

No. 640,397.

Patented Jan. 2, 1900.

M. C. MERKER.
ANTIFRICTION BEARING.

(Application filed Apr. 5, 1899.)

(No Model.)

FIG. 1.

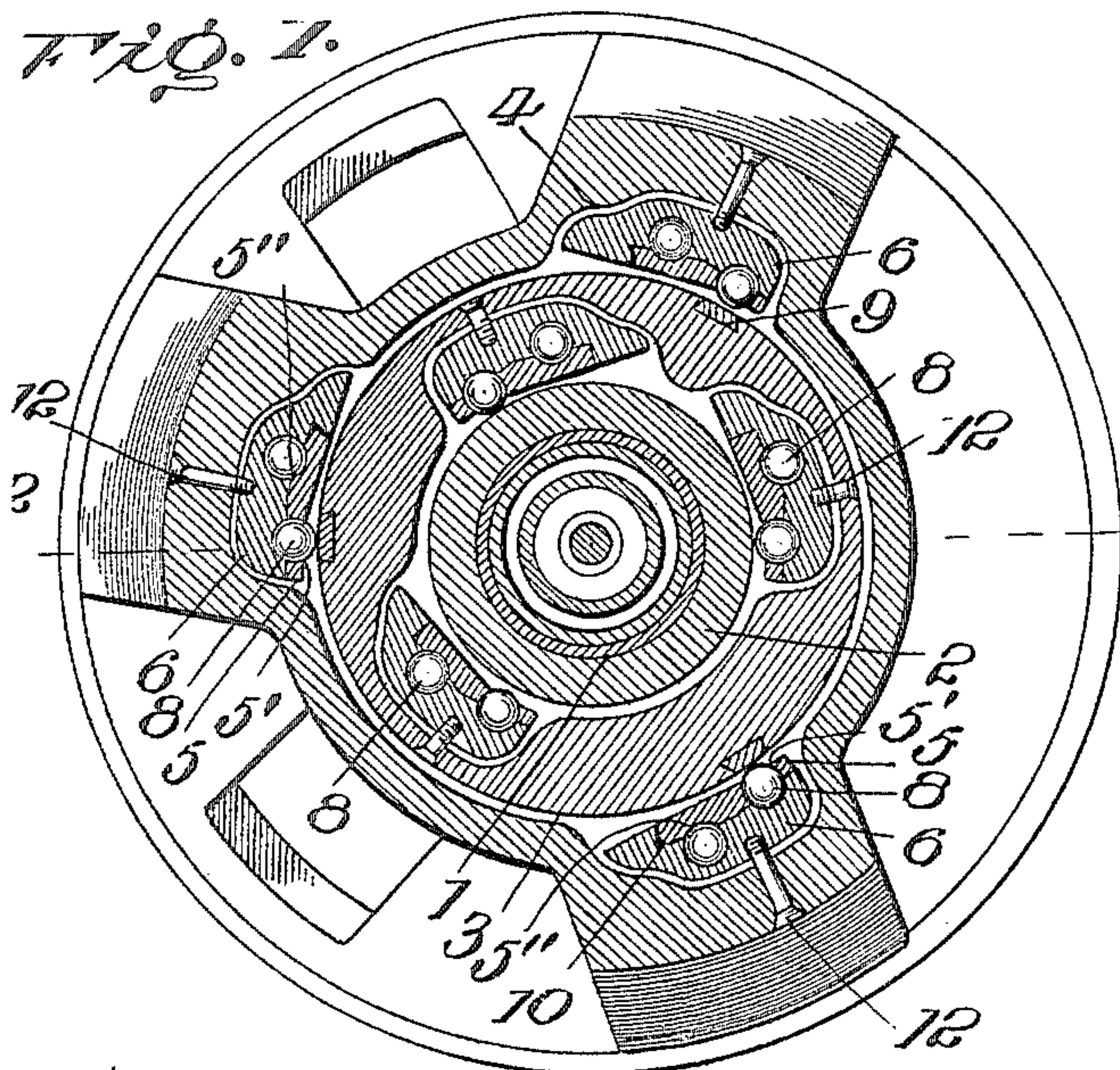


FIG. 3. FIG. 4.

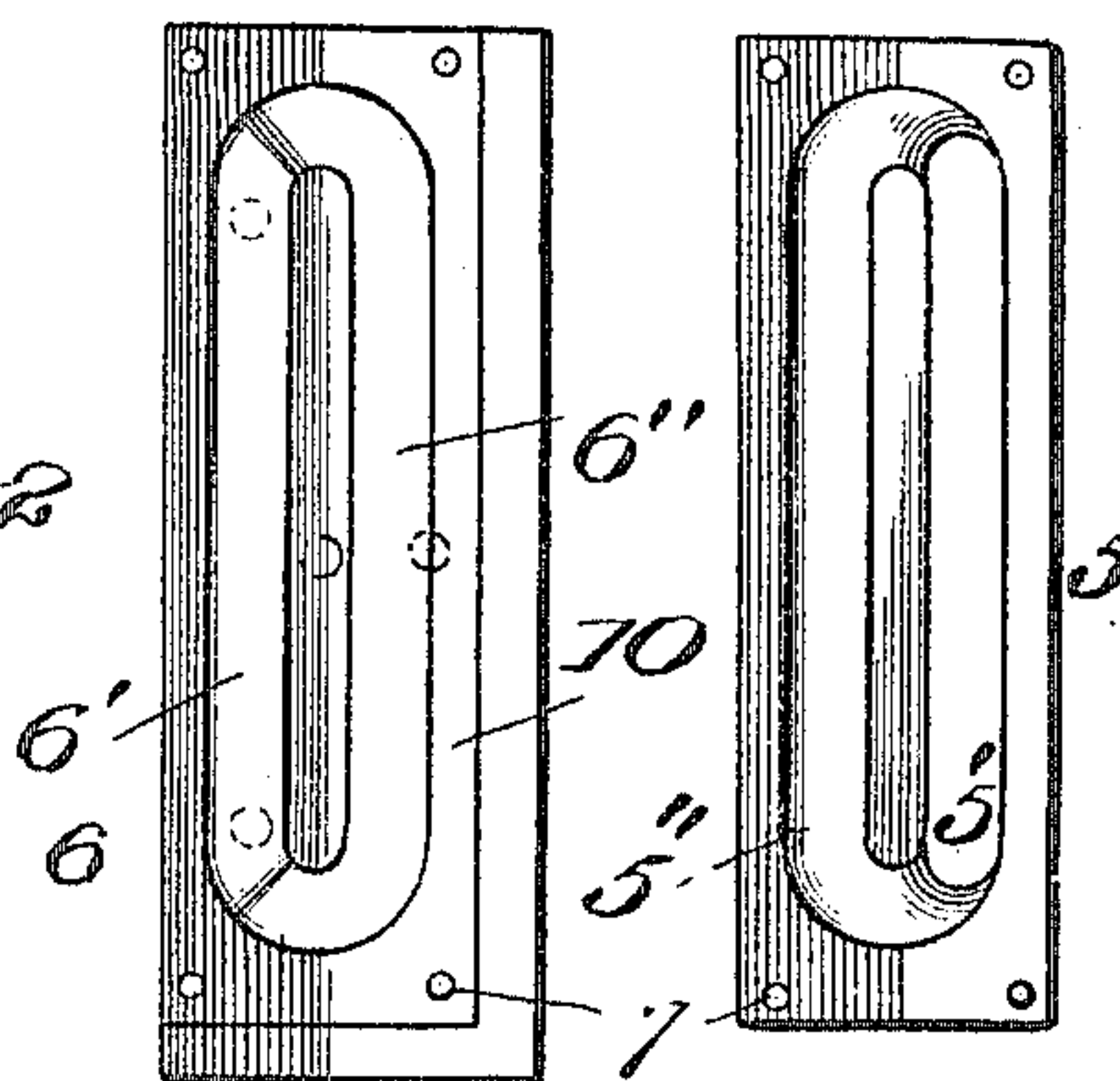


FIG. 5.

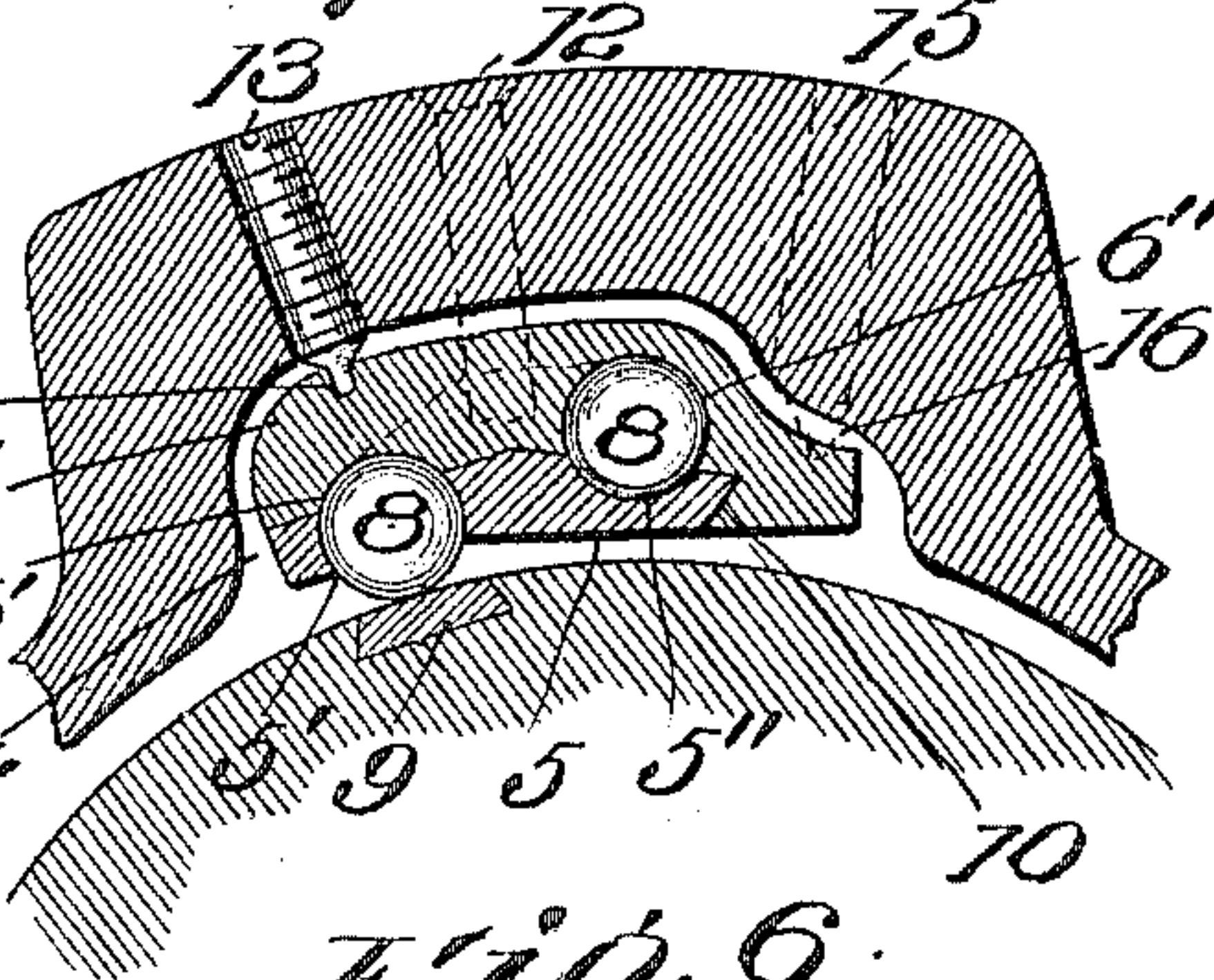


FIG. 6.

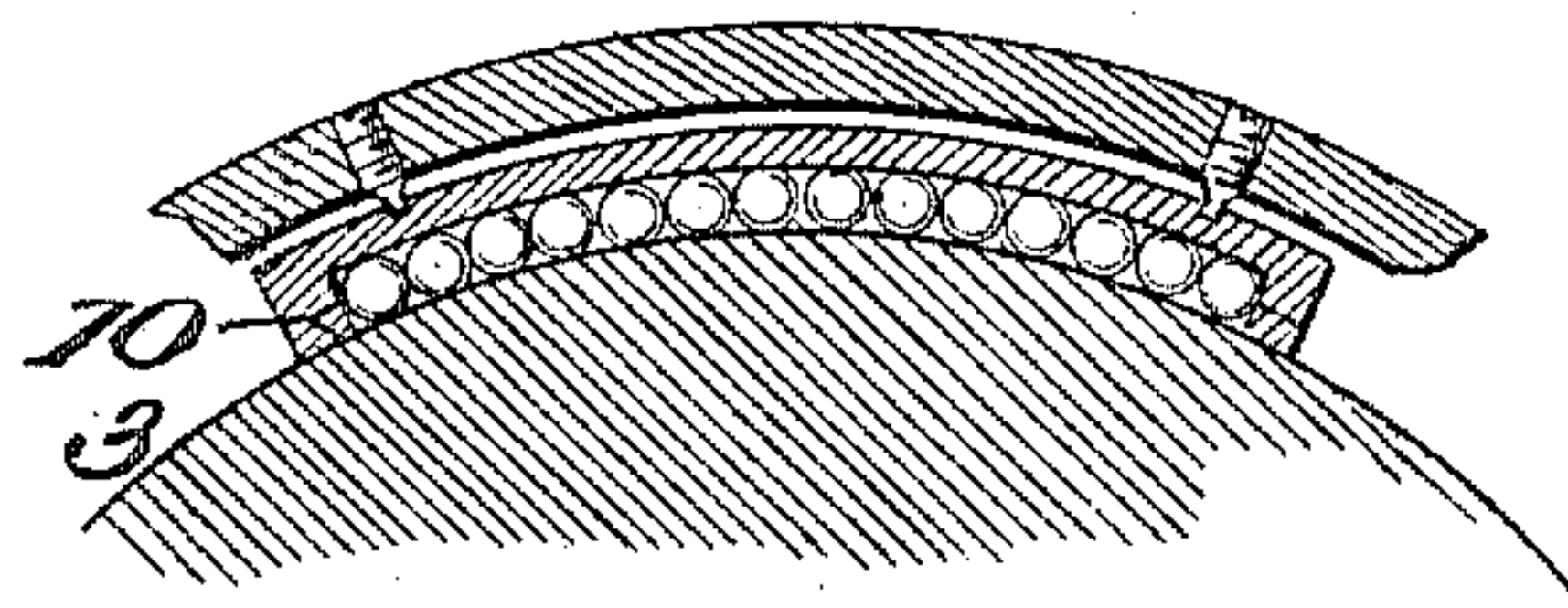
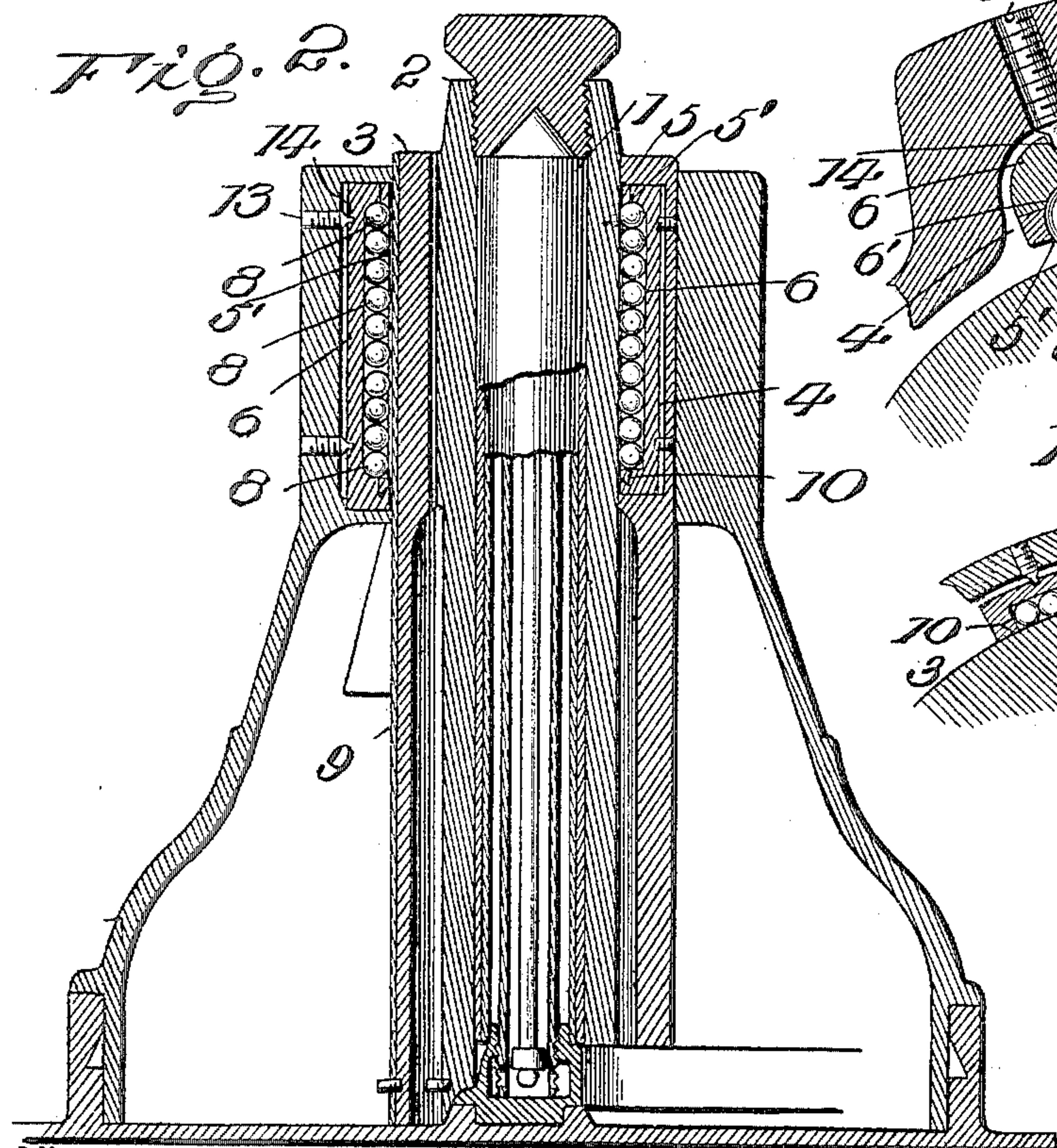


FIG. 2.



Witnesses

J. J. Moore
W. Williams.

Inventor

Mont. C. Merker.

UNITED STATES PATENT OFFICE.

MONT C. MERKER, OF NEW YORK, N. Y

ANTIFRICTION-BEARING.

SPECIFICATION forming part of Letters Patent No. 640,397, dated January 2, 1900.

Application filed April 5, 1899. Serial No. 711,857. (No model.)

To all whom it may concern:

Be it known that I, MONT C. MERKER, a resident of New York, in the county of New York and State of New York, have invented certain
5 new and useful Improvements in Antifriction-Bearings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make
10 and use the same.

The invention relates to antifriction-bearings, and has for its object to provide sectional ball-housings for balls that can be easily assembled and adjusted to the work
15 required, said housings having sections each provided with a continuous ball-groove, one of which permits the contained balls to bear on a contiguous tube, shaft, or other structure.

20 The invention consists in the construction hereinafter described and pointed out.

In the accompanying drawings, Figure 1 is a transverse section of three tubes and several ball-housings. Fig. 2 is a section on line
25 2 2 of Fig. 1. Figs. 3 and 4 are plan views of the sections, showing the respective faces which are contiguous when said sections are properly assembled. Fig. 5 is a section of a modification on a reduced scale. Fig. 6 is a
30 section of a modified detail.

The improvement is adapted for general use. In the present instance it is shown as applied to telescopic tubes such as are employed in raising and lowering chair-seats and other
35 objects, and such structures being well known and no part of the present invention require no further description.

Numerals 1, 2, and 3 indicate three concentric tubes, one of which, at least, is movable with respect to another or to the others.
40

4 4 indicate recesses formed in the wall of one or more of the tubes to receive a ball-housing. In the present instance these recesses are formed in the tube 3. They are
45 not essential in all cases and may be omitted, as represented in Fig. 6. The exterior tube indicates means for holding the ball-housing and the balls to their work.

The housing comprises two sections 5 and
50 6, adapted to be fastened together when necessary by any suitable means, such as holes 7 and screws, pins, or the like. These sections

are each formed with a continuous recess or groove which when the sections are assembled register to form a continuous ball-channel. The groove in section 5 comprises a slot
55 5', extending through the section, and a shallow recess 5'', which forms a continuation of the slot, being gradually merged therein. In section 6 the groove comprises a shallow recess 6' on one side and gradually merged into
60 a deeper recess 6'' on the opposite side. The slot 5' has such relation to the thickness of the section and to the diameter of the balls as to permit the balls to project outside the
65 housing sufficiently to bear upon the contiguous structure. When properly assembled, the slot 5' and recess 5'' in section 5 register, respectively, with the shallow recess 6' and the deeper recess 6'' of section 6, by which
70 construction I form a continuous ball-channel, in a part of which the balls are completely concealed, and in another part of which the balls project beyond the housing, all as clearly illustrated. The ball-channel comprises a
75 part or member formed by the grooves 5' and 6', which holds the balls in active bearing operation, the other part of the channel, constituted by grooves 5'' and 6'', being a ball returning or circulating member. Heretofore
80 ball-channels similar in some respects to those formed by the conjunction of my grooved plates have been formed by boring or coring out, but with greater difficulty and expense than by my improved construction,
85 which comprises simply two grooved plates, which are easily and cheaply cast. Further, the said plates completely house the balls independently of the shaft, tube, or other structure with which they coöperate, and the
90 housing, with its confined balls, can be applied, removed, and otherwise manipulated without danger of spilling them. The balls in one part of the channel project through a plate, so that they bear on the coacting tube
95 or other part entirely outside of the limits of the housing, though closely confined to said channel contained entirely within the housing.

9 denotes ball-tracks of hardened metal
100 made with beveled edges and inserted in similarly-formed grooves in the tube-wall.

The section 5 is in the present instance seated in a suitable recess 10, formed in sec-

tion 6, whereby the grooves and the holes 7 may be made to exactly register. The wall of recess 10 may be undercut, as indicated, to aid in firmly holding the sections together.

12 denotes a screw passing loosely through a tube-wall and engaging the housing to hold it in proper situation to enable the screws 13 and 15 to be screwed through the tube-wall into seats 14 and 16 for the screw-points, respectively. These screws 13 and 15 provide for accurate adjustment of transverse pressure on the balls. Either screw 13 or 15 could be used for this purpose; but it is preferred to use one, 13, to crowd the housing and a contained ball directly toward the track of the ball series, and the other, 15, to adjust the pressure—that is, the friction. When both are used, the adjustment can be made and maintained with especial ease and accuracy. The screws have dissimilar functions. Screw 12 holds the housing and confined balls temporarily until said housing and its projecting balls are assembled with the tube or part upon which the balls bear. The screw 13 urges the housing toward and the balls directly against said tube or part, while the screw 15 tilts the housing about the bearing-line of the active balls in manner to vary their pressure.

All the parts which are liable to wear are preferably made of hard metal. The construction is such, however, that all such parts can be quickly and conveniently renewed when necessary.

In case of concentric tubes or the like three or more housings with antifriction-balls can be arranged substantially as indicated and in manner to hold the adjacent tubes in proper relation. In the case of three concentric tubes the outer and middle one will preferably carry the antifriction devices, the inner tube being in some cases inconveniently small for the purpose and also less accessible; but the invention is not limited in this respect, nor is it limited to use with tubes.

Although lengthwise-movable parts have been shown and described in connection with the novel ball-housing, it is obvious that it could readily be adapted to rotating structures, as indicated in Fig. 6.

Having thus described my invention, I claim—

1. An antifriction - housing, comprising a section formed with a continuous groove, a second section formed with a groove and with a slot forming a continuation of the groove,

means for securing the sections together to register the groove and slot in one with the groove in the other to form a ball-channel, and balls having free movement in the channel, said balls projecting through the slot in the second section to bear on an adjacent structure.

2. An antifriction - housing, comprising a section formed with a continuous groove, a second section formed with a groove and with a slot forming a continuation of the groove, means for securing the sections together to register the groove and slot in one section with the groove in the other to form a ball-channel, and balls having free movement in the channel, said balls projecting through the slot in the second section to bear on an adjacent structure and means for adjusting the position of the housing with relation to said adjacent structure.

3. An antifriction - housing, comprising a section formed with a continuous groove having a deep part and a shallow part, a second section formed with a groove and a slot forming a continuation of the groove, means for fastening the sections together to register the groove and slot of the second section with the deep and shallow parts of the groove of the first section respectively to form a ball-channel, and balls having free movement in said channel and projecting through the slot in the second section.

4. A sectional housing for antifriction-balls, each section having a groove with relatively deep and shallow portions, the shallow portion of each being, when the sections are assembled, adjacent the deeper portions of the other whereby one part of the ball-channel is entirely inclosed and the other cut through a section to its exterior.

5. In a housing, two sections having counterpart grooves to constitute a continuous ball-channel, the sections fitting each other and one section having a seat for the other whereby the counterpart grooves of the sections are made to register when said sections are assembled, said seat having an undercut wall to aid in holding the sections together.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MONT C. MERKER.

Witnesses:

JOHN D. BRINKMAN,
J. ULRMANN.