(No Model.)

# J. S. MURRAY.

## BALL BEARING FOR BICYCLES.

No. 306,510. Patented Oct. 14, 1884.

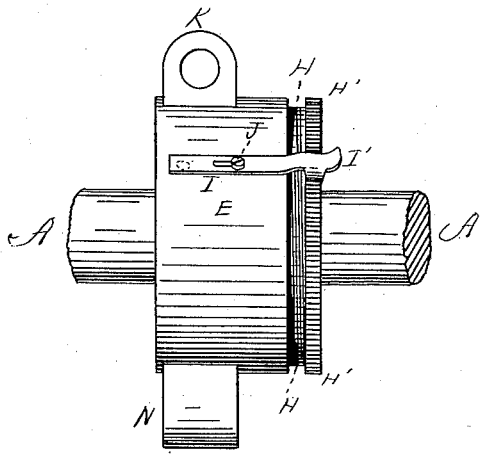


Fig. 1.

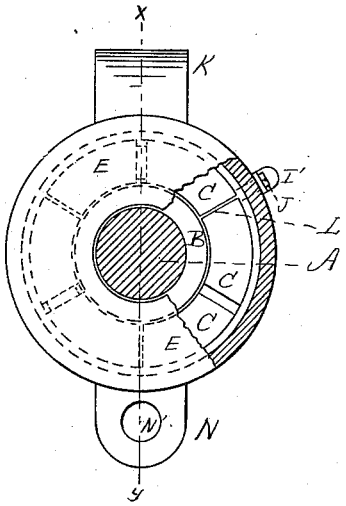


Fig. 2.

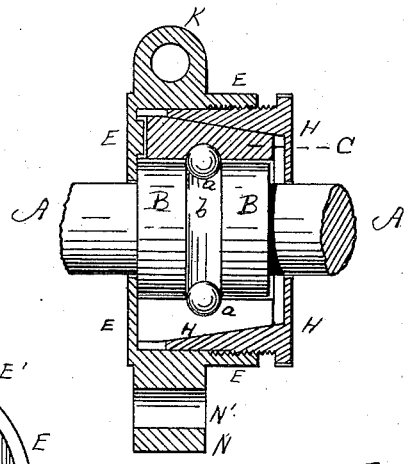


Fig. 3.

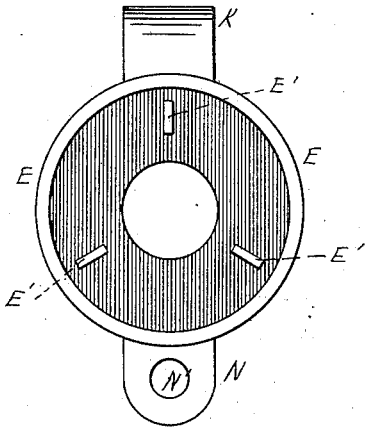


Fig. 4.

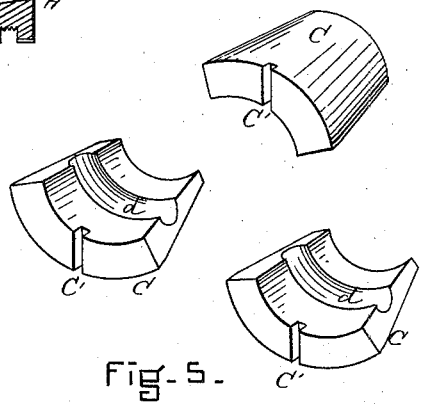


Fig. 5.

WITNESSES

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# UNITED STATES PATENT OFFICE.

JOSEPH S. MURRAY, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-FOURTH TO THE CUNNINGHAM COMPANY, OF SAME PLACE.

## BALL-BEARING FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 306,510, dated October 14, 1884.

Application filed March 19, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH S. MURRAY, of Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Ball-Bearings for Bicycles and other Velocipedes, of which the following is a specification.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a side elevation of a ball-bearing embodying my invention and especially adapted for bicycles. Fig. 2 is a rear elevation of the same, a portion of the casing being represented as broken out. Fig. 3 is a vertical section on line *x y*, Fig. 2. Fig. 4 is an interior view of the casing. Fig. 5 is a view of the cone-shaped sections separated.

A represents the driving shaft or axle of a bicycle.

B is a collar rigidly but detachably driven or keyed onto the axle A, and provided with one or more annular grooves, *b*, in which are placed the balls *a*, constructed as usual.

C C represent sections of cones surrounding the collar B and grooved at *d* coincidently therewith, the said sections being made of such widths circumferentially as to leave a slight space between each and the next section. Each section C is provided on its outer face with a groove or opening, C′, into which extend projections E′, rigidly secured to the inner surface of the casing E. This casing is internally threaded to receive the adjusting-cap H, having its edge serrated at H′, in the usual manner. The cap is prevented from rotation by means of the toothed extension I′ of the oil-cap I, adjustably secured to the casing E by the screw J, and the sections C are prevented from rotation by means of the projections E′, extending into the grooves or openings C′. Thus it will be seen that the axle A and collar B rotate, while the sections C, cap H, and casing E are stationary, the said casing being secured to the fork of the bicycle by means of the lug K, in the ordinary manner. As the balls or their grooves wear, the bearing is easily and quickly adjusted by screwing the adjusting-cap H into the casing upon the sections C, which of course draw nearer to each other as the wear progresses, sufficient space being left for the purpose between their adjacent edges, as above described, one of such spaces being shown at L in Fig. 2. There being but few parts to this bearing, the adjustability is exact and entirely under control, and the possibility of breakage is reduced to a minimum.

Rigidly secured to the under side of the casing E is a lug or ring of metal, N, provided with a perforation, N′. This is intended for attaching luggage, suspending a lamp, or for carrying any articles for which it may be found practicable.

The advantage of suspending a lamp from one of the bearings of the driving-wheel of a bicycle, instead of centrally from the hub thereof, is, as will be understood by all riders, that the shadow of the rim of the wheel is not thrown directly in front. This bearing may be applied not only to bicycle wheels and pedals, but to shafts and axles in machinery of any kind.

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

The herein-described ball-bearing for bicycles and other velocipedes, consisting, essentially, of the internally-threaded casing E, provided with the projections E′, the cone-sections C, provided with the annular grooves *d* and the grooves or openings C′, into which said projections E′ extend, the adjusting-cap H, extending between said sections and casing, and the shaft A, grooved collar B, and balls *a*, all arranged and constructed substantially as and for the purpose set forth.

JOSEPH S. MURRAY.

Witnesses:

HENRY W. WILLIAMS,

J. M. HARTNETT.