

No. 864,857.

PATENTED SEPT. 3, 1907.

A. P. OLSON.
AUTOMATIC OILER.

APPLICATION FILED JAN. 11, 1907.

2 SHEETS—SHEET 1.

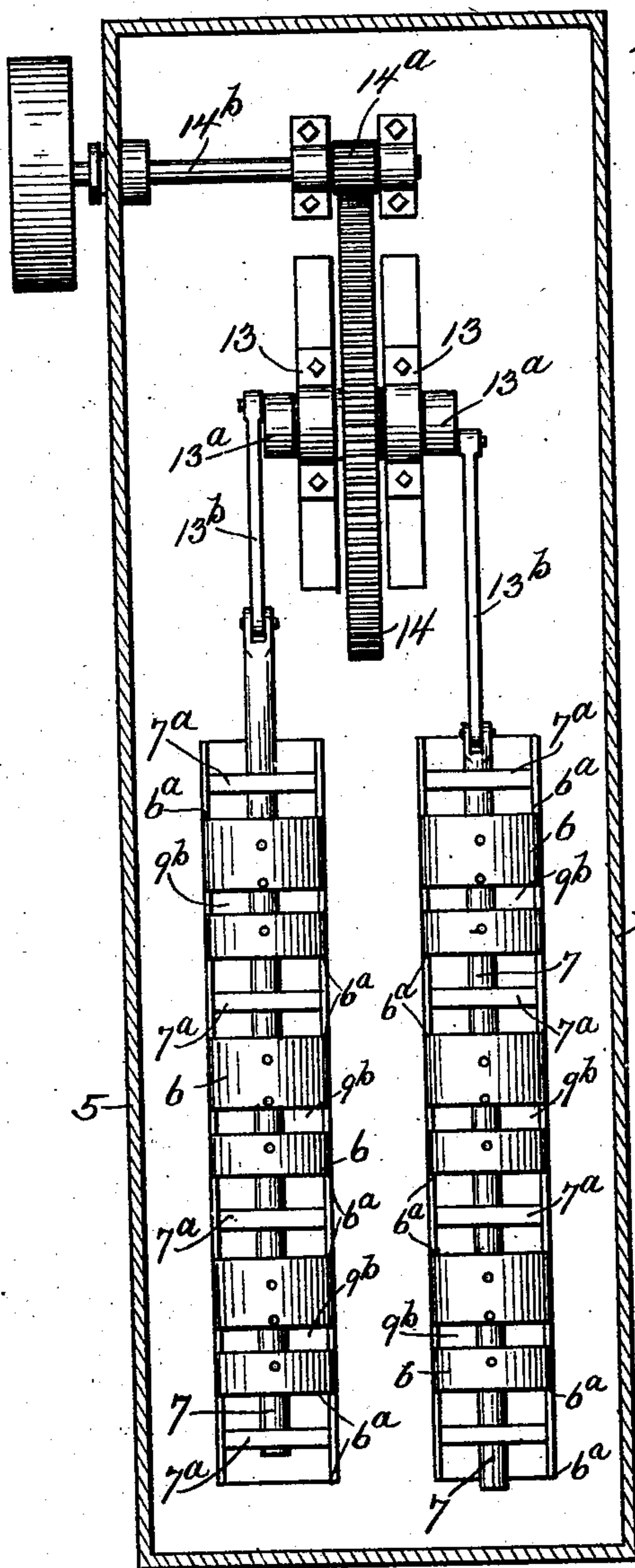


Fig. 1.

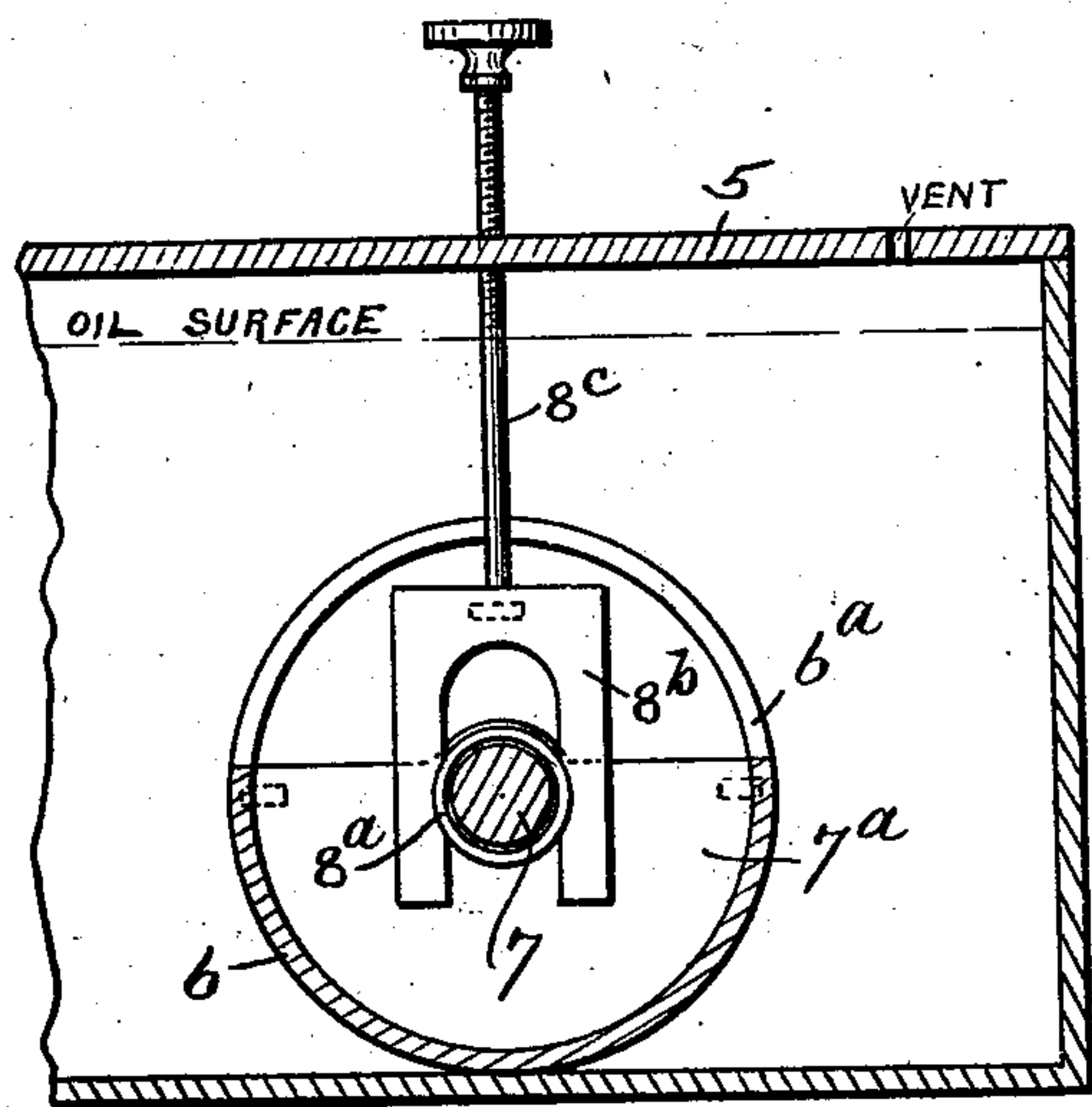


Fig. 4.

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R. J. Jacker
Anna C. Kahr.

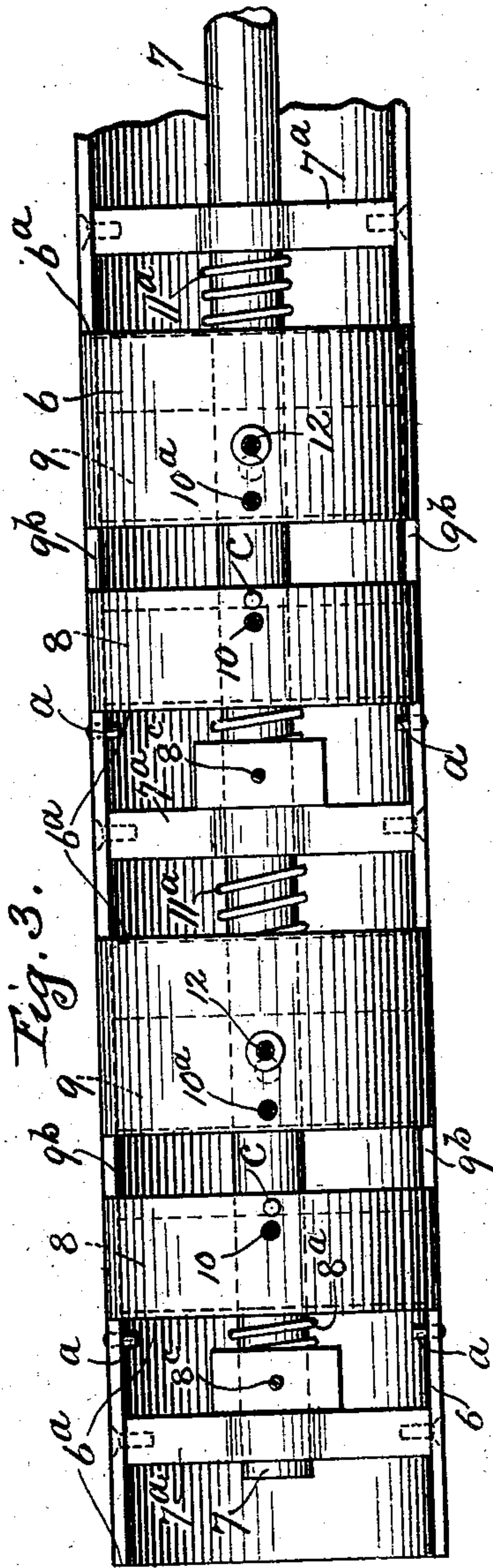
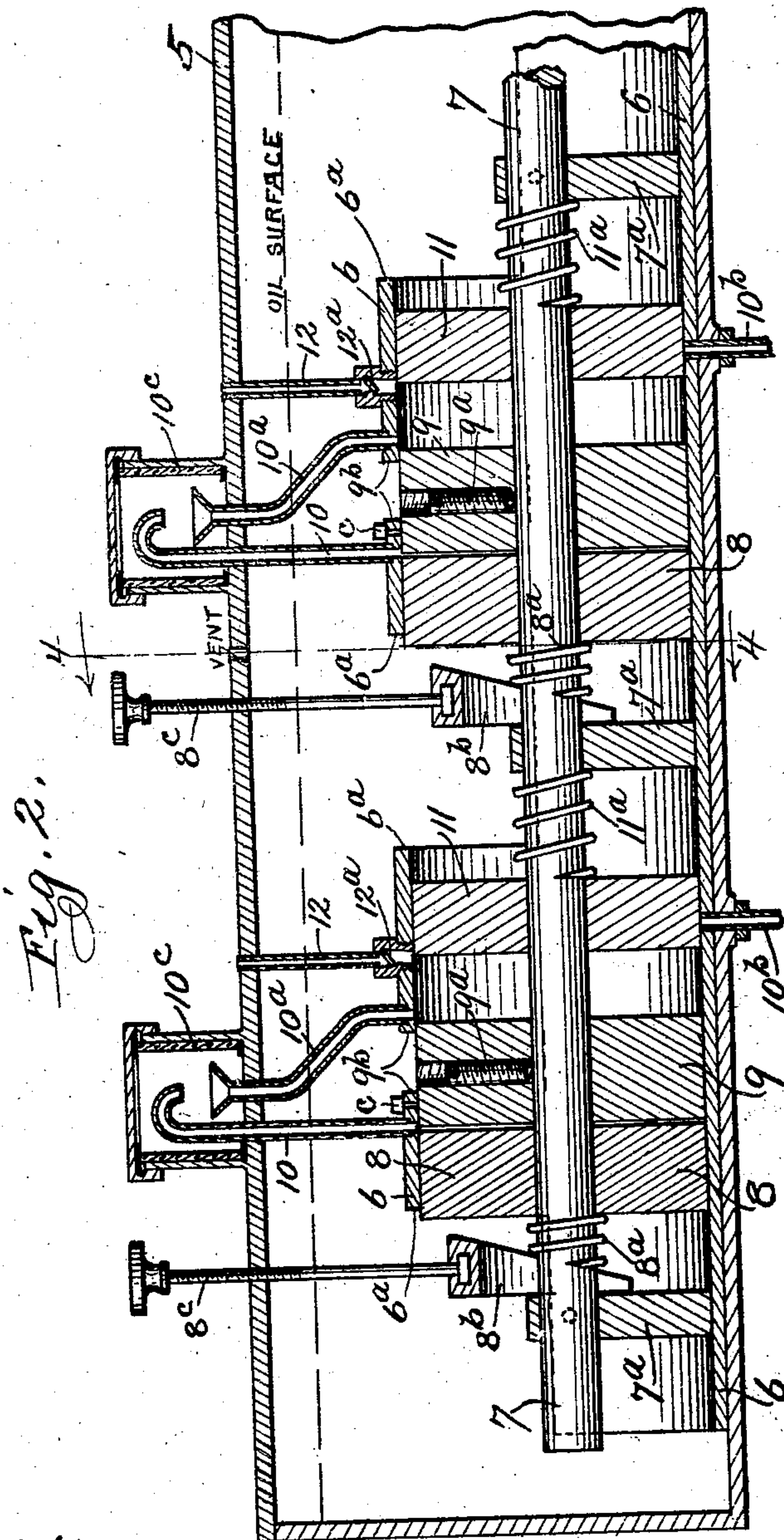
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

ANDREW P. OLSON, OF CHICAGO, ILLINOIS.

AUTOMATIC OILER.

No. 864,857.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed January 11, 1907. Serial No. 351,796.

To all whom it may concern:

Be it known that I, ANDREW P. OLSON, of Chicago, in the State of Illinois, have invented certain new and useful Improvements in Automatic Oilers, of which the following is a specification.

My invention relates to improvements in oilers in which an oil reservoir is used in conjunction with a pump arranged to be worked by the machine to be oiled so as to automatically feed the oil to the machine as required to keep it properly lubricated; and the objects of my improvements are, first, to provide a more simple and efficient construction than any now known to me for the purpose; second, to afford facilities for observing the passage of the oil from the duct leading from the reservoir to the machine to be oiled; and, third, to provide a form of device whose parts may be conveniently multiplied so as to be adapted to a compact system comprising several pumps with ducts leading to various parts of the machine to be oiled, all being worked by the same shaft or operating device. I attain these objects by the mechanism illustrated in the accompanying drawings in which—

Figure 1 is a sectional plan view of a device of the class mentioned containing my improvements with pump-cylinders shown in duplicate and reservoir in section. Fig. 2 shows in fragment a vertical longitudinal section through the reservoir and one of the pump cylinders. Fig. 3 is a fragmentary detail showing a top view of two connected cylinders separated from the reservoir. Fig. 4 is a detail showing a section on the line 4 4 of Fig. 2.

In the several views of the drawing the same reference numerals indicate the same parts.

The numeral 5 designates an oil reservoir which preferably consists of an elongated box, tube or other vessel-like structure adapted to hold a suitable supply of lubricating oil.

Numeral 6 is a tube or hollow cylinder-like structure which is adapted to lie upon the bottom of the reservoir and to be secured in place therein by any convenient means. A piston-rod 7 is extended through the cylinders and works in suitable bearings or openings in stop-pieces 7^a fixed in said cylinder or cylinders. Portions of said cylinders at 6^a 6^a over the stop-pieces are cut away as shown in Figs. 1, 3 and 4, and the pump-pistons, arranged in the cylinders on opposite sides of the cut-away portions, are shown in duplicate. The piston 8 is loose upon the piston-rod and is pressed by a spring 8^a so as to slide upon the rod in the direction from the stop-pieces and to permit it to slide in the other direction when the spring pressure is overcome. Stop-pins *a* (Fig. 3) prevent its movement backward too far. The spring pressure is regulated by means of a wedge-like yoke 8^a interposed between the stop-piece 7^b and the spring and attached to a thumb rod 8^c threaded in the

top of the reservoir so that the wedge can be inserted more or less, as desired for this purpose.

A piston 9 is fixed to the rod by a set screw 9^a so as to move therewith. Over the piston 9 the cylinder is cut away to form a slot 9^b preferably extending down 60 to the axis of the piston rod, and serving as an intake port to admit oil from the reservoir into the cylinder between the pistons 8 and 9. A small duct 10 communicating with the interior of the cylinder and extending out through the top or cover of the reservoir, is provided 65 for carrying the oil out to a point where it is to be delivered, by the working of the pistons 8 and 9 as presently to be explained.

In the present instance a third piston 11, opposite to piston 8 from piston 9, is provided and mounted loosely 70 so as to slide upon the rod toward the piston 9 under the pressure of a spring 11^a, and the oil duct 10 delivers the oil to a duct 10^a which communicates with the cylinder at a point between the pistons 9 and 11. An air vent 12 is provided for admitting air to the space between said pistons 9 and 11 when they are being moved 75 apart. Said vent has a check valve 12^a for automatically closing it at other times. A duct 10^b communicates with the cylinder at the bottom, at a point over which the piston 11 works, and it carries the oil, which has 80 been delivered into the cylinder in the open space between said pistons 9 and 11, to the place where it is to be used. The space between the downwardly turned end of the duct 10 and the funnel-shaped upper end of the duct 10^a as here shown is inclosed within a glass cup 85 10^c through which the passage of the oil from duct 10 to duct 10^a may be observed at this point. This is a convenient construction for cases in which it may be thought desirable to make the oil-feed visible. In other cases the pistons 8 and 9 in conjunction with the 90 duct 10 extended to the place where the lubricant is to be applied will be sufficient to do the required work without the use of the third piston 11.

To relieve possible inward pressure upon pistons 8 and 9 when being separated a small hole may be made 95 in the cylinders at *c* and provided with an automatic check valve arranged to open when the pressure is inward and to close when it is outward.

The bottom of the reservoir is provided with a bracket 13 in which a crank shaft 13^a is journaled. This 100 is connected by a pitman 13^b with the piston-rod or rods. The crank shaft is provided with a large cog wheel 14 geared to a small pinion 14^a mounted on a shaft 14^b extending out of the reservoir through a stuffing-box journal bearing, and by this means a slow re- 105 ciprocating movement of the piston-rod and pistons fixed thereto may be produced.

The apparatus containing the invention comprises an oil reservoir having a vent near the top for admitting air over the oil as it is drawn off, a cylinder (one or 110

more) fixed to the reservoir and communicating therewith through intake ports so as to receive oil therefrom, a duct or ducts communicating with the cylinder through an output port and leading to the place or places where the lubricant is to be applied, a piston-rod adapted to work within the cylinder, a fixed piston and one or more loose spring-pressed pistons mounted on the piston-rod and means for imparting to the piston-rod a reciprocating movement. The position of the port or intake of oil from the reservoir to the cylinder and of the output from the cylinder to the outgoing duct or ducts relatively to the pistons and their reciprocations, is such that the intake port or ports can be closed at or about the time of the opening of the output port, so that a regular charge of oil shall be taken and delivered at each return movement.

The operation is as follows: Assuming the oiler to be connected by the oil duct with the machine to be oiled and having a belt connection with the large pulley (Fig. 1) mounted on the outer end of shaft 14^b, the operation of the machine will impart a slow reciprocative movement to the piston-rod, or rods, and the piston or pistons 9 which are fixed rigidly thereon. The movement of the fixed piston 9 away from the loose piston 8 is sufficient to clear or open the intake port 9^b and allow oil from the reservoir to enter the cylinder between said pistons 8 and 9. With this movement the spring 8^a is brought into action which causes piston 8 to follow after piston 9 and close the output port leading to the duct 10 and further on toward the intake port 9^b as far as required to take in the desired charge of oil, the spring pressure having been adjusted and set with a view to regulate this movement of piston 8 to suit the result required in the given case. The return movement of the fixed piston toward the piston 8 will throw out through the intake port any excess of oil over the required charge before closing said port, and thereafter will compress the charge upon the piston 8 and force it back sufficiently to open the port leading to duct 10 and out through the same to any system of ducts which may be connected therewith. The stop-pins *a* check the backward movement of piston 8 as soon as the output port is fully open so that the piston 9 can come up close and force out the full charge of oil held in between said pistons.

In using the visible feed the charge taken from the reservoir and passed out through the duct 10 is returned to the cylinder at the opposite side of piston 9 through the duct 10^a and held by the piston 11, and the action of the piston 9 relatively to piston 11 is similar to that described with reference to piston 8, first closing the port leading from the duct 10^a, it compresses the oil upon the piston 11 and forces it back until the port of 10^b is open and then it forces the charge out there. The

vent 12 admits air between pistons 9 and 11 when they part, and the spring 11^a causes the piston 11 to move back over and close the port at 10^b. It is contemplated that the cylinder and piston rod may be extended to any desired length and that the sets of pistons can be multiplied and provided with ducts and regulators so as to make a series of adjustable pumps all operated by the single piston rod, each duct for supplying oil to a different journal or bearing of a machine having gear or belt connection adapted to work the piston rod in the manner shown and described.

What is claimed is:

1. In an apparatus of the class described, a pump comprising a cylinder with an intake port and an output port, a piston rod adapted to work within the cylinder, a spring-pressed piston mounted loosely upon the piston-rod and working to open and close the output port, and a piston mounted rigidly upon the piston-rod and working to open and close the intake port.

2. In an apparatus of the class described, a series of pump cylinders, each having an intake port and an output port, a piston-rod extended throughout the cylinders, spring-pressed pistons, respectively, mounted loosely upon the piston-rod within the cylinders, and working in conjunction with the output ports, and pistons respectively mounted rigidly upon the piston rod within the cylinders and working in conjunction with the intake ports.

3. In an apparatus of the class described, a pump comprising a cylinder provided with an air vent and two intake ports and two out-put ports, a piston-rod adapted to work within the cylinder, two spring-pressed pistons mounted loosely upon the piston-rod to work in conjunction with the output ports, and a piston mounted rigidly upon the piston-rod between the loosely-mounted pistons to work in conjunction with the intake and the output ports.

4. In an apparatus of the class described, a pump comprising a cylinder with an intake port, an output port, a stop in conjunction with the output port, a piston-rod adapted to work within the cylinder, a spring-pressed piston mounted loosely upon the piston-rod and adapted to work in conjunction with the output port and stop, and a fixed piston mounted rigidly upon the piston-rod and adapted to work in conjunction with the intake port and loosely-mounted piston.

5. In an apparatus of the class described, a pump comprising a cylinder provided with an intake port and an out-put port, a piston rod adapted to work within the cylinder, a spring-pressed piston mounted loosely upon the piston-rod and a piston mounted rigidly upon the piston-rod both of said pistons being adapted to work in conjunction with the intake port for measuring the charge taken.

6. In an apparatus of the class described, a pump comprising a cylinder provided with an intake port and an output port, a piston rod within the cylinder, a spring-pressed piston loosely mounted upon the piston-rod and a piston rigidly mounted upon the piston-rod and means for regulating the spring-pressure upon the loosely mounted spring-pressed piston.

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