

No. 793,923.

PATENTED JULY 4, 1905.

I. DEUTSCH.
LUBRICATING LOOSE WHEELS.
APPLICATION FILED MAY 25, 1904.

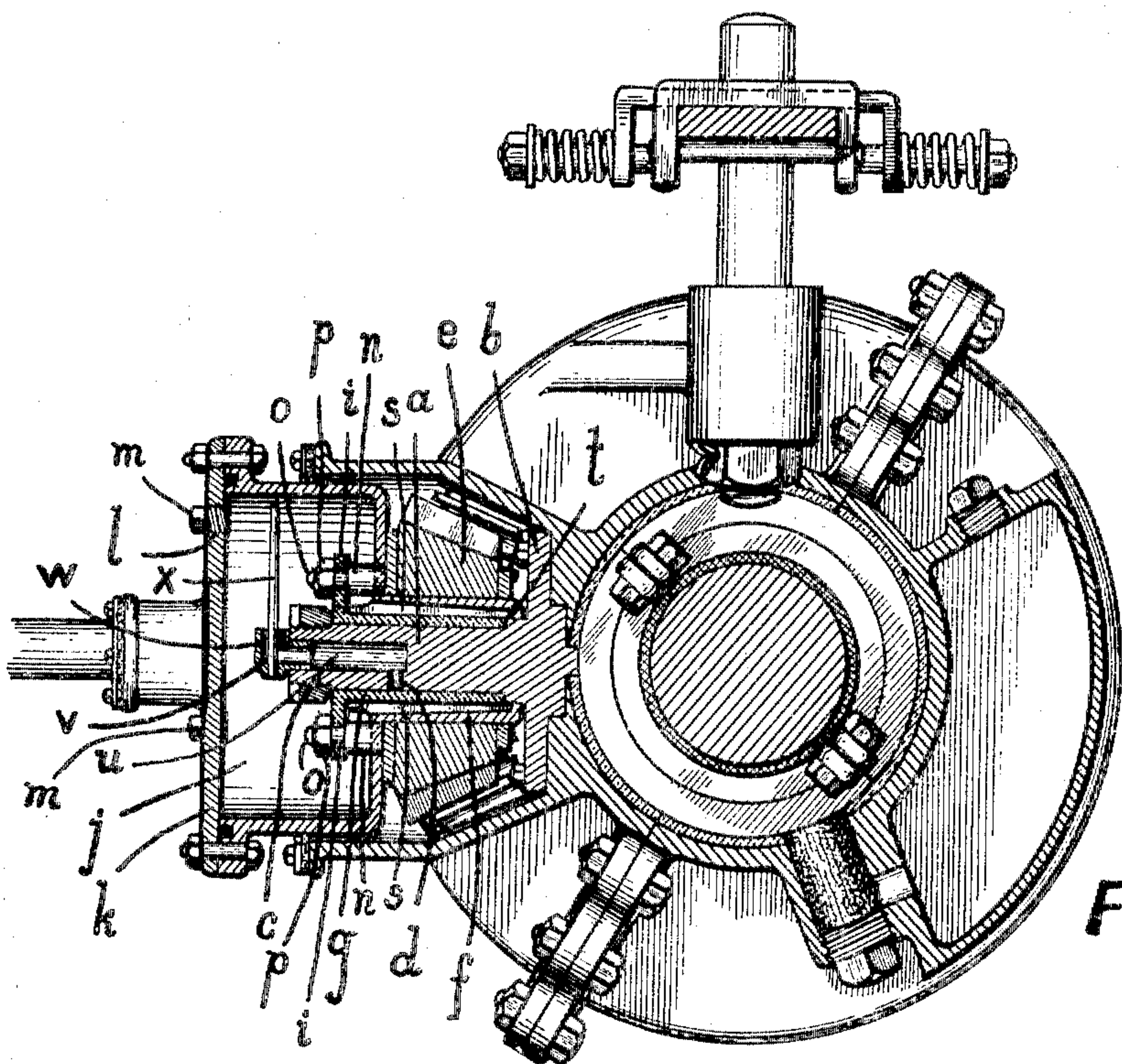


Fig. 1.

Fig. 4

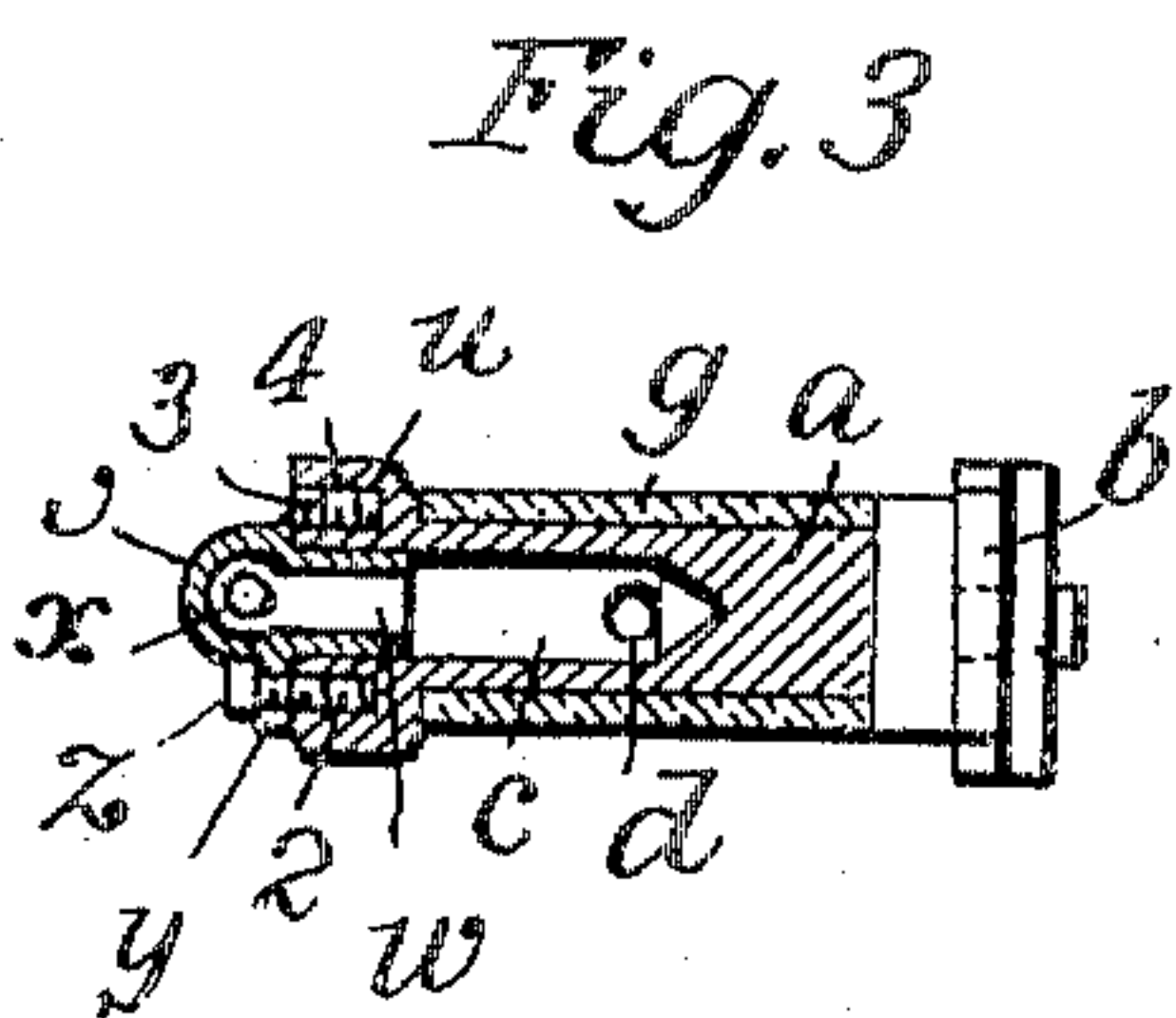


Fig. 3

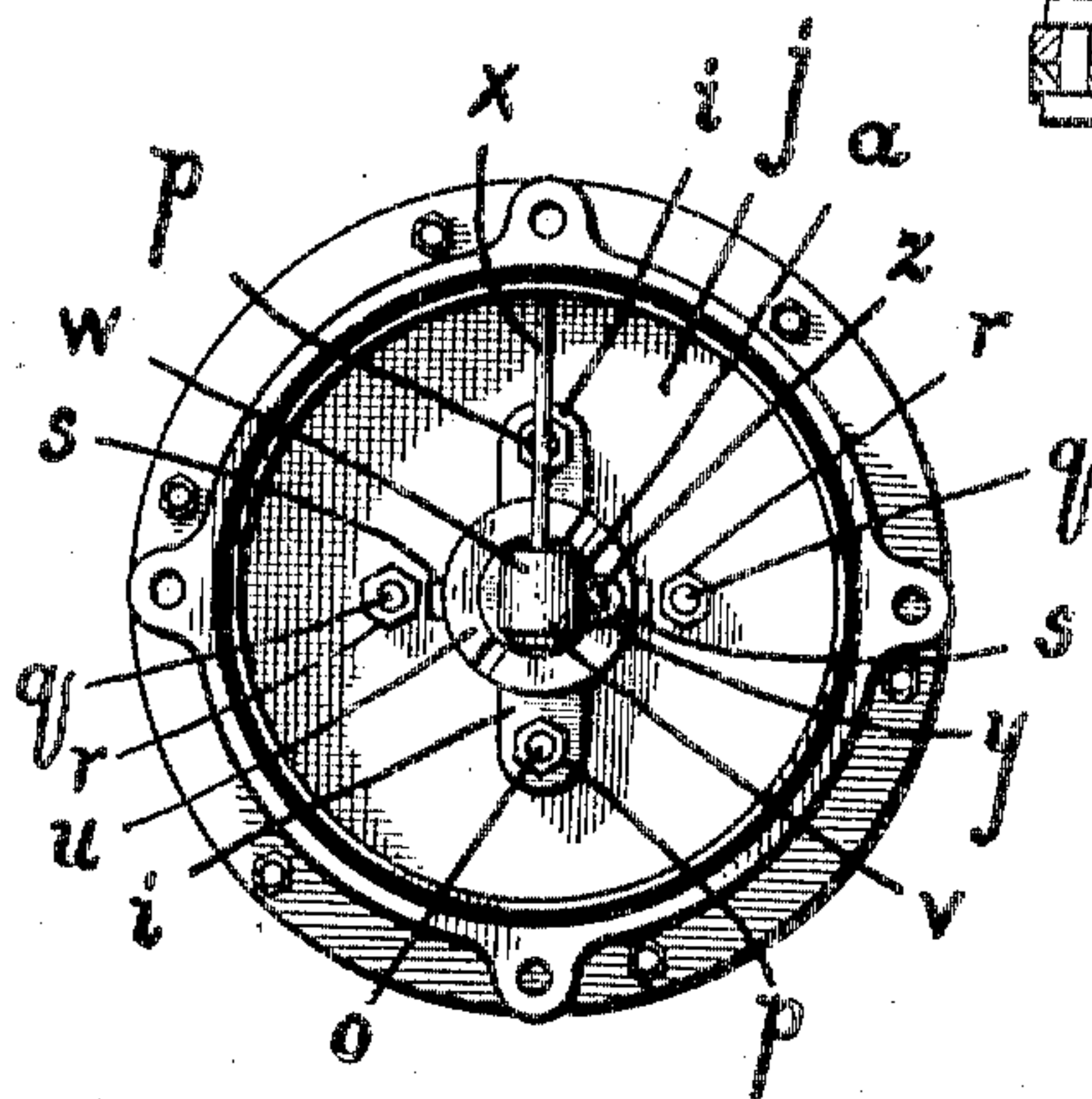
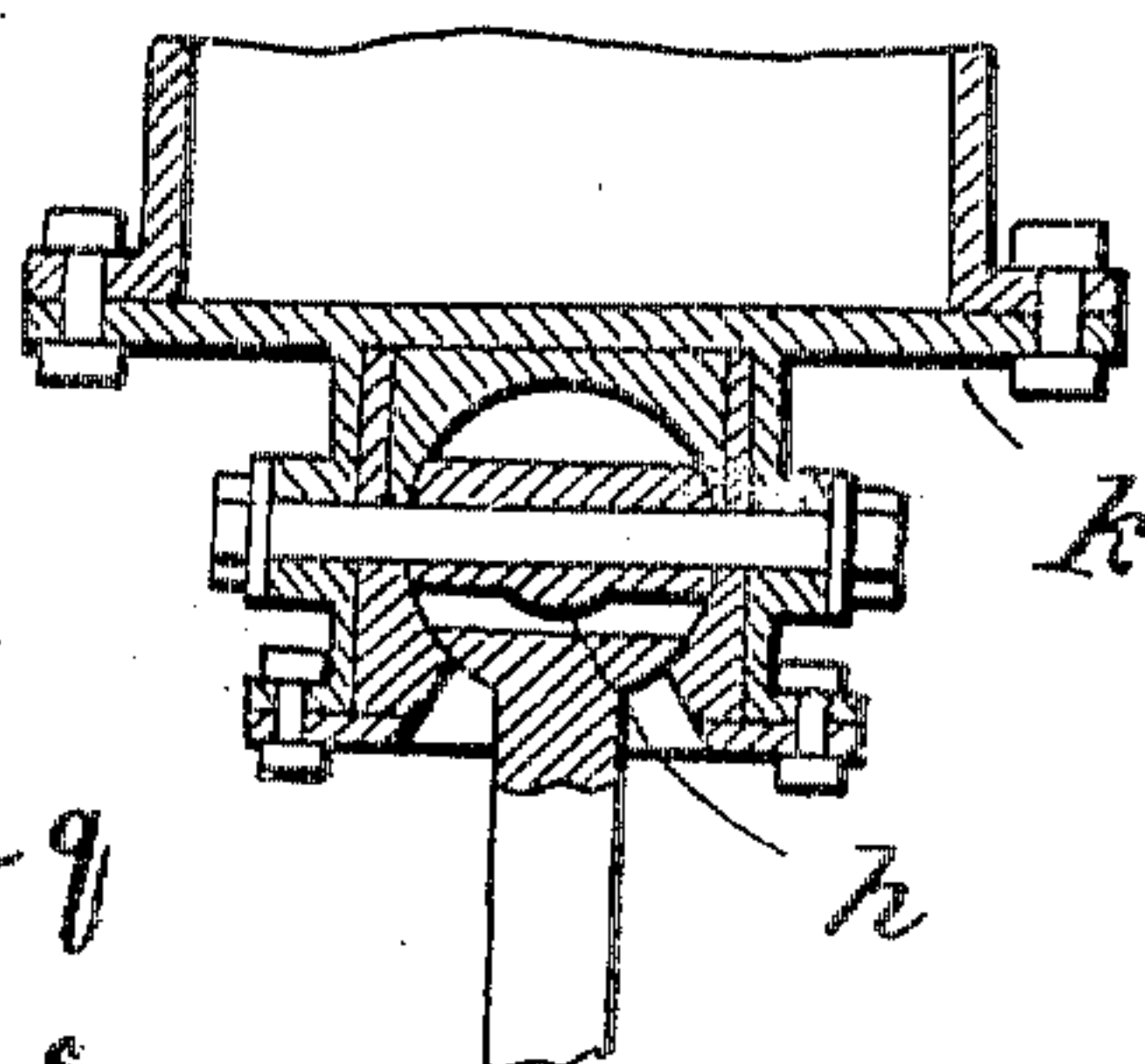


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

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LUBRICATING LOOSE WHEELS.

SPECIFICATION forming part of Letters Patent No. 793,923, dated July 4, 1905.

Application filed May 25, 1904. Serial No. 209,691.

To all whom it may concern:

Be it known that I, ISIDOR DEUTSCH, a citizen of the United States, residing at Montreal, in the district of Montreal, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Devices for Lubricating Loose Wheels, of which the following is a specification.

My invention relates to improvements in devices for lubricating loose wheels; and the object of the invention is to obviate the necessity of constant attention to the lubricating of wheels turning freely on a shaft and to devise a simple and cheap construction whereby it will be less expensive to maintain the bearing in proper condition under severe service; and it consists, essentially, of a circular casing forming a main oil-chamber and substantially integral with a wheel, a shaft, on which said wheel turns, partially hollowed to form an interior oil-chamber, a pan secured at the opening to said interior chamber, and a rigid rod projecting upwardly from within the pan, the various parts being constructed and arranged in detail, as hereinafter more particularly described.

Figure 1 is a sectional view of a gear mechanism mounted on an axle having a pinion turning freely on a fixed shaft and attached to said pinion my lubricating device. Fig. 2 is a view showing the interior of the oil-chamber contained within the circular casing and the means for directing the flow of the oil. Figs. 3 and 4 are detail views.

Like characters of reference indicate corresponding parts in each figure.

In the following I shall describe this device as applied to a pinion turning freely on a fixed shaft, though it must be understood that I do not confine it to this particular use.

a is a shaft projecting from a supporting-plate b and integral therewith. The said shaft a is partially hollowed from its outer end, forming an interior chamber c . d is a passage leading downwardly through the wall of said hollowed portion.

e is a pinion having a hub f , and g is a bush-

ing interposed between the shaft a and the hub f and rotating with said hub and pinion.

i represents lugs formed at the outer end of said bushing and preferably forming part therewith.

j is a circular casing containing the main oil-chamber and secured to the hub f or in preferable construction forming part thereof.

k is a removable cover for the circular casing j , having the openings l therethrough and closure-plugs m .

h is a universal joint centrally secured to the removable cover k and from which a shaft extends in this particular form of the device.

n represents rigid posts extending from the rear face of the pinion e and through corresponding orifices in the circular casing and in the lugs i and having the reduced threaded outer ends o , on which the retaining-nuts p are secured.

q represents rigid posts extending from the rear face of the pinion e and through corresponding orifices in the circular casing and having their outer ends threaded, on which are placed retaining-nuts. The circular casing is thus made substantially integral with the pinion.

s represents tapered passages through the pinion, formed by slotting the hub f at intervals circumferentially and leading from the thrust portion t of the bearing into the main oil-chamber.

u is a retaining-nut for the pinion e , placed on the threaded outer end of the shaft a , where it projects into the main oil-chamber.

v is a pan, preferably of cup-shaped form, having a tubular extension w inserted in the opening at the end of shaft a , leading to the interior chamber c and acting as a support for said pan.

x is a rigid rod secured centrally in the pan v , projecting upwardly and terminating in proximity to the wall of the main oil-chamber. y is a wing secured to or forming part with said pan and extending therefrom, hav-

ing an orifice through which is inserted a suitable cap-screw z . The cap-screw z is inserted into a threaded hole made between the said shaft and the said nut, thus holding the pan v securely in its upward position and also locking the nut. As shown in Fig. 3, the screw z enters an opening or passage 2, formed partially in the retaining-nut u and partially in the shaft a . It will thus be seen that the screw z acts both to secure the pan to the shaft and also as a lock for the nut u . A screw 3 is arranged diametrically opposite the screw z in a passage 4, formed in the same manner as the passage 2, above referred to, and said screw 3 constitutes a further means for locking the nut u , but does not in the form shown support the pan.

The successful operation of this device is dependent upon the centrifugal force gained by the rotation of the pinion, with the circular casing secured thereto containing the main oil-chamber. The main oil-chamber is partially filled with oil, and as the casing revolves this oil is swished to the sides of the chamber, and as the speed revolution increases the oil is whirled round, clinging to the circular wall of the chamber. The rigid rod projecting upwardly from the pan at the end of the shaft obstructs the passage of the oil to a sufficient extent to divert a stream of the said oil down the periphery or sides of the rod into the pan from which said rod projects. The oil on reaching the pan flows through the tubular extension therefrom into the interior oil-chamber in the shaft and from there passes through the hole in the wall of the interior oil-chamber to the periphery of the shaft or, in other words, to the bearing to be lubricated. The rotation of the wheel distributes the oil throughout the bearing, and all of the oil collecting at the inner thrust portion of the bearing finds its way into the passages leading through the pinion, and as these passages are tapered the oil must continue therethrough and empty into the main oil-chamber, thus returning to the starting-point.

The salient features of this invention consist in the utilization of centrifugal force with parts so arranged that obstruction of the continuous passage of oil is not likely to occur, and it is mainly with this object in view that I have adopted a simple rod to divert the oil in a new direction and into a pan which forms the receptacle from which the oil flows through a fairly large opening into the hollowed shaft.

The device as shown in the drawings forming part with this specification is particularly applicable to a gear mechanism in which the driving-pinion rotates a shaft. In this form of my device the advantages are manifest. For instance, circular oil-chamber having a removable cover may have a universal joint secured to said cover and a shaft projecting therethrough to the machine to be operated.

This provides a most convenient construction, as the shaft may be uncoupled and the pinion and oil-chamber removed from the shaft and the bearing examined or repairs made without in any way affecting the assembled parts. Further, the cover may be removed from the main oil-chamber without uncoupling the shaft and the lubricating arrangement inspected or repaired in a very few minutes. This convenience of inspection and repair are particularly applicable to electric train-lighting devices located under the cars, and therefore subject to very severe conditions, rendering inspection of the parts necessary at frequent intervals.

The passages through the pinion are herein shown as being formed by slotting the hub, but it must be understood that without departing from the spirit of my invention the tapered passages may be made from the inner thrust portion of the bearing to the main oil-chamber in any suitable manner.

What I claim as my invention is—

1. The combination with a fixed shaft and a wheel mounted to turn on said shaft, of a lubricating device comprising a casing connected with the wheel to rotate therewith and forming a lubricant-chamber, a pan supported stationarily within said casing by the shaft and communicating with a passage extending to the bearing of the wheel on the shaft, and a rod of less diameter than the space within the pan having one end secured within said pan and its other end extending radially into the lubricant-chamber, substantially as and for the purpose described.

2. The combination with a fixed shaft and a wheel mounted to turn on said shaft, of a lubricating device comprising a casing connected with the wheel to rotate therewith and forming a lubricant-chamber, a pan supported stationarily within said casing by the shaft and communicating with a passage extending to the bearing of the wheel on the shaft, and a solid rod secured at one end within said pan and having its other end projecting from said pan into the lubricant-chamber at an angle to the axis of the shaft, substantially as and for the purpose described.

3. The combination with a fixed shaft and a wheel mounted to turn on said shaft, of a lubricating device comprising a casing connected with the wheel to rotate therewith and forming a lubricant-chamber, a rod mounted at the end of the shaft within the casing and extending radially therefrom, and means for conducting lubricant collected on the exterior of said rod, as the wheel rotates, from the inner end thereof to the bearing of the wheel on the shaft.

4. The combination with a fixed shaft and a wheel mounted to turn on said shaft, of a lubricating device comprising a casing connected with the wheel to rotate therewith and forming a lubricant-chamber, a rod mounted

at the end of the shaft within the casing and extending radially therefrom, and a receptacle, open at its upper side, surrounding the lower portion of said rod to receive lubricant collected on the exterior of the rod as the wheel rotates, said receptacle communicating with a passage leading through the shaft to the wheel bearing thereon.

5. The combination with a fixed shaft and a wheel mounted to turn on said shaft, of a lubricating device comprising a casing connected with the wheel to rotate therewith and forming a lubricant-chamber, said casing having a removable cover or face-plate, a rod mounted at the end of the shaft within the

casing and extending radially therefrom, means for conducting lubricant collected by said rod as the wheel rotates from the inner end thereof to the bearing of the wheel on the shaft, and a shaft connected with the removable face-plate or cover of the said casing by a universal joint, substantially as described.

Signed at Montreal, in the district of Montreal, in the Province of Quebec, Canada, this 23d day of May, 1904.

ISIDOR DEUTSCH.

Witnesses:

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W. P. KING.