No. 647,502. Patented Apr. 17, 1900.

C. S. LOCKWOOD.

CASING FOR ROLLER BEARINGS.

(Application filed May 22, 1899.)

(No Model.)

Fig. 1.

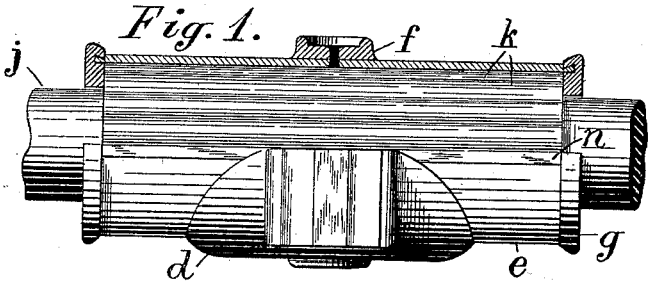


Fig. 2.

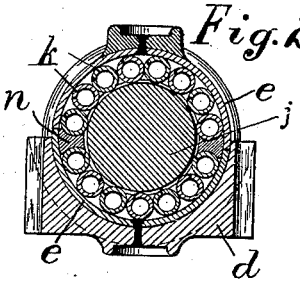


Fig. 3.

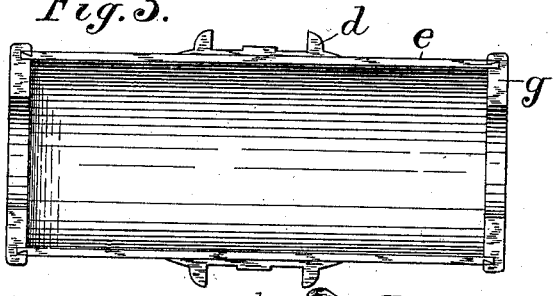


Fig. 4.

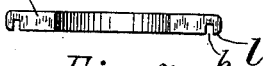


Fig. 5.

Fig. 7.

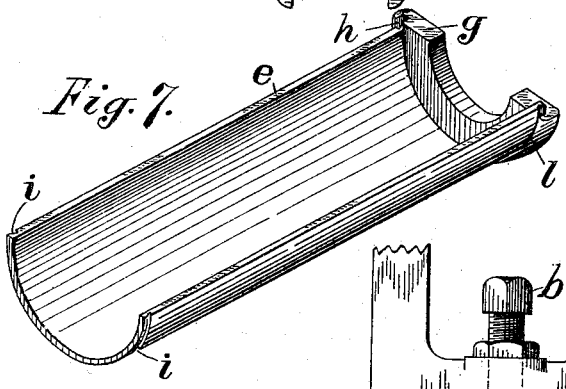


Fig. 6.

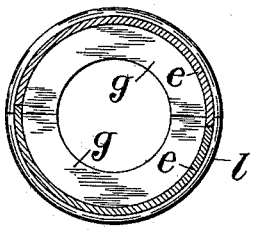


Fig. 8.

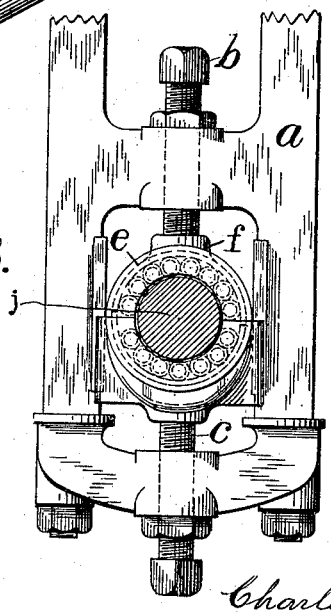
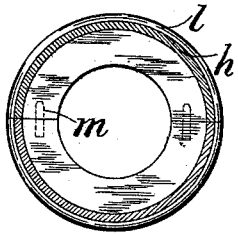


Fig. 9.



Attest:
L. Lee.
Edw. F. Kinsey.

Inventor.
Charles S. Lockwood, per
Thomas S. Crane, Atty.

UNITED STATES PATENT OFFICE.

CHARLES S. LOCKWOOD, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE HYATT ROLLER BEARING COMPANY, OF HARRISON, NEW JERSEY.

CASING FOR ROLLER-BEARINGS.

SPECIFICATION forming part of Letters Patent No. 647,502, dated April 17, 1900.

Application filed May 22, 1899. Serial No. 717,735. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. LOCKWOOD, a citizen of the United States, residing at Newark, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Casings for Roller-Bearings, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The present invention relates to that class of bearings in which the shaft or journal is encircled by a series of antifriction-rolls supported within a cylindrical casing. It has been found that where the casing has been made of cast-iron the rolls tend to wear off particles of that metal, which clog the interior of the casing and impede the revolution of the rollers, and an improvement in such bearings has been effected by making the lower part of the casing of sheet-steel, as shown in United States Patent No. 555,510, issued to John W. Hyatt on March 3, 1896. In the construction of that patent the sheet-steel is of trough shape, embracing more than two-thirds the periphery of the roller-chamber, and the upper part of the casing is closed by a cast-iron cap, which serves to complete the casing. Where the load upon the shaft is downward or lateral, the pressure upon the rolls is in such construction sustained by the steel portion of the casing; but where the draft upon the shaft is upward the rolls are crowded against the cast-iron cap, and injurious wear of such cap results. As the cast-iron portion of the roller-chamber wears more rapidly than the steel portion, the edges of the steel casing soon form shoulders which produce a shock as the rollers pass over the same, and thus create needless noise and resistance.

The present improvement consists in forming the casing wholly of sheet-steel, the sections of the casing being divided upon the diameter of the shell, so that they may be identical in form and dimensions and their manufacture greatly facilitated by their uniformity of size. The semisections of the casing will, for convenience, be termed "shells" herein. The rolls are thus rotated against a steel surface around the entire inner face of the casing, and the wear upon the casing is uniform in whatever direction the shaft is pressed. By dividing the steel casing upon the diameter of the bearing the two parts are easily made in a drop-press, and the bearing can be used for an upward pull without inversion. Where the bearing has been made with a steel bottom and cast-iron cap, the oil-holes have been formed in the cap, and whenever it has been necessary to invert the bearing to resist an upward pull the oil-holes have been plugged up and new ones have been required through the steel portion of the casing. Where a cast-iron cap has been used, great care is required in fitting it to the steel portion of the casing to make the interior of the cap concentric with the steel portion of the casing, and the opposite ends of such cap have required finishing or grinding to make them of the same length as the collars upon the steel portion of the box. In the present construction the upper and lower halves of the casing are identical, and the collars which are applied to the ends of the steel sections agree in length and finish. The upper and lower parts of the bearing can thus be made readily interchangeable and can be kept in stock and fitted together with much greater rapidity than where cast-iron caps are used, which require to be chipped and accurately fitted to the edges of the steel casing.

The invention will be understood by reference to the annexed drawings, in which—

Figure 1 is a side elevation of a bearing adapted for a shaft-hanger box, with a piece of shaft laid therein and the upper shell in vertical section at the center line. Fig. 2 is a transverse section of the bearing at the center of its length. Fig. 3 is a plan of the lower shell and its saddle. Fig. 4 is a plan, and Fig. 5 an inside view, of one of the semicollars used at each end of each shell. Fig. 6 shows the inner side of two collars with a section of the shells. Fig. 7 is a perspective view of one of the shells with the collar secured upon one end only; and Fig. 8 is an end view of the hanger-box, upon a reduced scale, with the adjacent portions of the shaft-hanger. Fig. 9 is a view like Fig. 6, showing an alternative means to prevent the displacement of the shells.

a designates the lower end of a shaft-hanger, having guides to fit a saddle *d*, in which the

bearing is fixed, and having screws *b* and *c* to adjust the box in the hanger. A shaft *j* is shown in the bearing in Figs. 1, 2, and 8.

The casing is formed of the two equal shells *e*, the lower of which is riveted to the saddle *d*, and the upper is provided with the seat *f* to receive the set-screw *b*.

The semicollars *g* are provided each with an annular groove *h* to fit the ends of the shells *e*, and the exterior of the shell near the ends is formed with a depression or channel *i*, into which the marginal flange *l* of the groove *h* may be calked or upset in the usual manner, as shown in the upper part of Fig. 1. The semicollars are made of malleable iron, gun-metal, or similar malleable material to permit the calking of the flange *l*.

As shown in Fig. 7, one edge of the casing is projected a little above the groove *h* in the semicollar, and the opposite edge is thus drawn slightly within the groove. The projection from one end of the groove and the recess in the opposite end furnish a means, as shown in Figs. 2 and 6, of locking the opposite shells together and holding them in the required position to form a concentric casing. As two corners of each shell project into the groove upon the opposite semicollar, they prevent any displacement of the shell laterally or longitudinally.

Fig. 3 shows the semicollars applied to the shell in readiness for calking or upsetting the marginal flange into the channel *i* upon the shell.

Fig. 9 shows the joint between the shells and the semicollars coincident and any displacement prevented by dowel-pins *m*, inserted in the contiguous edges of the collars. It is obvious that instead of throwing the joint of the shells off the horizontal line, as shown in Fig. 6, the joint of the shells may be horizontal, as shown in Fig. 9, and the joint of the collars turned obliquely enough to engage the corner of the shell with the end of the groove *h*, as described with reference to Fig. 6.

The view in Fig. 1 is taken upon the right-hand side of Fig. 2, where the edge of the lower shell is below the center line of the casing, and a bar *n*, which forms a portion of a roller-guide, is exposed in Fig. 1 and is exhibited at opposite sides of the shaft in Fig. 2; but such guides are well known and form no part of the present invention.

The shells may form each exactly one-half of a casing and can be readily stamped in suitable dies from flat sheets of steel, which cannot be done with a casing or trough of horseshoe section, like that employed in the Hyatt patent, No. 555,510, and the present invention thus greatly facilitates the manufacture of the shells and reduces the cost of the roller-bearing, while it improves its durability and the uniform working of the rollers in whatever direction the strain may be imposed upon them. My present improvement thus reduces the cost and increases the value of the roller-bearings.

It will be understood that where the two shells of sheet metal are made of semicylindrical shape the edges of the shells do not fit into one another and will not therefore retain the desired relation to one another without extraneous means. Neither will the shells alone form a casing adapted to retain the rolls within the bearing, except collars be provided to inclose the ends of the rolls, and such collars may also serve, as I have shown above, to hold the casings with coincident edges, so as to form a cylindrical roll-chamber. My invention does not therefore consist merely in making the casing of sheet metal, nor in the making of the sheet-metal casing of semicylindrical shells, but in the combination, with the shells, of collars of suitable character secured permanently upon the ends of the shells to perform the double function of holding the rolls within the bearing and of holding the shells from displacement, so as to form a truly-cylindrical roll-chamber. The collars to perform these functions may be made of any suitable character.

The prior patent, No. 555,510, issued to John W. Hyatt March 3, 1896, claims a box formed of springy material, as sheet-steel, with inwardly-extending end guards and a removable cover. This Patent No. 555,510 is the property of the Hyatt Roller Bearing Company, of New Jersey, to which I have assigned the present invention, and I hereby disclaim the said prior patent as being the first to show a spring roller-box of springy material, like sheet-steel.

Having thus set forth the nature of the invention, what is claimed herein is—

1. A casing for roller-bearings, comprising semicylindrical shells of sheet metal, semicollars grooved to receive the ends of the shells, and secured thereon with one edge of the shell projecting above the groove.

2. A casing for roller-bearings, comprising semicylindrical shells of sheet metal, a saddle secured to one of the shells and a seat secured to the other, and semicollars grooved to receive the ends of the shells and secured thereon with one edge of the shell projecting above the groove, whereby the two shells are prevented from lateral and longitudinal displacement.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES S. LOCKWOOD.

Witnesses:
ALFRED P. SLOAN, Jr.,
THOMAS S. CRANE.