No. 755,371. PATENTED MAR. 22, 1904.

O. C. KNIPE.

BALL BEARING.

APPLICATION FILED SEPT. 22, 1900. RENEWED FEB. 26, 1904.

NO MODEL.

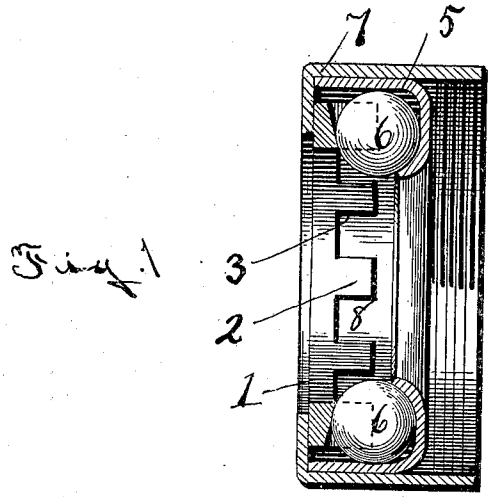


Fig. 1.

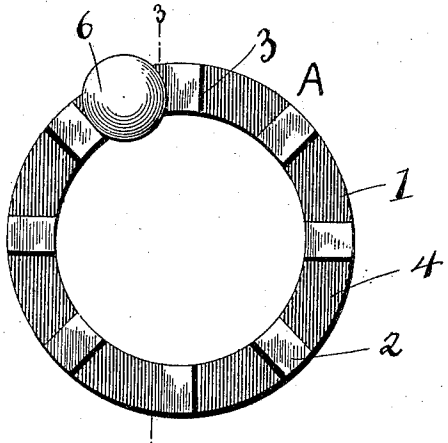


Fig. 2.

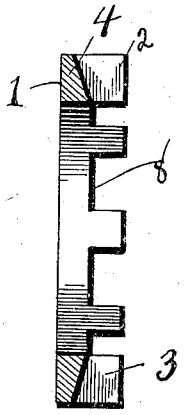


Fig. 3.

Witnesses:

E. W. Hall

Inventor:
Oliver C. Knipe.
By Augustus B. Stonebraker
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 755,371. Patented March 22, 1904.

UNITED STATES PATENT OFFICE.

OLIVER C. KNIPE, OF NORRISTOWN, PENNSYLVANIA.

BALL-BEARING.

SPECIFICATION forming part of Letters Patent No. 755,371, dated March 22, 1904.

Application filed September 22, 1900. Renewed February 26, 1904. Serial No. 195,479. (No model.)

To all whom it may concern:

Be it known that I, OLIVER C. KNIPE, a citizen of the United States, residing at Norristown, Montgomery county, Pennsylvania, have invented certain new and useful Improvements in Ball-Bearings, of which the following is a specification.

One object of the present invention is to provide a spacer and retainer which will keep the balls separated without undue friction.

Another object of the invention is to provide a ball-bearing in which the balls are comparatively free and unconfined and are at the same time properly held apart from each other and also held against accidental detachment.

The nature, characteristic features, and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a central sectional view of a ball-bearing embodying features of the invention. Fig. 2 is an elevational view of the spacer and retainer; and Fig. 3 is a sectional view of the same, taken on the line 3 3 of Fig. 2.

The spacer and retainer A is, generally speaking, crown-shaped, with the slots or recesses between its teeth beveled toward its outer rim.

In the drawings, 1 is a ring or annulus provided with teeth 2, so that the slots or recesses are formed between them, as shown. The sides 3 of the teeth are parallel, and the face of the ring 4 is beveled outward, so that it is thicker at its inner edge than it is at its outer edge. 5 is a cup provided with a ball-race for the balls 6, and 7 is a cap fitted telescopically over the cup. The balls 6 occupy the spaces between the teeth 2 and are held in the cup 5, or rather are held against accidental displacement from it, by the beveled face 4 of the ring. The spaces 8 for the balls are of rectangular outline, so that the balls may bear upon them at not more than three points. Thus friction of the balls in the spacer and retainer is reduced to a minimum.

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

In a ball-bearing, a collar having one of its side faces provided with offsets of generally rectangular outline leaving recesses or pockets between them for the reception of balls, the bottoms of said recesses being beveled outwardly, balls in said recesses, a cup to accommodate the balls, and a cap to maintain said parts assembled, substantially as described.

In testimony whereof I have hereunto signed my name.

OLIVER C. KNIPE.

Witnesses:
W. J. JACKSON,
K. M. GILLIGAN.