

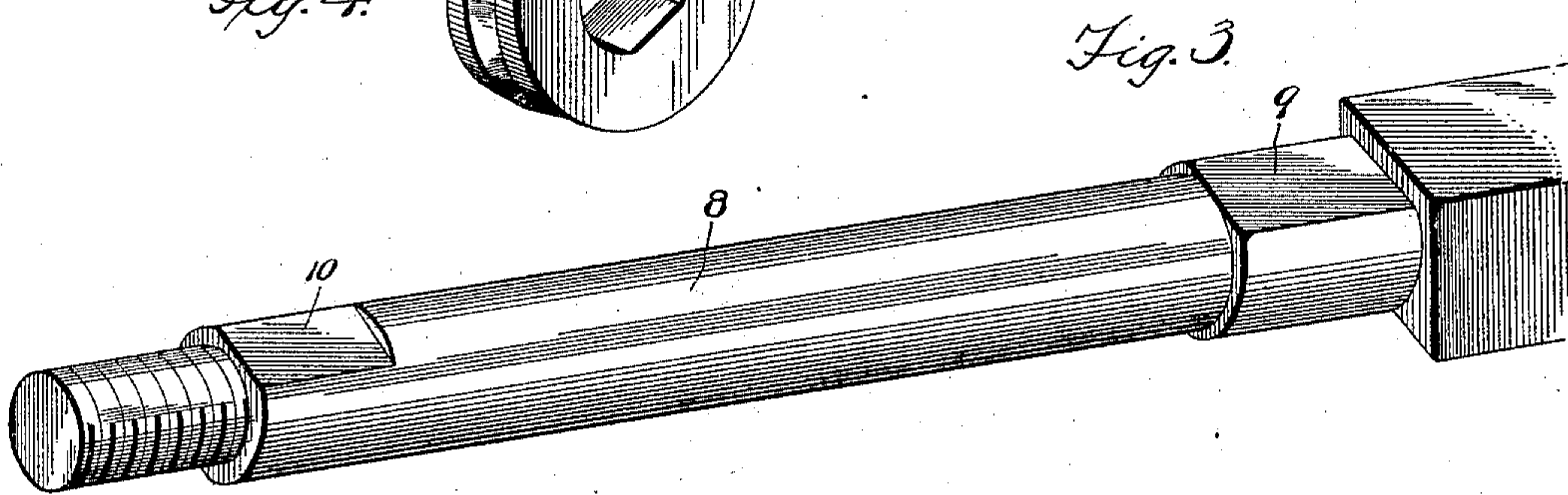
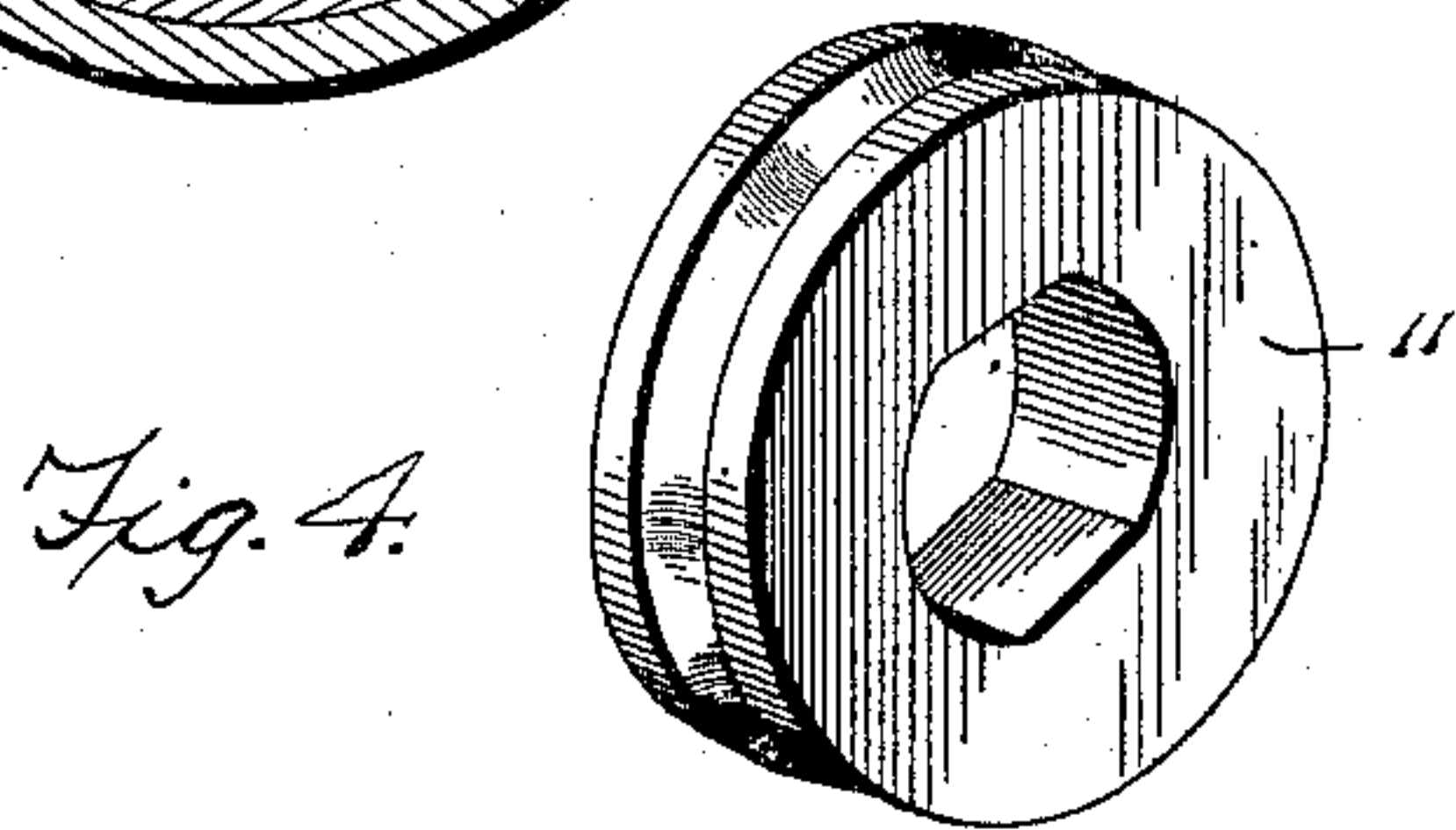
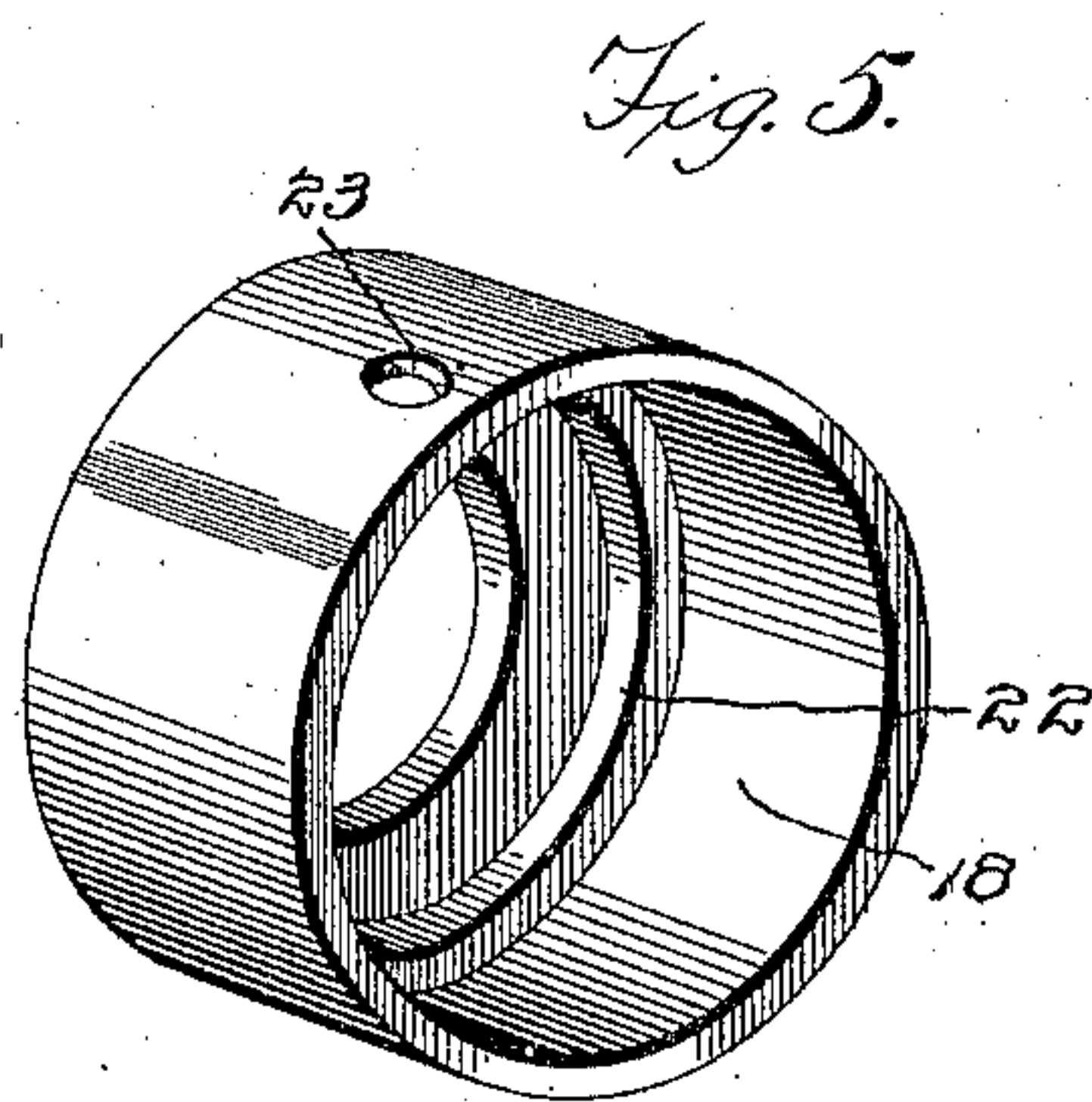
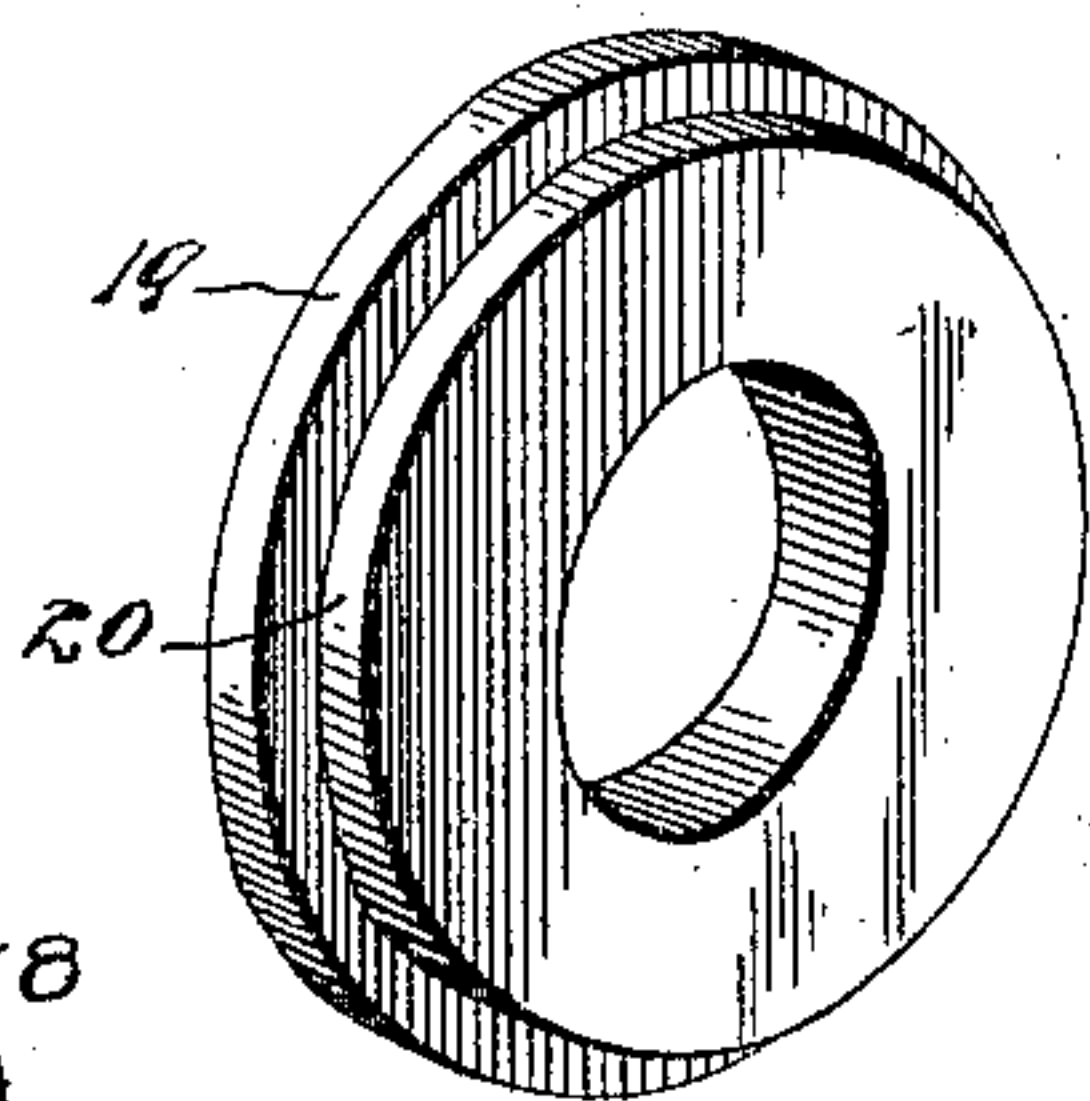
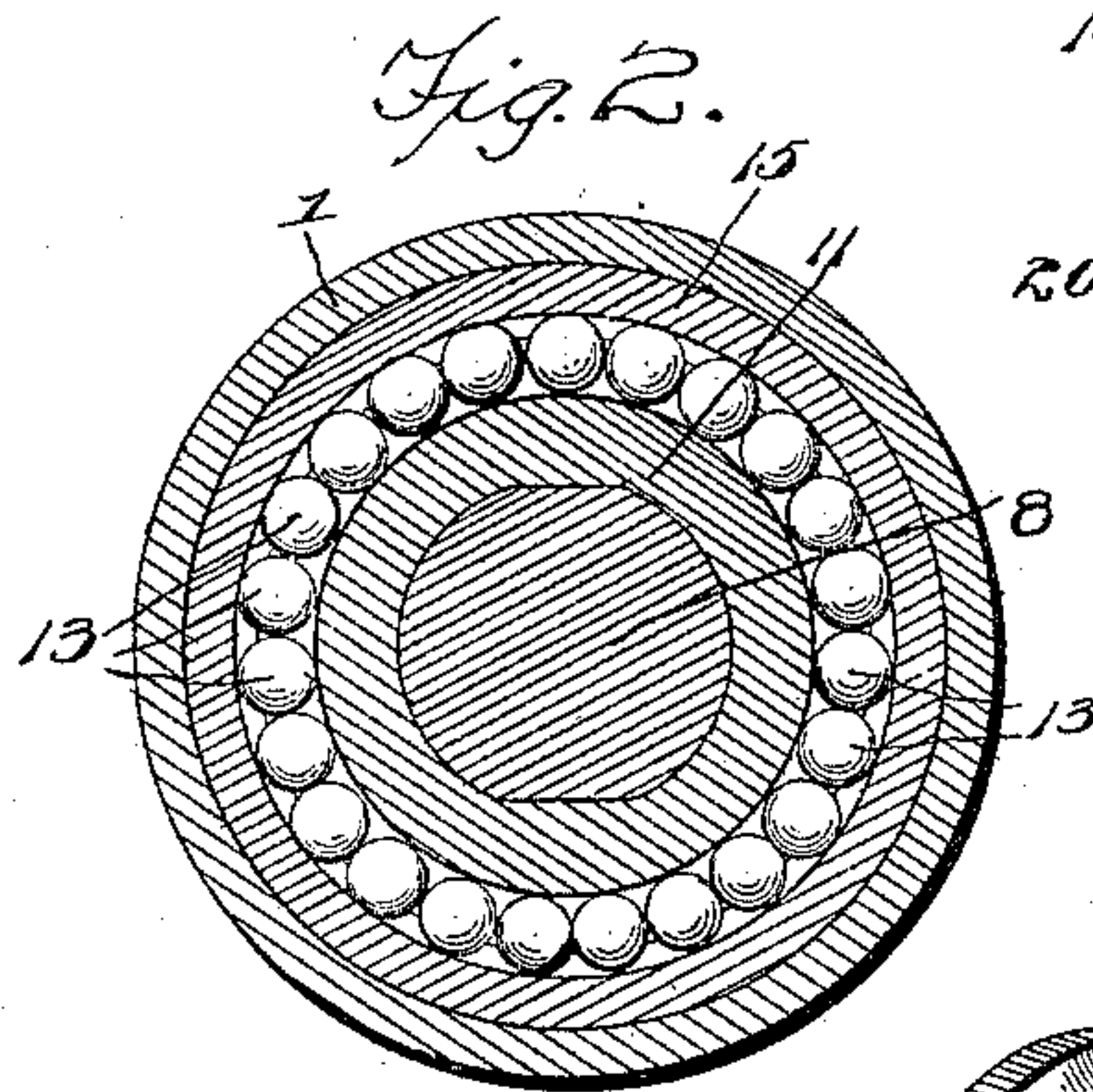
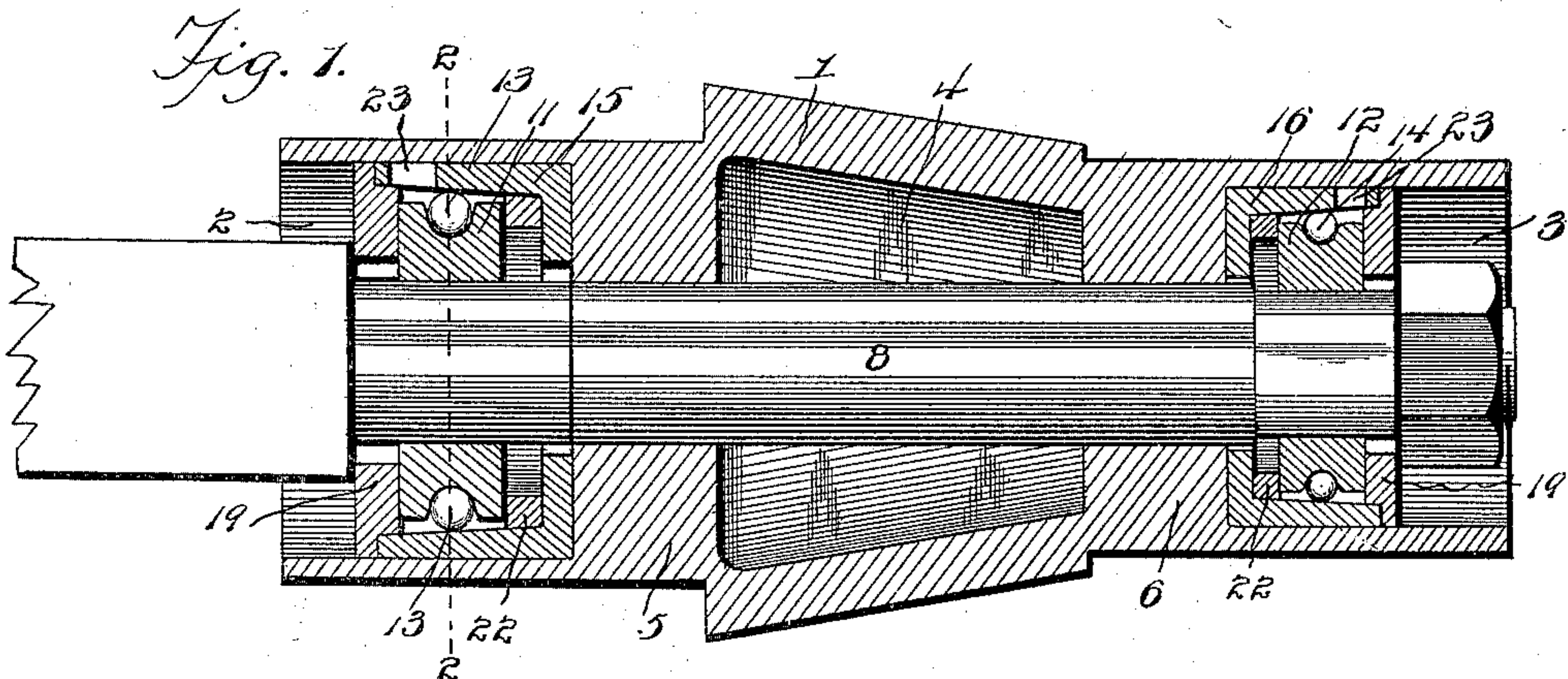
No. 634,898.

Patented Oct. 17, 1899.

G. MILLEN.
BALL BEARING.

(Application filed Mar. 1, 1899.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE MILLEN, OF SAN ANTONIO, TEXAS.

BALL-BEARING.

SPECIFICATION forming part of Letters Patent No. 634,898, dated October 17, 1899.

Application filed March 1, 1899. Serial No. 707,305. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MILLEN, a citizen of the United States, residing at San Antonio, in the county of Bexar and State of Texas, have invented a new and useful Ball-Bearing, of which the following is a specification.

The invention relates to improvements in ball-bearings.

The object of the present invention is to improve the construction of ball-bearings for vehicle-wheels and to provide a simple and comparatively inexpensive one adapted to reduce the friction to a minimum and capable of enabling the wear to be readily taken up when the balls become worn.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a longitudinal sectional view of a ball-bearing hub constructed in accordance with this invention. Fig. 2 is a transverse sectional view on line 2 2 of Fig. 1. Fig. 3 is a perspective view of the spindle. Fig. 4 is a detail perspective view of one of the adjustable ball-receiving collars. Fig. 5 is a similar view of one of the caps or cups. Fig. 6 is a detail view of one of the end disks or rings.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a metallic hub provided at its ends with inner and outer interior recesses or chambers 2 and 3 and having a central hollow portion or chamber 4 separated from the end recesses or chambers 2 and 3 by intermediate solid portions 5 and 6, having central openings for the passage of a spindle 8 of an axle, and these chambers 2 and 3 are adapted for the reception of the ball-bearings, which are arranged at the inner and outer ends of the spindle.

As clearly illustrated in Fig. 1 of the accompanying drawings, each ball-bearing is constructed the same, with the exception that the inner bearing is slightly larger than the outer one. The spindle is provided with inner and outer irregular portions 9 and 10, preferably formed by flattening the opposite sides of the

spindle, as shown; but they may be constructed in any other suitable manner, and they receive inner and outer adjustable ball-supporting collars 11 and 12, conforming to the configuration of the irregular portions of the spindle, and thereby interlocked with the same. These ball-supporting collars are provided with annular grooves or raceways for the reception of the inner and outer series of anti-friction-balls 13 and 14, which are housed within inner and outer casings 15 and 16, each casing consisting of a cap or cup 18 and a ring or disk 19, both provided with circular openings to receive the spindle, and the ring or disk has an annular peripheral recess or rabbet 20 and is adapted to fit within the open end of the cap or cup of the casing. The balls bear against the interior of the cap or cup, which gradually tapers from its open end to provide a gradually-decreasing interior diameter to take up the wear of the balls. The outer face of the casing is of the same diameter and is intended to be fastened within the recess or chamber of the hub. A washer 22 is shown interposed between the collar and the end of the cap or cup; but a series of washers may be employed, if desired, and the said washer is adapted to be transferred to the opposite side of the ball-supporting collar to shift the latter and move it into the cup or cap to take up the wear of the balls. By this construction it will be clear that as soon as the anti-friction-balls become worn the parts may be readily arranged to take up the wear. The circular openings in the otherwise closed ends of the cylindrical casings are designed to be about one-sixteenth of an inch greater in diameter than the diameter of the spindle, so that should the balls become very much worn the spindle may find its bearing in said openings in the ends of the casings.

The outer end of the spindle is threaded to receive an axle-nut, and the casings 15 and 16 are provided with openings 23, adapted to form an entrance to the ball-races to permit the balls to be introduced therein and also serving as oil-holes to enable the bearings to be lubricated.

The invention has the following advantages: The ball-bearing, which is simple and comparatively inexpensive in construction, possesses strength and durability and is

adapted to reduce friction to a minimum, and the parts may be readily adjusted to shift the position of the balls and take up the wear.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

10 What is claimed is—

1. A device of the class described comprising a casing with an interior bearing-wall of regular taper and provided with closed ends, a spindle passing through said ends, a bearing-collar on the spindle adjustable with re-
15 lation to said ends, and a device for spacing the collar from one end or the other of the casing.

2. A device of the class described comprising a casing, a spindle, and a ball-supporting collar having a sliding and non-rotatable en-
20 gagement with the spindle and capable of adjustment longitudinally of the spindle to arrange the balls at different points in the casing, substantially as described.

3. A device of the class described comprising a casing, a spindle having a cross-sectionally irregular portion, an adjustable collar provided with a ball-race and having an
30 opening corresponding with the shape of the irregular portion of the spindle upon which said collar is adapted to be slid in adjusting it, balls arranged within the race, and a washer interposed between the collar and
35 one end of the casing and adapted to be transferred to the opposite side of the collar in

adjusting the collar and position of the balls, substantially as and for the purpose described.

4. A device of the class described comprising a casing having a tapering interior and
40 designed to be mounted within a hub and secured to the same, a spindle having an irregular portion, a ball-supporting collar mounted on the irregular portion of the spindle and capable of adjustment longitudinally thereof,
45 balls arranged within the groove of the collar, and means for adjusting the latter, substantially as described.

5. A device of the class described comprising a hub provided at its ends with recesses
50 or chambers, casings mounted within the recesses or chambers of the hub and consisting of cups having removable rings or disks, a spindle provided with inner and outer irregular portions, inner and outer ball-receiv-
55 ing collars mounted on the regular portions of the spindle, conforming to the configuration of the same and capable of adjustment longitudinally of the spindle, balls interposed between the collars and the casing, and wash-
60 ers arranged on the spindle and adapted to be transferred from one side of the collars to the other, to adjust the balls, substantially as described.

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

GEORGE MILLEN.

Witnesses:

R. L. BALL,
A. A. MILLEN.