J. NEWMANN.

ROLLER BEARING.

APPLICATION FILED DEC. 28, 1911. RENEWED FEB. 18, 1914.

1,159,072. Patented Nov. 2, 1915.

Fig. 1.

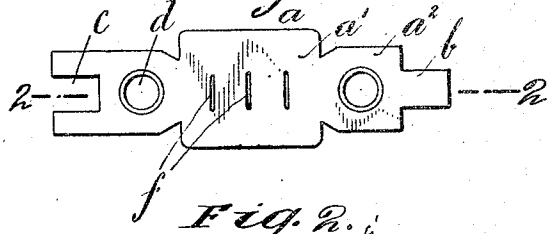


Fig. 2.

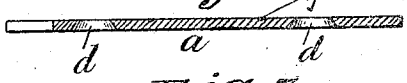


Fig. 3.

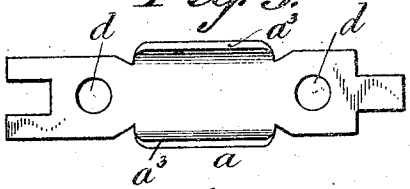


Fig. 4.

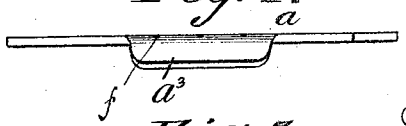


Fig. 5.

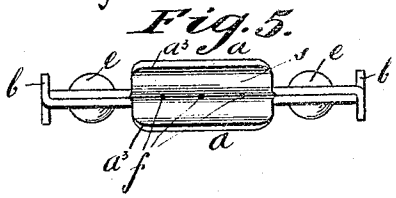


Fig. 6.

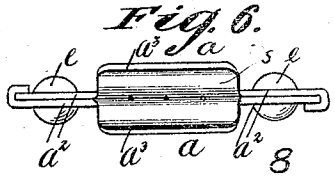


Fig. 7.

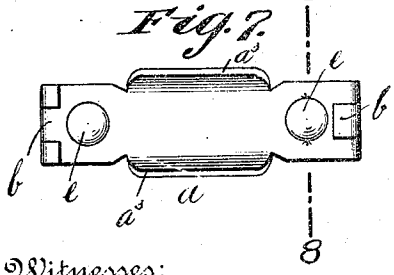


Fig. 9.

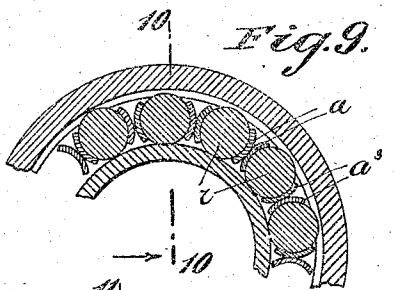


Fig. 10.

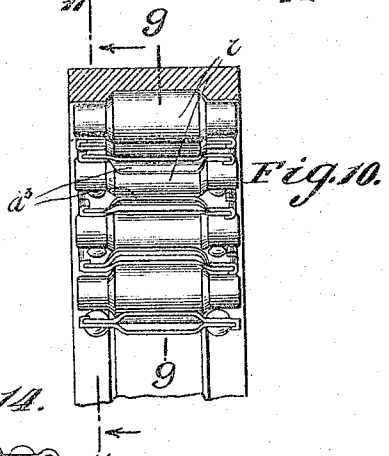


Fig. 14.



Fig. 11.

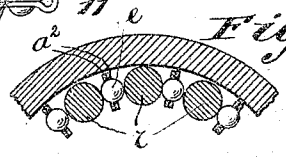


Fig. 12.

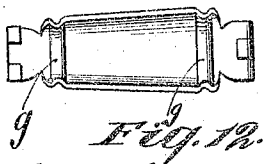


Fig. 8.

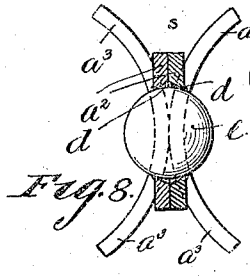
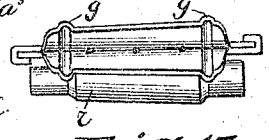


Fig. 13.



Witnesses:
Harry C. Hoebig
H. Brockman.

Inventor
John Newmann
By his Attorney
Max V. Ozmann

UNITED STATES PATENT OFFICE.

JOHN NEWMANN, OF BROOKLYN, NEW YORK.

ROLLER-BEARING.

1,159,072. Specification of Letters Patent. Patented Nov. 2, 1915.

Application filed December 28, 1911, Serial No. 668,333. Renewed February 18, 1914. Serial No. 819,558.

To all whom it may concern:

Be it known that I, JOHN NEWMANN, a citizen of the United States of America, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Roller-Bearings, of which the following is a specification.

The present invention pertains to roller bearings of the kind specified in my Patents Nos. 969,763, 1,003,495, and 1,001,673, and particularly to the spacers, and has for its object to improve the construction of the roller bearing with the view of reducing the cost of manufacture thereof.

My invention is fully illustrated in the accompanying drawing, which forms a part of this specification and in which similar reference letters denote corresponding parts.

Figures 1–8 illustrate one mode of construction of my new spacer, Fig. 1 showing the first stage of a part of a spacer; Fig. 2 a section on line 2—2 of Fig. 1; Fig. 3 the second stage thereof; Fig. 4 a plan view of Fig. 3; Fig. 5 a plan view of two parts composing the spacer in assembled position; Fig. 6 shows the same parts joined together; Fig. 7 is an elevation of the completed spacer; Fig. 8 is a section on line 8—8 of Fig. 7; Fig. 9 is a section of Fig. 10 of a roller bearing in which my new spacers are employed; Fig. 10 is a section on line 10—10 of Fig. 9; Fig. 11 is a section on line 11—11 of Fig. 12; Figs. 12 and 13 illustrate in elevation and plan view a modified construction of the new spacer; and Fig. 14 illustrates a plan view of a second modification thereof.

The roller bearing, according to the patents above referred to, are composed of rollers and loose blocks interposed between the rollers and serving as spacers. Experiment has shown that the construction of the loose blocks or spacers is greatly simplified and cheapened when carried out in accordance with the present invention.

Referring to Figs. 1–8, the spacers are shown to be composed of two separate uniform pieces a, of which each is punched of sheet metal, so as to form an enlarged middle portion a' and reduced end portions a^2. One end portion is provided with a tenon b and the other end portion with a mortise c, so that when the two parts are put on top of one another, the tenon of one will engage the mortise of the other part (Fig. 5) and by bending the tenons over (Fig. 6) the two parts will be permanently and securely joined to form a single body. Each part, furthermore, is formed at its end portions with perforations d, which are tapered outwardly relative to the outer surfaces of the parts. These perforations serve for the reception of balls e (Figs. 5–8). The balls are inserted into the perforations prior to the joining of the two parts and are securely held therein after the parts become fastened to one another, projecting outwardly from the perforations at both sides of the two parts, so as to rest against the rollers r (Fig. 11) interposed between the blocks.

The upper and lower extensions a^3 of the middle portion of each part a are bent or curved (Figs. 3 and 4), so that when both parts are assembled, they project in opposite directions and their outer surfaces are concaved (Figs. 7 and 8). The curvature of said extensions is made to conform with the cylindrical surface of the rollers (Figs. 9 and 10) r. The bending over of the tenons to join the two parts and the bending or curving of the extensions of the middle portions may be accomplished in one operation. On the adjoining inner surfaces of both parts I provide furrows f, through which any lubricating material which may be placed in the space s between the curved extensions of the two parts may find its way to the rollers and other working parts (Figs. 8 and 10).

The punching of the parts into the form shown in Fig. 1 and the punching of the perforations and furrows may also all be accomplished in one operation.

By this mode of construction, the manufacture of the spacers for a roller bearing is not only greatly simplified, but also affords a very efficient means for carrying lubricating material to the surfaces of the rollers, etc.

Instead of balls being provided in the spacers, I may have the latter formed with cylindrical ribs in accordance with the modification shown and described in my Patent #1,003,495 above referred to. In this case, the parts composing the spacer are not perforated, but as shown in Figs. 12 and 13, are each pressed so as to form ribs g of circular cross section, which ribs extend crosswise over the outer surfaces of the parts and near

the ends thereof and are concaved in conformity with the said surfaces and the rollers between which the said spacers are to be interposed (Fig. 13). The reduced ends of the parts, as in the first example above referred to, are joined by lateral tenons and mortises.

Instead of making the spacers of two separate pieces as in the first two examples, I may punch and press the same from a tubular piece into the shape shown in Fig. 14, in which the extensions *h* of the middle portion are curved outwardly to form concaved outer surfaces.

Of course, a great number of other modifications may be made without departing from the principle of my invention and I, therefore, do not wish to limit myself to the particular constructions above referred to.

What I claim and desire to secure by Letters Patent is:

1. A roller bearing comprising rollers having reduced ends and loose individual spacers interposed between the said rollers, the spacers each consisting of sheet metal members having concaved leaf-like projections and end portions having members opposite the shoulders formed by the reduced ends of the rollers, said leaf-like concaved projections being adapted to extend longitudinally of and to embrace the opposite surfaces of the adjoining rollers and the members of the end portions being adapted to rest against the said shoulders and to retain said rollers in position.

2. A roller bearing comprising rollers having reduced ends and loose individual spacers interposed between the said rollers, the spacers each consisting of sheet metal members having leaf-like concaved projections and perforated end portions containing balls, said leaf-like concaved projections being adapted to extend longitudinally of and to embrace the opposite surfaces of the adjoining rollers and the said balls being adapted to rest against the shoulders formed by the reduced portions and to thereby retain the said rollers in position.

3. In a roller bearing, a spacer of sheet metal members having concaved leaf-like separated projections extending in opposite directions and furrows on the adjoining surfaces of said members.

4. In a roller bearing, a spacer composed of two sheet metal plates, each plate being formed with an enlarged concaved middle portion and reduced flat end portions, and a tenon at one end and a mortise at the other end, for joining the said plates together.

5. In a roller bearing, a spacer composed of two sheet metal plates joined together, the plates being each formed with an enlarged concaved middle portion and with furrows in their opposite surfaces, said furrows serving as channels for lubricant matter.

6. In a roller bearing, a spacer composed of two sheet metal plates, each plate being formed with an enlarged concaved middle portion and a tenon at one end and a mortise at the other end, for joining the said plates together, and the opposite surfaces of the said plates being formed with furrows serving as channels for lubricant matter.

7. In a roller bearing, a free sheet metal spacer for insertion between adjacent rollers of said bearing, said spacer comprising a central portion adapted to lie between the nearest adjacent points in the surfaces of the adjacent rollers, and separated leaf-like projections formed of the sheet metal of the spacer and extending in four directions from said intermediate portion to embrace the faces of the said rollers on both sides of their nearest adjacent points.

8. In a roller bearing, a free sheet metal spacer for insertion between adjacent rollers of said bearing, said spacer comprising a central portion adapted to lie between the nearest adjacent points in the surfaces of the adjacent rollers, separated leaf-like projections formed of the sheet metal of the spacer and extending in four directions from said intermediate portion to embrace the faces of the said rollers on both sides of their nearest adjacent points, longitudinal projections at each end of said intermediate portion, and bearing balls pivotally supported in said projections.

9. A spacer for roller bearings comprising two sheet metal members each comprising a central web and laterally turned edge flanges, said strips being rigidly fastened together with their flanges projecting in opposite directions and anti-friction balls supported in said webs at their opposite ends and of a greater diameter than the thickness of the connected webs.

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

JOHN NEWMANN.

Witnesses:
JOHN T. CARMODY,
MAX D. ORDMANN.

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