

No. 725,247.

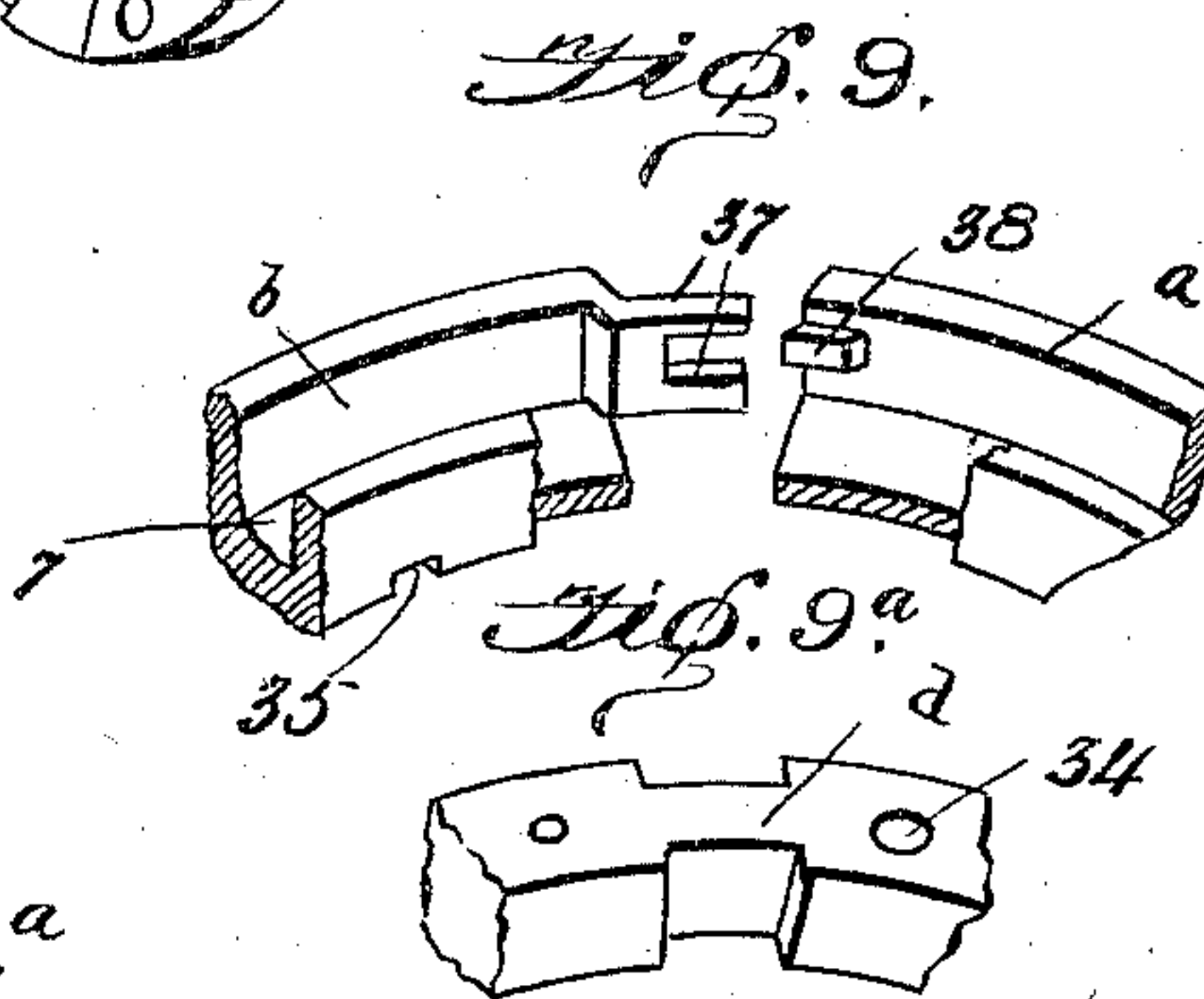
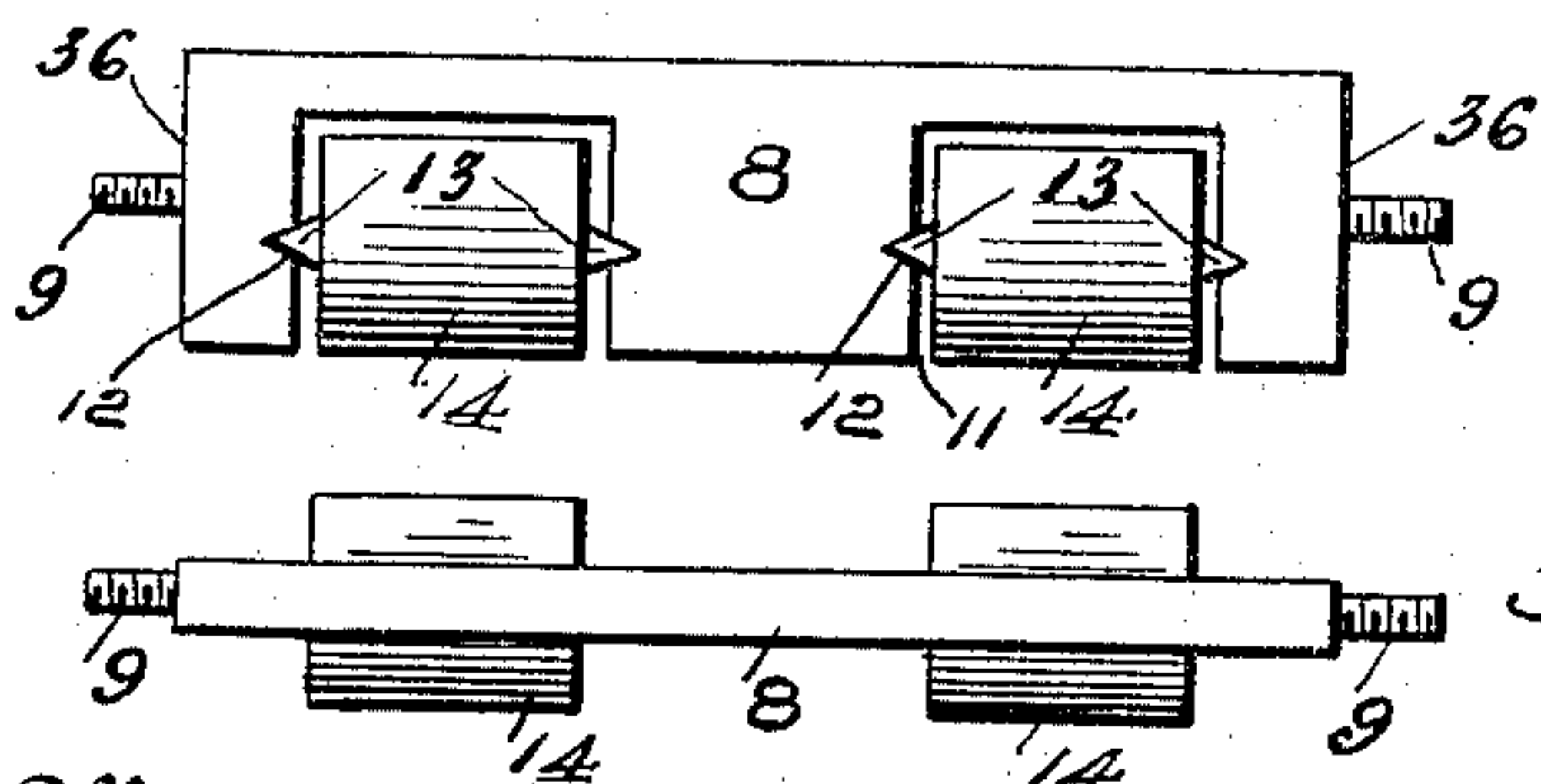
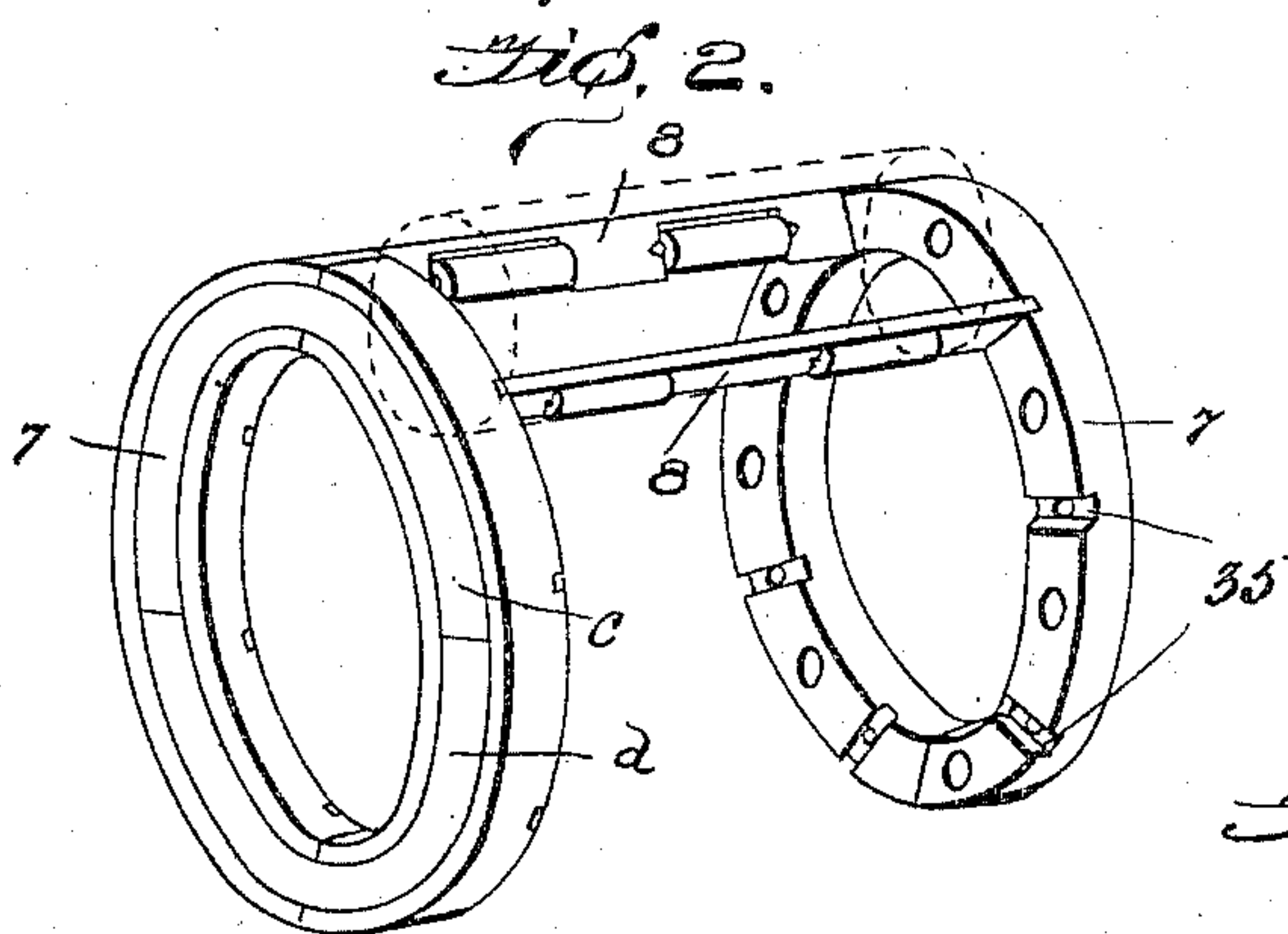
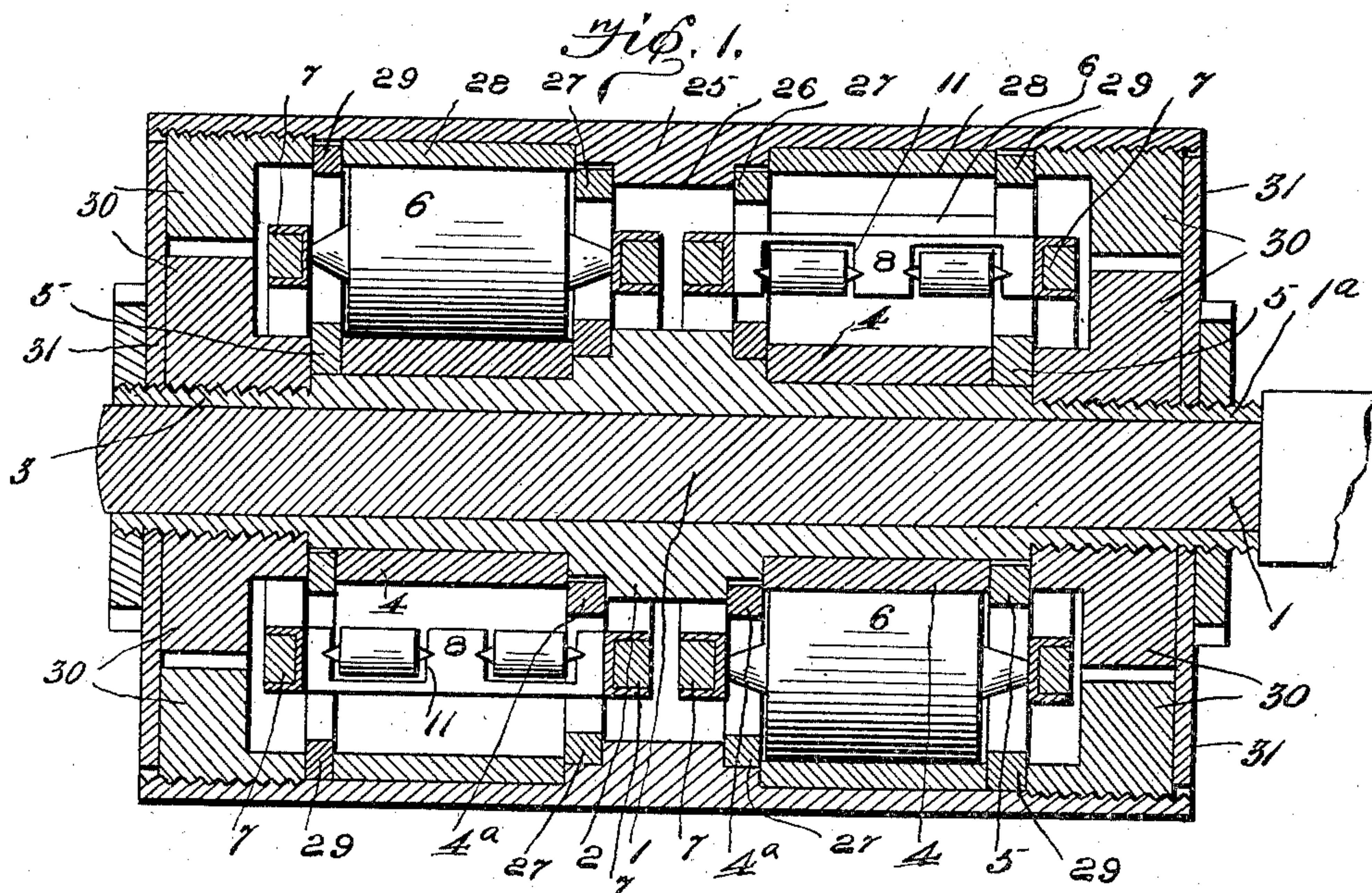
PATENTED APR. 14, 1903.

A. E. HENDERSON.
ROLLER BEARING.

APPLICATION FILED AUG. 23, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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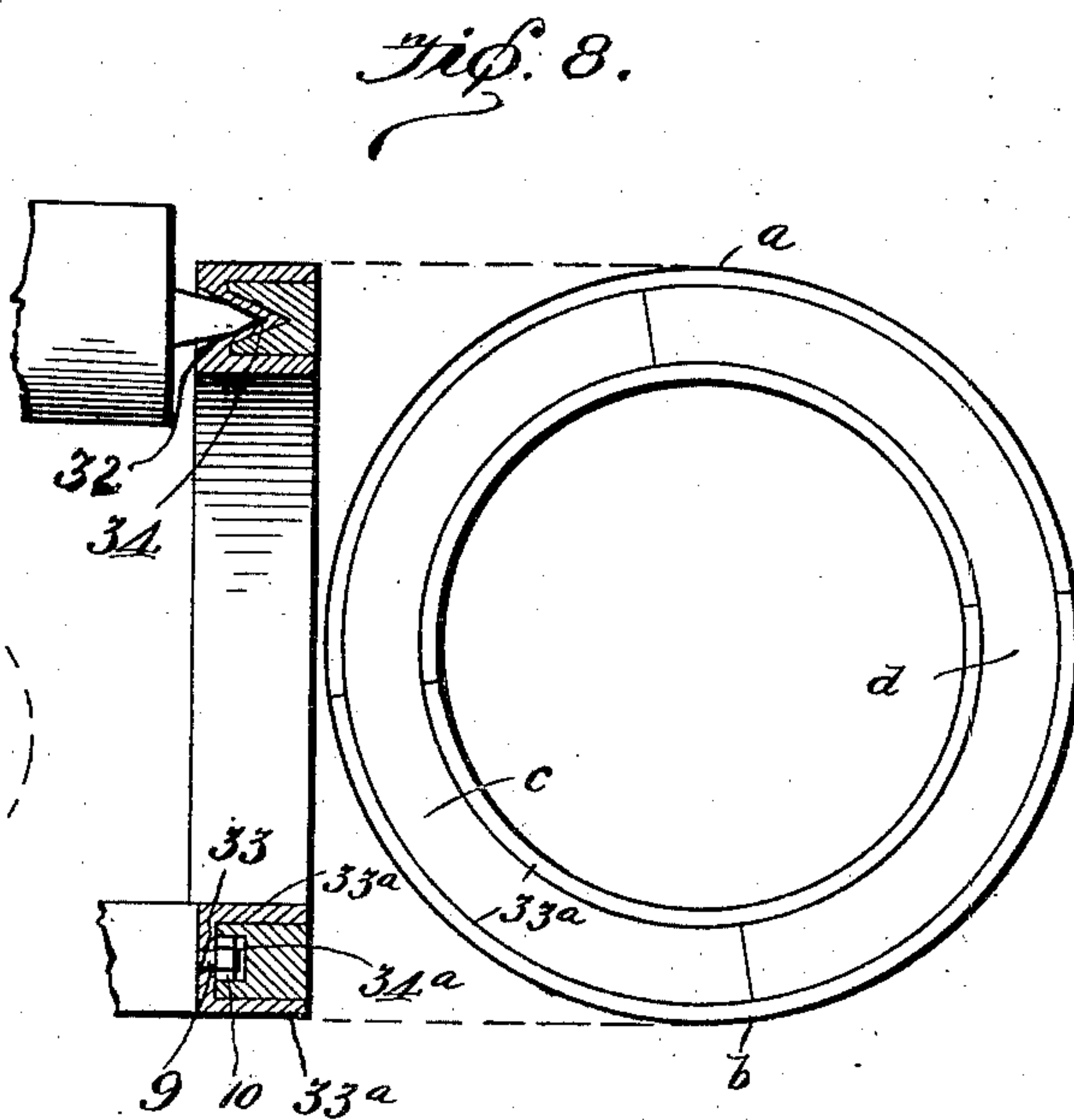
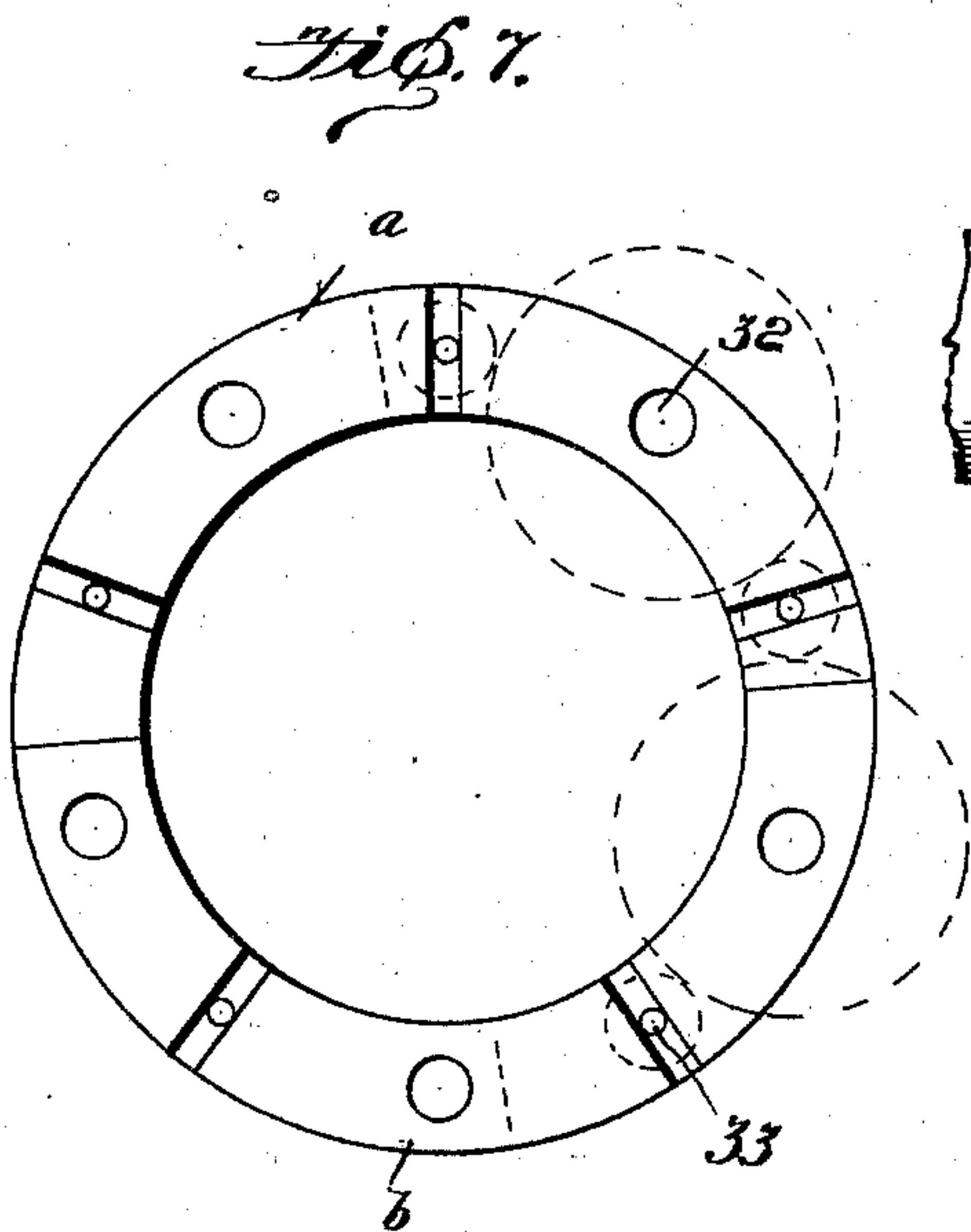
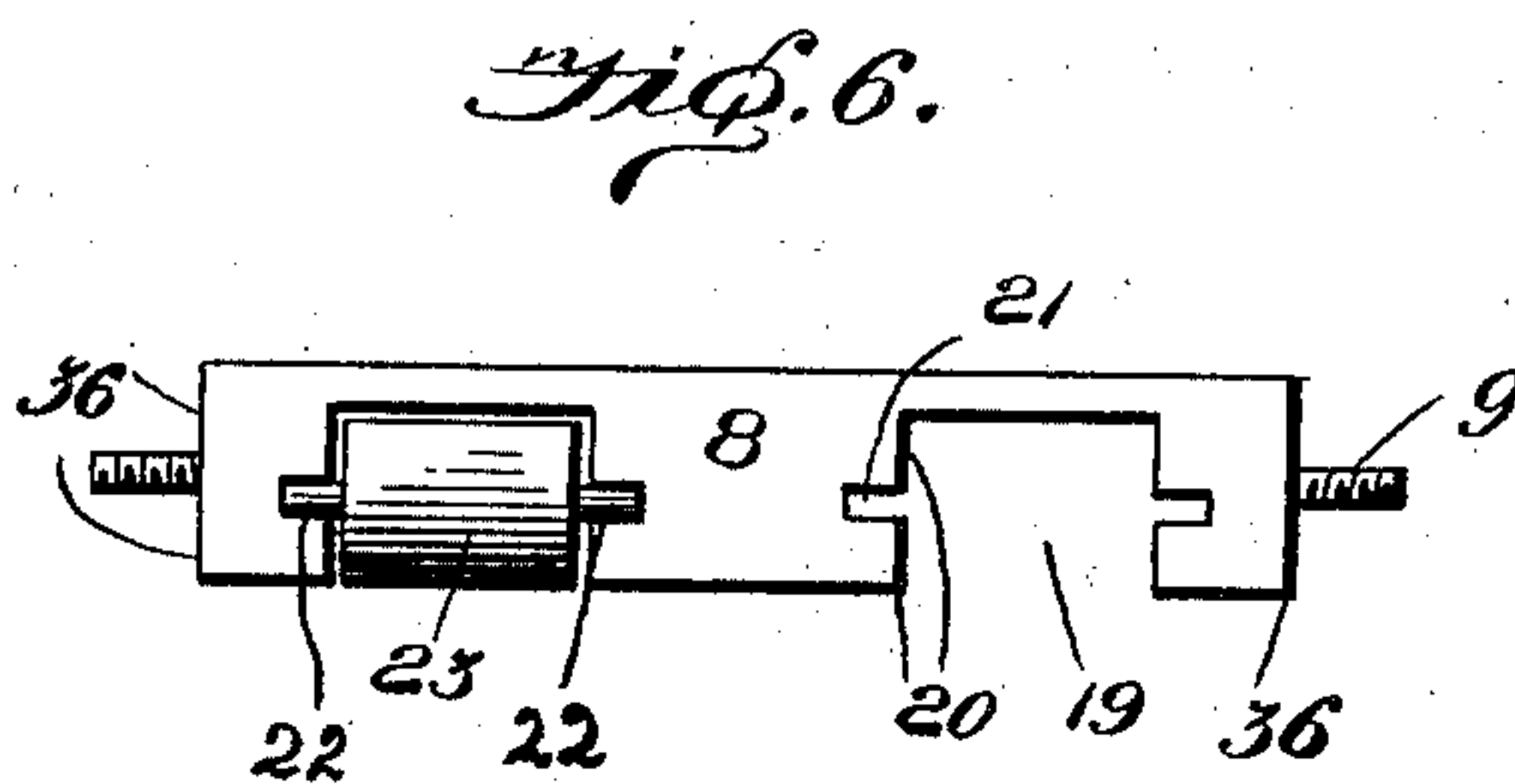
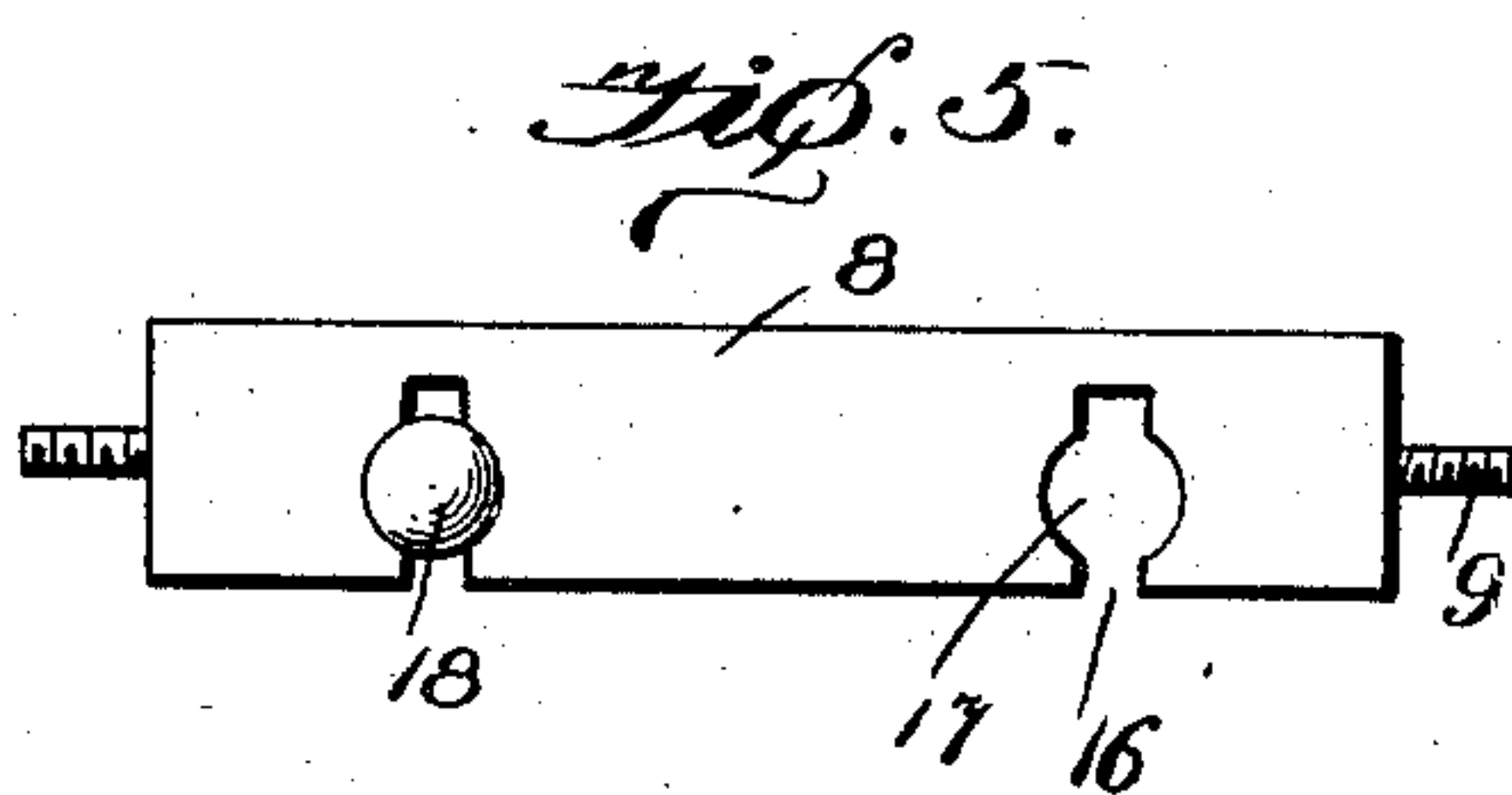
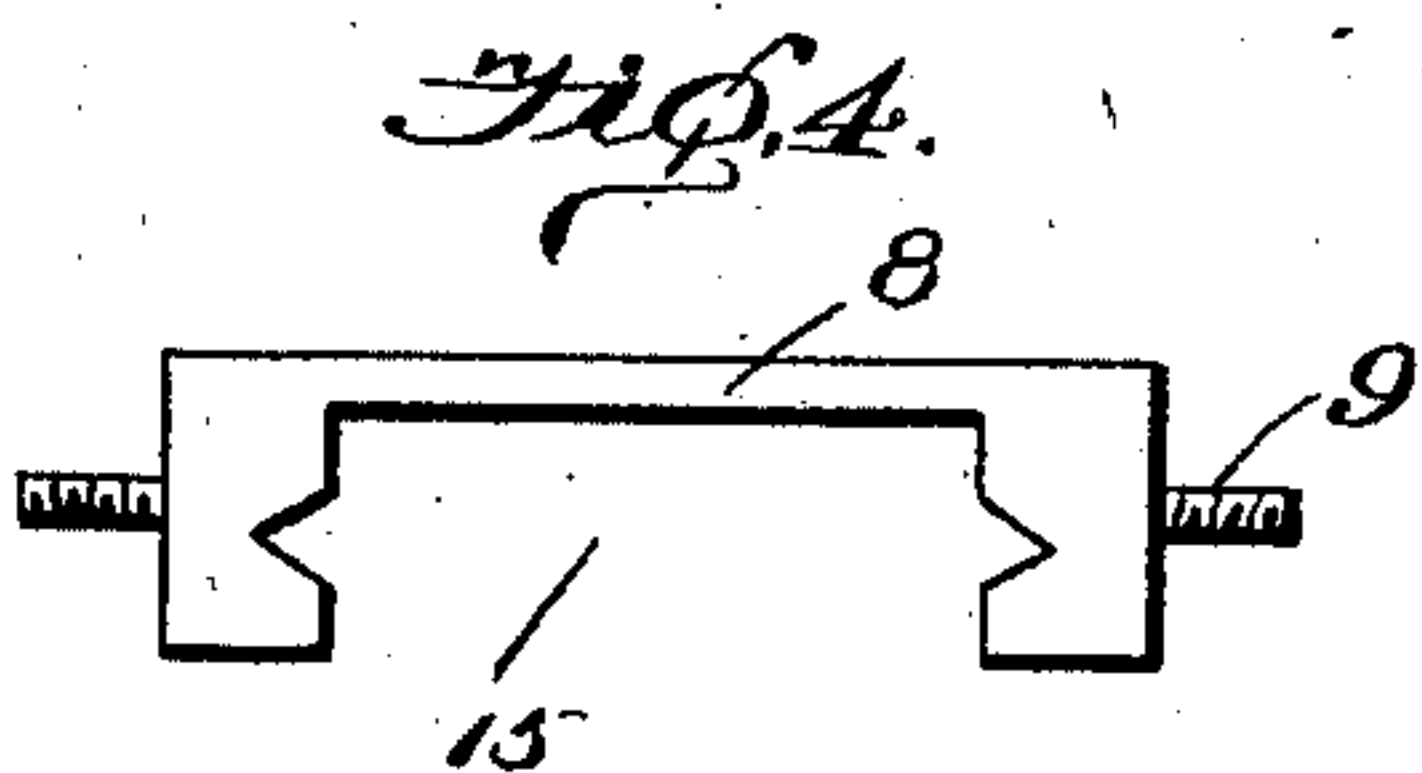
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

ALBERT ENNIS HENDERSON, OF TORONTO, CANADA, ASSIGNOR TO
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ROLLER-BEARING.

SPECIFICATION forming part of Letters Patent No. 725,247, dated April 14, 1903.

Application filed August 23, 1902. Serial No. 120,737. (No model.)

To all whom it may concern:

Be it known that I, ALBERT ENNIS HENDERSON, a subject of the King of Great Britain, residing at Toronto, in the county of York, Province of Ontario, and Dominion of Canada, have invented certain new and useful Improvements in Roller-Bearings, of which the following is a specification.

This invention relates to improvements in roller-bearings; and the main object of my invention is the provision of an antifriction spacing-rod which is provided with roller-bearings which contact the bearing-rollers proper and keep them properly spaced.

Another object of my invention is the provision of a device of this character which is thoroughly efficient and practical in use and is of comparatively simple and durable construction.

To this end I have constructed a roller-bearing of novel construction, as will presently appear.

In the accompanying drawings, Figure 1 is a central sectional view of a journal and box-
ing provided with my invention. Fig. 2 is a perspective view of the cage with several of the spacing-rods in place. Figs. 3 and 3^a are detailed views of one of the spacing-rods. Figs. 4, 5, and 6 are detailed views of modified constructions of spacing-rods. Figs. 7, 8, 9, and 9^a are detail views of the improved ring for the cages, Figs. 9 and 9^a being perspective views of the meeting ends of section *a b* and a portion of section *d* at such junction, respectively.

Referring to the drawings, the numeral 1 designates the journal, which has mounted thereon a sleeve 1^a, which is provided with an annular shoulder 2 and a reduced end 3, which is surrounded by a lining or sleeve 4, a rotatable thrust-ring 4^a for the inner ends of the bearing-rollers 6 surrounding the journal and limited in its inward movement by the shoulder 2. Adapted to surround the reduced end and contact the sleeve 4 is a rotatable thrust-ring 5. Mounted upon the journal are the bearing-rollers 6, which are carried in the cage formed by the two rings 7. Forming spacing-rods for the rollers and tie-rods

for the rings 7 are the spacing-rods 8, which are provided with the reduced ends 9, which are securely held in place by means of nuts 10. These spacing-rods are provided with cut-away portions or notches 11, which in a preferred form are two in number and are provided with the conical-shaped journals 12 to receive the pintles 13 of the spacing-rollers 14. These cut-away portions extend from the edge of the tie-rods to a short distance above the center thereof and have the rollers so journaled therein as to be out of contact with the body of the tie-rods.

In Fig. 4 I show a spacing-rod having a single recess or space 15. In Fig. 5 I illustrate a spacing-rod provided with the recesses or spaces 16, which are provided with the intermediate enlarged portions 17 for the reception of spacing-balls 18. In Fig. 6 is illustrated a spacing-rod in which the recesses or spaces 19 are provided with straight walls and the opposed bearings 21 for the reception of the cylindrical pintles 22 of the spacing-rollers 23.

Surrounding the journal is a bearing-sleeve 4, and surrounding the entire journal-bearing rollers is a journal-box 25, which is provided with an internal shoulder 26, against which abuts a rotatable thrust-ring 27 and removably-mounted bearing lining or shell 28 and removable shoulder or thrust-ring 29, which forms a rotatable thrust-ring for the outer ends of the bearing-rollers, these parts being held in their relative positions by means of the two lock-rings 30. In order to hold the parts upon the journal, I provide the lock-nut 31. The rings which form the supports for the bearing-rollers are made in substantially four parts, respectively, *a*, *b*, *c*, and *d*, said sections being compressed together to form a compressed overlapping ring—that is, the ends of each section overlap the joints at the ends of the other ring formed by the other two sections, the sections *a* and *b* constituting the portions between which are mounted the bearing-rollers and in which are provided the tie-rod and spacing-rod openings 33 and radial grooves 35. The conical bearings 32 are formed in this ring by pressing upon the

outer face thereof, and this ring is also provided with openings 33 for the reception of the ends 9 of the tie-rods. This ring is also provided with peripheral flanges 33^a to surround the sections *c* and *d*. The sections *c* and *d* constitute the outer ring, being adapted to fit snugly within the flanges of sections *a* and *b* to form a lock for the retaining-rings and are adapted to have the bearing 32 surrounded by means of the series of depressions 34, which are of a smaller diameter than the pintles of the inner ring, and by forcing the two rings into contact with each other the pintles of the inner ring are tightly forced into the depressions of the outer ring and secured thereby. The tie-rods' securing-nuts are held between the rings and are invisible, being mounted in recesses 34^a. Formed upon the inner face of the inner ring adjacent to the openings for the reception of the ends of the tie-rods are radial grooves 35, in which fit the shoulders 36 of the spacing-rods, thus preventing the rods from turning. The sections *a* and *b* are provided upon one end with the parallel projections 37, which provide a recess to embrace a projection 38, carried by the adjacent end of each section.

From the foregoing description, taken in connection with the drawings, it is evident that I provide a thoroughly efficient and practical roller-bearing and one which is made up of parts which will constitute a simple and durable construction and remedy the defects in the bearings in general use, in that this bearing is provided with the rotatable rings which form thrust-bearings for the rollers, the antifriction spacing-rods which properly hold the rollers apart and reduce the friction between the bearing-rollers, and also provide a cage which has supporting-rings for the bearing-rollers made in sections which overlap the joints of each other and are held together by having compressed interlocking parts.

What I claim as new is—

1. In a roller-bearing, the combination of two retaining-rings each formed substantially of four sections, said sections being arranged in pairs so that one pair fits within the other pair, bearing-rollers supported between the rings, and tie-rods mounted in the inner sections of the retaining-rings.

2. In a roller-bearing, the combination of a pair of retaining-rings, said retaining-rings comprising each four segmental sections, two of said sections being provided with bearings, the other remaining two fitting within the first two overlapping their meeting ends to lock the sections together, bearing-rollers mounted in the bearings of said rings, and tie-rods to hold the rings together.

3. In a roller-bearing, the combination of a pair of retaining-rings, each formed of four segmental sections arranged in pairs the outer pair overlapping the meeting-points of the

inner pair, bearing-rollers mounted in and supported by the inner sections of said rings, said inner sections being provided with openings and grooves, and tie-rods mounted in said openings and prevented from turning by said grooves.

4. In a roller-bearing, the combination of two retaining-rings each of which is formed of four sections, two of said sections being provided with parallel flanges, the two other sections fitting within the flanges and having their meeting edges overlapping the meeting edges of the flanged sections, bearing-rollers supported between the rings, and tie-rods for holding the rings relatively to the bearing-rollers.

5. In a roller-bearing, the combination of two end rings each one of which comprises an internal and an external ring, each made of two sections, the internal ring being provided with depressions for the reception of the bearing elements, and with radial grooves, bearing-rollers journaled in the depressions, and tie-rods mounted in the grooves to hold the rings relatively to the bearing-rollers.

6. In a roller-bearing, the combination of two retaining-rings, each formed of two rings, one ring fitting wholly within the other ring, bearing-rollers journaled in the adjacent faces of the retaining-rings, and tie-rods for holding the rings relatively to the bearing-rollers.

7. In a roller-bearing, the combination of two retaining-rings, each of which is formed from two rings, one ring fitting wholly within the other ring, the opposed faces of the retaining-rings being provided with circular depressions and radial grooves, bearing-rollers journaled in the depressions of the rings, and tie-rods mounted in the rings and prevented from twisting by the grooves, said tie-rods holding the rings relatively to the bearing-rollers.

8. In a roller-bearing, the combination of two retaining-rings, said retaining-rings being formed each from four sections arranged in pairs, the inner sections of which are provided with depressions and radial grooves having central openings, and the outer sections being provided with a series of openings opposed to the openings and grooves of the inner sections, bearing-rollers supported in the depressions of the rings and tie-rods mounted in the grooves and openings and having their ends projecting into the recesses of the outer rings.

9. A cage for roller-bearings, comprising two retaining-rings provided with means for the reception of bearing-rollers and tie-rods, tie-rods for holding the retaining-rings relatively to the bearing-rollers, each one of said tie-rods being cut away upon one of its edges to provide notches, and antifriction-spacers for the bearing-rollers mounted in the tie-rods.

10. A cage for roller-bearings, comprising two retaining-rings provided with means for the reception of bearing-rollers and tie-rods, tie-rods for holding the retaining-rings relatively to the bearing-rollers, each one of said tie-rods being cut away upon one of its edges to provide notches with aligned bearings and spacing-rollers mounted in the bearings and rotatable in the notches of the tie-rods adapted to contact adjacent bearing-rollers. 10

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

ALBERT ENNIS HENDERSON.

Witnesses:

T. BLAIR SHOEMAKER,
DAVID P. MOORE.