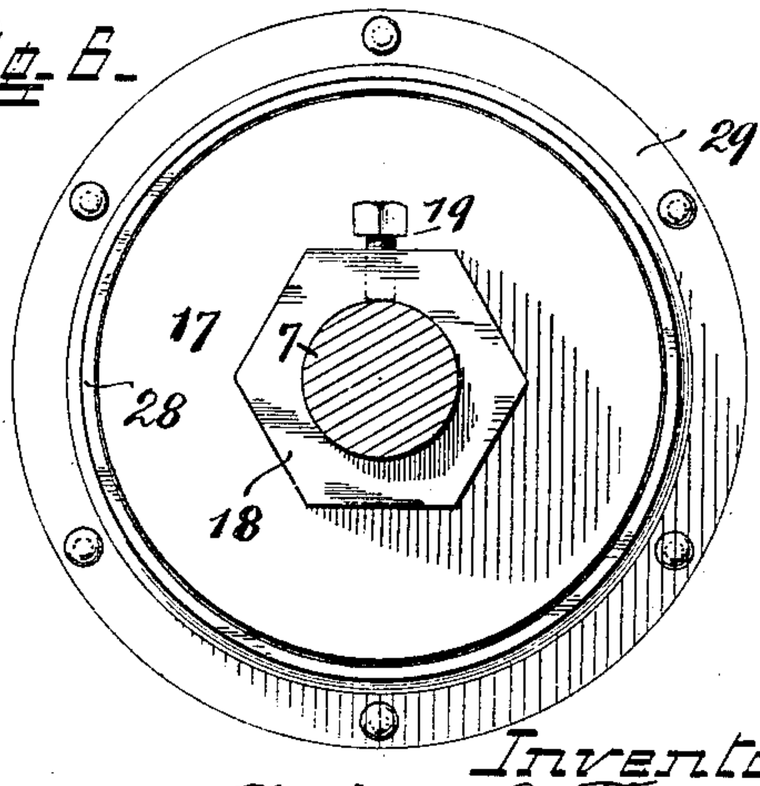


Fig. 6.



Attest
Edward F. Smith
John C. Rogers.

Inventor
Andrew J. Theiring
by C. Spengel Atty.

UNITED STATES PATENT OFFICE.

ANDREW J. THEIRING, OF CINCINNATI, OHIO.

AXLE-BEARING.

SPECIFICATION forming part of Letters Patent No. 630,948, dated August 15, 1899.

Application filed January 9, 1899. Serial No. 701,568. (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 Axle-Bearings; and I do hereby declare the following to be a clear, full, and exact description of the invention, such as will 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 a part of this specification.

This invention relates to improvements in axle-bearings; and the object is to devise an improved construction which permits the hub to be held on the axle between stationary shoulders having a screw adjustment, whereby the position of the hub respectively of the wheel may be exactly determined and adjusted. Antifriction devices are provided between these shoulders and the ends of the hub to lessen lateral friction. Means and adjustments are provided to take up loss by wear of these antifriction devices as well as other contacting and moving surfaces. Parts subject to wear may be independently replaced without requiring renewal of other parts.

In the following specification, and particularly pointed out in the claims, is found a full description of my invention, 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. Figs. 2 and 3 are cross-sections taken on a line 2 3 of Fig. 1 and show opposite surfaces resulting from such section. Fig. 4 is a cross-section on line 4 4 of Fig. 1. Fig. 5 is an enlarged end view of the fill-tube through which the lubricating-chamber receives its supply. Fig. 6 is a view of the larger end of the hub.

In the drawings, 6 indicates the journal of the axle 7—that is, that part of it about which the hub turns.

8 is the body of the hub, which may be wood. Its bore is lined with a box 9, which receives the axle-journal. This box is tapering on its outside and held in place by flanges 11 11, one at each end. The one at the thicker end of the box may be integrally connected, while the one on the other end is attached with a screw connection, which permits of drawing the tapering box tightly into the body of the hub. On its outside box 9 is provided with customary ribs 12, which are forced into the body of the hub and prevent the former from turning within the latter. Part of the inside of the box next to the axle is removed, as shown at 13, the space forming a chamber to receive and hold lubricating matter, and which matter from this chamber is distributed throughout the contacting surfaces of the axle-bearing. The lubricant is supplied through a fill-tube 14, passing from oil-chamber 13 to the outside of the hub, where it is closed by a screw-cap 15.

The hub is laterally held in place on the axle by means of shoulders or abutments, between which it is endwise confined. These shoulders consist of flanges 17 17, one opposite each end of the hub and mounted on the axle by means of a screw connection. The parts containing this screw connection are extended outwardly and form in each case a nut 18, suitable for application of a wrench, whereby flanges 17 17 may be placed, removed, or adjusted. By moving these flanges lengthwise on the axle the position of the hub and wheel between them is affected and determined. These flanges 17 are held in position and prevented from turning by lock-screws, one, 19, passing sidewise through nut 18 at the inner end of the axle-bearing. The other, 21, passes endwise through the nut at the outer end of the axle-bearing and engages the end of the axle thereat. The diameter of this end—that is, that much of it which receives the nut thereat—is reduced in diameter.

To prevent the excessive friction which actual contact between flanges 11 11 and 17 17 at each end of the hub would produce, antifriction devices are interposed, to which such contact is limited. These devices consist of balls 22, occupying grooves 23 in one of the flanges and bear against a ring 24, having also a groove which they occupy. This bearing-ring occupies partly groove 23 in the one flange and contacts with the flange opposite it. The friction is thus limited to the opposite surfaces between the bearing-ring and the balls, and as these contacting parts wear

such wear may be taken up by adjustment of flanges 17. If the capacity of this adjustment is exhausted, it may be restored by renewal of bearing-ring 24. Friction by contact between the sides of the grooves and the balls is avoided by the width of the former, which exceeds considerably the diameter of the latter, and by confining the balls to the concave bottom of the grooves. The balls are thereby prevented from touching or riding upon the sides of the grooves. The end or head of a screw or pin 20, projecting over bearing-ring 24 and countersunk thereinto, serves to hold the latter in place within groove 23 simply for the purpose of confining the balls therein and to prevent them from being spilled when the parts are separated or when the wheel is taken off. To prevent the lubricant from working out between the flanges at each end of the hub or dust from entering the space between them or the axle-bearing, such space is closed by suitable packing or a washer, as shown at 30, occupying a groove 25, which may be in either one of the opposite flanges, and, as shown, is in flange 17. This packing should have a tendency to remain in contact with the opposite flange, which is attained by having either springs behind it or have it of elastic material—like rubber, for instance. That part of the opposite surfaces against which this washer bears is provided with circular serrations 26, into which the former is pressed and whereby a dust-and-oil-proof joint is obtained. To prevent this washer from rotating in the groove which it occupies, a screw 27 is provided, which holds it in place, but without interferring with its expansive action. In place of hub-bands I use a shell 28 in two parts or sections, one drawn on from each end of the hub, which ends are tapering, whereby a close fit is attained. The inner ends of these sections are each provided with a flange 29, which flanges meet and are connected by rivets or screws.

Having described my invention, I claim as new—

1. In an improved axle-bearing, the combination of a hub having a flange at each one of its ends, flanges mounted on the axle-journal, one opposite each end of the hub and the flanges thereat, there being a groove in one of the opposite flanges and balls contained therein, and a bearing-ring interposed between said balls and the opposite flange.

2. In an improved axle-bearing, the combination of a hub having a flange at each one of its ends, flanges mounted on the axle, one opposite each flange at the ends of the hub, there being a groove in one of the opposite flanges and balls contained therein to lessen the friction caused by contact with opposite surfaces, the width of the groove greatly exceeding the diameter of the balls, so that the latter do not touch the sides of the groove and whereby the pressure of contact is limited and its direction restricted only to lines parallel with the axle and wear confined to points only at the opposite ends of such pressure-lines.

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

ANDREW J. THEIRING.

Witnesses:
C. SPENGEL,
JOHN C. ROGERS.