

No. 681,125.

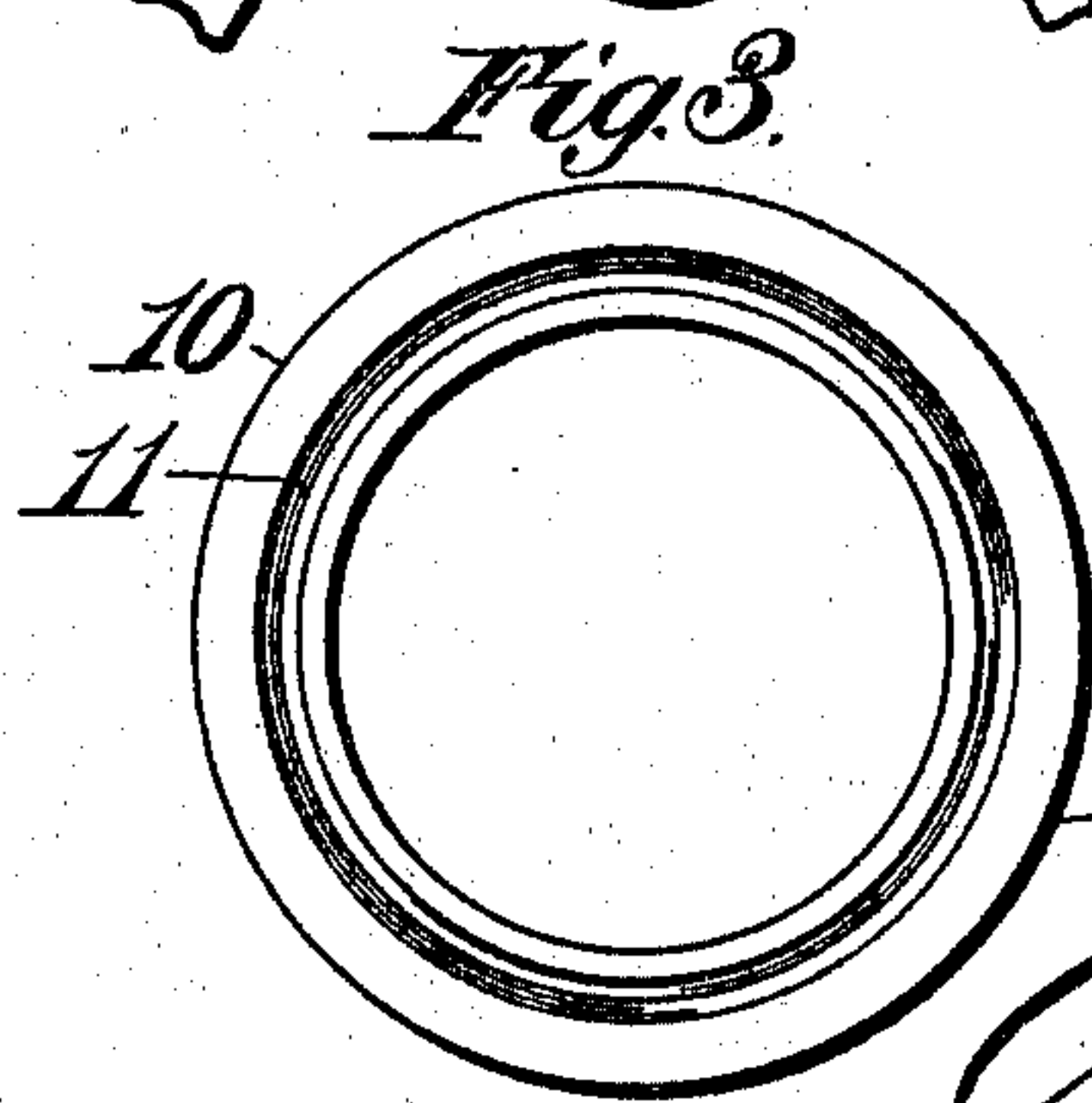
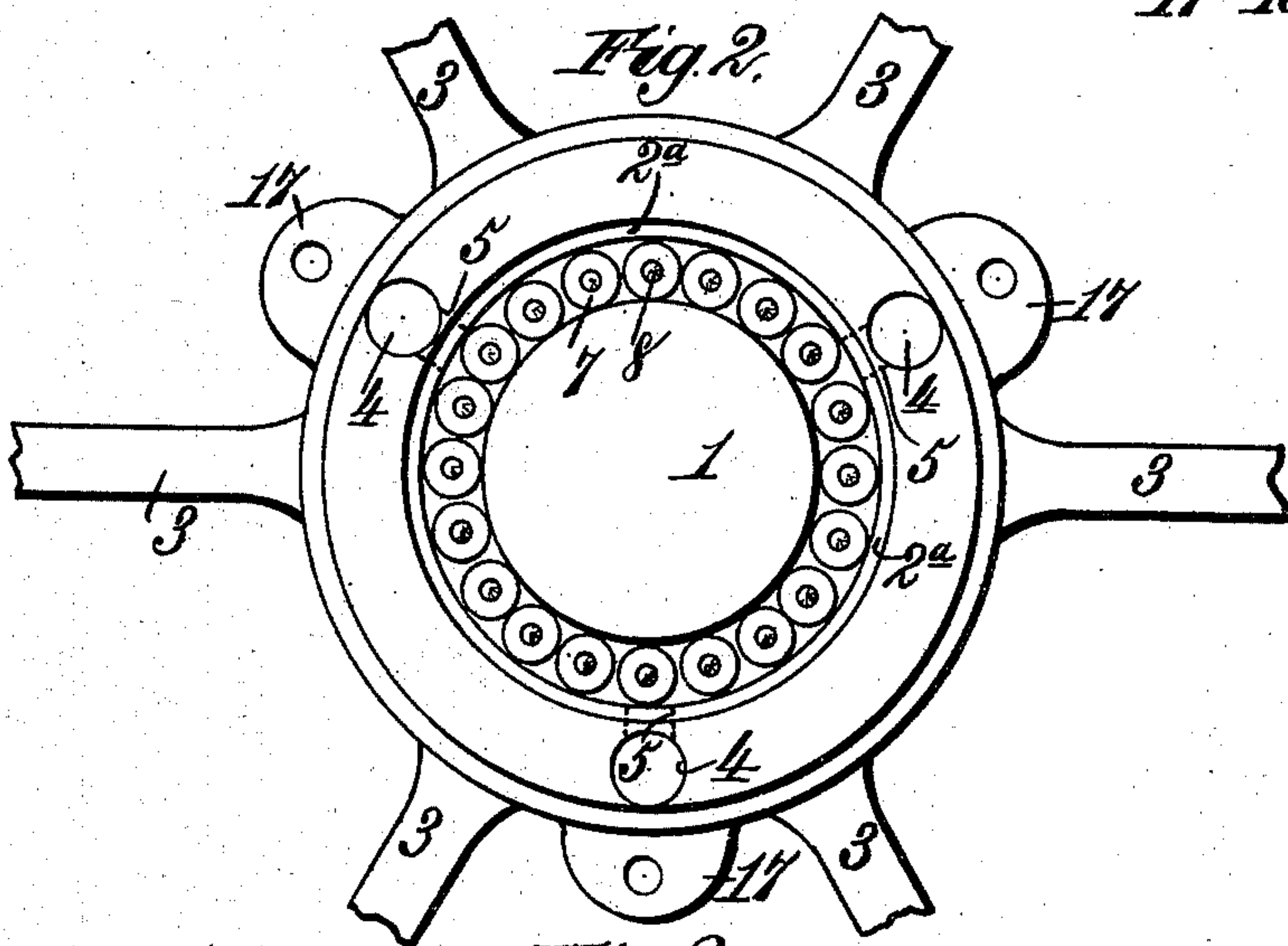
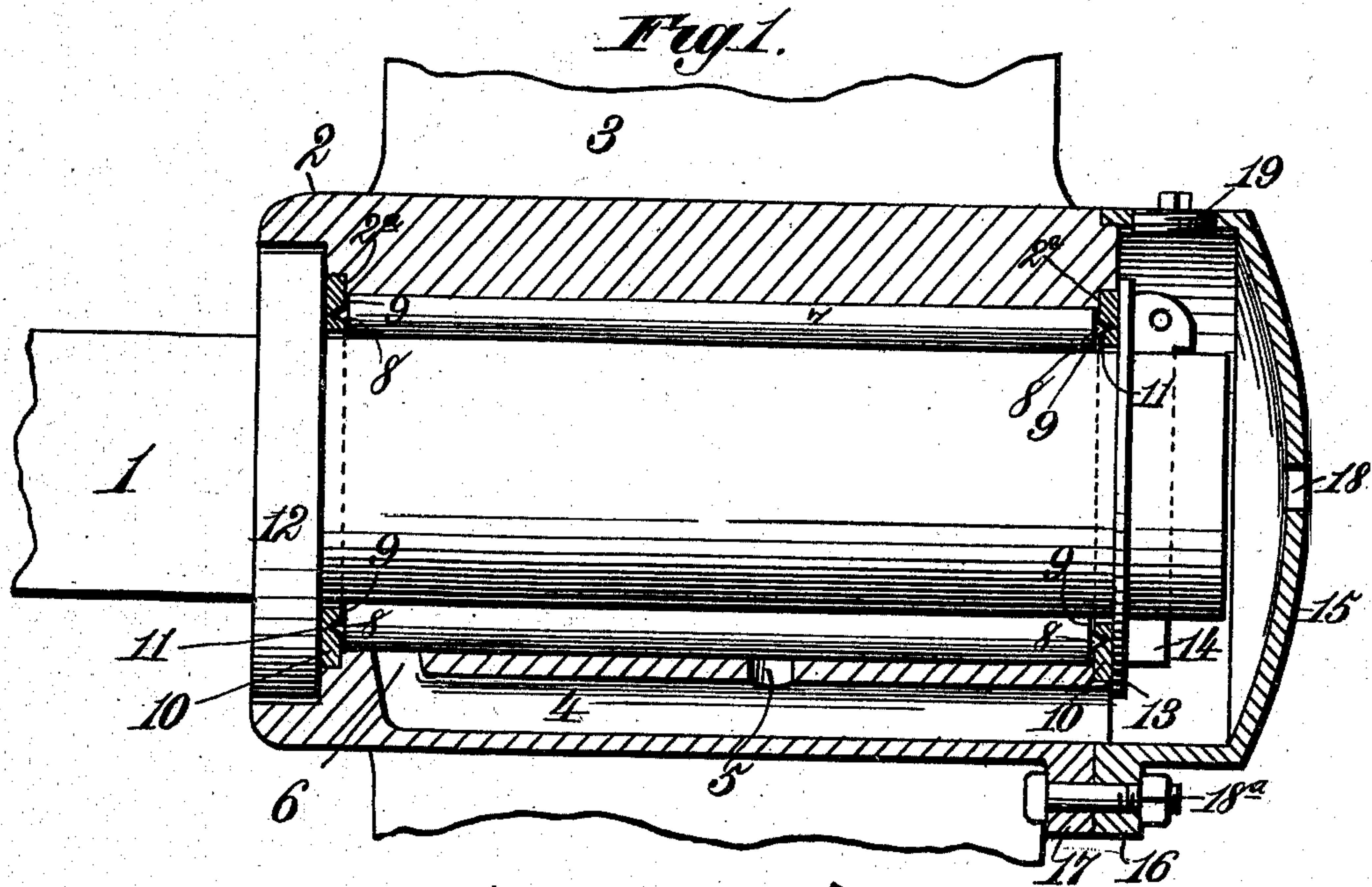
Patented Aug. 20, 1901.

J. K. LIGHTFOOT.

WHEEL.

(Application filed Dec. 3, 1900.)

(No Model.)



Witnesses:
Robert Everett.
Dennis Sumby.

Inventor:
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UNITED STATES PATENT OFFICE.

JOHN K. LIGHTFOOT, OF CUMBERLAND, MARYLAND.

WHEEL.

SPECIFICATION forming part of Letters Patent No. 681,125, dated August 20, 1901.

Application filed December 3, 1900. Serial No. 38,461. (No model.)

To all whom it may concern:

Be it known that I, JOHN K. LIGHTFOOT, a citizen of the United States, residing at Cumberland, in the county of Allegany and State of Maryland, have invented new and useful Improvements in Wheels, of which the following is a specification.

This invention relates to wheels, and especially to wheels for mining-cars, and has for its object to provide an improved anti-friction-bearing of simple, inexpensive, and durable construction and efficient and economical in operation.

To these ends my invention consists in the features and in the construction, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a central longitudinal sectional view of my improved bearing. Fig. 2 is an end view thereof, the cap being removed. Fig. 3 is an inner face view of one of the grooved washers.

Referring to the drawings, the numeral 1 indicates the axle, 2 the hub, and 3 the spokes.

The hub consists of a single integral casting cylindrical in shape and having an internal diameter greater than that of the axle-spindle 1. Formed in the walls of the hub, preferably at equal distances apart, is a plurality of longitudinal cylindrical channels or ducts 4, each of said channels or ducts extending entirely through the outer end of the hub and terminating at its opposite end near the inner end of the hub. Radial passages or ports 5 and 6 are formed in the inner wall of the hub, intermediate the ends of the hub and near the inner end thereof, said passages or ports communicating with both the interior of the hub and the channels or ducts 4, the ports 5 communicating with the ducts 4, centrally between the ends of the latter, and the ports 6 communicating with the inner ends of said ducts.

Disposed between the periphery of the axle-spindle and the inner wall of the hub are a number of rollers 7, said rollers being perfectly cylindrical or of uniform diameter from end to end and preferably formed of polished steel. Each of the rollers is provided at its

opposite ends with reduced conical projections or extensions 8, the base of said extensions being much less in diameter than the rollers, whereby the ends of the latter terminate abruptly or present square shoulders 9, that are adapted to receive the impact of any endwise thrust that may be placed on said rollers, as will more fully hereinafter be apparent. As shown, the rollers are of a length sufficient to extend substantially from end to end of the hub and adapted to have a free rolling bearing between the axle-spindle and the interior of the hub.

In each end of the hub is formed a rabbet or annular groove 2^a, formed concentrically with the cylindrical interior of the hub, and tightly fitted in each of said rabbets or grooves is a collar 10, that loosely surrounds the axle-spindle. Formed in the inner face of each of the collars 10 is an annular groove 11, V-shaped in cross-section, and when said collars are fitted in place in the ends of the hub the conical extensions 8 of the rollers project into and rest loosely in said grooves. In practice the collars are fitted sufficiently tight in the grooved or rabbeted ends of the hub to hold the rollers in place during transportation or when the hub is removed from the axle.

On the axle-spindle is formed or fixed a collar 12, over which the inner end of the hub is loosely fitted and against which rests one of the collars 10, and the other collar is held to its seat by a washer 13 and a key or pin 14, fitted in a transverse slot in the end of the axle-spindle. Over the outer end of the axle-spindle is fitted a hollow cup-shaped cap 15, which is provided with perforated ears or lugs 16, adapted to register with corresponding perforated ears or lugs 17, cast on the outer end of the hub. Suitable packing is arranged between the adjacent end faces of the hub and cap, and the cap is securely held in place on the hub by bolts and nuts 18^a, which operate to draw the ears or lugs 16 and 17 tightly together. The cap 15 constitutes a reservoir for the lubricant, which is introduced therein through an aperture 18, formed centrally in the cap.

In practice the rollers 7 are introduced into the hub, and the collars 10 are fitted in place in the grooves or rabbets 2^a, the conical ex-

tensions 8 of the rollers loosely resting in the annular grooves 11 in said collars. As before explained, the collars are constructed to tightly fit in the grooves or rabbets, so that they will be held therein by frictional contact, whereby the rollers are held in place in the hub to permit the latter to be removed and replaced and shipped, transported, and stored without disturbing the arrangement of the rollers. The lubricant is stored in the reservoir formed by the cap and flows into the ducts 4, from whence it passes through the ports 5 and 6 to the rollers 7, said ports delivering the lubricant to said rollers at the ends and intermediate the ends of the latter. The rollers are held against endwise movement by the collars 10, which latter are held immovable by the collar 12 on the axle and the washer 13 and key 14. The conical extensions 8 of the rollers travel loosely in the grooves 11 in the collars 10, the end thrust which may at times occur being taken up by the square ends of the rollers. To remove the hub from the axle, it is only necessary to take off the cap and withdraw the key, when the hub may be slipped off the axle, the rollers being held in place by the collars and conical extensions in the manner before described. To remove the rollers, it is only necessary to lift out one of the collars, no fastenings having to be undone or removed for the purpose. In the cap 15 I provide a removable screw-plug 19 in order to facilitate

the withdrawal of the key 14 without removing the cap.

Having described my invention, what I claim is—

In a wheel, the combination with the axle provided with a collar and the hub provided at its opposite ends with annular grooves or rabbets formed concentrically with the bore of the hub, of cylindrical rollers disposed between the axle and the inner wall of the hub and each provided at its opposite ends with conical extensions, the bases of said extensions being of less diameter than the diameter of the rollers whereby shoulders are formed on the ends of the rollers about said conical extensions, collars loosely surrounding the axle and tightly fitted in the said grooves and rabbets and held therein by friction, said collars being provided on their inner faces with annular grooves V-shaped in cross-section, the said conical extensions on the rollers resting and loosely traveling in said grooves, a key passing transversely through the axle, and a washer arranged between said key and the adjacent collar, substantially as described.

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

JOHN K. LIGHTFOOT.

Witnesses:

RALPH WILLARD,
WILLIAM HARTSOCK.