

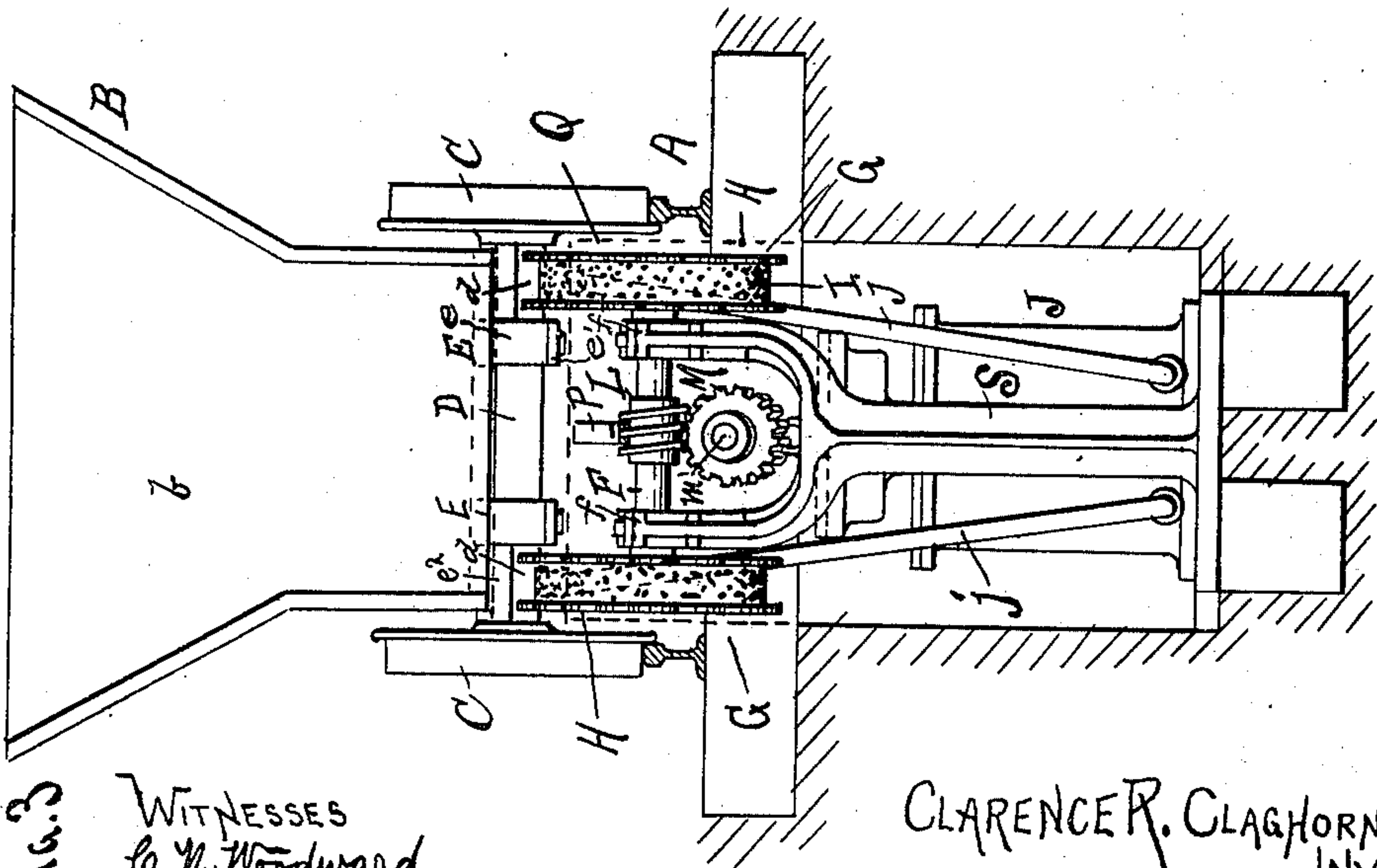
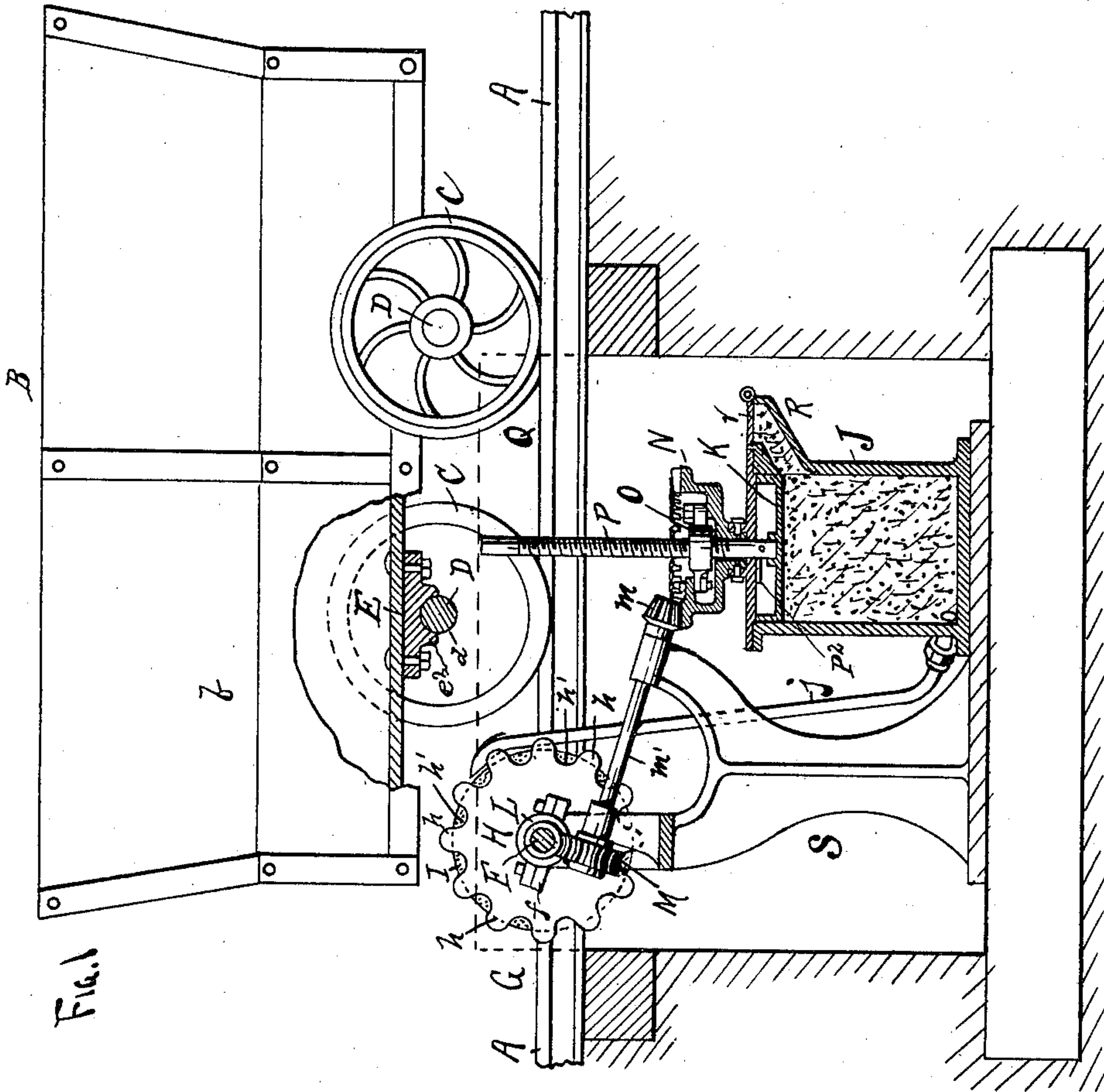
No. 736,689.

PATENTED AUG. 18, 1903.

C. R. CLAGHORN.
CAR AXLE LUBRICATOR.
APPLICATION FILED SEPT. 13, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES
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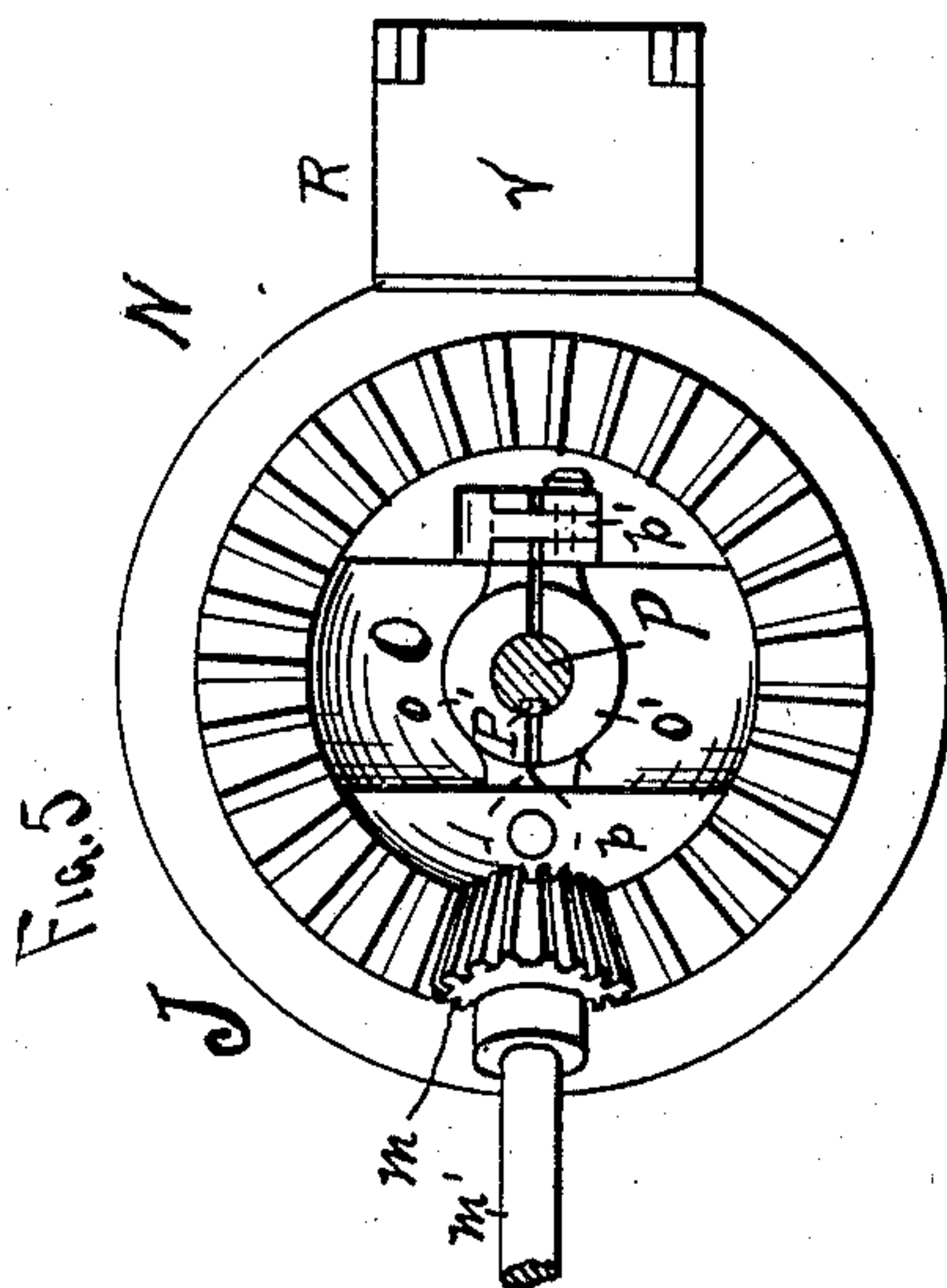
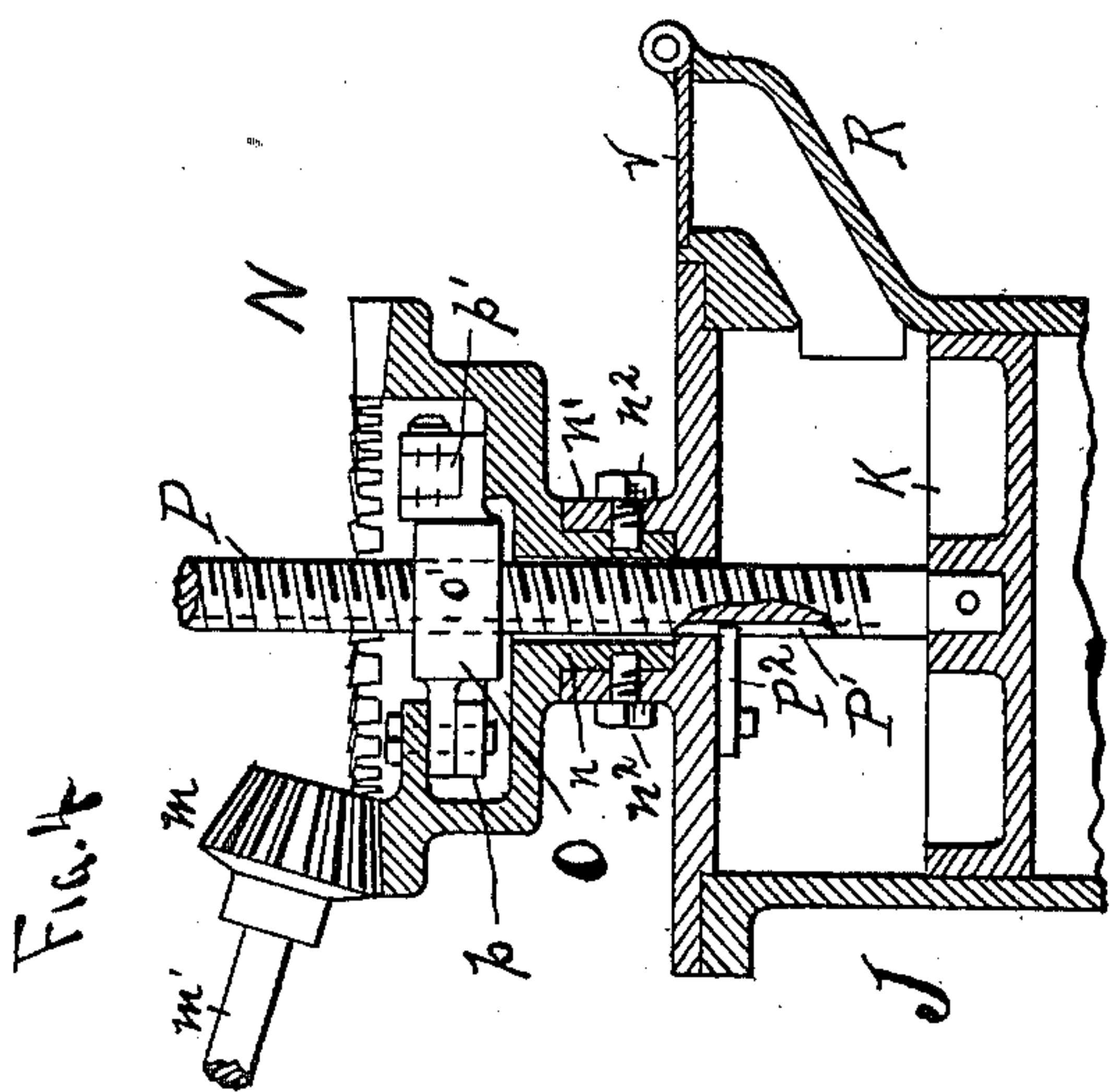
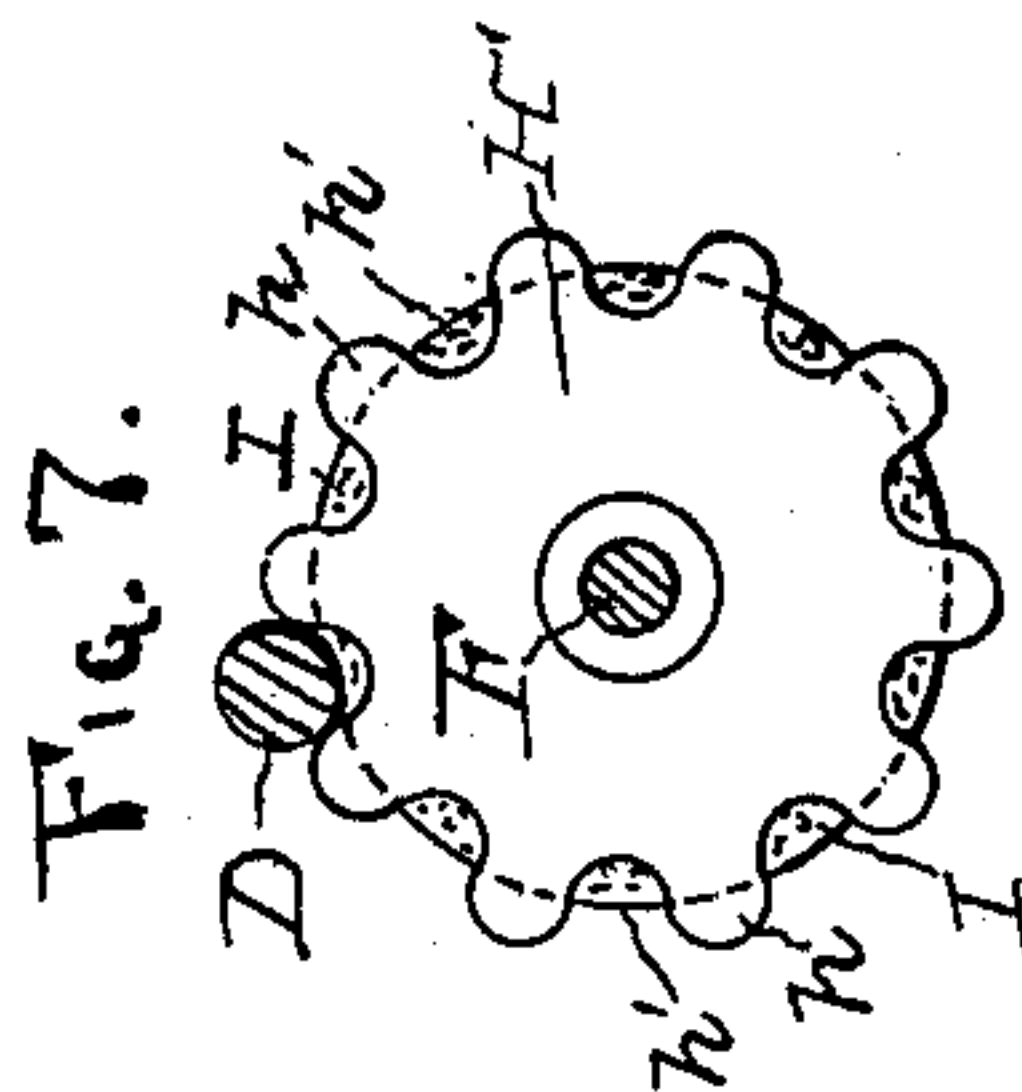
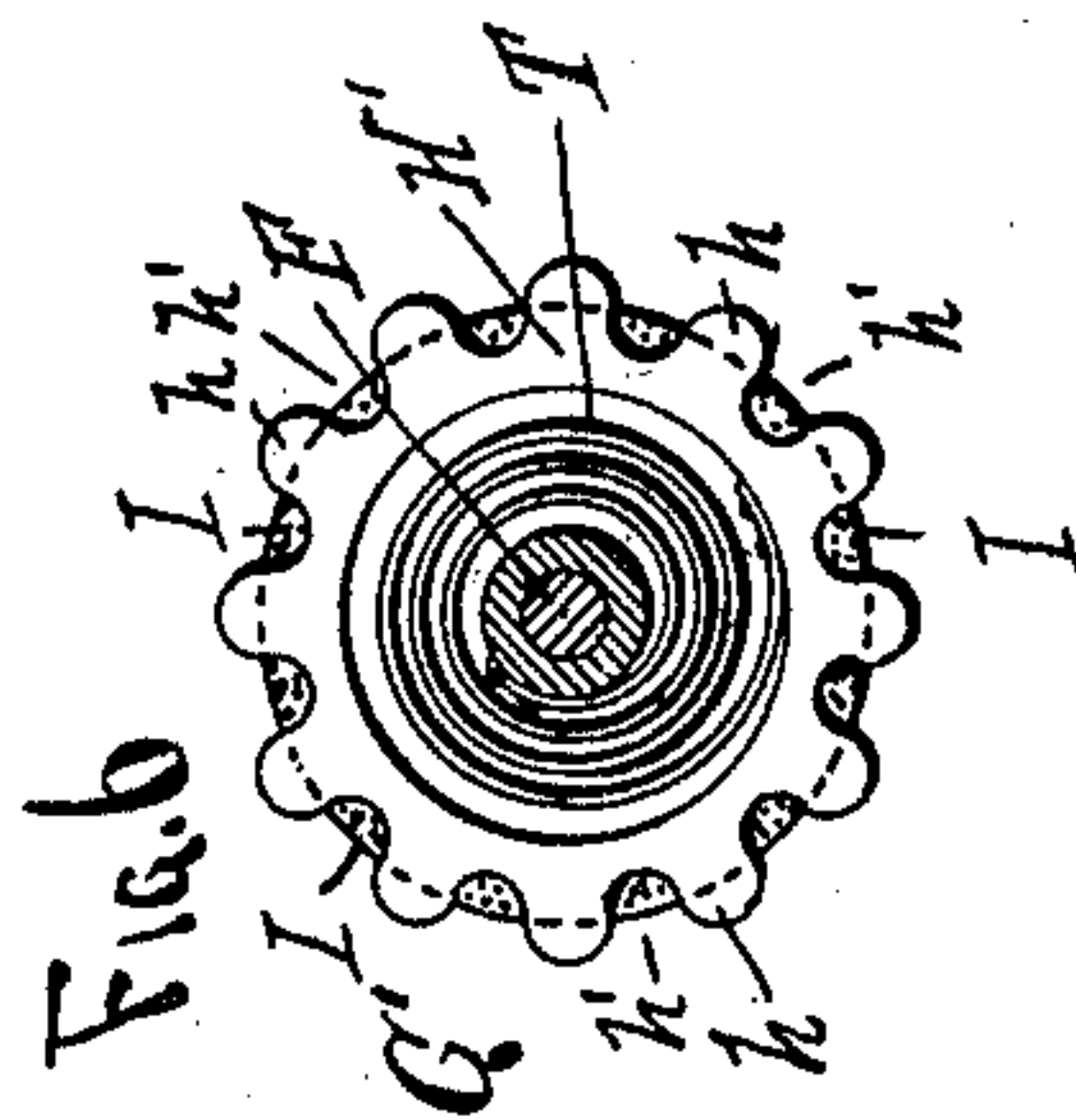
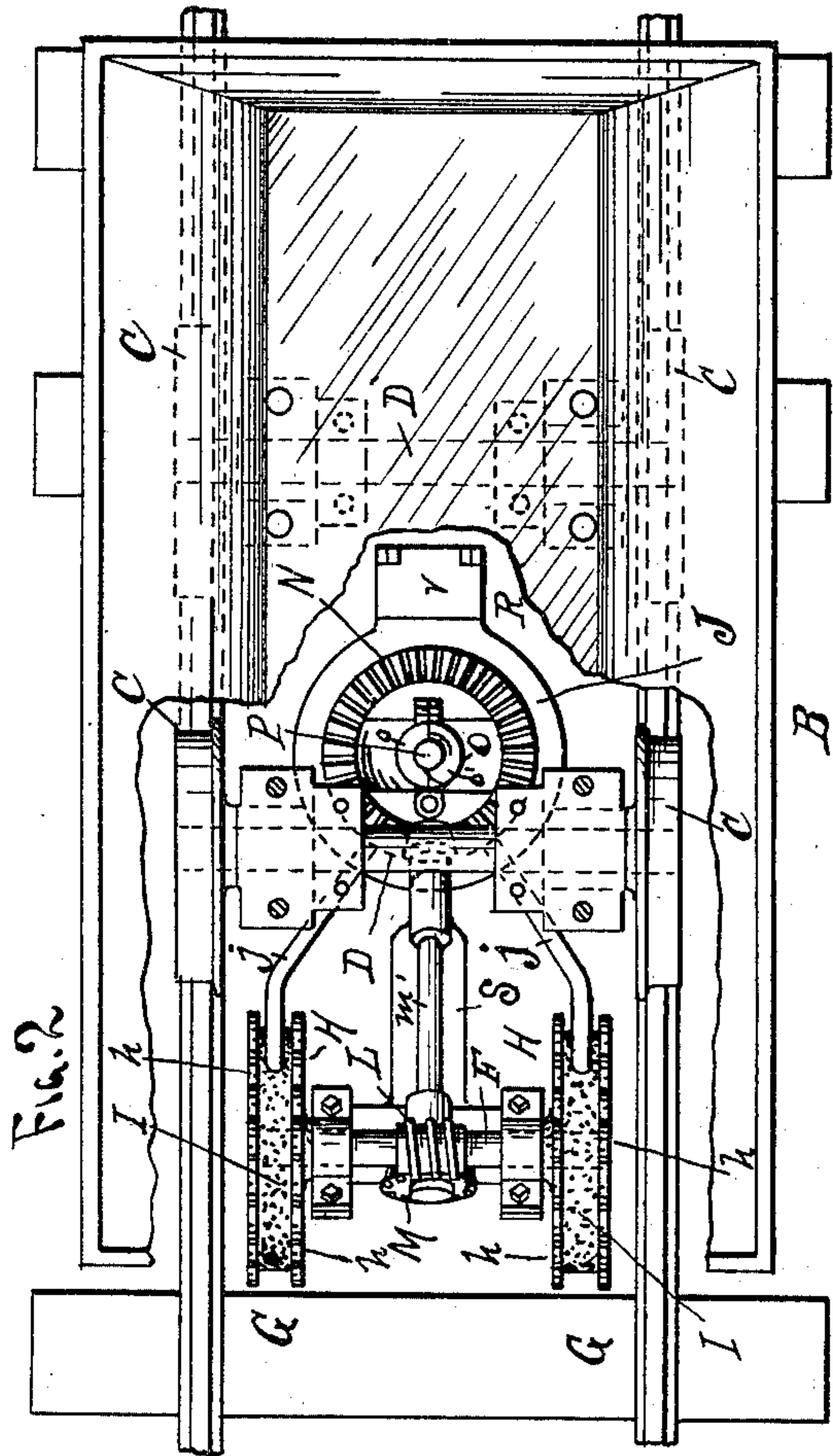
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UNITED STATES PATENT OFFICE.

CLARENCE R. CLAGHORN, OF VINTONDALE, PENNSYLVANIA.

CAR-AXLE LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 736,689, dated August 18, 1903.

Application filed September 13, 1901. Serial No. 75,296. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE R. CLAGHORN, a citizen of the United States, residing at Vintondale, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Car-Axle Lubricators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improved mechanism for automatically imparting lubricating material to the journal parts of the axles of vehicles while in motion, it being particularly applicable to the oiling or lubricating of the axles of cars upon tracks such as are used in mines for the hauling of coal and other material.

Figure 1 is a view, partly in side elevation and partly in section, of a mechanism embodying my improvements. Fig. 2 is a plan view, parts being broken away. Fig. 3 is a front elevation of the principal parts in Fig. 1, the others being shown in section. Fig. 4 is a vertical section of the upper part of the devices which eject the lubricant. Fig. 5 is a plan view of the parts shown in Fig. 4. Fig. 6 is a side view of the lubricant-distributor secured to its shaft by a modified connecting device. Fig. 7 is a detailed view showing the position of the parts when the lubricator is being operated by the car-shaft.

In the drawings, A indicates a section of a car-track and of its supports, and B indicates a car thereon, this being intended as a conventional illustration of a car of the sort commonly used in coal-mines for the hauling of the coal. The car, however, may be of any suitable sort and in detail constructed in any way preferred. For present purposes it is merely necessary to state that the box or body part *b* is supported upon the wheels C C, which run upon the track A, these wheels being in pairs rigidly connected to the axles D. The axles D are mounted in bearings E on the under side of the car. Each bearing consists of the upper part *e* and the lower or cap part *e'*, the upper part *e* having an extension, as at *e*², projected outward toward the wheel C. The lower part of the axle D is exposed below this part *e*² of the bearing. The part of

the axle which is fitted and turns in the bearing or box E and which can be considered as the journal is indicated by *d*. It is these journal parts of the axle which it is desired to lubricate in an efficient manner. Heretofore this has been accomplished in either of several ways; but to each of these I have found serious disadvantages to be incident, and these I have obviated by employing a lubricating mechanism constructed and arranged as shown.

F indicates a shaft which is mounted in suitable bearings *f*, these being preferably in a housing placed in a suitable position in relation to the track A and relative to the lines of travel of the cars. Upon the shaft F there are distributors (each indicated by G) to distribute the lubricant or impart it to the journal parts *d* of the car-axles as they pass. Each distributor G is shown as formed of a rotary disk or wheel-like body H. At its periphery there are trip devices in the form of projections or teeth *h*, and the distributor is so arranged that each of the vehicle-axles will impinge upon that projection or tooth *h* which is extending vertically upward, and as the car advances each axle imparts a step of movement to the distributor.

I represent a pad or circular mass of felt or equivalent absorbent material capable of absorbing oil or lubricant material and also capable of imparting more or less thereof to car-axles if the latter be in turn pressed against it. The recesses at *h'* between the teeth *h* of the distributor are of such depth in relation to the periphery of the pad I that the circle of said periphery is somewhat outside of the bottoms of the recesses, and therefore as the axles come into engagement with the distributor they press into the pad somewhat and compel the latter to deposit more or less of the lubricant upon the journal parts *d*.

The lubricant is conveyed to the absorbent pad from any suitable receptacle. I prefer to keep the pad charged by means of automatically-acting devices, one form of which I have illustrated in the drawings. J indicates a lubricant receptacle or holder, it being in the form of a closed reservoir. It is situated at a proper point in relation to the

distributor and the path of the car, preferably being also in a pit or housing below the track. From the reservoir there extends a pipe *j*, which conveys the lubricant to the
 5 absorbent pad I. Generally for this purpose use is made of a heavy lubricating material which is viscid in character and not capable of flowing freely, being of the nature of a heavy "grease." To compel a constant
 10 feeding of such heavy body from the reservoir to the distributing-pad, I employ a feeder or ejector, here illustrated as consisting of a piston-like plate K, fitted to the interior of the reservoir J, and an actuating device for
 15 slowly and gradually moving this piston or disk against the lubricant and forcing it from the reservoir through the ducts *j*.

L is a worm rotated by the distributor G, being mounted, for example, on the shaft F
 20 and partaking of the step-by-step rotary movement transmitted to the distributor by the passing cars. The worm L engages with worm-wheel M on a shaft *m'*, and the latter at the opposite end has a beveled pinion *m*.
 25 This pinion engages with a bevel-wheel N, which is mounted on the top of the lubricant-receptacle J in any suitable way. It is shown as having a tubular journal *n* fitted in a bearing *n'* and held therein by screws *n*² fitting in
 30 grooves in the journal *n*.

The bevel-gear N carries a nut O, which engages with a threaded stem P, that projects upward from the plunger or piston K. When the bevel N is rotated, it, through the nut O,
 35 causes the stem P to force the plunger K downward.

The nut O is divided, its two sections being indicated by *o o'*, which are pivoted at *p* to the bevel-wheel N. Forming the nut in
 40 this way permits it to be quickly disengaged from the threaded stem, so that the latter can be readily drawn up to the top of the reservoir J when it is desired to recharge the latter with lubricant. The nut-sections can be
 45 as quickly brought again into engagement with the threaded stem P and can then be locked together by means of the hinged lock pin or bar *p'*, pivoted to the section *o* and having a head which engages with lugs on
 50 the section *o'*.

The threaded portion of the stem P is somewhat shorter than the depth of the tank J, and consequently before the plunger K reaches the bottom it will pass out of engagement with the nut O, and the stem and plunger
 55 can no longer be forced downward. This prevents danger of breakage of the parts in case the lubricant should be all forced out and the attendant should fail to immediately draw the stem P up again.
 60

To prevent the stem P from rotating under the force of the rotary nut, a groove, such as shown at P', can be formed therein and a gib or key P² fitted in the groove. The filling of
 65 the tank or receptacle J can be effected through the feed-nozzle R, projecting later-

ally from the upper part of the chamber, this being made large enough to allow the introduction of even heavy or non-fluid grease. The feedway is closed by means of a hinged
 70 door or cover *r*.

The operation of the devices above described will be readily understood.

When a vehicle comes to the distributing apparatus, its axles in turn impinge upon the
 75 upwardly-projecting teeth *h*, bringing forward successively the sections of the pad I, and each axle touches and more or less presses downward upon one of these sections, receiving lubricant in the way described. At the
 80 same time the worm-gearing, bevel-gearing, and nut are moved in such way as to slowly force down the plunger or piston K and cause it in turn to force small amounts of the lubricant from the bottom of the reservoir and
 85 through the duct *j* to the absorbing-pad I, ready to be applied to the axle-journal.

Preferably there are two of the distributors employed in each apparatus, one adjacent to each of the rails *a* of the track A, as
 90 shown in Fig. 2; but as these can be duplicates of each other the description of one will serve for both. Independent reservoirs J can be used; but preferably a single one is employed, having two of the ducts *j* extending
 95 therefrom, one to the right-hand distributor and the other to the left. In such case the two journals of each axle will be simultaneously lubricated.

The pit or chamber S, in which the lubricating apparatus is placed, is preferably
 100 closed at the top by a housing, as indicated by the dotted lines at Q, this being arranged so as to protect the several parts, exposing only the upper part of the periphery of the
 105 distributors G. Ordinarily the lubricating mechanism will be placed at a suitable point on the tippie structure, and an inclosed chamber, if found desirable, can be constructed for it below the track.
 110

It will be seen that the distributor when made in the form shown may be regarded as having a series of operative parts which are
 115 moved to and from the path of the car-axle, moving away therefrom in order to receive a new charge of lubricant and moving toward said path in order to distribute the same to the axles successively.

Under some circumstances I connect the distributor G to the shaft F in such way that
 120 it shall be capable of yielding downward when subjected to pressure by a vehicle or a part thereof. Such a yielding connecting device is shown in Fig. 6, where T indicates an elastic device fastened to the distributor G' and
 125 also to the axle F, either directly or by means of an interposed sleeve secured to the shaft and also to the elastic part, the distributor having a suitably large central aperture H' to receive this connector. As shown, the latter consists of a helix or a coil of spring metal.
 130 This manner of mounting the distributor

makes provision for variations in the height of the axles as they successively approach it. Should one be lower than another, it will tend to depress the distributor, and by having the latter so held that it can yield it will accomplish the purposes above described and at the same time move downward sufficiently to permit the axles to freely pass over it without danger of breakage or binding.

10 What I claim is—

1. In a car-axle lubricator, a rotary lubricant-distributor stationary relatively to the passing cars and adapted to contact with the axles of the cars, a lubricant-feed duct delivering lubricant to the periphery of the said rotary distributor, and means actuated by a passing car for moving the lubricant-distributor, substantially as set forth.

2. In a car-axle lubricator, the combination of a rotary distributing device for the lubricant adapted to have the sections of its periphery successively contact with the axles of passing cars to impart lubricant thereto, a vessel or receptacle for lubricant, and means actuated by the passing car for pressing the lubricant from the receptacle to the periphery of the distributor, substantially as set forth.

3. In a car-axle lubricator, the combination of a distributing device for the lubricant, rotating in the vertical planes of travel of the cars, and adapted to have the sections of its periphery contact with the axles of passing cars to impart lubricant thereto, a vessel or receptacle for the lubricant, a plunger adapted to move through the said vessel and force the lubricant therefrom, a duct leading from the receptacle at a point in advance of the plunger and toward which the latter moves when in operation, said duct extending to the periphery of the distributor, and means actuated by the passing cars to move said plunger in the receptacle, substantially as set forth.

4. In a car-axle lubricator, the combination of a receptacle or vessel for the lubricant, a lubricant-distributor mounted independently of the passing cars, and outside of the said receptacle, a duct for the lubricant extending from the said receptacle to the said distributor, and means actuated by the passing cars for forcing the lubricant from the said receptacle to the said distributor, substantially as set forth.

5. In a car-axle lubricator, the combination of a vessel or receptacle for the lubricant, a lubricant-distributor which is stationary or non-advancing in relation to the passing cars, but is movable toward and from the path of the car-axle, a duct extending from the receptacle to the distributor, a plunger in said receptacle and a train of gearing actuated by the passing cars for moving the said plunger, substantially as set forth.

6. In a car-axle lubricator, the combination of a rotary absorbing-pad mounted adjacent

to the track to be stationary or non-advancing in relation to the passing cars, and adapted to be impressed by a car-axle and to be rotated in one direction, a stationary lubricant-receptacle, a duct conveying lubricant from said receptacle to said lubricating-pad, and means supplemental to the pad actuated by the passing car to positively effect the rotation of the pad, substantially as set forth.

7. In a car-axle lubricator, the combination of the lubricant-distributor, the vessel or receptacle for lubricant, the plunger therein, means for conducting the lubricant from the receptacle to the distributor, means for moving the distributor relatively to the car, and devices for transmitting motion from the distributor-moving means to the plunger, substantially as set forth.

8. In a car-axle lubricator, two lubricant-distributors, one near each end of the axle, a receptacle or vessel for the lubricant, means for conveying the lubricant to each of the two distributors from the receptacle, and means actuated by the passing car for compressing the lubricant in said receptacle, substantially as set forth.

9. In a car-axle lubricator, the combination of a lubricant-receptacle, two lubricant-distributors, one adapted to engage with one end of a car-axle, and the other with the other end, and both stationary or non-advancing in relation to the cars, ducts supplying both of said distributors from the said receptacle, a lubricant-ejecting means in the said receptacle, and means actuated by passing cars for actuating the lubricant-ejecting mechanism, substantially as set forth.

10. In a car-axle lubricator, two lubricant-distributors supported independently of the cars, one situated inside of each of the track-wheels of each car-axle and adapted to contact with the end parts of the said axle as it passes, a stationary receptacle or vessel for the lubricant, means actuated by the cars for forcing the lubricant from the receptacle, and two ducts delivering the lubricant to the distributors, substantially as set forth.

11. The combination of a rotary lubricant-distributor mounted near a car-track in the path of a car-axle and adapted to be encountered by the latter and to impart lubricant thereto by contact, and means supplemental to the distributor for delivering lubricant to the upper part thereof, substantially as set forth.

12. The combination of a lubricant-distributor rotating in the vertical planes of advance of the cars and mounted near the track in the path of the car-axle and adapted to be encountered by the latter, a duct for delivering lubricant to said distributor, and means actuated by the car for causing the feed of lubricant through said duct.

13. The combination of a lubricant-distributor, a receptacle for the lubricant, means

actuated by the car-axle for moving the distributor, a duct for conducting the lubricant from the receptacle to the distributor, a feeder for positively forcing lubricant from the receptacle through the duct, and devices for transmitting motion from the distributor-moving means to said feeder.

In testimony whereof I affix my signature in presence of two witnesses.

CLARENCE R. CLAGHORN.

Witnesses:

E. E. SMITH,
R. G. WARE.