

M. MOSSIG.
GROOVED AND RECESSED BALL BEARING.
APPLICATION FILED AUG. 24, 1916.

1,301,295.

Patented Apr. 22, 1919.

2 SHEETS—SHEET 1.

Fig. 1

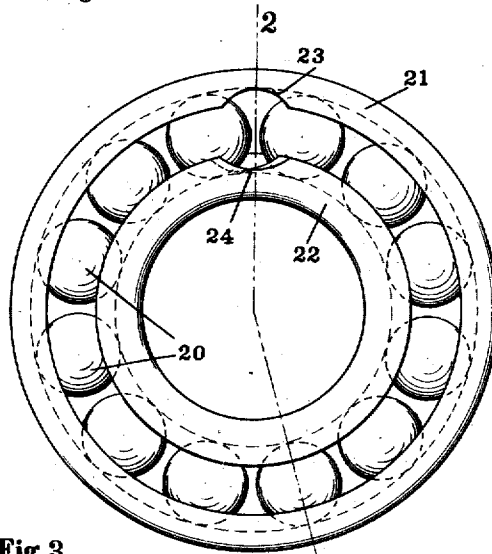


Fig. 2

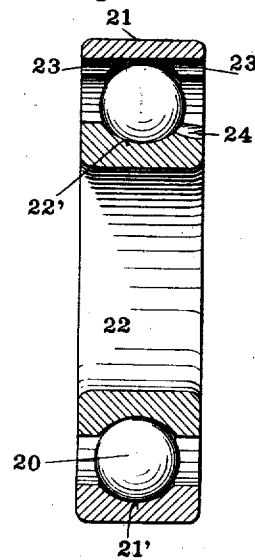


Fig. 3

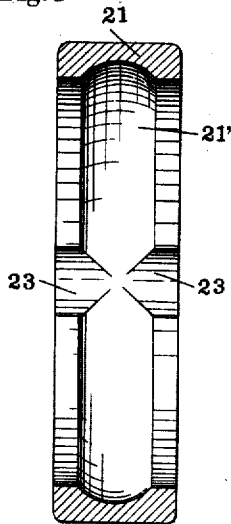


Fig. 4

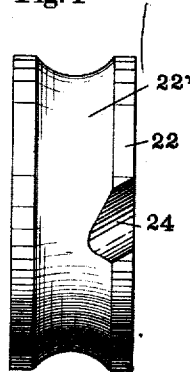
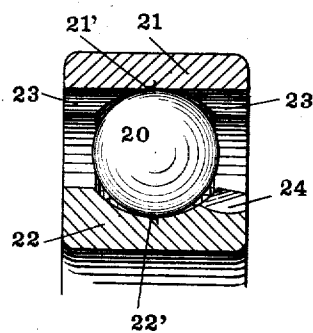


Fig. 5



Witnesses

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2 SHEETS—SHEET 2.

Fig. 6.

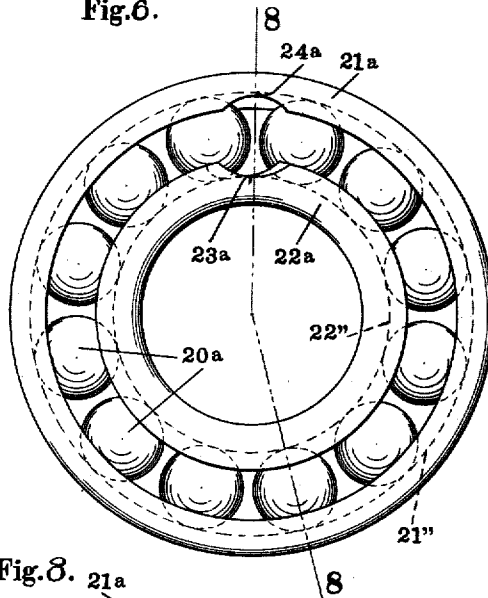


Fig. 7.

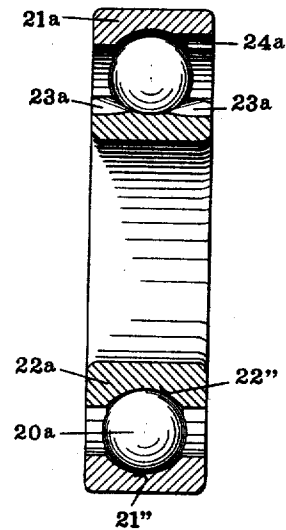


Fig. 8.

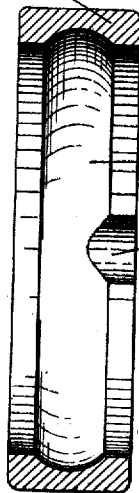


Fig. 9.

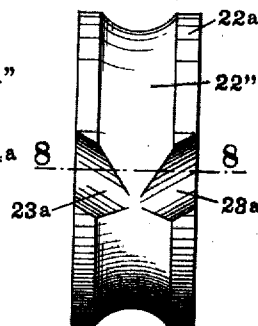
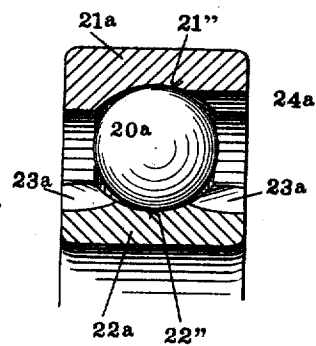


Fig. 10.



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UNITED STATES PATENT OFFICE.

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GROOVED AND RECESSED BALL-BEARING.

1,301,295.

Specification of Letters Patent.

Patented Apr. 22, 1919.

Application filed August 24, 1916. Serial No. 116,741.

To all whom it may concern:

Be it known that I, MAX MOSSIG, of No. 98 Gneisenaustrasse, Berlin, in Germany, have invented certain new and useful Improvements in Grooved and Recessed Ball-Bearings, of which the following is a specification.

This invention relates to ball-bearings having grooved race-ways and lateral notches suitable for the insertion of the balls into the said race-grooves, which arrangement is especially applicable to the annular type of ball-bearings in which the ring elements are sufficiently resilient to allow the slipping in of the balls through said lateral recesses, the balls being forced therebetween one by one, as known in the art.

The object of the invention is to provide a ball-bearing with cooperating notches in both rings which will enable the easy insertion of the balls and then surely retain them, while facilitating the manufacture of the construction. This object is attained by the use of notches, which, when placed oppositely, constitute a nearly circular filling opening level with the race of one ring and located at a certain radial distance from the bottom of the other ring. Another feature of the device resides in the fact that the filling notch in one ring extends over the bottom of the race-groove, on both sides thereof, so that the enlargement formed at the intersection of the grooves will permit of the smooth passage of the balls in the operation of the bearing.

In the drawing, which forms a part of this specification, several constructional embodiments of the invention have been illustrated for purpose of examples.

Figure 1 is a side elevation of an annular ball-bearing having a filling aperture constructed in accordance with the invention, and

Fig. 2 is a sectional view of said bearing on the line 2—2 of Fig. 1.

Fig. 3 represents a cross-section of the outer ring.

Fig. 4 is the view of the circumference of the inner bearing-element.

Fig. 5 is a partial cross-section of the bearing on a larger scale.

Fig. 6 is a side view of a ball-bearing showing a modification of the filling opening, and

Fig. 7 is a cross-section on the line 8—8 of Figs. 6 and 9.

Fig. 8 is a cross-section of the outer bearing-ring, while

Fig. 9 represents the circumference of the inner ring.

Fig. 10 illustrates the upper part of Fig. 7 on a larger scale.

Like numerals denote like parts throughout all figures of the drawing.

Referring to the construction illustrated in Figs. 1 to 5, the bearing consists of the outer and inner rings 21 and 22, respectively, and the balls 20 confined and working therebetween in the grooves 21' and 22' of the usual construction, the lateral shoulders of both rings overhanging the series of balls and retaining the elements in the assembled position. Beginning from the side of the rings 21 and 22, the shoulders are provided with notches or recesses 23 and 24, respectively, which in the position shown in Figs. 1 and 2, together form a passage convenient for the insertion of the balls, whereby the balls must be forced through, since the radial width of said passage is smaller than the diameter of the balls (see Figs. 1, 2 and 5).

The recess 23 cut into the outer ring 21 presents the same depth as the pertinent race-groove; it leads from one side of the ring across the shoulder into the groove 21' and is continued from the bottom thereof through the other shoulder totally (as shown in Figs. 2 and 3). The depth of the recess 24 of the inner ring 22 is smaller than that of the corresponding race-groove 22', so that its inner end terminates at a certain distance above the bottom of the said groove. The elevation of the recess 24 can be considerable, the resiliency of both rings being available for the introduction of the balls. The unbroken part of the shoulder inside the recess 24 will not only prevent the balls from escaping but also guide them upon the middle race throughout the circumference of the bearing. The angular relation of said recess 24 to the groove 22' may be varied; it may be vertical (Fig. 8) or more or less inclined thereto (Fig. 4), or helical, as known in the art.

In the modification of the construction illustrated in Figs. 6 to 10 the two recesses 23^a and 24^a are interchanged in their position with respect to the rings 21^a and 22^a, viz., a recess 23^a cut to the bottom of the groove 22'' and extending into both shoulders is provided on the inner ring 22^a, while the recess 24^a (Fig. 8), or shallower

than the groove 21'' is located upon the outer bearing-ring 21^a. From Fig. 9 it may easily be understood that the recess 23^a can be given various shapes and inclinations with respect to the race, and its two-branches may be symmetrical (Fig. 9) or not. Instead of straight, the recess 23^a can be curved, f. ex., in the shape of an arc of a circle crossing the race. A recess leading in obliquely, presents some advantages with a certain direction of rotation of the bearing as it tends to move the balls to the middle of the race.

It may be opportune, to state in connection with the foregoing description that recesses located above the bottom of the race-groove are known, as well as recesses cut into both shoulders of a ring and intersecting the grooves; therefore the invention does not reside in those details. From the combination and special arrangement of the different recesses upon the rings, however, advantages are obtained in the manufacture and operation of ball-bearings; especially the grinding of the recesses will be facilitated therewith.

What I claim as my invention and desire to secure by Letters Patent is—

An annular ball bearing consisting of two concentric resilient rings having in their confronting surfaces opposed ball-race grooves and side entrance slots or recesses for inserting balls between the rings by springing them apart, and a series of balls between the rings running in said grooves, the recess in one ring extending through both annular shoulders on opposite sides of the balls; one of said recesses being oblique to the axis of the ring and the other substantially parallel with said axis, and the recess extending through the annular shoulders in one ring having a depth equal to that of the ball-race while the recess in the other ring is of less depth than the ball-race, substantially as and for the purpose set forth.

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

MAX MOSSIG.

Witnesses:

HENRY HASPER,
ALLEN F. JENNINGS.

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