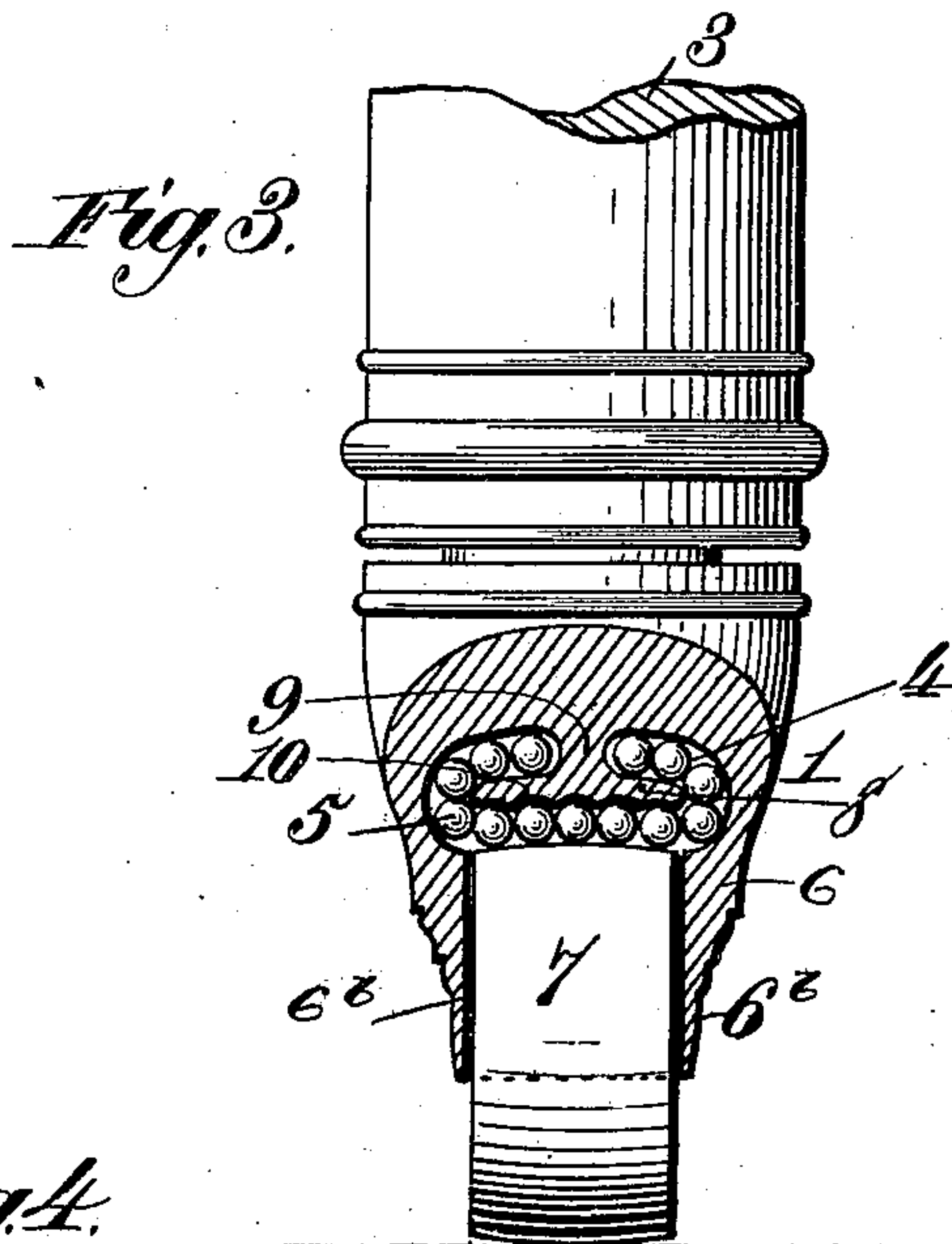
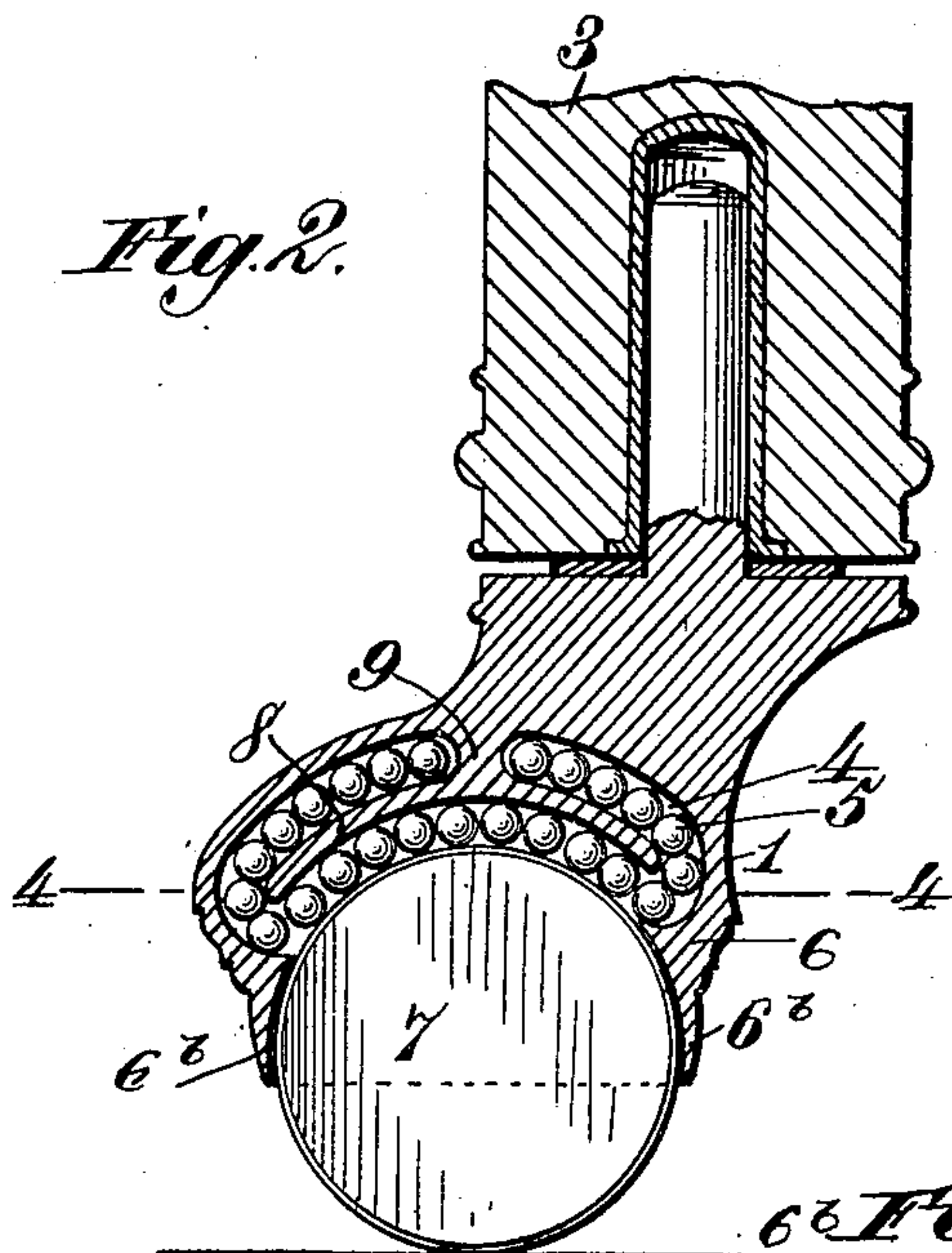
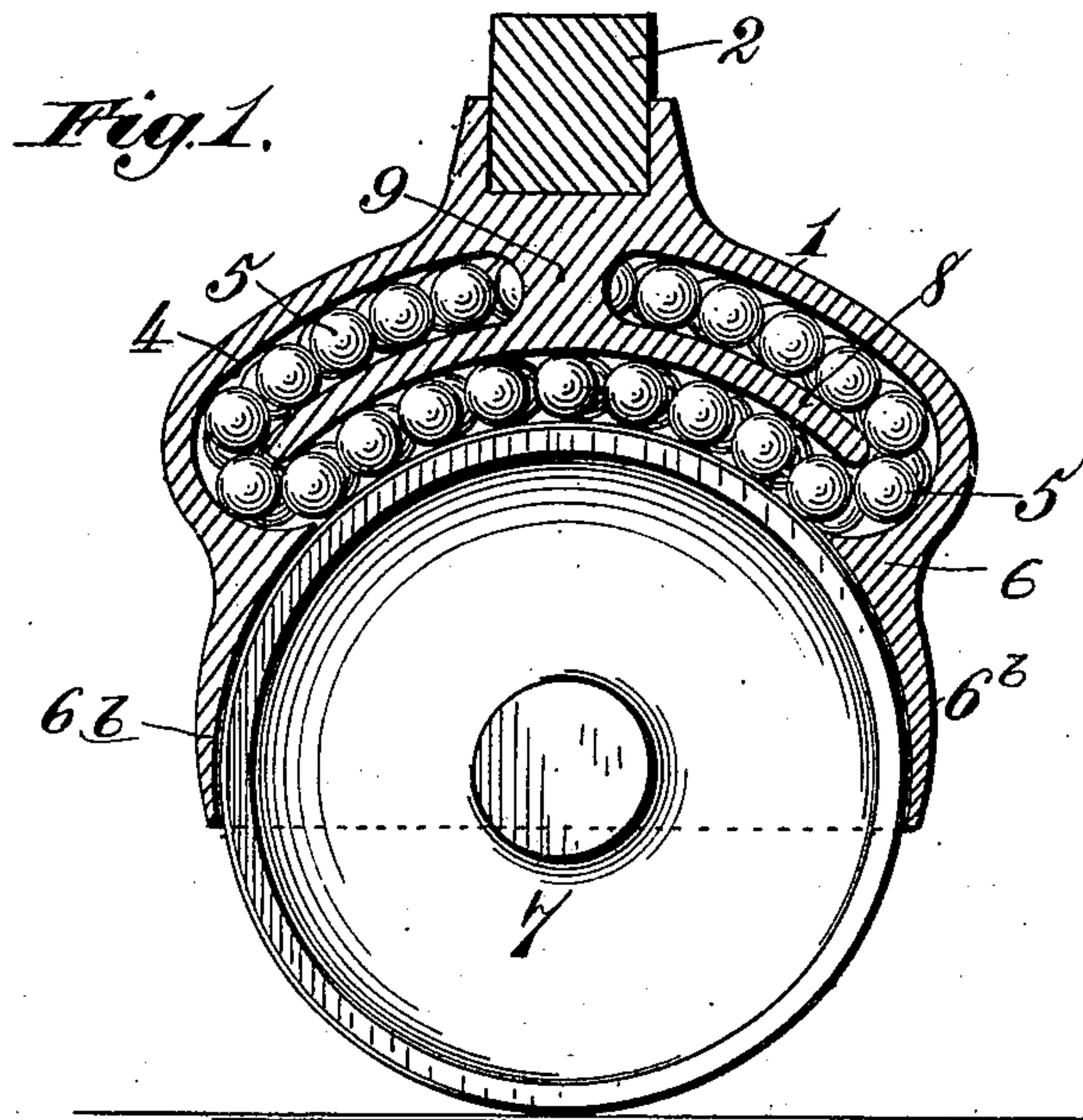


No. 680,641.

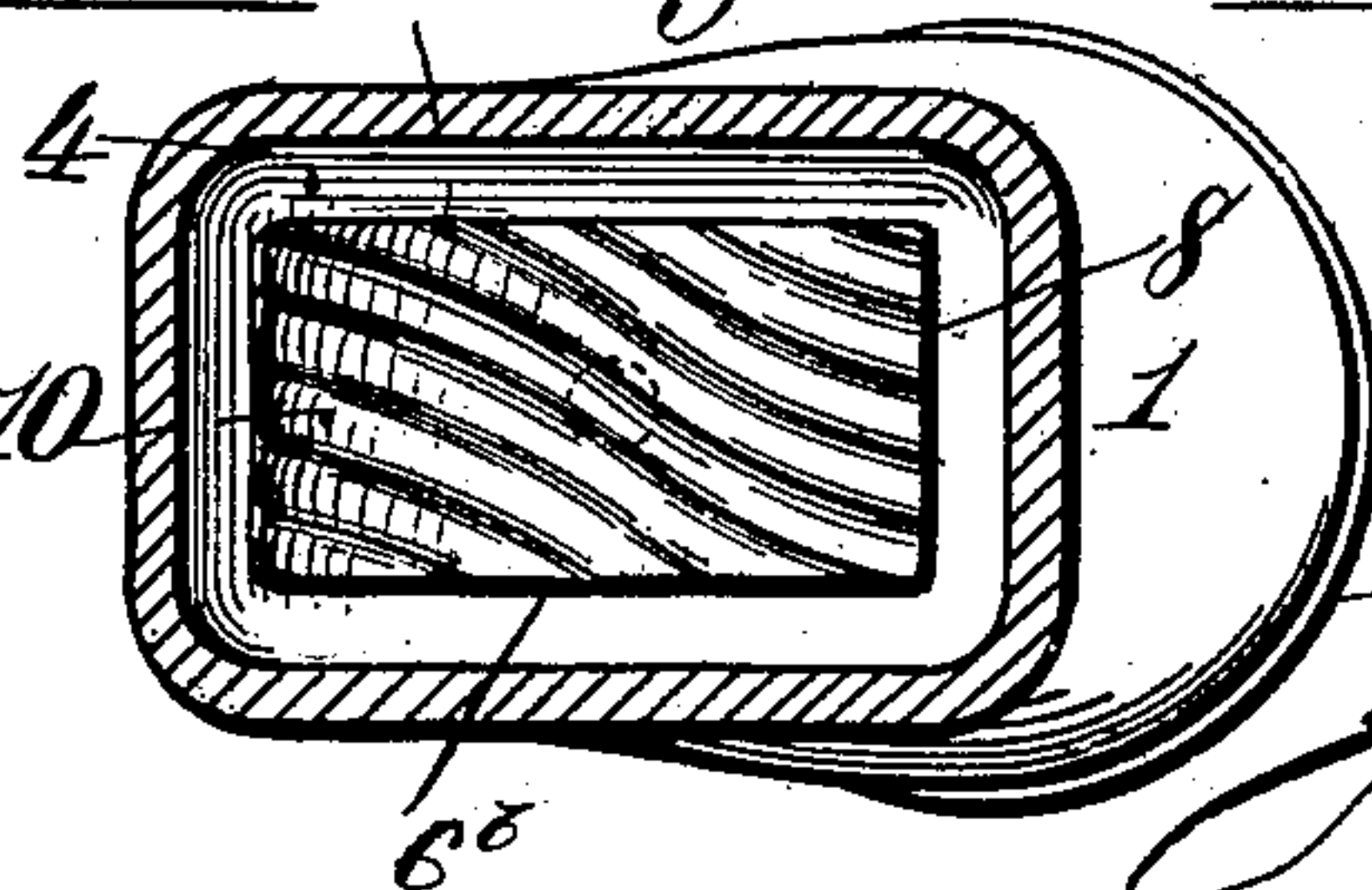
Patented Aug. 13, 1901.

J. J. CLARKE.  
BALL BEARING FOR WHEELS, &c.  
(Application filed Oct. 18, 1900.)

(No Model.)



*Fig. 4.*



Witnesses:  
Robert Everett.  
J. B. Keefe.

Inventor:  
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By James L. Norrie  
Att'y.



# UNITED STATES PATENT OFFICE.

JOHN J. CLARKE, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF TWO-THIRDS TO WILLIAM J. HENDRICKS, OF SAME PLACE, AND EDWARD Y. BRADY, OF MUNCIE, INDIANA.

## BALL-BEARING FOR WHEELS, &c.

SPECIFICATION forming part of Letters Patent No. 680,641, dated August 13, 1901.

Application filed October 18, 1900. Serial No. 33,473. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. CLARKE, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Ball-Bearings for Wheels or Disk-Rollers, of which the following is a specification.

This invention relates to ball-bearings for wheels or disk-rollers applicable to various purposes, as rotatable supports, and has for its main object to provide antifriction ball-bearings for wheels or disk-rollers having no shafts or journals.

It is one of the purposes of my invention to provide for free rotation of a wheel or disk-roller without cramping or jamming in the action of the rolling-surfaces, thereby avoiding undue wear, and a further purpose of the invention is to prevent grooving of the wheel or disk periphery by its contact with the antifriction-balls comprised in the bearing.

The construction and arrangement of parts involved in my improved ball-bearing are such as will make the same of easy application wherever a rolling support is required, as for certain kinds of vehicles, heavy furniture, or other movable objects, turn-tables, gun-carriages, and in many mechanical appliances.

In the annexed drawings, illustrating the invention, Figure 1 is a view in part-sectional side elevation, showing my improvement in ball-bearings as applied to a truck, dray, or other vehicle. Fig. 2 is a similar view showing the invention as applied to a leg of a piece of furniture. Fig. 3 is a part-sectional elevation at a right angle to the preceding figure. Fig. 4 is an inverted plan of the bearing-plate for the antifriction-balls.

The reference-numeral 1 designates a socket-piece, the upper part of which may have any desired configuration suitable for its attachment to the particular object or part to which the ball-bearing device is to be applied—such, for instance, as a truck-bolster 2, Fig. 1, or a leg 3, Figs. 2 and 3, of an article of furniture.

In its under portion the body or piece 1 is constructed with a substantially arch-shaped socket 4 to accommodate the antifriction-balls

5 and also to provide a housing 6 for reception of the wheel or disk-roller 7, that is to carry the load. This housing 6 is provided with straight flat interior side walls 6<sup>a</sup>, which loosely fit against the opposite faces of the wheel or disk-roller to properly support the same in vertical position and prevent any side wobbling. The end walls 6<sup>b</sup> of the housing are struck on arcs of a circle to accommodate the periphery of the wheel or disk-roller and prevent objectionable end play or movement thereof, and the lower extremities of said end walls depend or extend below the horizontal diameter of the disk or wheel, thus confining it within the housing without the necessity of axles or journals on the wheel or disk-roller, as has been heretofore an essential feature of construction thereof. This wheel or disk-roller 7 has no axle or journals and is arranged immediately beneath and in peripheral contact with the antifriction-balls, which are all of substantially uniform size. Those antifriction-balls that are in immediate contact with the upper portion of the wheel or disk periphery will have a bearing thereon and also against the concaved under face of an elongated bearing-plate 8, that is suspended rigidly in the upper portion of the socket 4 by means of a stem 9, which is preferably integral with said bearing-plate 8 and with the body portion of the socket-piece. On its upper side the elongated bearing-plate 8 is convexed longitudinally and laterally in approximate conformity with the internal configuration of the socket 4, between which and said bearing-plate 8 there is provided sufficient space for free passage of the balls 5 from the under side of said bearing-plate to its upper side. It is to be understood that as the wheel or disk-roller 7 revolves the antifriction-balls 5 in contact therewith will roll along the concaved under face of the elongated bearing-plate 8 to the edge thereof and thence upward into the space between the upper side of said plate and the top of the socket, while at the same time some of the balls on the upper side of the plate 8 will pass freely downward to the space between the under side of the bearing-plate and the uppermost peripheral portion of the wheel or



disk-roller 7, thus replacing the antifriction-balls that have previously passed upward. Thus the uppermost peripheral portion of the wheel or disk-roller 7 is always in contact with a sufficient number of balls 5 for uniform transmission of the load from the socket and bearing-plate 8 to said supporting wheel or disk-roller. As the wheel or disk-roller 7 can rotate only in a forward or a backward direction, it cannot exert any cramping or jamming action on the antifriction-balls 5, through which they would be subjected to undue wear, besides obstructing a proper and smooth operation of the ball-bearing device, as is liable to occur with a spherical supporting-roller.

The antifriction-balls 5, wheel or disk-roller 7, and the elongated bearing-plate 8 are preferably provided with suitably-hardened steel surfaces.

For the purpose of preventing the cutting of peripheral grooves on the wheel or disk-roller 7 and to cause the wear on its rolling-surface to be uniformly distributed it is preferable to provide the concaved under face of the elongated bearing-plate 8 with diagonally-curved grooves 10, Fig. 4, for guiding the balls 5 in varying lines, so that no portion of the wheel or disk periphery will be repeatedly subjected to bearing-contact with the same line or series of balls. Thus the wear is uniformly distributed both on the balls 5 and on the periphery of the supporting wheel or disk-roller.

It is an important advantage of this improved ball-bearing device that there is no cramping or jamming of the parts in operation and no undue strain. Furthermore, the supporting-wheel or disk-roller will not cut, tear, or break a surface over which it is rolled, as often occurs with a spherical roller.

The running contact of the spherical caster or ball is a sharp line which will cut into the

surface upon which it runs, doing great damage in the case of carpets or marble or mosaic floors when used as a furniture-caster. This objection to a spherical or ball caster is entirely overcome by my invention, wherein there is a flat or extended running contact of the wheel or disk-roller, which will not be injurious in those respects. My invention also does away with the journals that have heretofore been found necessary in wheel-casters.

What I claim as my invention is—

1. In a ball-bearing, the combination with a housing or socket-piece provided with an elongated bearing-plate having a concave under face and with interior straight flat side walls and arc-shaped end walls, ball-bearings contained within said housing and having a running contact with said elongated bearing-plate, and a wheel or disk-roller arranged in said housing in contact with said ball-bearings and held therein by the arc-shaped end walls which extend below the horizontal diameter of said wheel or disk-roller, substantially as described.

2. In a ball-bearing, the combination with a supporting-wheel or disk-roller, and a socket-piece, of an elongated bearing-plate having a concaved and diagonally-grooved under face directed toward the uppermost peripheral portion of the wheel or disk-roller and a convexed upper side spaced apart from the socket-piece, and antifriction-balls surrounding said elongated bearing-plate and providing antifriction-bearings for the uppermost portion of the supporting wheel or disk, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN J. CLARKE.

Witnesses:

GEO. W. REA,

GEO. E. SULLIVAN.