No. 849,530. PATENTED APR. 9, 1907.

H. C. CLAY.

PUMP.

APPLICATION FILED OCT. 23, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

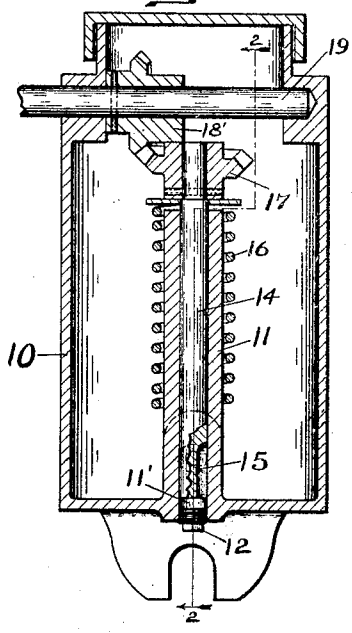


Fig. 2.

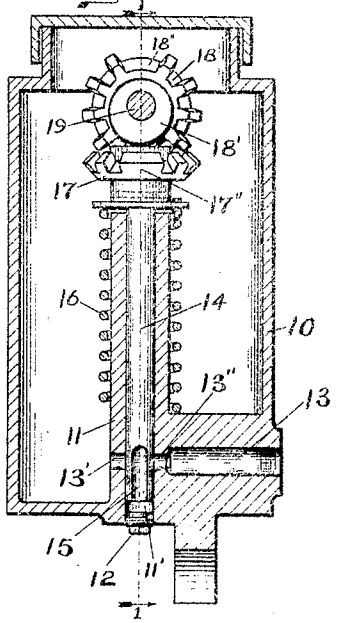


Fig. 3.

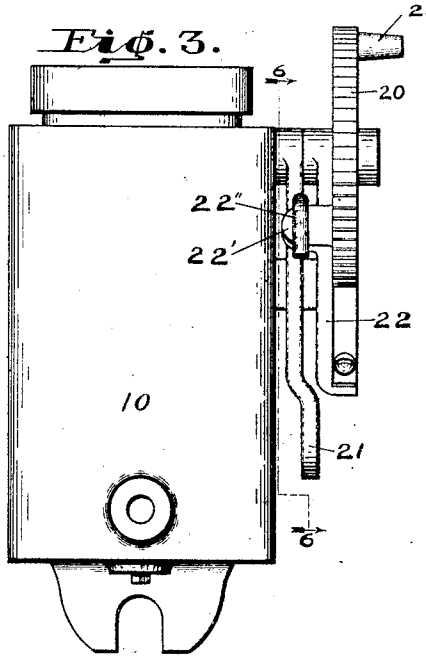
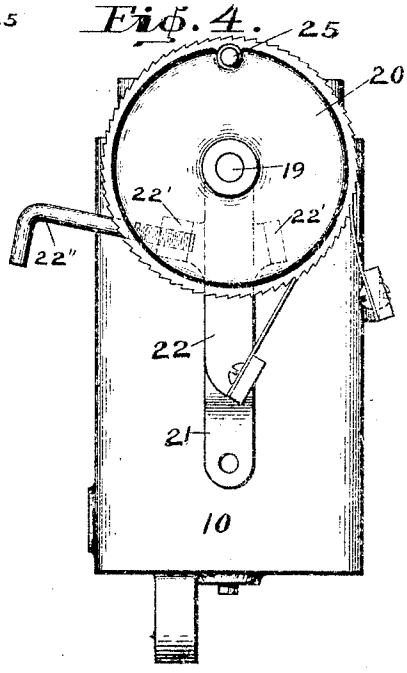


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

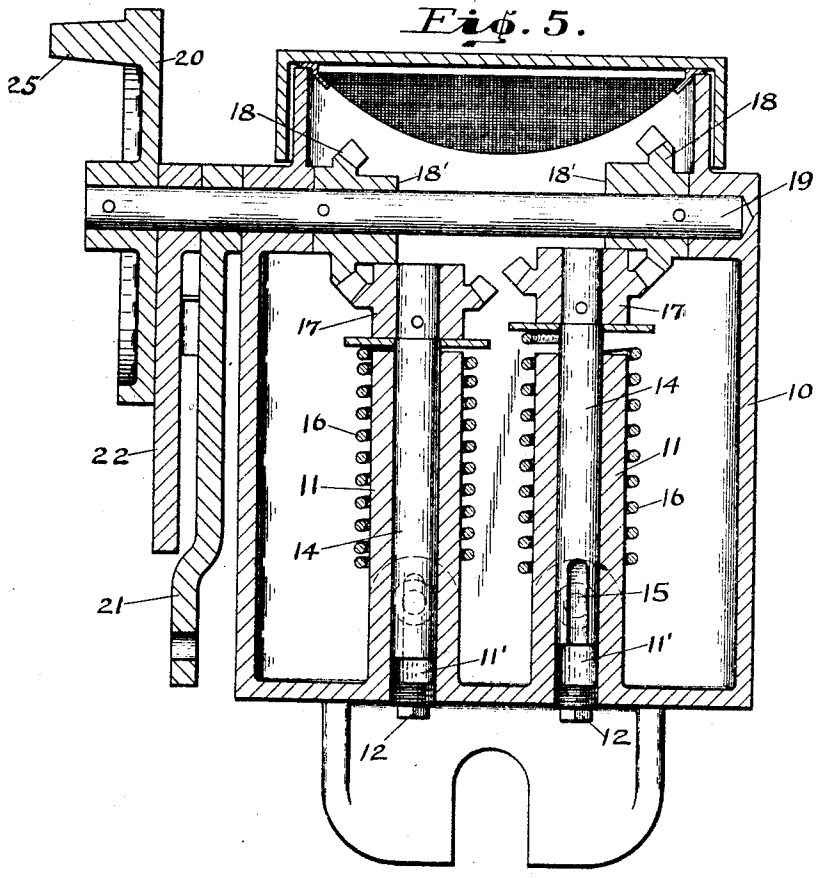
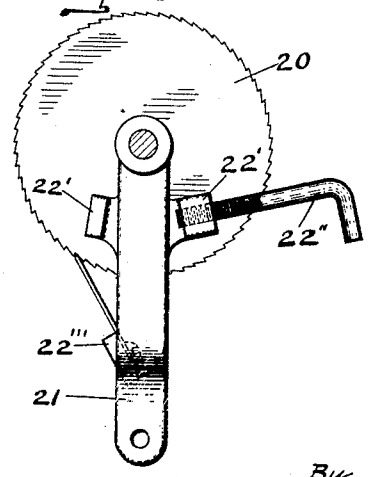


Fig. 6.



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UNITED STATES PATENT OFFICE.

HARRY C. CLAY, OF COLUMBUS, INDIANA, ASSIGNOR TO REEVES & COMPANY, OF COLUMBUS, INDIANA, A CORPORATION OF INDIANA.

PUMP.

No. 849,530. Specification of Letters Patent. Patented April 9, 1907.

Application filed October 23, 1905. Serial No. 284,108.

To all whom it may concern:

Be it known that I, HARRY C. CLAY, a citizen of the United States, residing at Columbus, in the county of Bartholomew and State of Indiana, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

The object of my invention is to produce a simple easily-manufactured pump especially designed for pumping lubricating-oil in small regulated quantities from a reservoir to a part to be lubricated.

The accompanying drawings illustrate my invention.

Figure 1 is a vertical section of an embodiment of my invention on line 1 1 of Fig. 2; Fig. 2, a similar section on line 2 2 of Fig. 1; Fig. 3, a side elevation; Fig. 4, an end elevation; Fig. 5, a section similar to Fig. 1 of a double pump, and Fig. 6 a section on line 6 6 of Fig. 3.

In the drawings, 10 indicates a suitable reservoir of any desired size, within which is arranged a vertical cylinder 11, which is preferably formed integral with the reservoir 10, the bore of said cylinder being straight and entirely through the cylinder, so that it may be formed by an ordinary drill and its lower end closed by any suitable plug, such as the screw-plug 12. Intersecting the bore of cylinder 11 near its lower end a short distance above the plug 12 is a transverse passage 13, which also communicates at its inner end with the reservoir 10, the said passage thus forming, with relation to the bore of cylinder 11, an induction-port 13′ and an eduction-port 13″ upon opposite sides of the bore. Rotatably and axially movable within the bore of cylinder 11 is a piston 14, the lower end of which is provided at one side with a longitudinal groove 15, the upper end of which extends as far as the passage 13, so that it may communicate either with the port 13′ or the port 13″ and the lower end of which extends to the lower end of the piston. The piston is normally urged upward by means of a suitable spring 16, and it may be rotated and axially reciprocated by any suitable means.

In Figs. 1 to 4, inclusive, I show a wabble bevel-gear 17, pinned to the upper end of the piston and arranged so that the upper end of its hub will be engaged by the eccentric hub 18′ of an eccentric bevel-gear 18, said gear 18 being attached to a shaft 19, which is journaled in the upper end of the reservoir 10 at right angles to the piston 14. By making the gear 17 a wabble-gear the eccentricity of the gear 18 may be half of the eccentricity of the eccentric 18′. By this arrangement as shaft 19 is rotated the piston 14 will be simultaneously rotated and axially reciprocated, so that as the groove 15 comes opposite the induction-port 13′ the piston 14 will be at its highest point and oil will flow from the reservoir 10 through the induction-port 13′ into the space 11′ between the lower end of the piston 14 and the plug 12. As the piston 14 is rotated groove 15 is carried out of registry with the induction-port 13′ and into registry with the eduction-port 13″ and at the same time is moved downward toward plug 12, so that the oil in the portion 11′ of the bore of the cylinder will be forced upward (by the downward movement of the piston) and out through the eduction-port 13″.

Any suitable means may be used for rotating shaft 19. In the drawings I have shown a ratchet wheel or disk 20 attached to the shaft 19. Swinging freely on shaft 19 between wheel 20 and casing 10 are two arms 21 and 22, the arm 21 being adapted to be reciprocated through a definite angle by any suitable means. In order that the amount of angular advancement of the ratchet-wheel may be varied, even though the throw of arm 21 remains constant, I provide arm 22 with a pair of fingers 22′ 22′, arranged on opposite sides of arm 21 and spaced apart, so as to permit a limited independent movement of arm 21. Threaded through one finger 22′ is a screw 22″, by means of which the independent movement of arm 21 may be limited. Arm 22 carries a spring finger or pawl 22″, adapted to engage the teeth of the ratchet-wheel 19. By arranging the arms 21 and 22 between the casing 10 and wheel 19 I am able to provide wheel 19 with a handle 25, by means of which it may be readily turned by hand in case an initial supply of oil is desired to be discharged from the pump.

In the construction shown in Fig. 5 the pump construction is merely duplicated, with the exception that the gears 17′ are not

wabble-gears. In order that the gears may be assembled in proper relation, I provide the gear 17 with a large or broad tooth 17″ and the gear 18 with a corresponding broad space 18″ between the teeth, so that the gears will only run when assembled in proper position.

I claim as my invention—

1. The combination, with a suitable reservoir, of a cylinder formed integral therewith within the reservoir and having eduction and induction ports communicating with the bore thereof, a piston rotatably and axially reciprocable within the cylinder and having a passage formed therein communicating with the cylinder at the end of the piston and adapted to be brought into registry with the induction and eduction ports successively, a spring for normally urging the piston in one direction, a shaft, a cam carried by said shaft and adapted to drive the piston axially in opposition to the spring, and a pair of meshing gears carried by the shaft and piston.

2. The combination, with a suitable reservoir, of a cylinder formed integral therewith within the reservoir and having eduction and induction ports communicating with the bore thereof, a piston rotatably and axially reciprocable within the cylinder and having a passage formed therein communicating with the cylinder at the end of the piston and adapted to be brought into registry with the induction and eduction ports successively, a spring for normally urging the piston in one direction, a shaft, a cam carried by said shaft and adapted to drive the piston axially in opposition to the spring, a pair of meshing gears carried by the shaft and piston, a disk carried by the shaft outside the casing, a pair of arms pivoted upon the shaft between said disk and the casing, one of said arms carrying means for engaging and propelling the disk in one direction, and interengaging portions between the two arms permitting limited movement of one of the arms independent of the other.

3. The combination, with a suitable reservoir, of a cylinder formed integral therewith within the reservoir and having induction and eduction ports communicating with the bore thereof, a piston rotatably and axially reciprocable within the cylinder and having a passage formed therein communicating with the cylinder at the end of the piston and adapted to be brought into registry with the induction and eduction ports successively, a spring for normally urging the piston in one direction, a shaft, a cam carried by said shaft and adapted to drive the piston axially in opposition to the spring, a pair of meshing gears carried by the shaft and piston, a disk carried by the shaft outside the casing, a pair of arms pivoted upon the shaft between said disk and the casing, one of said arms carrying means for engaging and propelling the disk in one direction, interengaging portions between the two arms permitting limited movement of one of the arms independent of the other, and means for varying the possible amplitude of said independent movement.

4. The combination, with a suitable reservoir, of a cylinder formed integral therewith within the reservoir and having induction and eduction ports communicating with the bore thereof, a piston rotatably and axially reciprocable within the cylinder and having a passage formed therein communicating with the cylinder at the end of the piston and adapted to be brought into registry with the induction and eduction ports successively, a spring for normally urging the piston in one direction, a shaft, a cam carried by said shaft and adapted to drive the piston axially in opposition to the spring, a pair of meshing gears carried by the shaft and piston, a disk carried by the shaft outside the casing, a pair of arms pivoted upon the shaft between said disk and the casing, one of said arms carrying means for engaging and propelling the disk in one direction, interengaging portions between the two arms permitting limited movement of one of the arms independent of the other, and means for varying the possible amplitude of said independent movement.

5. In a pump, the combination, with a cylinder having induction and eduction ports communicating with the bore thereof, of a piston rotatable and axially reciprocable within said cylinder and having a passage formed therein communicating with the cylinder at the end of the piston and adapted to be brought into registry with the induction and eduction ports successively, means for rotating and axially reciprocating the piston, a disk carried by the shaft outside the casing, a pair of arms pivoted upon the shaft between said disk and the casing, one of said arms carrying means for engaging and propelling the disk in one direction, and interengaging portions between the two arms permitting limited movement of one of the arms independent of the other.

6. In a pump, the combination, with a cylinder having induction and eduction ports communicating with the bore thereof, of a piston rotatable and axially reciprocable within said cylinder and having a passage formed therein communicating with the cylinder at the end of the piston and adapted to be brought into registry with the induction and eduction ports successively, means for rotating and axially reciprocating the piston, a disk carried by the shaft outside the casing, a pair of arms pivoted upon the shaft between said disk and the casing, one of said arms carrying means for engaging and pro-

pelling the disk in one direction, interengaging portions between the two arms permitting limited movement of one of the arms independent of the other, and means for varying the possible amplitude of said independent movement.

In witness whereof I have hereunto set my hand and seal, at Columbus, Indiana, this 16th day of October, A. D. 1905.

HARRY C. CLAY. [L. S.]

Witnesses:
FRED DOELLER,
W. R. BAXTER.