No. 676,939. Patented June 25, 1901.

S. S. EVELAND.

ANTIFRICTION END THRUST DEVICE.

(Application filed Nov. 21, 1899.)

(No Model.)

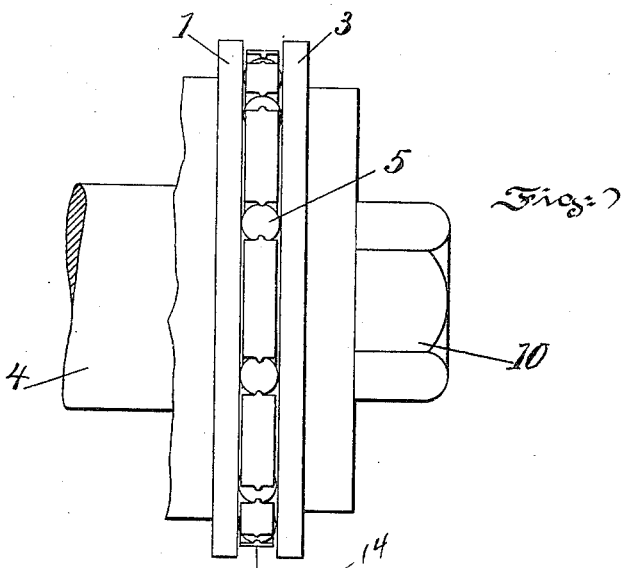

Fig. 1.

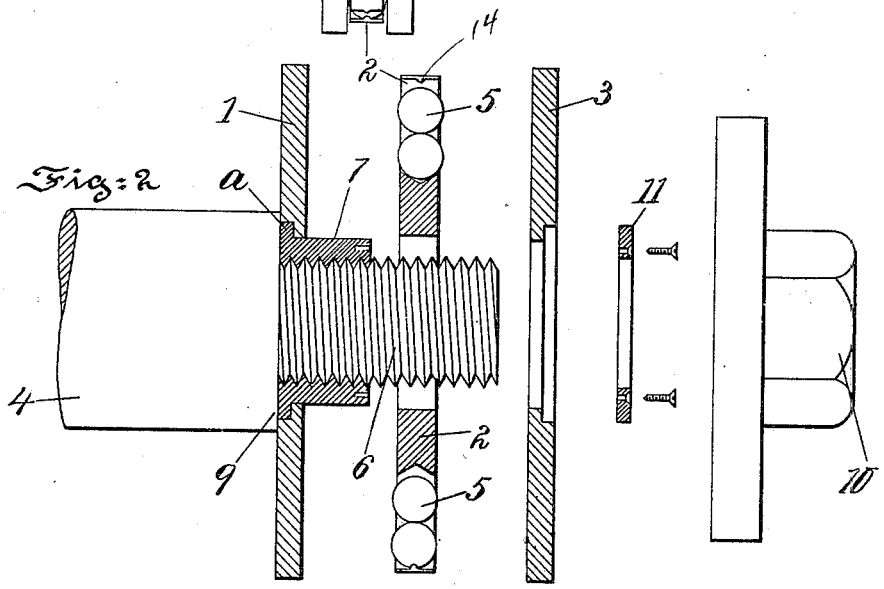

Fig. 2.

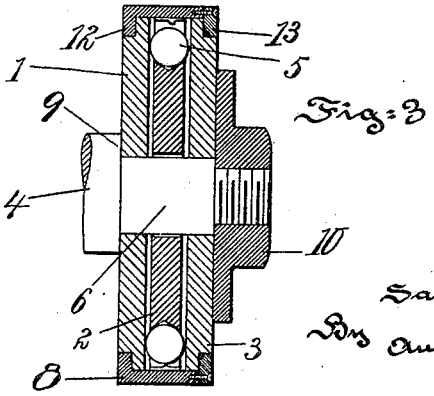

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

SAMUEL S. EVELAND, OF PHILADELPHIA, PENNSYLVANIA.

ANTIFRICTION END-THRUST DEVICE.

SPECIFICATION forming part of Letters Patent No. 676,939, dated June 25, 1901.

Application filed November 21, 1899. Serial No. 737,765. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL S. EVELAND, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Antifriction End-Thrust Devices for Axles and the Like, of which the following is a specification.

The object of the present invention is to provide a simple, efficient, and reliable antifriction device which may be applied to an axle and to which end thrusts in both directions of a rotating member can be advantageously referred. To these and other ends my invention comprises the improvements hereinafter described and claimed.

The nature, characteristic features, and scope of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a side view of an end-thrust device embodying features of my invention and showing the same mounted upon a shoulder at the end of the axle. Fig. 2 is a sectional view showing the parts detached, and Fig. 3 is a sectional view illustrating a modification.

In the drawings, 1, 2, and 3 are centrally-perforated disks independently rotatable in respect to the axle 4. The center disk 2 is equipped with balls 5, which are placed at suitable intervals throughout its extent and are exposed upon its opposite faces. The balls 5 are kept in place in any appropriate manner—for instance, by providing the disk 2 with inward projections, as 14. The disk 1 is intended to receive the thrust which is directed toward the outer end of the axle, and the disk 3 is intended to receive the thrust which is directed toward the inner end of the axle. In either case friction due to the thrust is compensated for by the relative movement of the three disks upon the balls 5 and in respect to the axle. Of course the three disks may be simply mounted so as to turn upon the axle or upon the reduced end portion 6 thereof, or they may be mounted upon the thimble 7, Fig. 2, or they may be secured by a peripheral band 8, loose or with a running fit. As shown in the drawings, the shoulder 9 and the nut 10 prevent endwise motion of the disks as a whole. Referring to Fig. 2, the thimble 7 is flanged, as at *a*, and is provided with a detachable ring 11. The flange *a* and ring 11 are fitted to rabbets in the disks 1 and 3, and thus serve to hold the disks together and to permit of their free and independent rotation. Referring to Fig. 3, the peripheral band 8 is flanged, as at 12, and the ring 13 is detachably applied to it, and the flange and the ring work in rabbets in the disks and prevent their accidental detachment and at the same time permit of their independent rotation. Of course where the three disks are connected together, as in Fig. 3, they constitute a unitary member, which can be readily applied to and removed from the axle. Moreover, since each disk is independently revoluble in respect to the others and to the axle it follows that end thrust in either direction can be transferred to the described device, which compensates for the same.

It will be obvious to those skilled in the art to which the invention appertains that modifications may be made in details without departing from the spirit thereof. Hence I do not limit myself to the precise construction and arrangement of parts herein set forth and shown in the drawings; but,

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An antifriction end-thrust device comprising three similar coaxial disks whereof the center one is provided with balls, and retaining means for the disks whereby they may be applied and removed as a unit, said means permitting independent rotation of each, substantially as described.

2. The combination in an antifriction end-thrust device, of an axle and three coaxial disks independently revoluble and whereof the center disk is provided with balls, and of a flanged annulus embracing the peripheries of said disks and having a running fit therewith, substantially as described.

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Witnesses:

GRACE B. HURLBUT,

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