

No. 801,670.

PATENTED OCT. 10, 1905.

R. S. MEARS.  
LUBRICATING DEVICE.  
APPLICATION FILED DEC. 14, 1904.

3 SHEETS—SHEET 1.

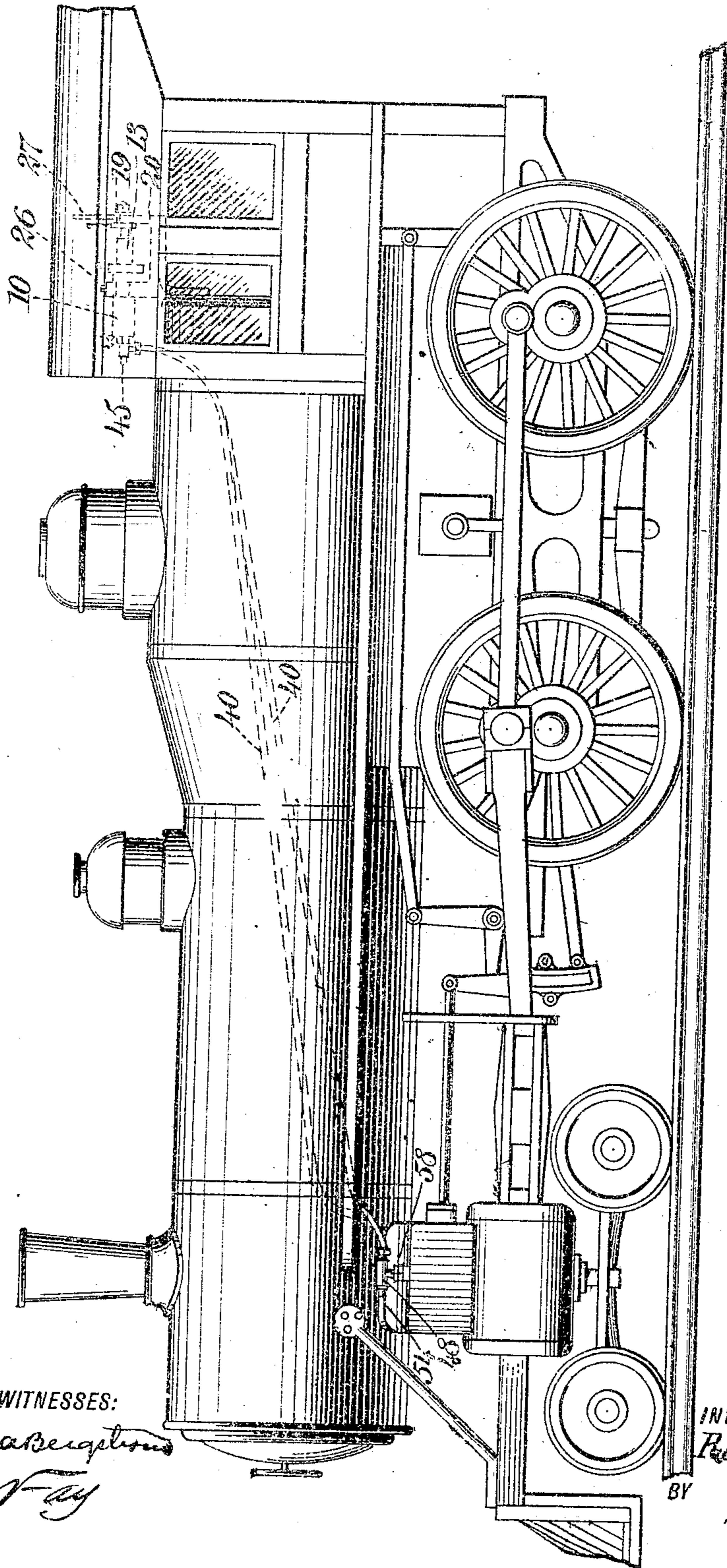


FIG. 1

WITNESSES:

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INVENTOR  
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BY

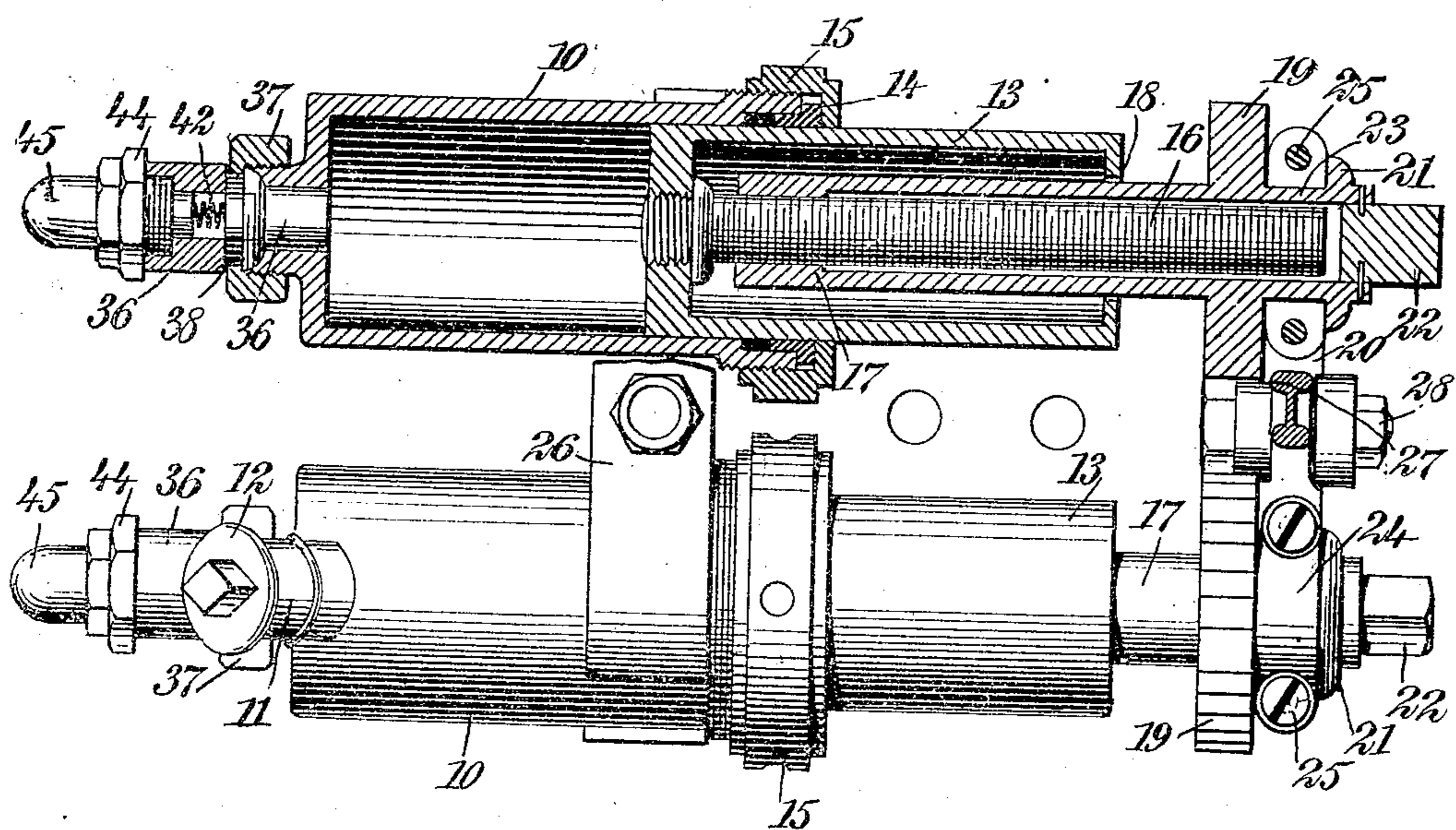
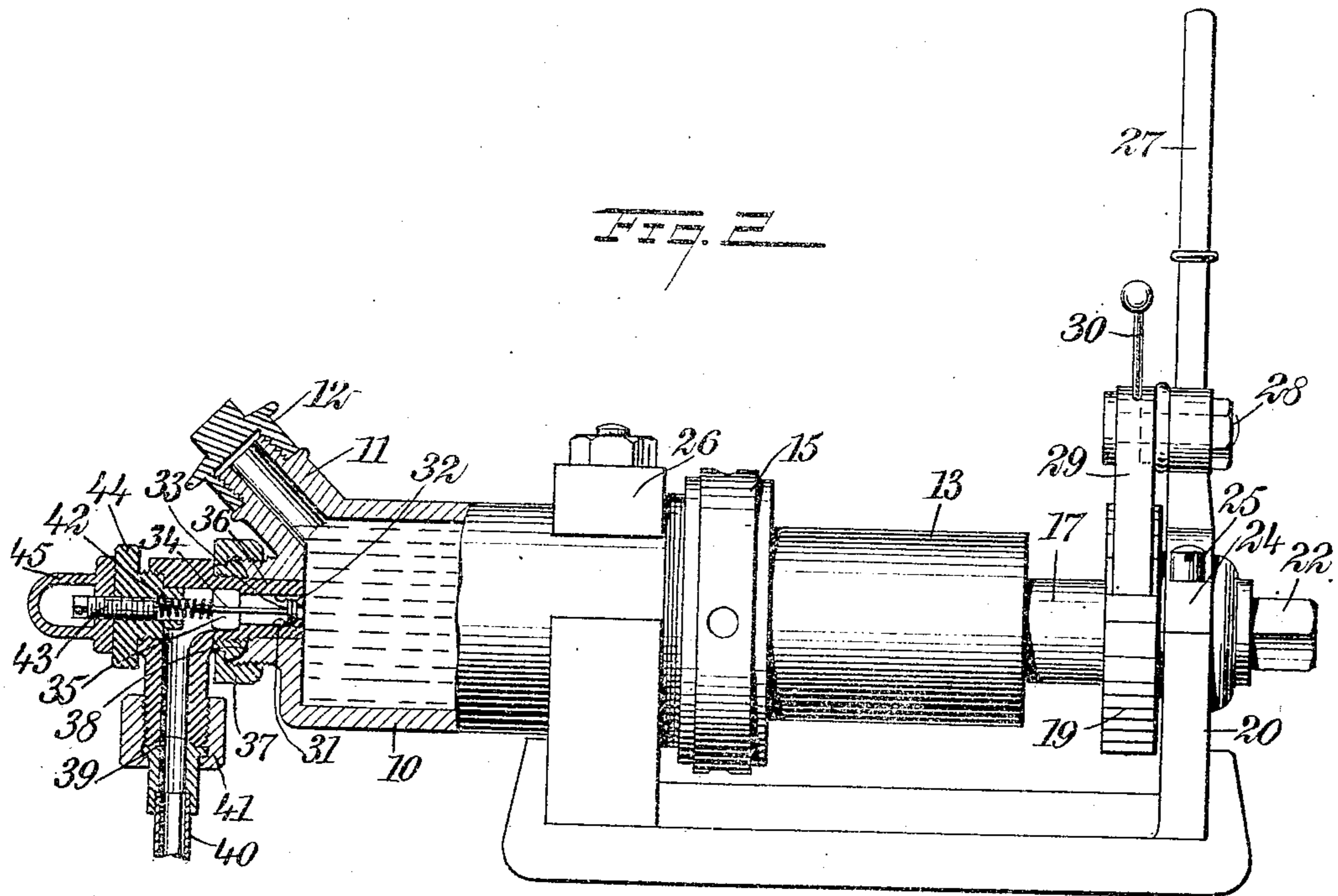
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3 SHEETS—SHEET 2.



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*Fig. 3*

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3 SHEETS—SHEET 3.

Fig. 4

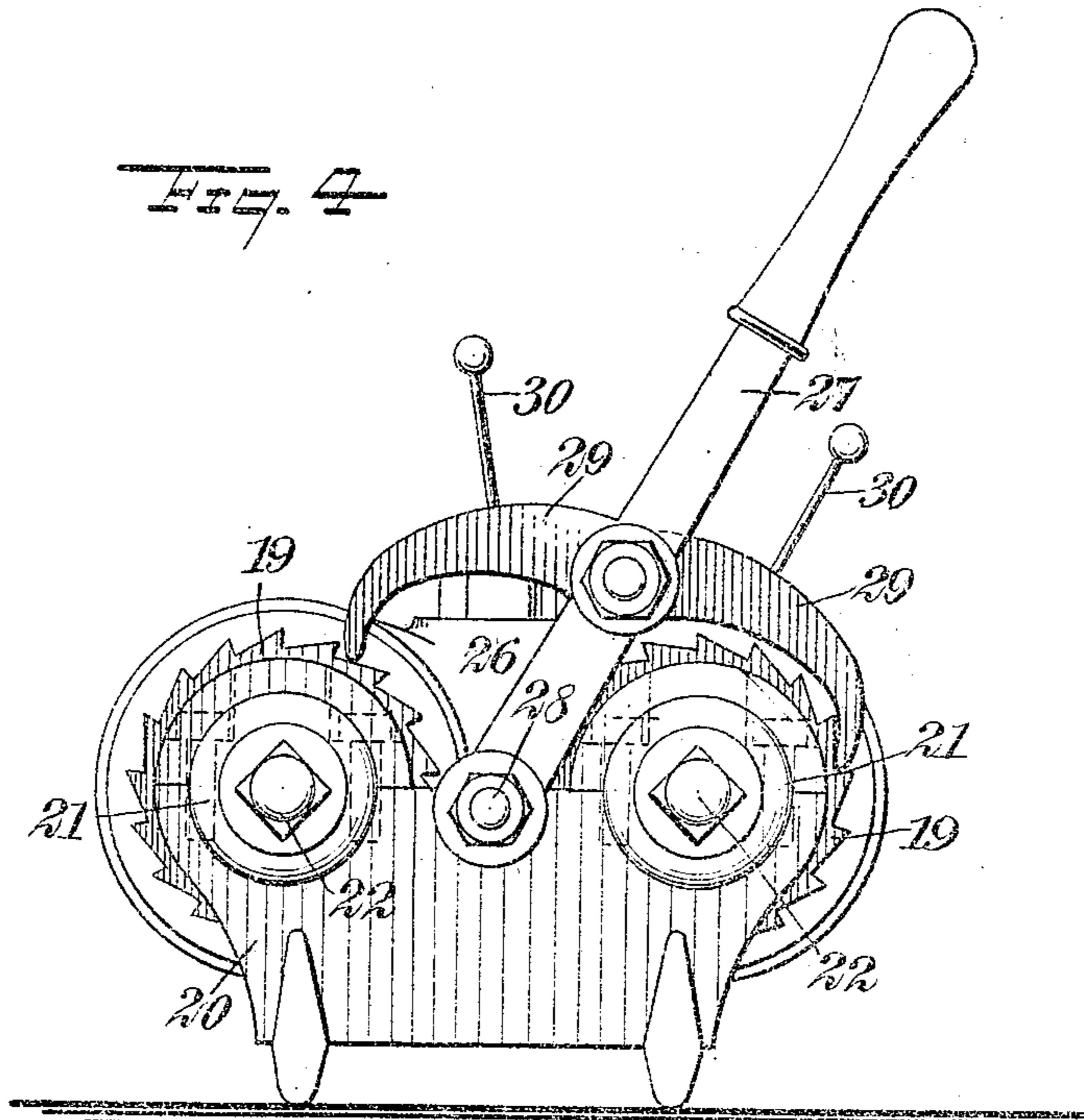
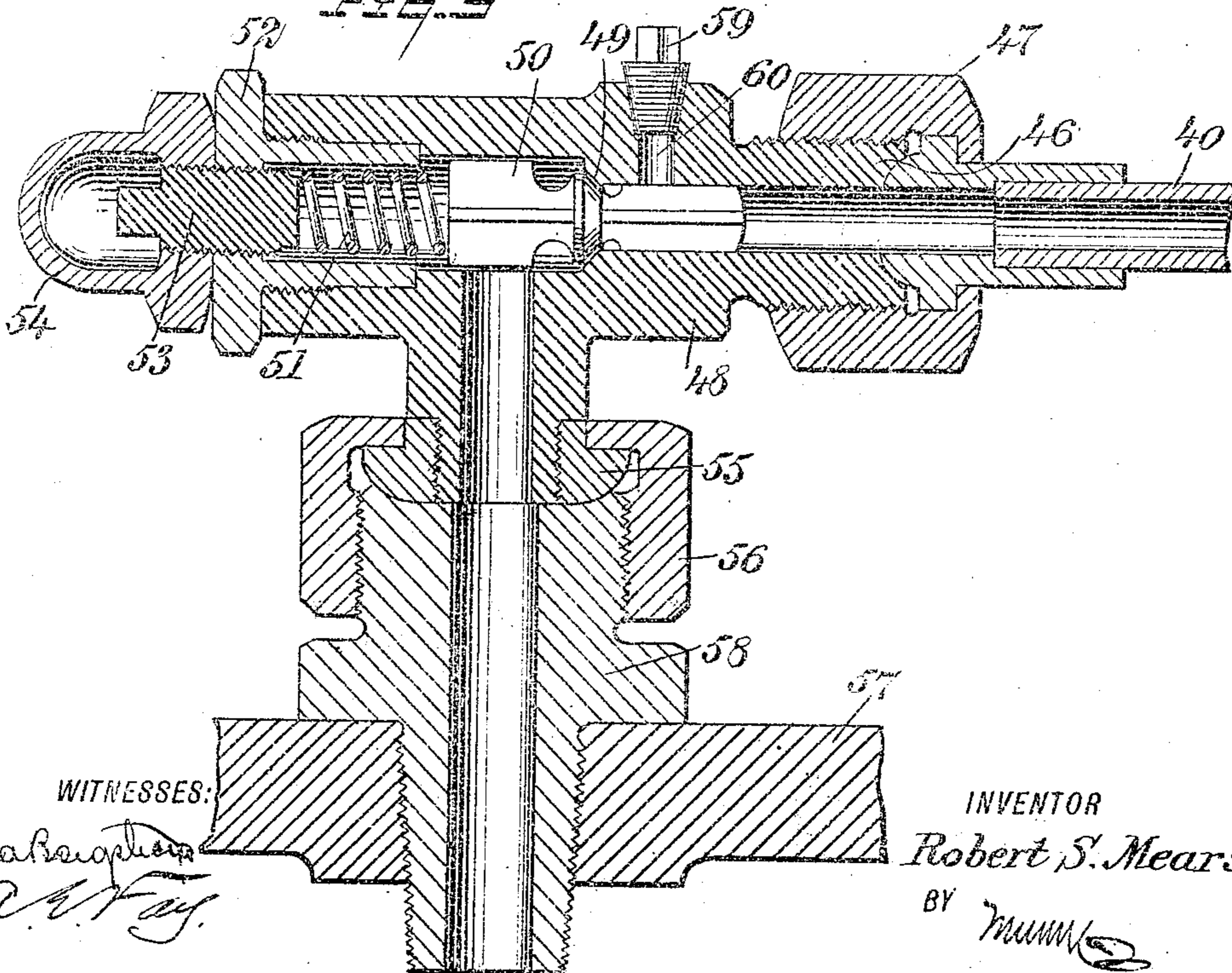


Fig. 5



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# UNITED STATES PATENT OFFICE.

ROBERT S. MEARS, OF HUMANSVILLE, MISSOURI.

## LUBRICATING DEVICE.

No. 801,670.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed December 14, 1904. Serial No. 236,820.

*To all whom it may concern:*

Be it known that I, ROBERT S. MEARS, a citizen of the United States, and a resident of Humansville, in the county of Polk and State of Missouri, have invented a new and Improved Lubricating Device, of which the following is a full, clear, and exact description.

My invention relates to a lubricating device which is capable of general use; but it is especially adapted for oiling the valves and cylinders of locomotives and can be applied to any style of engine where it is desired to oil against steam-pressure. In the devices which are employed for similar purposes at the present time sight-feed glasses and gage-glasses are employed. These glasses sometimes break and cause personal injury to employees and also permit oil to escape. Moreover, in these devices the oil is subjected to a high heat on account of the presence of steam, which injures the oil, and the adjustments have to be made in such a manner as to provide for feeding the oil in accordance with the working of the engine. When the engine is at rest, they do not feed properly and it is necessary to adjust them by hand. The condensation from the steam also sometimes freezes, with bad results, as will be obvious.

The principal objects of my invention are to remedy these and other defects in existing types of lubricating devices.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a locomotive, showing the manner in which my lubricating device can be applied thereto. Fig. 2 is a side elevation of one embodiment of my invention, showing parts in section. Fig. 3 is a plan view of the same, showing one-half of the device in longitudinal central section. Fig. 4 is a rear elevation of the same; and Fig. 5 is a longitudinal sectional view, on an enlarged scale, of another portion of the device.

10 represents a cylinder for containing oil or other lubricant. It is provided with an angle-fitting 11, having a cap 12 for closing the fitting. This fitting is provided for the purpose of introducing lubricant into the cylinder, and it is preferably located at the upper part of the front end. The cylinder is provided with a displacement-piston 13, which is adapted to travel from the outer end inwardly in order to displace the lubricant in

the cylinder and drive it to the desired points.

A stuffing-box 14 is provided for making an oil-tight connection between the cylinder and piston, and a spanner-nut 15 is located on the outside of the stuffing-box.

In order to operate the piston, it is provided with a screw 16, and a nut 17 engaging therewith is adapted to move throughout the entire length of the screw, passing through an opening 18 in the rear of the piston. This nut is provided with a ratchet-wheel 19 and is mounted upon a frame 20 and secured in position by means of a return-collar 21. A square returning-nut 22 is also connected with the nut 17 for the purpose of drawing the piston back to its extreme position. It will be understood that the bearing 23 on the nut 17 between the parts 19 and 21 is clamped in the frame 20 by means of a cap 24 and bolts 25 or in any other desired manner. It will be apparent that the step-by-step rotation of the ratchet-wheel 19 will cause the nut 17 to turn upon its axis and gradually force the screw 16 and piston 13 forward in the cylinder, thereby displacing the lubricant therein. It is to be understood, of course, that the cylinder is secured on the frame 20 by means of a top clamp 26 or any other equivalent device.

In order to supply oil to both sides of the engine, a pair of these cylinders is preferably provided, both being mounted in the same way parallel to each other and each being a duplicate of the other. An operating device for successively moving the two pistons for these cylinders forward a notch or several notches at a time, as desired by the operator, is shown in Fig. 4. This comprises a lever 27, pivoted to the frame 20 by means of a bolt 28 or the like. Upon this lever are pivoted a pair of pawls 29, adapted to engage with the teeth of the ratchet-wheels 19. It will be readily understood that the oscillation of the lever 27 about its pivot will move first one of the pistons forward and then the other, each being moved forward an equal distance. In order to provide for operating one of the pistons without moving the other, each of the pawls is provided with an arm 30, which can be grasped in order to hold either of the pawls up out of operative position with respect to the teeth of the ratchet-wheels. Each oscillation of the lever 27 will move the cylinders one or more notches, as desired.

A preferred means of permitting and regulating the feed of the lubricant from the cyl-

inders 10 will now be described. At the front end of each cylinder is a passage 31, provided with a valve-seat 32. A retaining-valve 33 is provided for the seat, and a valve-rod 34, 5 attached to the valve, is guided in a spider 35. This valve is mounted in a body 36, secured to the reduced end of the cylinder by means of a connection 37. It is so connected through the instrumentality of a ball-joint 38 10 as to permit an angular adjustment. Another ball-joint 39 is located between a branch of the body and the tallow-pipe 40, these two parts being joined by a connection 41. Bearing upon the spider 35 and surrounding the 15 valve-stem 34 is a spring 42. On the other end this spring bears upon a screw 43, mounted in an adjusting-nut 44, which is adjustably secured to the end of the body 36. A cap-nut 45 is mounted upon the outside of 20 this screw to protect it, as will be obvious. It will be readily understood that the tension of the spring 42 can be accurately adjusted by the nut 44 and screw 43 and that the device can be so regulated as to feed oil to the 25 cylinders through the tallow-pipe 40 at any desired pressure.

Fig. 5 shows the other end of the tallow-pipe connected, by means of a ball-joint 46 and a connection 47, with a casing 48, having 30 a valve-seat 49 for a second retaining-valve 50. This casing 48 is provided with a spring 51, adjusting-nut 52, screw 53, cap-nut 54, ball-joint 55, and connection 56, similar to corresponding parts in the other portion of 35 the apparatus, for connecting the casing with a steam-chest cover 57 through a steam-chest connection 58. The operation of these parts will be readily understood. 59 is a vent-plug stopping a passage 60, communicating with 40 the passage in which the retaining-valve 50 is located.

In adjusting a lubricator of this character to a locomotive it is mounted in any desired position, preferably within the cab and with- 45 in easy reach of the operator. The retaining-valves are properly adjusted when the caps 12 are removed from the filling-plugs 11. At this time the displacing-pistons will be at the rear ends of the cylinders. The cylinders 50 may then be filled with oil or other lubricant until it overflows at the filling-plugs. The vent-plug 59 should then be removed, and the oil should be fed out of the cylinders into the tallow-pipes by working the lever 27. The 55 oil passing into the tallow-pipes and forcing the valves 33 back against the resistance of the springs 42 will drive the air out of the tallow-pipes through the vent-passages 60. When the oil appears at the vent-passages, 60 the plugs 59 should be replaced. The retaining-valves are then adjusted by removing the cap-nuts 45 and 54 and adjusting the tension of the springs by means of the screws 43 and 53.

65 Pressure enough should be applied with

the adjusting-screws on the retaining-valve springs to overcome the vacuum when the engine is drifting, so as to prevent the robbing of the tallow-pipes of oil. This will of course 70 have to be done only when the lubricator is first applied to the engine, as the adjustment having once been made will usually not have to be altered. It will be understood that at each stroke of the lever 27 one of the displac- 75 ing-pistons is forced forward a definite amount and displaces a certain amount of oil, forcing it by the first retaining-valve into the tallow-pipe and also forcing an equal amount of oil by the second retaining-valve and into the 80 passage therefrom to the steam-chest. This arrangement enables the engineer to lubricate the valves and cylinders with any desired amount of oil at any and all times, whether working steam or not, with the least amount 85 of trouble and without taking the attention of the operator from other work. A quantity of oil is discharged sufficient to lubricate all of the surface, even if the steam-chest or cylinders leak. When it is desired to withdraw 90 the displacing-pistons, a wrench can be applied to the returning-nut 22, and the pawls 29 being held out of operative position the pistons can be readily withdrawn to their extreme position at the rear.

A lubricating device constructed in accord- 95 ance with the principle set forth above, whether in the particular form illustrated or in any other form embodying that principle, will have many advantages over the lubricating devices now in use. The oil is not heated 100 by steam, as is the case in a gravity-lubricator, and no steam connections are made to it. Consequently no condensation is present and no trouble is occasioned by the freezing thereof. The device insures a positive delivery of oil 105 into the steam-chest at any time, whether working steam or drifting, at the will of the operator, simply by moving a lever in each direction, the driving-screws being provided with right and left hand threads; the sight- 110 feed glasses and gage-glasses now in use are entirely done away with; the operation of the device is not affected by change of temperature, as is the case with the sight-feed and gravity lubricators, and the oil is not im- 115 paired by heating to a high degree, but is fed direct into the steam-chest in its natural state, thereby giving the best results. On account of the variation in work of a locomotive no automatic lubricator will accommodate the 120 engine to its demands for oil under the varying conditions of service without being continually adjusted. My device is simple and can be manufactured for much less cost than 125 other lubricators of its size and capacity. It can be placed in any position in the cab and the cylinders turned as desired in the frame, being in the same horizontal plane, as shown, or in the same vertical plane, if desired. This 130 can be done by loosening the nut on the clamp

26 and turning the cylinders in an obvious manner. The lubricator can be filled at any time when the engine is running without shutting off steam and shows the greatest economy in the use of oil, because none is wasted when the engine is standing idle. It also shows a saving in fuel, for the reason that the valves being properly oiled at all times the engine will work with a small expenditure of power. If the valves become dry, the remedy can be applied instantly, and one side can be oiled without applying an excess of oil to the other by simply throwing one of the pawls back and leaving the other in operative position.

While I have illustrated and described a particular embodiment of my invention, it will be readily understood that the principle thereof can be carried out in many other ways and that many modifications can be made in the form shown.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A lubricating device comprising a pair of parallel cylinders for containing a lubricant, a displacement-piston for each cylinder, a screw connected with each piston, a ratchet-wheel connected with each screw, a pawl for each ratchet-wheel, a lever pivotally mounted and pivotally connected with the pawls, and means for holding the pawls in inoperative position.

2. A lubricating device, comprising a pair of parallel cylinders for containing a lubricant, and having an outlet, a piston for each cylinder, and means for operating the piston

comprising a ratchet-wheel on each cylinder, the teeth on said ratchet-wheels being turned in opposite directions, a lever pivoted between the cylinders, a pawl pivotally connected with the lever and having two projections adapted to engage the teeth on the ratchet-wheels, and a screw connected with each ratchet-wheel, said screws being connected with the pistons for moving them.

3. A lubricating device, comprising means for feeding a lubricant, a tube into which said lubricant is fed, a casing connected with said tube and provided with a retaining-valve, yielding means for seating said valve, a screw for adjusting said valve, an adjustable nut in which said screw is mounted, and a removable cap on said nut for covering the screw.

4. A lubricating device, comprising a cylinder for containing a lubricant and having an outlet, a yieldable retaining-valve for said outlet, a tallow-tube into which said outlet discharges, a casing connected with said tallow-tube and provided with a retaining-valve, yielding means for seating said valve, a screw for adjusting the last-mentioned valve, an adjustable nut in which said screw is mounted, and a removable cap on said nut for covering said screw.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT S. MEARS.

Witnesses:

T. B. ATCHISON,  
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