(No Model.)

R. EICHSTEADT.

ROLLER BEARING.

No. 563,146. Patented June 30, 1896.

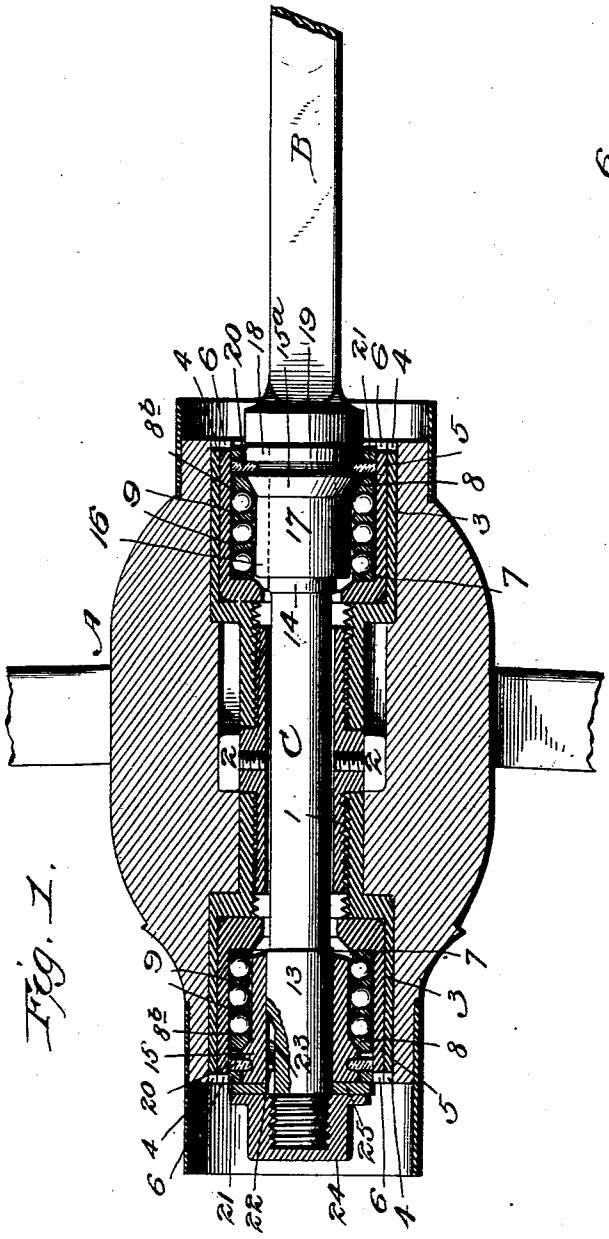

Fig. 1.

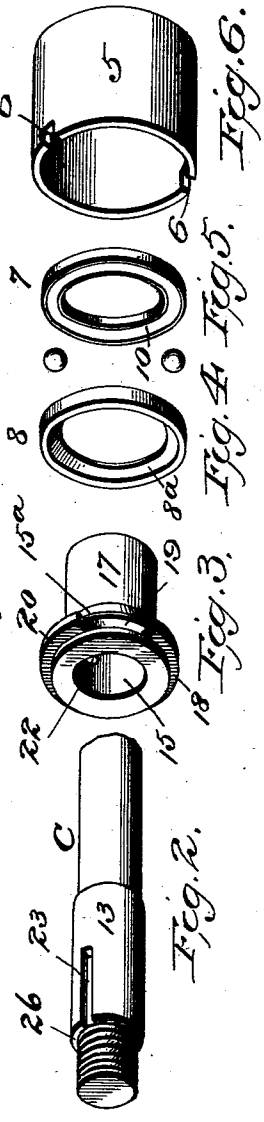

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Witnesses
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UNITED STATES PATENT OFFICE.

ROMAN EICHSTEADT, OF MICHIGAN CITY, INDIANA.

ROLLER-BEARING.

SPECIFICATION forming part of Letters Patent No. 563,146, dated June 30, 1896.

Application filed March 13, 1896. Serial No. 583,081. (No model.)

To all whom it may concern:

Be it known that I, ROMAN EICHSTEADT, a citizen of the United States, residing at Michigan City, in the county of La Porte and State of Indiana, have invented certain new and useful Improvements in Ball-Bearings; and I do declare the following to be a full, clear, 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to ball-bearings, and more particularly to an improved ball-bearing especially adapted for use in connection with vehicle-hubs.

The objects sought to be accomplished are simplicity and durability of construction, longer and less frictional bearings, and facility of removal and assembly of the parts. These objects are accomplished by the employment of an improved double-ended coupling connecting duplicate removable housings or sections in which the ball-bearings are situated.

The invention further consists in novel ball-races situated in removable cups, and in improved bearing-collars secured on the axle-spindle, together with certain other improved features and combinations more fully described hereinafter.

In the accompanying drawings, Figure 1 represents a longitudinal section of a hub with my invention applied thereto; and Figs. 2 to 6, inclusive, detail views of certain parts.

The wheel-hub is shown at A, while B represents the axle, and C the spindle.

I employ a double-ended screw-threaded coupling 1, provided with removable flanges 2 for preventing the coupling and its connections from turning within the hub. This coupling affords connection between screw-threaded duplicate cup-shaped sections 3, which are provided with shoulders to prevent longitudinal displacement of the hub. Notches 4 are provided, so that a spanner may be inserted and the sections screwed on or unscrewed from the coupling.

I employ a removable thimble 5, which snugly fits the cup of the section, being provided with notches 6, and having its base apertured for the passage of the spindle C. This thimble holds the balls and improved ball-races.

The ball-races consist of inner and outer annular rings 7 and 8 and intermediate rings 9. The inner ring 7 is flat on one side to conform to the base of the thimble, but its remaining face is provided with a ball-raceway 10. The outer ring 8 is beveled at 8^a on its outer face to form a suitable abutment for a removable bearing-collar 15, secured on the spindle, and which will be described hereinafter. The remaining face of this ring is provided with a ball-raceway 8^b. Between the inner and outer ball-races are situated intermediate rings 9, provided on both faces with ball-raceways. The peculiar construction of the ball-races renders it impossible for the ball to drop out when the spindle is not in position.

The axle-spindle C is provided with two enlargements 13 and 14, upon which are secured respective spindle-bearing collars 15 and 16. The collars are identical in construction, but are secured to the spindle by different means. They are cylindrical for the major portion of their length to provide a bearing-surface 17 for the balls, but are provided at their ends with enlarged portions 18, a beveled shoulder 15^a being provided to form an abutment for the bevel 8^a, whereby all the rings in the thimbles are held in position. The enlargements of these bearing-collars are grooved at 19 for the reception of the usual felt packing-rings 20, which are protected by outer metallic rings 21. As it is usually unnecessary to remove the inner collar 16 when adjusting the parts, I secure this permanently to the spindle in any preferred manner. The outer collar is prevented from turning by a stud 22, projecting into a keyway 23, cut in the spindle. The parts are held in position by the usual nut 24 and washer 25, the screw-threads on the end of the spindle being reduced in diameter, so that a shoulder 26 is formed, which serves as an abutment for the face of the nut, so that the latter cannot be screwed on so far as to crowd or injure the parts and cause unnecessary friction.

The assembly of the parts is accomplished as follows: The double-ended coupling is first inserted in the hub and the inner and outer

cup-sections screwed on. The thimbles having previously been filled with the successive layers of rings and balls, are then forced within the cups, being held in position by frictional contact with the latter. The spindle is now inserted and the outer bearing-collar forced into position. Upon adjusting the nut on the end of the spindle, the parts are brought into proper relation.

Should it be necessary to repair the balls or ball-races, this may be readily accomplished without the annoyance of having to take the whole bearing apart, as the nut can be removed and the troublesome thimble taken out.

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

1. In a ball-bearing, the combination with a double-ended screw-threaded coupling adapted to receive a spindle, of a pair of oppositely-extended cups having threaded ends which engage those of the coupling, removable thimbles fitting within the cups and adapted to surround the opposite ends of the spindle, a pair of spindle-bearing collars adapted to fit within said thimbles, a series of ball-races encircling the collars, removable rings between the balls, and retaining devices adapted to screw upon the spindle, all arranged and adapted to operate in the manner and for the purpose specified.

2. In a ball-bearing, the combination with a spindle, of a double-ended coupling, cupped sections connected thereto, thimbles held within the cupped sections, and bearing devices within the thimbles.

In witness whereof I affix my signature in presence of two witnesses.

ROMAN EICHSTEADT.

Witnesses:
J. F. GALLAHER,
WM. A. BRAY.