

No. 620,180.

Patented Feb. 28, 1899.

F. H. RICHARDS.
ROLLER BEARING.

(Application filed Apr. 9, 1898.)

(No Model.)

Fig. 1.

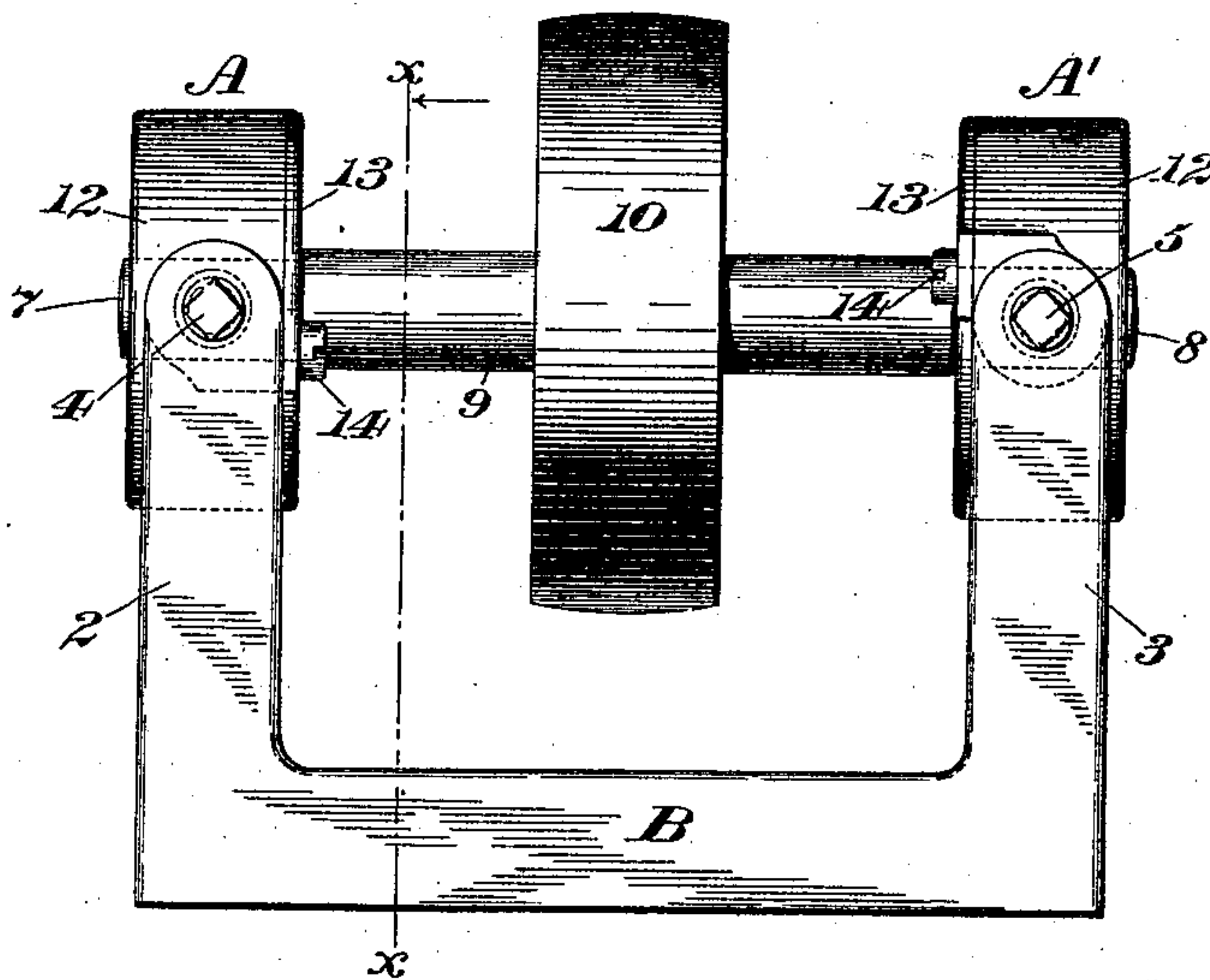


Fig. 2.

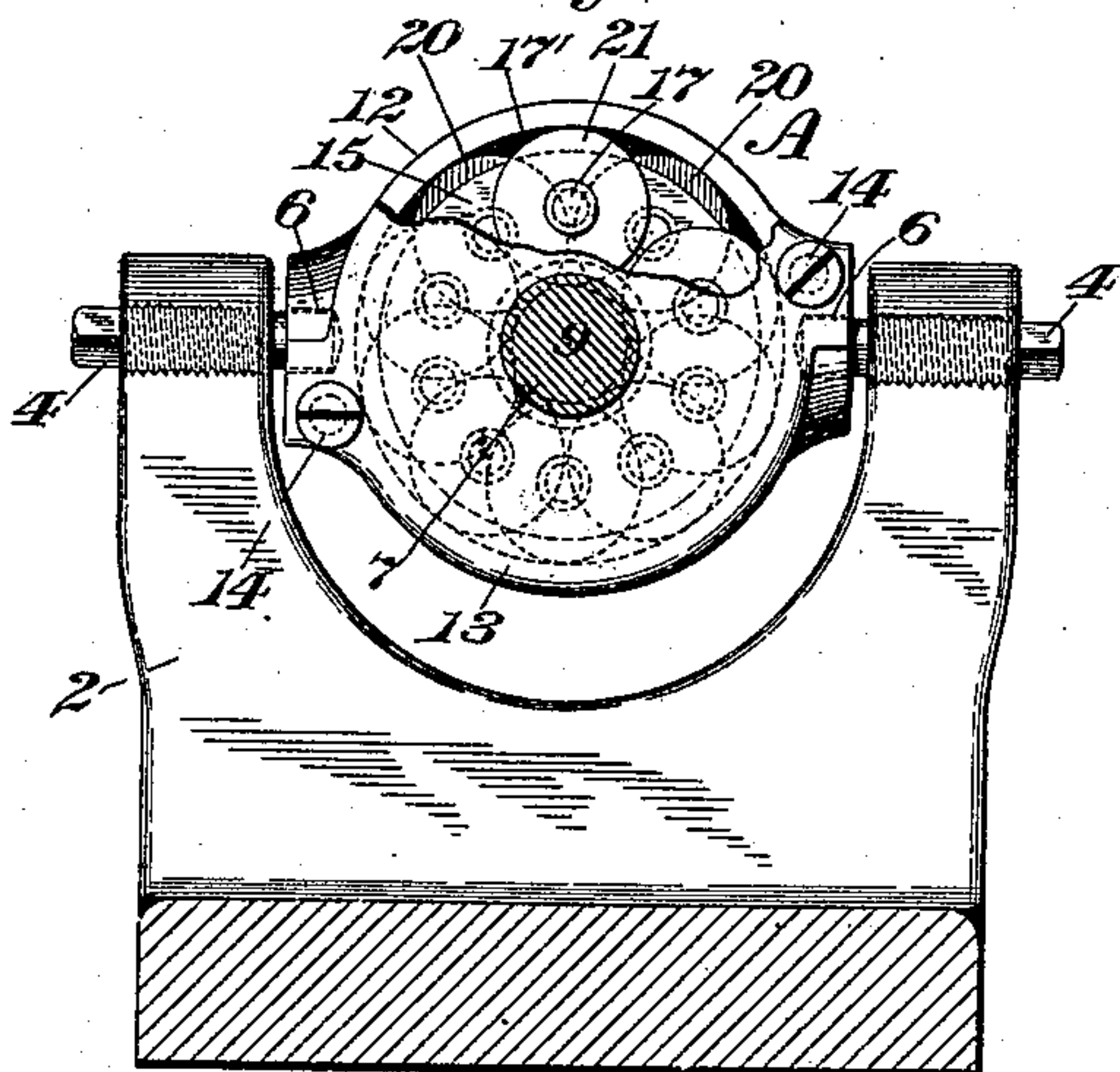


Fig. 3.

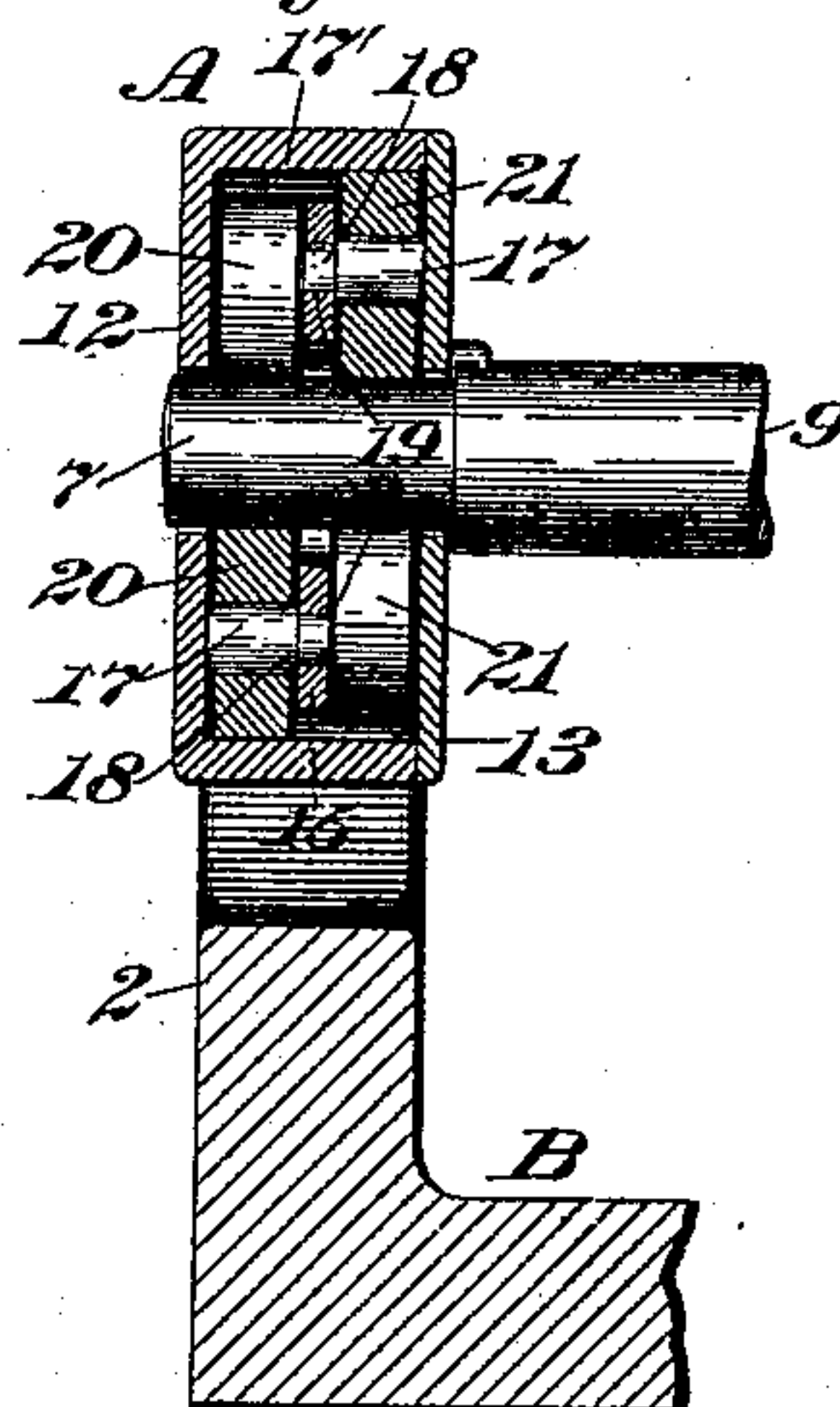


Fig. 4.

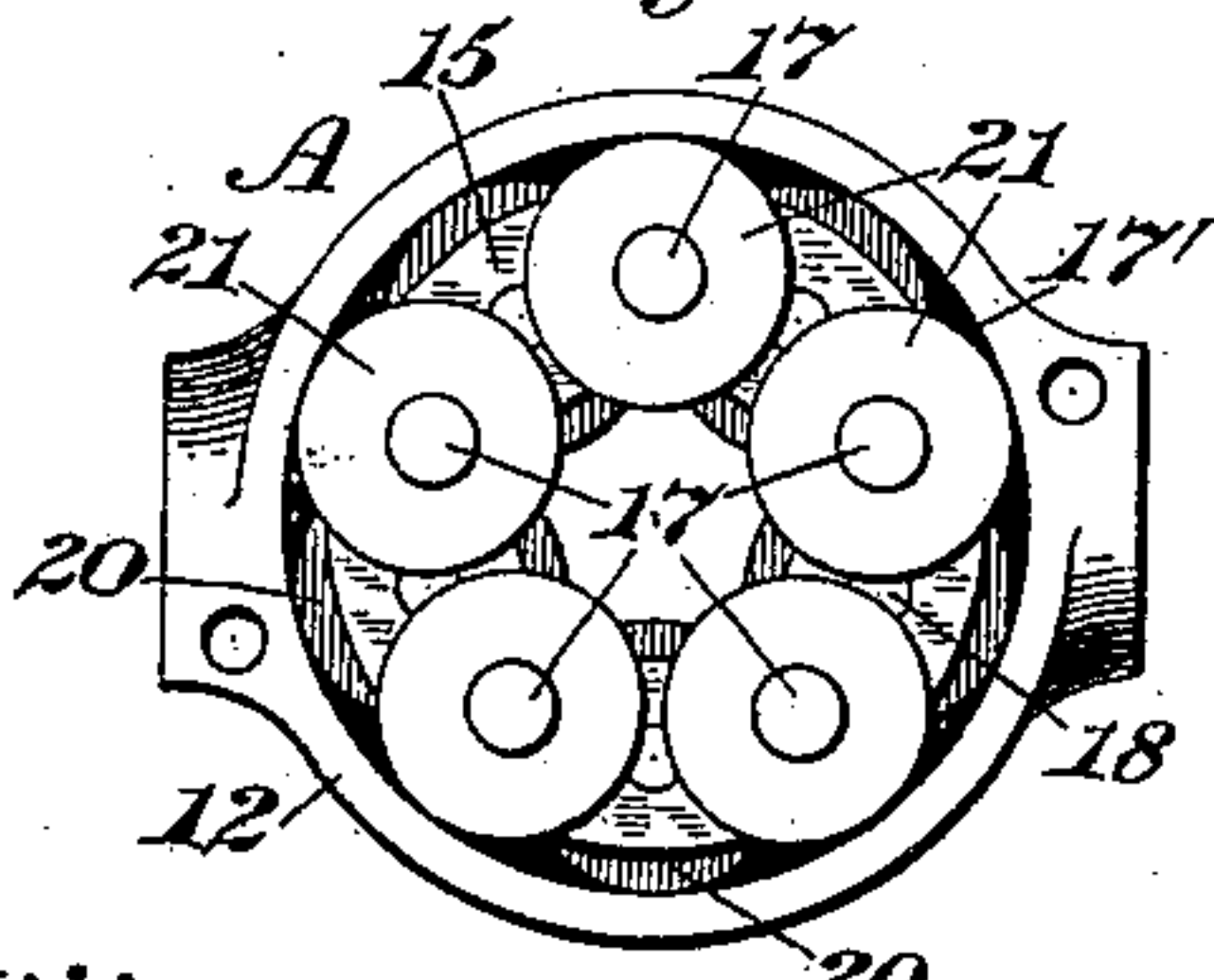


Fig. 5.

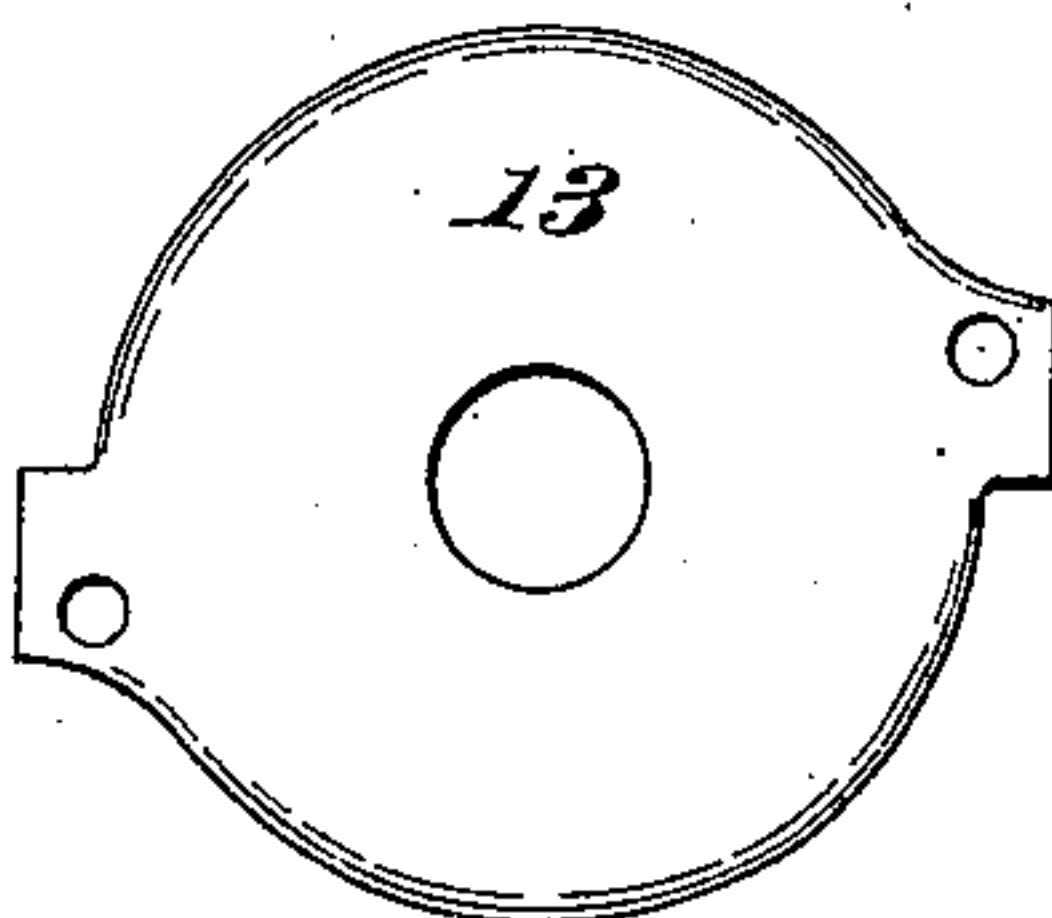


Fig. 6.

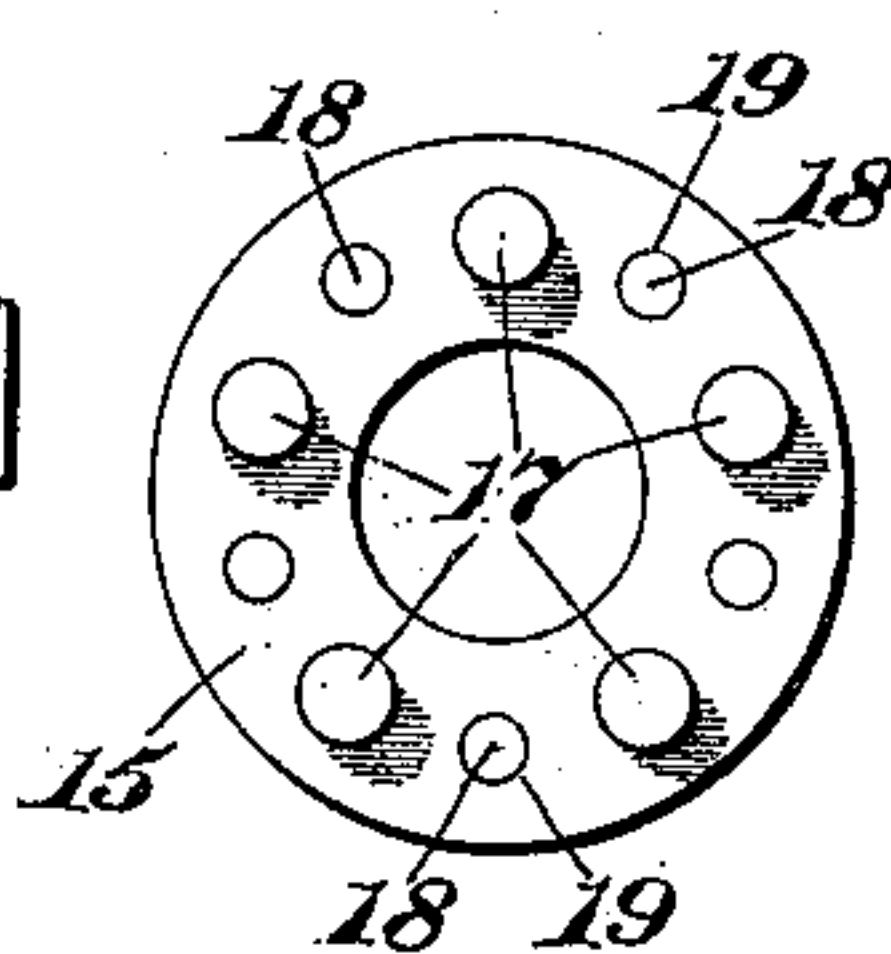
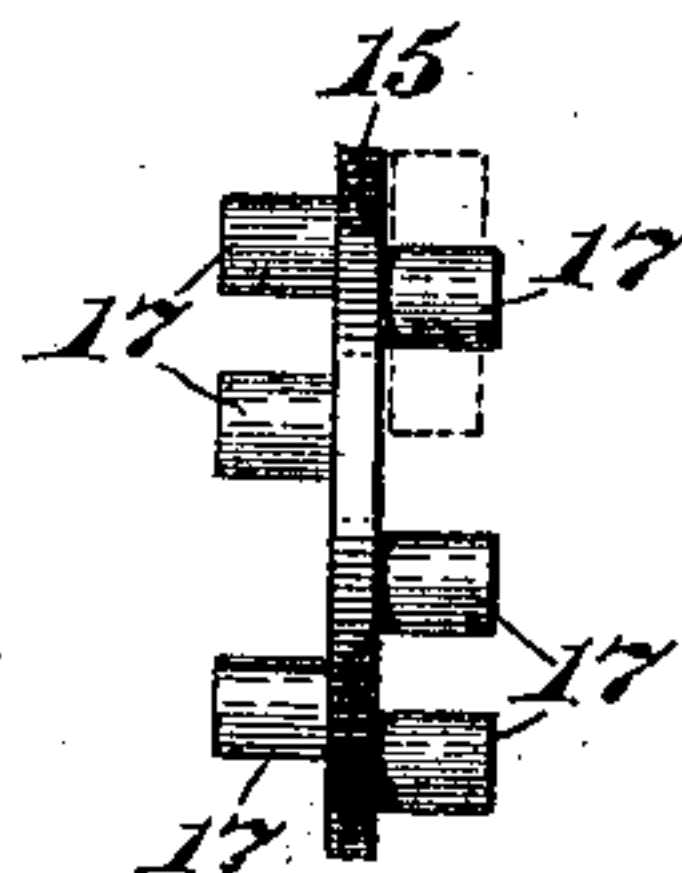


Fig. 7.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT.

ROLLER-BEARING.

SPECIFICATION forming part of Letters Patent No. 620,180, dated February 28, 1899.

Application filed April 9, 1898. Serial No. 677,043. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Roller-Bearings, of which the following is a specification.

This invention relates to roller-bearings; and the object of the invention is to provide a simple device of this character in which the friction between the journal, the rollers, and the casing is evenly distributed and one in which the tendency of the rollers to assume an angle to their carrier or to wobble is removed, whereby the peripheries of the rollers travel squarely against their runway and the journal, respectively, thereby causing the parts to operate with precision and wear with uniformity.

The improved roller-bearing includes in the present instance a carrier and a casing or box therefor, said carrier having a substantially central opening through which the journal is inserted and also having a series of rigid studs which may be driven in place or otherwise fixed thereto and about which the rollers rotate. Said studs extend entirely through and beyond, so that when the latter and their carriers as a whole are subjected to side thrusts the studs will strike the sides of the casing or box, thereby protecting the rapidly revolving and rotating rollers. The carrier for said rollers consists, preferably, of a ring having on its opposite sides a plurality of alternating studs, and the diameters of the rollers are such that when assembled upon the studs those upon one side of the carrier overlap those on the opposite side of said carrier.

In the drawings accompanying and forming part of this specification, Figure 1 is a front elevation illustrating two of my improved roller-bearings sustaining a shaft. Fig. 2 is a cross-sectional view taken in the line $x x$, Fig. 1, looking toward the left, part of the cap of the roller-casing being removed. Fig. 3 is a transverse central section of the bearing, a part of the journal being shown in full lines. Fig. 4 is a face view of the device with the cap removed. Fig. 5 is a face view of the

cap; and Figs. 6 and 7 are front and side elevations, respectively, of the roller-carrier.

Similar characters designate like parts in all the figures of the drawings.

In Fig. 1 of the drawings the two roller-bearings are designated by A and A' and are supported between the arms 2 and 3, respectively, at the opposite ends of the frame B, said arms carrying screws, as 4 and 5, fitting in sockets, as 6, in the opposite sides of the bearing-boxes, and the two bearings sustaining the journal portions 7 and 8 of the shaft 9, which carries at its middle the pulley 10, although it is obvious that said bearing may be used in any other manner. The bearings A and A' each include a box, as 12, involving removable covers 13, which may be held in place by screws, as 14.

In Figs. 2 to 7, inclusive, I have illustrated in detail the bearing A.

The rollers, consisting, preferably, of disks, are disposed in alternation, respectively, upon opposite sides of a carrier, by reason of which rollers of relatively large diameter may be employed, and the carrier consists in the present case of a ring 15, having a substantially central opening through which the journal portion 7 of the shaft passes, the rollers being adapted to bear against said journal portion and against the inside face 17' of the box or casing 12, which serves as a raceway. The carrier or ring 15 has upon each side the oppositely-disposed rigid studs 17, the inner ends of which are reduced, as at 18, and such reduced ends are tightly fitted or driven into the circular series of openings 19 in the ring 15. Those rollers upon one side of the ring 15 are designated by 20, while the remaining rollers, which overlap, respectively, their companions, are designated by 21, and the two series are rotatably mounted upon the rigid studs 17.

By rigidly mounting the studs upon the carrier or ring 15 the rollers as they revolve about the journal portion 7 of the shaft 9 and in contact therewith and with the raceway 17' cannot wobble or assume an angle to the carrier, by virtue of which the peripheries of the several rollers are maintained in true con-

tact with the two bearing-surfaces just alluded to, and the lives of the rollers and of the journal and the bearing-box 12 are thereby materially prolonged.

5 The rollers and their carrier as a whole occasionally are subjected to lateral thrusts, and for the purpose of protecting the outer faces of said rollers the studs supporting the same extend entirely through and beyond the
10 rollers, as represented in Figs. 3 and 7, by reason of which when the bearing is thrust in either direction the studs and not the rapidly rotating and revolving rollers come in contact with the inside of the box 12 or its
15 cover.

The carrier, which consists of the ring 15 and a series of fixed studs 17, disposed in alternation upon opposite sides of said ring, is fitted closely but freely in the casing, by
20 reason of which the rollers are normally maintained free from pressure against the sides of the casing. In practice the carrier is almost constantly subjected to side thrusts, and when such action takes place in either direction it
25 will be obvious that the studs by projecting beyond the rollers will bear against or strike the opposite sides of the casing, thereby positively preventing the rollers from being forced into contact with the casing, and consequently
30 insuring the free rotation of all of said rollers and their even wear. It will of course be understood that if the rollers themselves are subjected to pressure against the casing their proper rotation is retarded or arrested so long
35 as the contact and pressure continue, and

of course uneven wear of the peripheries is caused, as well as unnecessary wear upon the outside faces of the rollers.

By locking the two series of rollers, one set on either side of the same annular carrier, 40 with the rollers of one set located circumferentially of the carrier at points intermediate of the rolls of the other set, the angular distance circumferentially of the journal between the successive bearing-points of the entire series 45 of rollers upon the journal is reduced to a minimum, thereby securing a high degree of smoothness of operation not otherwise readily obtainable.

Having described my invention, I claim— 50

The combination, with a casing, of a series of rollers; a carrier for the rollers, consisting of a ring having a series of fixed studs disposed in alternation upon opposite sides thereof upon which the rollers are rotatively mount- 55 ed, said studs extending entirely through and beyond the rollers, whereby, when the carrier is subjected to side thrusts, the ends of the studs will bear against the casing, thereby preventing the rollers from subjection to pres- 60 sure against the casing and insuring the free rotation of said rollers, and the carrier being supported with a close but free fit in the casing, whereby said rollers will be normally main- 65 tained out of end contact with the casing.

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