

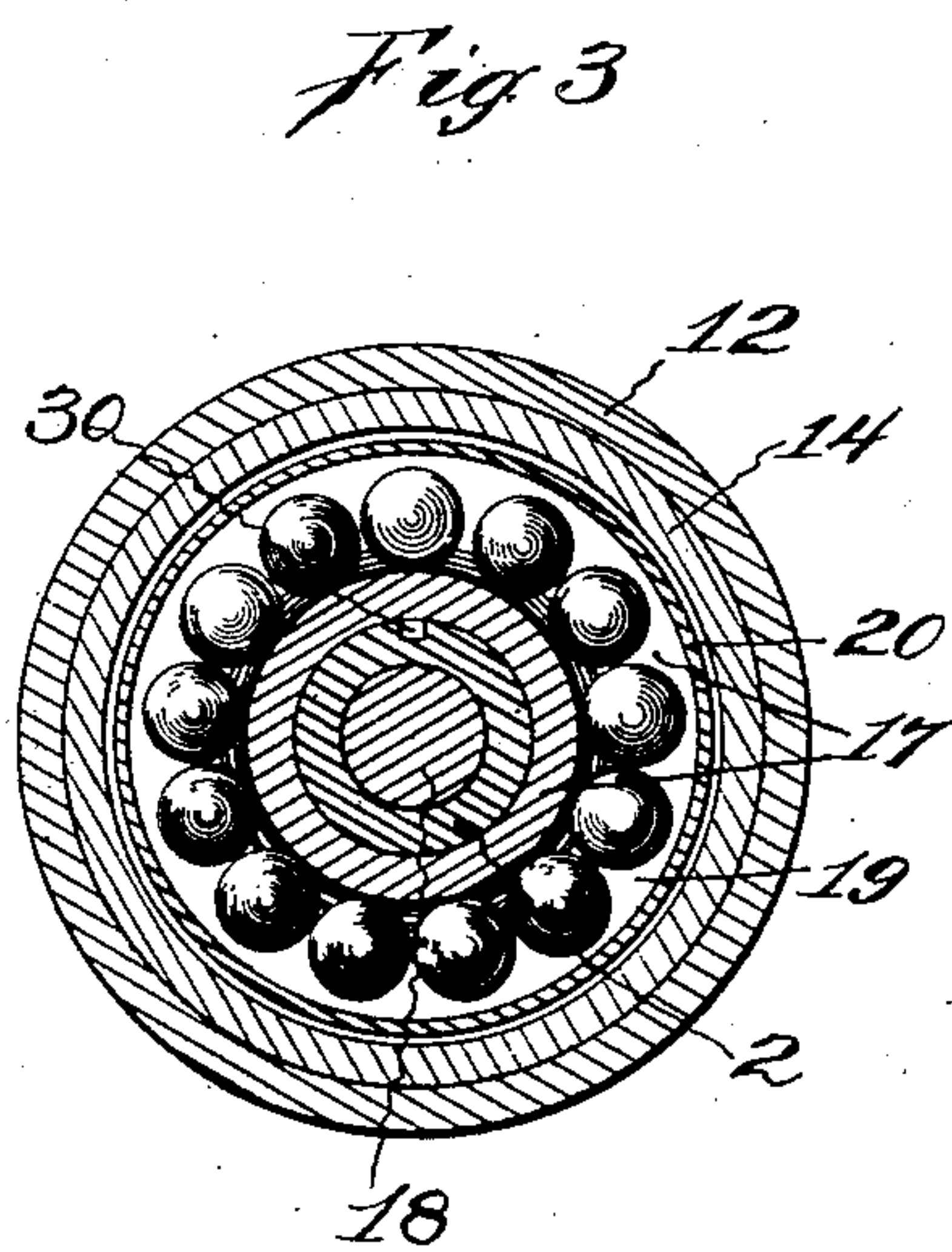
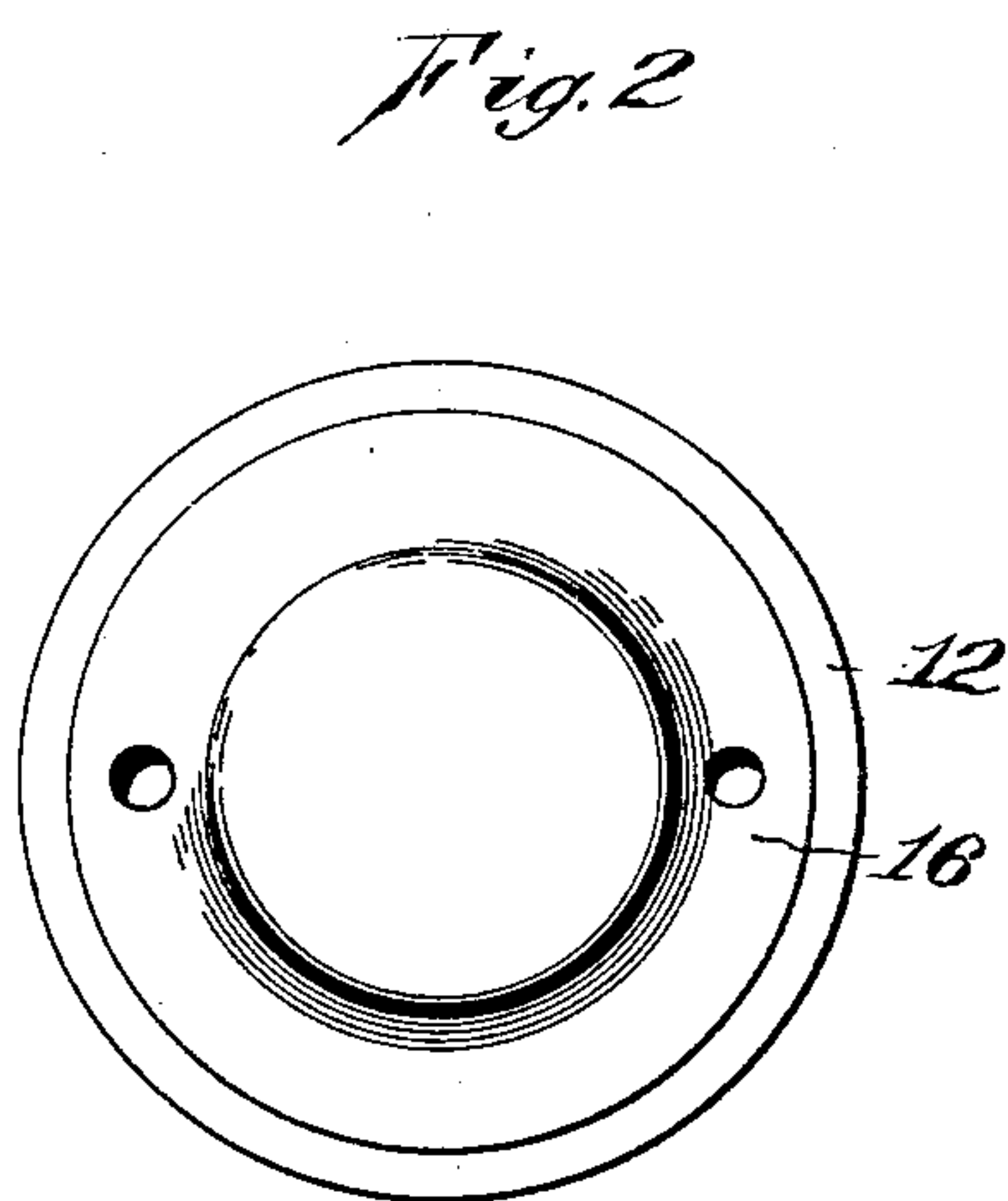
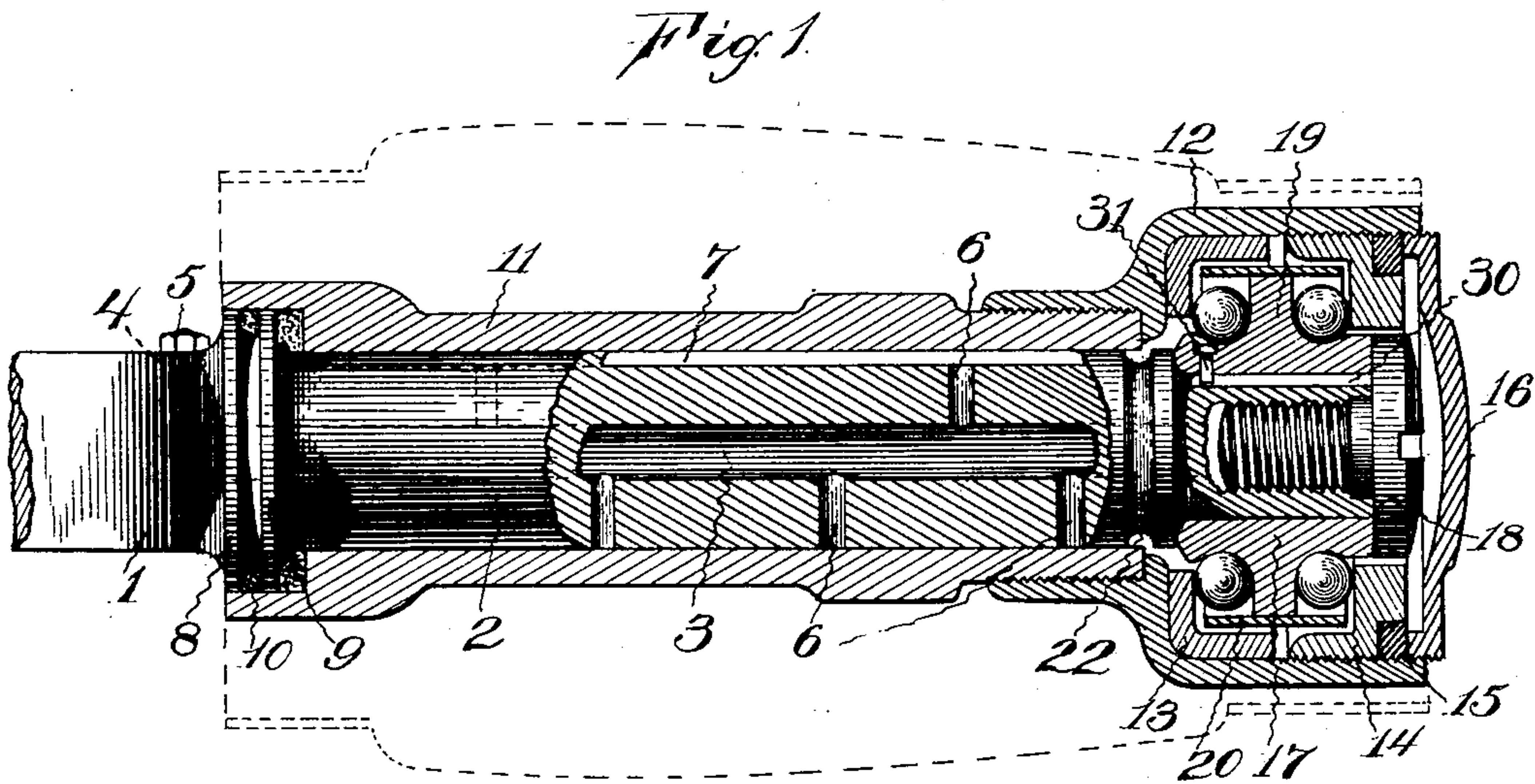
No. 703,075.

Patented June 24, 1902.

C. T. McCUE.
VEHICLE WHEEL.

(Application filed July 20, 1898.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

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VEHICLE-WHEEL.

SPECIFICATION forming part of Letters Patent No. 703,075, dated June 24, 1902.

Application filed July 20, 1898. Serial No. 686,457. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. McCUE, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Vehicle-Wheels, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

10 The object of my invention is to provide a ball-bearing for special use on carriages and the larger class of vehicles which will enable the freedom of rotary movement of the hub to be attained without any endwise motion. A preferred form of apparatus by which these ob-
15 jects may be attained is illustrated in the accompanying drawings, in which like numerals of reference indicate like parts throughout, and in which—

20 Figure 1 is a view in central lengthwise section through the device on a plane passing diametrically through the hub and with parts of the axle broken away to show construction. Fig. 2 is a detail end view of the device. Fig.
25 3 is a detail view in cross-section on line passing through the ball-case nearer the end of arm.

While my invention is equally applicable in connection with the hub of a wheel with-
30 out regard to the special construction thereof, I have only shown and described it herein as usable with a wheel having a hub constructed of wood as a means of illustrating the invention.

35 In the accompanying drawings, the numeral 1 denotes a portion of an axle, and 2 the axle-arm, the latter having a central lengthwise opening 3, forming an oil-channel extending a short distance beyond the arm, an oil-port
40 4 in the end of the axle, leading into the oil-channel. This oil-port may be supplied with any well-known form of oil-cup 5 or other device for closing the port. Lateral oil-passages 6 extend from the oil-channel 3 through the arm
45 to the outer surface, these passages being preferably located on diametrically opposite sides of the arm. A groove 7, forming an oil-scoop, extends lengthwise along the outer surface of

the arm, one series of oil-passages preferably opening into this groove.

50 Flanges 8 and 9 are formed at the inner end of the axle-arm, a groove 10 being located between these flanges. The case is formed in two sections in order to adapt it for use with a wooden hub, the inner section 11 being
55 threaded for the reception of the outer section 12. This construction of the hub in two sections, however, is not necessary in the well-known form of suspension-wheels.

A cone 17 is located on the outer end of the
60 axle and is held in place by means of the head of the bolt 18, this bolt being secured in a central opening in the axle-arm and the head extending outward beyond the edges of the cone. An annular flange 19, forming a thrust-bearing,
65 is located on this cone, a row of balls being located in the ball-races on each side of the thrust-bearing. A groove 30 extends lengthwise of the end of the axle-arm, and a pin or key 31, projecting from the cone 17 into
70 this groove, prevents rotative movement of the cone.

A ball-case 13 is located in an enlarged end of the hub in this instance in the section 12 and operates in connection with the balls in
75 the ball-race on the inner side of the thrust-bearing, and a ball-case 14, secured in the enlarged opening in the hub, as by means of interengaging screw-threads, coöperates with the balls in the ball-race on the outside of
80 the thrust-bearing. A lock-nut 15 is employed for holding the ball-case in any position of adjustment, and a cap 16 closes the opening in the hub, forming a supplemental ball-case lock and which may serve the pur-
85 pose of the lock-nut 15, if desired.

It is to be noted that the shoulder on the inner end of the hub is located at such distance from the flange 9 as to cause all the end thrust of the wheel to be supported by the
90 ball-bearings at the outer end of the axle-arm, these bearings being properly adjusted by means of the ball-case 14.

An annular oil-groove 22 is located near the outer end of the axle-arm for the purpose of
95 preventing an oversupply of oil from flowing

into the lower part of the enlarged recess of the outer end of the hub containing the ball-bearings, which would otherwise take from the other parts of the bearing the quantity of oil needed to properly lubricate them.

A ball-retainer 20 is located on the thrust-bearing, and consist of a collar closely fitting the outer surface of the bearing and extending on each side thereof, serving the double purpose of a retainer for the two sets of balls to hold them in place on the cone when the latter is removed from the axle.

By means of my improved construction I am enabled to employ a parallel bearing, the ball-bearings at the outer end of the arm serving to take up the end thrust in both directions, and by which means a bearing as a whole is provided which has not present in it many of the faults common to structures of the prior art.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An axle-arm, a cone supported on the end of the arm and slidable lengthwise thereof, a bolt fitting a threaded hole in the end of the arm and having a head for holding the cone in position, a hub supported on the arm, a ball-case located in the opening in the end

of the hub and closely encircling the head of said bolt, and means for holding the ball-case in position.

2. An axle-arm, a cone supported on the end of the arm and having lengthwise movement, but held against rotary movement, a bolt fitting a threaded opening in the end of the arm and having a head for holding the cone in position, a hub supported on the arm, a ball-case fitting a threaded opening in the end of the hub and closely encircling the head of said bolt and having an annular shoulder forming a rabbet between the shoulder and the wall of the hub, and a lock-nut fitting the threaded opening in the hub and located in said rabbet.

3. An axle-arm, a hub mounted thereon, a cone mounted on the arm and forming a thrust-bearing, balls located in the ball-race on each side of the thrust-bearing, ball-cases appurtenant to each ball-race, and a collar located on the thrust-bearing and forming a ball-retainer for the balls on each side thereof.

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