H. HESS.

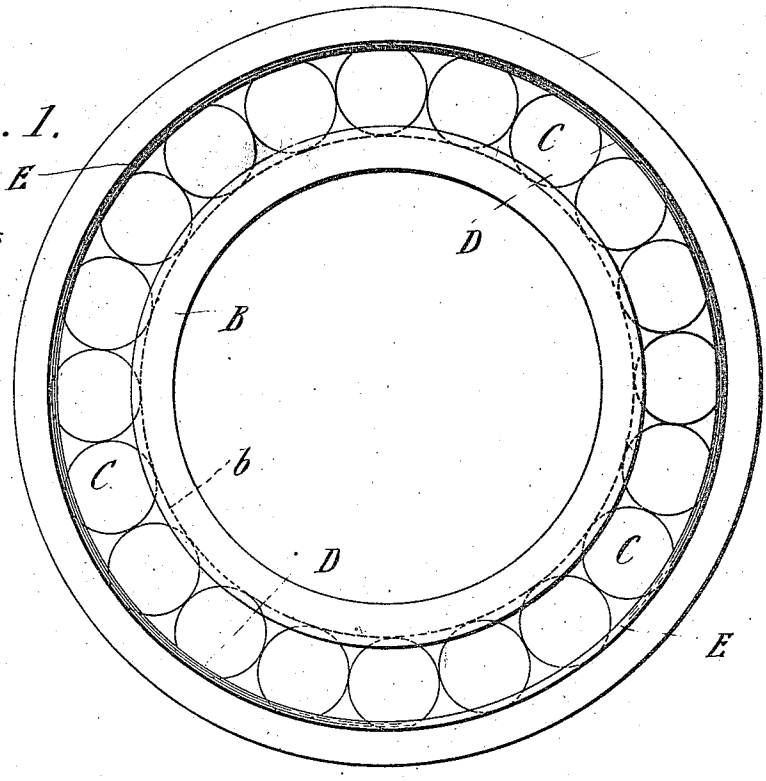
BALL BEARING.

APPLICATION FILED DEC. 17, 1910.

1,145,018.

Patented July 6, 1915.

Fig. 1.



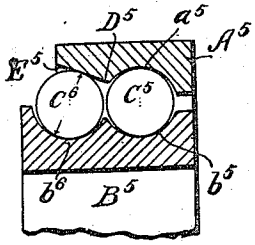


Fig. 2.

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UNITED STATES PATENT OFFICE.

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BALL-BEARING.

1,145,018. Specification of Letters Patent. Patented July 6, 1915.

Application filed December 17, 1910. Serial No. 597,884.

To all whom it may concern:

Be it known that I, HENRY HESS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Ball-Bearings, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to ball bearings, and more particularly to that class thereof provided with continuous or uninterrupted tracks or ways, which offer no impediment or obstruction to the travel of the balls therein, and whereby the several parts are held in assembled relations, thus constituting a bearing of the unit-handling type.

The present improvement contemplates the formation thereof with certain additional features which facilitate assemblage and also possess other advantages as will hereafter appear.

Bearings of the unit-handling type and provided with uninterrupted tracks are assembled in various ways, among which may be mentioned the employment of eccentric displacement according to the well-known Conrad invention. The last-mentioned procedure, namely eccentric displacement, is ordinarily followed for the introduction of substantially less than the full complement of balls, after which, if additional ones are desired, they may be inserted by other means, such as non-full-depth filling openings, and the like. My present invention, however, contemplates the complete assemblage at one time, and this even in the case of "full type" bearings, wherein the raceway is entirely or almost filled with balls. To this end I provide on at least one of the rings at the side of the track or way, an outwardly inclined or tapered surface, which facilitates the passage of the ring to assembled position over the balls when located in the track or way of the other ring. Specifically, this inclined surface extends throughout the periphery of the ring, so that it may be placed in its final position by forcing or pressure over an entire complement of balls located in the other ring. Moreover in the specific form illustrated, the inclined surface is so located as to constitute a track or way for one of the series of balls. In this way, the inclined surface subserves a double function, in that it not only facilitates the assemblage of the bearing, but also serves as a track or way when the parts are in assembled relation.

In the accompanying drawings I have shown several modifications of the general idea by way of example, and obviously many changes and variations may be made therein without departing from the spirit of the invention; and generally speaking, I do not desire to limit myself to any specific form or embodiment, except in so far as such limitations are specified in the claims.

Referring to the drawings: Figure 1, is a side view of a bearing embodying my invention; and Fig. 2 is a transverse section thereof.

The bearing consists of an outer ring A^5 and an inner ring B^5, the latter being formed with two continuous and uninterrupted grooved tracks or ways b^5 and b^6, adapted to receive the two series of balls C^5 and C^6. The outer ring A^5 is formed with a grooved track or way a^5 adapted to engage the series of balls C^5, and at one side thereof is provided with an inclined surface E^5, intersecting the track or way a^5 on a line above the central or lowest line thereof, thus constituting a rib D^5, at one side of the balls C^5, whereby the parts are held in proper operative relations after they are assembled. The inclined or tapered surface E^5 extends entirely around the ring A^5 or throughout its periphery.

The method of assemblage is as follows: The balls C^5 and C^6 are first placed in their respective tracks or ways of the ring B^5. The ring A^5 is then brought into relation with the balls by placing the inclined or tapered surface E^5 in contact with the series of balls C^5. The ring is then pressed or forced into its final position, which operation is facilitated by the surface E^5, as it permits its easy movement over the balls C^5, until they pass the rib D^5 and are located in the track or way a^5. The formation of the inclined or tapered surface E^5 throughout the entire periphery of the ring allows its employment even in connection with full type bearings, that is to say, its passage is rendered possible over a full or substantially full complement of balls located in the track or way of the other ring. I have found as a result of actual practice that due to this construction the rib D^5 may be located at a materially greater distance from

the central line of the grooved track or way, than is possible in connection with the bottom of a non-full-depth filling opening, through which the balls are forced or pressed one at a time. Not only does this result in reducing the liability of the balls to escape, but in addition greater resistance to side pressure is thereby afforded. It will be further noted that the inclined surface E^5 serves also as a track or way in connection with the series of balls C^6. In other words when the parts are assembled, the raceway for the balls C^6 is constituted by the grooved track or way b^6 in the ring B^5, and by the inclined or tapered surface E^5 of the ring A^5, it being noted that this raceway is angularly located so that the balls C^6 may take both radial and end load, in the same manner for instance as the corresponding series of balls shown in my previous Letters Patent No. 1,059,538. Another advantage arising from this particular form is involved in the fact that, due to the mode of assemblage described, I am enabled to dispense with the filling opening as shown in such Letters Patent.

The above described embodiments of my invention are presented here merely by way of example, and as before stated many equivalent forms and variations will suggest themselves to those skilled in the art and still be embodied within the spirit of my invention.

Having thus described my invention, its construction and mode of operation, what I claim and desire to secure by Letters Patent of the United States is as follows:

1. In a ball bearing, the combination of the inner and outer rings and a plurality of series of balls mounted therebetween, one of said rings being formed with a continuous and uninterrupted track or way to engage one series of balls and further provided at one side of the track or way with an outwardly inclined or tapered surface of such form as to allow the forcing of the ring over the said balls when located in the other ring, and also to serve as a track or way for the other series of balls.

2. In a ball bearing, the combination of the inner and outer rings and of two series of balls mounted therebetween, one of the rings being formed with two continuous or uninterrupted tracks or ways, and the other ring being formed with one continuous or uninterrupted track or way and further provided at one side of the track or way with an outwardly inclined or tapered surface of such form as to allow the forcing of the ring over the first series of balls when located in the other ring, and also to serve as a track or way for the second series of balls.

In testimony whereof I have affixed by signature in presence of two witnesses.

HENRY HESS.

Witnesses:
MARY M. CALLA,
L. E. MORRISON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."