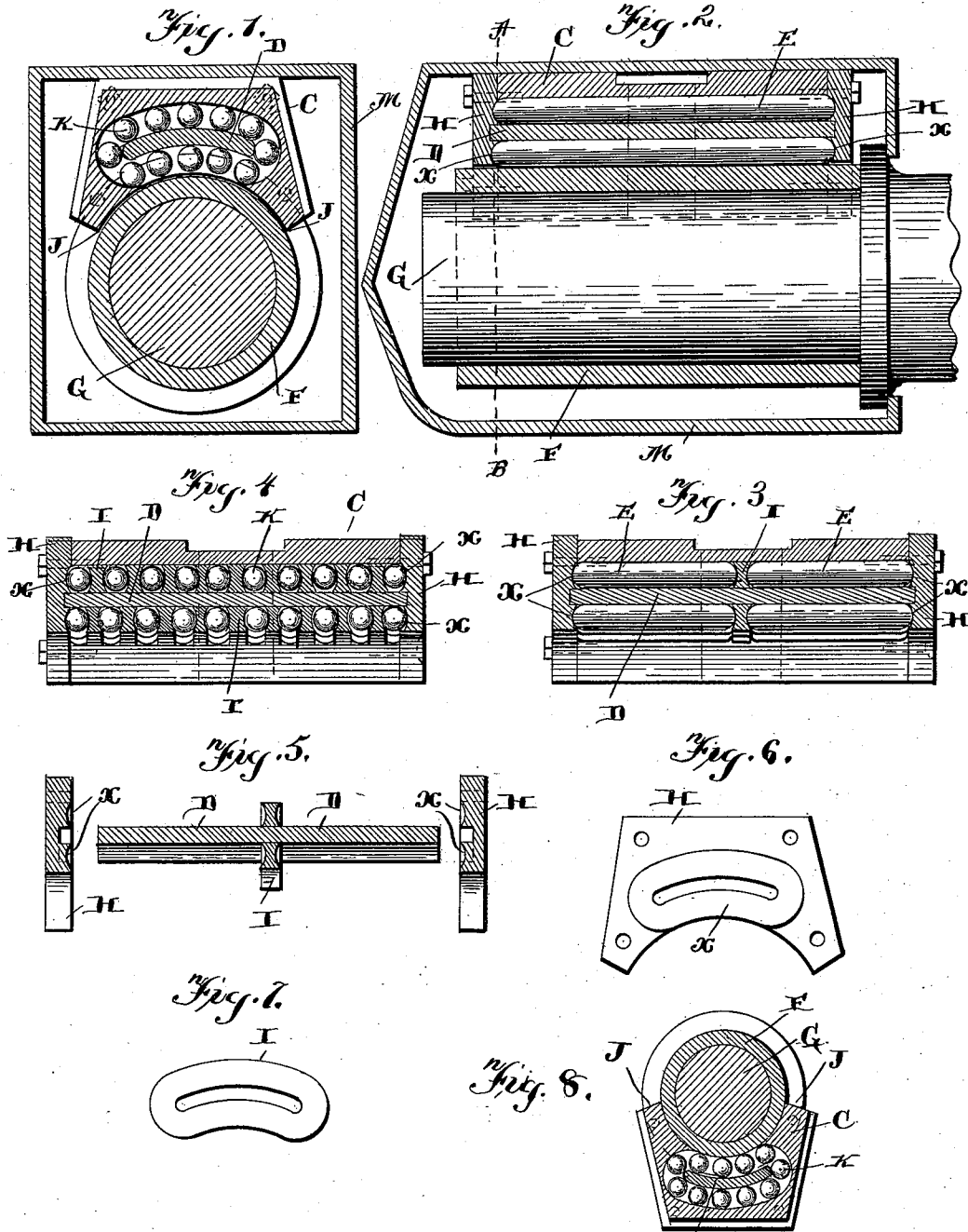


(No Model.)

F. McGLOIN.
ANTIFRICTION BEARING.

No. 560,322.

Patented May 19, 1896.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANK MCGLOIN, OF NEW ORLEANS, LOUISIANA.

ANTIFRICTION-BEARING.

SPECIFICATION forming part of Letters Patent No. 560,322, dated May 19, 1896.

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To all whom it may concern:

Be it known that I, FRANK MCGLOIN, a citizen of the United States of America, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Antifriction-Bearings, of which the following is a specification, reference being had therein to the accompanying drawings.

In the drawings, Figure 1 is a transverse sectional view taken on the line A B of Fig. 2. Fig. 2 is a longitudinal sectional view of my improved bearing inserted in the journal-box. Fig. 3 is a longitudinal sectional view of the bearing detached, showing two sets of rollers. Fig. 4 is a similar view showing several sets of balls. Fig. 5 is a view showing parts of the casing slightly separated. Fig. 6 is a view of one of the side plates or caps. Fig. 7 is a side view of one of the intermediate division-plates. Fig. 8 is a sectional view showing the bearing applied beneath the shaft and serving as a lubricating-box.

G is the shaft or axle around which is fitted a hardened metallic ring F to protect shaft from undue wear.

M is the ordinary journal-box in which the axle revolves. This ring is preferably made of tool-steel hardened and ground to shape; but some other metal or alloy can be used, such as aluminium bronze, manganese bronze, or extra-hard gun-metal.

C is the body of the box or casing, also preferably made of some hard alloy or metal. Inside of the box or casing C is an arch or curved plate. (Shown at D in Figs. 1 and 2 and isolated in Fig. 5.) This is also made of hardened steel or hard alloy. At each end of box C there is a cap H, which is fastened on by means of bolts, as in Fig. 4. These caps serve for the purpose of not only holding the balls or rollers in position but also to support the arch-plate D, a side section of which is plainly shown at Fig. 5.

The balls K or rollers E run in an oval arc in casing C, in the center of which the arch-plate D is located.

The box or casing C on its lower end extends down and around the axle G to the point J, or even as far as the center line of the shaft. It is to be noted that the box C and the axle G do not touch at the point J,

but that there is a small space to prevent actual contact, and thus the whole weight and rotary motion is confined to the rollers or balls, as the case may be. This part of the box C is carried down to the point J, in order to afford protection to the axle against possible displacement by any sudden shock or other contingency. Normally the box C will not touch at the point J, as such contact would be detrimental to the antifrictional properties of the same. The space between the walls of the box C and the arch-plate D is greater than the diameter of the rollers or balls, so that as they travel from the bottom and around over the top and back again there will be no friction between the sides of the box C and the said rollers and balls. The arch-plate D supports the weight of the bearing through the rollers or balls, and once they have passed the arc of contact between the shaft and this plate D they enter a space above sufficiently ample to allow perfect freedom of motion.

As shown in Figs. 1 and 2, the caps H support the weight or pressure from the arch-plate when no intermediate supports are used; but when more than one set of rollers or balls are used the intermediate division-plates I support part of the weight. Fig. 3 shows two rollers and one division-plate, while Fig. 4 shows ten rows of balls, and which allows of using nine division-plates I. The number of rollers, if rollers be employed instead of balls, and of division-plates, may be increased or diminished as experience or fancy may suggest. The end pieces or caps H and the division-plates I may be provided with grooves in their side faces, as shown at the point marked *xxx*, and this has for its object the providing against possible displacement of the balls or rollers, the latter being rounded at the ends and projecting into the groove for this purpose. This is one of the features designed to render the box or bearing portable, easily removed and replaced, or stored away for future use.

In practice, one cap H is bolted in place, and if we are making a ball-bearing one row of balls is slipped in place, then a division piece or plate I, then another row of balls, then another division-plate, and so on until full, when the other cap H is bolted on, se-

curing the arch-plate D in proper position, as well as the balls or rollers. These division-plates are not fastened in any way and merely fit nicely over the arch-plate D and inside of the box C. The shape is shown in Fig. 7. One of the caps is shown in Fig. 6. This shows the bolt-holes and the recess cut inside for the purpose of admitting the arch-plate D and groove *z*, as indicated in Fig. 5. The construction can be made such that long rollers shown in Fig. 2, short rollers in Fig. 3, or balls in Fig. 4 can be readily used. The change from one to the other can be readily accomplished by removing the cap H and adding either balls and division-plates I or adding rollers and removing the surplus divisions, as may be required. The balls or rollers are made of the very best tool-steel and hardened to insure durability and resistance under the enormous pressures they may be subjected to in practice.

The balls or rollers after making their escape from under the axle or shaft pass over the arch-plate D and return at the opposite end, thus performing a continuous cycle.

This form of bearing is applicable not only to car-boxes but also to quarter and half boxes of steam-engines and other machinery, as well as carts, wagons, and vehicles of all kinds.

I am aware that journal-boxes have been made with a supporting arch-plate and an elliptical passage around the same for the friction-rollers, and lay no claim to such construction.

It is to be noted that my invention does not relate to the construction of the journal-box, but to the detachable bearings known as "brasses," adapted to be inserted in any old form of journal-box.

The bearing is made up of the separate parts, as before described, bolted together in a compact form so as to be handled as one piece, which may be taken out of the journal-box and then carried about from place to place without any danger of the rollers or balls dropping out or losing their places.

What I claim as my invention is—

1. A detachable bearing consisting of a casing, having a cavity opened at the bottom; the arch-plate in the cavity, whereby a continuous passage is formed; a piece or cap secured to each end of the casing and supporting the arch-plate at its ends, and the set of rollers adapted to pass around the arch-plate and between it and the axle; the whole adapted to be inserted in the journal-box or bearing-seat, substantially as described.

2. In a bearing the detachable hollow cas-

ing, adapted to bear upon the axle and partly encircling the same, but readily removable therefrom; the arch-plate therein, the two end pieces or caps, having arched recesses to receive the ends of the arch-plate; and the set of rollers revolving around the arch-plate and between it and the axle, substantially as described.

3. In a bearing the detachable hollow casing, the arch-plate secured in the casing, the end caps having the elliptical-shaped grooves cut therein about the ends of the arch-plate, and the set of rollers adapted to revolve about the arch-plate the said rollers extending into the grooves, whereby the rollers are prevented from falling out when the bearing is removed, substantially as described.

4. In a bearing the detachable hollow casing and caps, secured thereto; the arch-plate in the casing secured to the cap at its ends, the grooved division-plates I, surrounding the arch-plate and the sets of rollers adapted to revolve about the arch-plate between the division-plates, substantially as described.

5. In a bearing the detachable hollow casing and caps secured thereto; the arch-plate in the casing secured to the caps at its ends; the grooved division-plates I surrounding the arch-plate, and the sets of balls, adapted to revolve about the arch-plate and between the division-plates, substantially as described.

6. In a bearing, the hollow casing, the arch-plate therein, the end caps having arched recesses to receive the ends of the arch-plate and bolted to the casing; the division-plates I, adapted to be slipped onto the arch-plate; the said division-plates and the end caps, having elliptical grooves cut in their side faces and the sets of rollers adapted to revolve in parallel paths, about the arch-plate, and between the division-plates, substantially as described.

7. In a bearing the hollow casing; the arch-plate therein; the end caps having arched recesses to receive the ends of the arch-plate and secured to the casing; the division-plates I, adapted to be slipped onto the arch-plate, said division-plates having elliptical grooves cut in their faces and the set of balls adapted to revolve in parallel paths, about the arch-plate, and between the division-plates, substantially as described.

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

FRANK MCGLOIN.

Witnesses:

JOS. E. RAULT,

JAMES J. McLOUGHLIN.