J. E. SHAFER.

ROLLER BEARING.

APPLICATION FILED OCT. 27, 1914.

**1,152,663.** Patented Sept. 7, 1915.

Fig. 1.

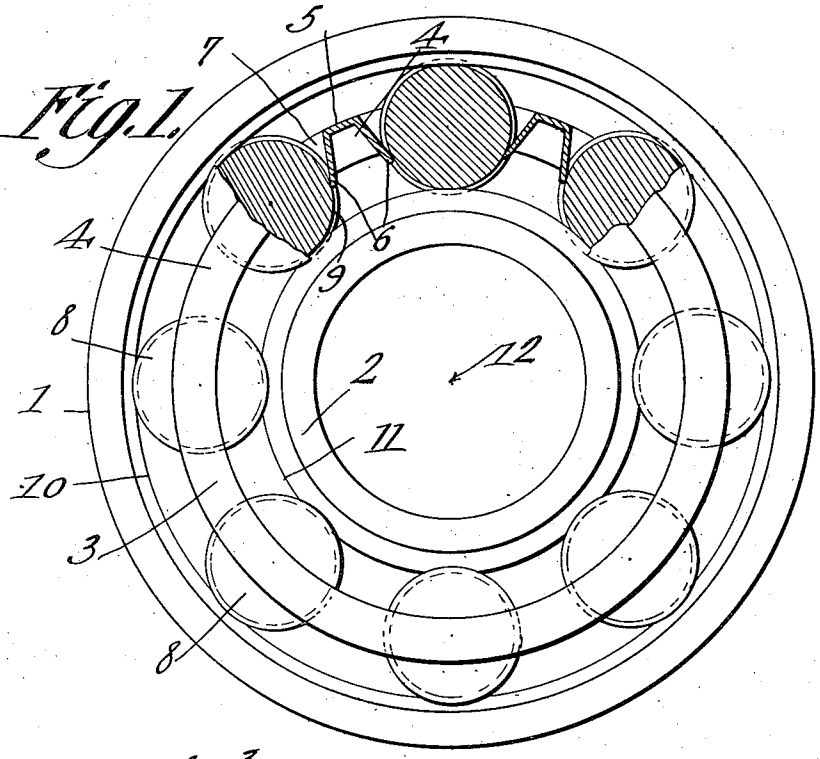



Fig. 2.

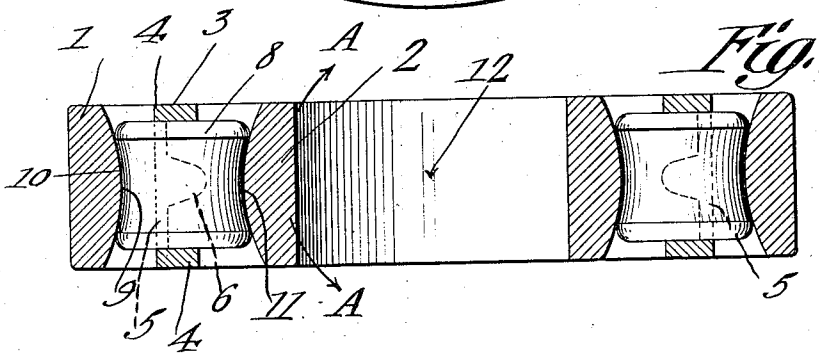
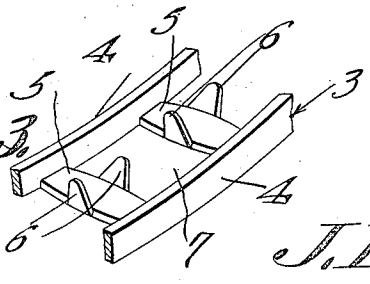



Fig. 3.




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# UNITED STATES PATENT OFFICE.

JULIUS E. SHAFER, OF CHICAGO, ILLINOIS.

## ROLLER-BEARING.

1,152,663. Specification of Letters Patent. Patented Sept. 7, 1915.

Application filed October 27, 1914. Serial No. 868,882.

*To all whom it may concern:*

Be it known that I, JULIUS E. SHAFER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Roller-Bearing, of which the following is a specification.

The device forming the subject matter of this application is a roller bearing, and one object of the invention is to provide a means whereby relative movement between the inner ring of the bearing upon the one hand and the outer ring, the spacer and the rollers upon the other hand, in a lateral direction, may be permitted to take place, the construction being such that the bearing will operate properly even though the inner ring upon the one hand and the outer ring, the spacer and the rollers upon the other hand lie in intersecting rather than in coincident planes of rotation.

Another object of the invention is to provide novel means whereby the consistent elements of the bearing may be assembled with each other and be held in proper coöperative relation.

It is within the scope of the invention to improve generally and to enhance the utility of devices of that type to which the present invention appertains.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawing:—Figure 1 shows the invention in side elevation, parts being broken away; Fig. 2 is a transverse section; Fig. 3 is a fragmental perspective of the spacer.

In carrying out the present invention there is provided an outer ring 1, an inner ring 2 and a spacer 3 located between the rings 1 and 2. The spacer 3 embodies side portions 4, webs 5 connecting the side portions 4, and bendable, roller retaining tongues 6 projecting from the longitudinal edges of the webs 5 intermediate the side portions 4, the webs 5 defining openings 7 in the spacer, within the extended contour of which openings, the tongues 6 protrude slightly as will be understood best from Fig. 1.

Mounted to rotate in the openings 7 of the spacer 3 are rollers 8, each roller having a concaved tread 9. At this point it may be noted that the webs 5 of the spacer 3 taper slightly toward their ends so as to shape the openings 7 properly to coöperate with the concaved tread 9 of each roller 8.

The outer ring 1 is equipped with an inwardly and transversely convexed track 10, the inner ring 2 being provided with an outwardly and transversely convexed track 11. The tracks 10 and 11 coöperate with the concaved tread 9 of the rollers 8 as will be evident from Fig. 2. The track 11 lies in an arc the center of which is the geometrical center 12 of the inner ring 2. Owing to the fact that the track 11 is struck upon an arc the center of which is the point 12, relative transverse movement between the ring 2 upon the one hand and the rollers 8, the spacer and the ring 1 upon the other hand, in the direction of the arrows A, may take place, the object and advantages of such an operation being obvious. Further, since the track 10 of the ring 1 is engaged with the tread 9 of the rollers 8, the spacer 3 and the ring 1 will remain in a common plane when the ring 2 is disposed in an intersecting plane, that is, when relative swinging movement between the parts takes place in the direction of the arrows A as hereinbefore specified.

In assembling the bearing, the spacer 3 is placed within the contour of the outer ring 1 and the rollers 8 are mounted in the openings 7. Then, the tongues 6 are bent so as to hold the rollers 8 in the spacer 3 for rotation, and to hold the concaved treads 9 of the rollers engaged with the convexed track 10 of the ring 1. Thus, the parts 3 and 1 will be held for rotation in a common plane. The inner ring 2 is then swung in one direction or the other indicated by the arrows A until the track 11 of the ring 2 coacts with the tread 9 of the rollers 8, this operation being possible because of the fact that the center of curvature of the transversely curved track 11 is located at the geometrical center 12 of the ring 2.

Having thus described the invention, what is claimed is:—

1. A device of the class described comprising an inner ring; an outer ring; a spacer between the rings; and rollers carried by the

spacer; the outer ring having an inwardly and transversely convexed track and the inner ring having an outwardly and transversely convexed track, each roller having a concaved tread engaging both tracks, the track of the inner ring being convexed on an arc the center of which is the geometrical center of the inner ring thereby to permit relative transverse swinging movement between the outer ring, the spacer and the rollers upon the one hand, and the inner ring upon the other hand, the engagement between the tread of the rollers and the track of the outer ring serving to prevent relative transverse movement between the outer ring, the spacer and the rollers when relative swinging movement between the outer ring, the spacer and the rollers upon the one hand and the inner ring upon the other hand occurs.

2. In a device of the class described, an outer ring having an inwardly and transversely convexed track; a spacer within the outer ring; rollers in the spacer and having concaved treads coacting with the track, the spacer being provided with bendable tongues which engage the rollers to hold the treads thereof engaged with the track thereby to connect the spacer and the outer ring against relative transverse movement but for rotation in a common plane; and an inner ring within the spacer and having an outwardly and transversely convexed track, the said track being transversely curved along an arc the center of which is the geometrical center of the inner ring, whereby the inner ring may be tilted transversely to cause the track thereof to engage the treads of the rollers after the rollers are assembled with the spacer through the instrumentality of the tongues.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JULIUS E. SHAFER.

Witnesses:
ANGEL MELEGARI,
CHARLES A. BAILEY.