No. 609,835. Patented Aug. 30, 1898.

# C. E. ROBERTS.

## BALL BEARING.

(Application filed Sept. 7, 1897.)

(No Model.)

FIG. 1.

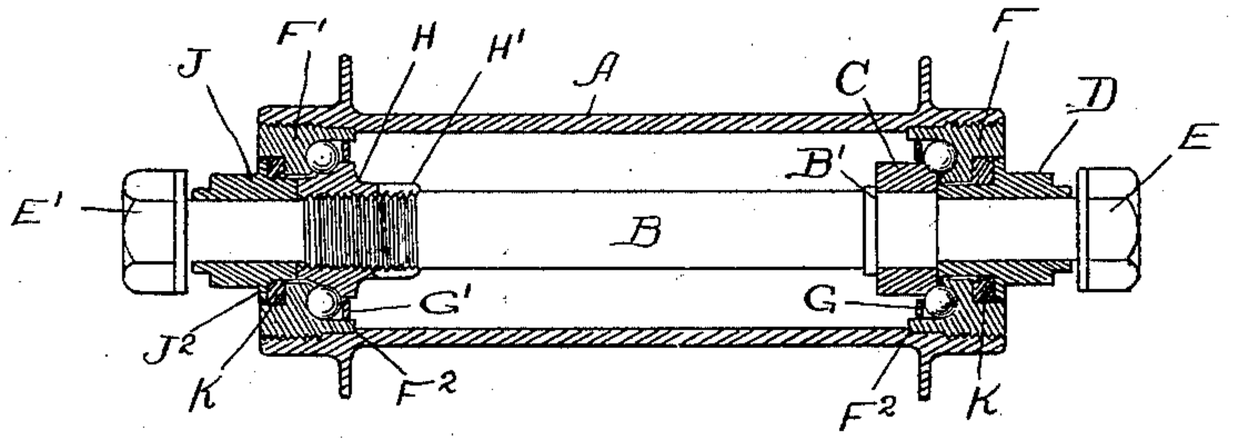
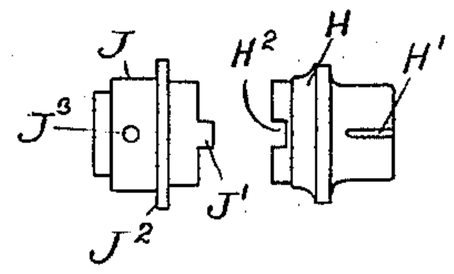



FIG. 2.

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# UNITED STATES PATENT OFFICE.

CHARLES E. ROBERTS, OF OAK PARK, ILLINOIS.

## BALL-BEARING.

SPECIFICATION forming part of Letters Patent No. 609,835, dated August 30, 1898.

Application filed September 7, 1897. Serial No. 650,707. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. ROBERTS, a citizen of the United States, residing in Oak Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Ball-Bearings, of which the following is a specification.

The object of this invention is to provide a construction of ball-bearing hubs for bicycle-wheels which will allow the wheel to be removed from the machine without loss of the adjustment of the ball-bearing.

The nature of the invention will be understood from the accompanying drawings, which show, at—

Figure 1, a longitudinal section of the hub, and at Fig. 2 side views of the movable cone and its actuating-sleeve.

In said drawings, A represents the barrel of the hub, and B the axle. The latter is provided with a shoulder B′ at one end, and in proximity to which the cone C is attached to the axle, so as to be rigid therewith. A loose sleeve D encircles the axle outside of the cone C, and the retaining-nut E is threaded on the extreme end of the axle.

F is the cup opposing cone C, and is preferably provided with a ball-retaining ring G. The cup is plain-surfaced at its inner end and threaded from such plain surface to its outer end. The plain-surface portion is of a diameter corresponding to the diameter of the threaded portion of the barrel and serves as a ready means of centering the cup in the barrel when the cup is inserted.

At the outer end of the axle the cone is indicated at H and is provided with an inward extension, which is split, as shown at H′. This cone is threaded upon the axle, and the split extension is adapted to create such friction with the axle as will prevent any turning movement of the cone which is not purposely caused.

For the purpose of rotating the cone in putting it on or taking it off or in adjusting a sleeve J, loosely fitting the axle and provided with one or more projections J′ at its inner end, adapted to enter recesses $H^2$ in the outer edge of the cone, is employed. The sleeve has an outstanding collar at $J^2$ and a stud $J^3$, adapted to be engaged by the wrench used in actuating it when turned to rotate the cone.

A nut E′, similar to the nut E, is also threaded on this end of the axle outside of the sleeve J. The cup opposing the cone H is indicated at F′ and is similar in all respects to the cup F and is threaded in the barrel in a similar manner. It also has a ball-retaining ring G′. Packing K is also preferably employed at each end and is confined between the cups and the flanges of the sleeves D and J.

With this construction it will be seen that when the wheel is detached from the forks of the machine no feature of adjustment of either ball-bearing need be disturbed, one of the cones being fast upon the axle and the other being held against turning by the friction with the axle caused by the split extension H′. At the same time the cone H can be readily turned by applying a wrench to the sleeve J. While the wheel is in use no turning movement can be imparted to the cone H, because the sleeve J, which is locked to the cone, will then be clamped to the fork of the bicycle and thus held against turning.

The cups F and F′ both set against shoulders $F^2$ in the barrel, as plainly shown, so that they are accurately positioned by screwing into bearing contact with said shoulders. It will be noticed that the cones are located nearer the vertical center of the wheel than the cups, so that they may be appropriately termed "inside" cones.

I claim—

1. The ball-bearing for vehicle-wheels, having inside cones, one of which is threaded on the axle and is provided with a split friction-exerting extension on its inner end acting to retain the adjustment of the cone when the bearing is taken apart, substantially as specified.

2. The ball-bearing for vehicle-wheels having inside cones, one of said cones being adjustably threaded on the axle and also provided with an inward split friction-creating extension acting to retain the adjustment when the bearing is taken apart, and the outer end of the same cone being adapted to engage a suitable rotating device, substantially as specified.

3. The ball-bearing for vehicle-wheels, having inside cones, one of which is threaded on the axle and is provided with a split friction-exerting extension on its inner end acting to

retain the adjustment of the cone when the bearing is taken apart, the bearing also having a loose sleeve J upon the axle rotatably engaging said threaded cone, substantially as specified.

4. In a ball-bearing having inside cones, the combination of the barrel, the axle, the cups, the cones one of which is adjustable and the other non-adjustable, the sleeves D and J loose upon the axle and setting against the outer ends of the cones, and the nuts for confining the sleeves, substantially as specified.

5. In a ball-bearing, the combination with the adjustable cone H threaded upon the axle, of sleeve J loosely fitting the axle and engaging said cone, and serving both as a means of adjusting said cone and of locking it against rotating, and means for confining said sleeve upon the axle, substantially as specified.

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