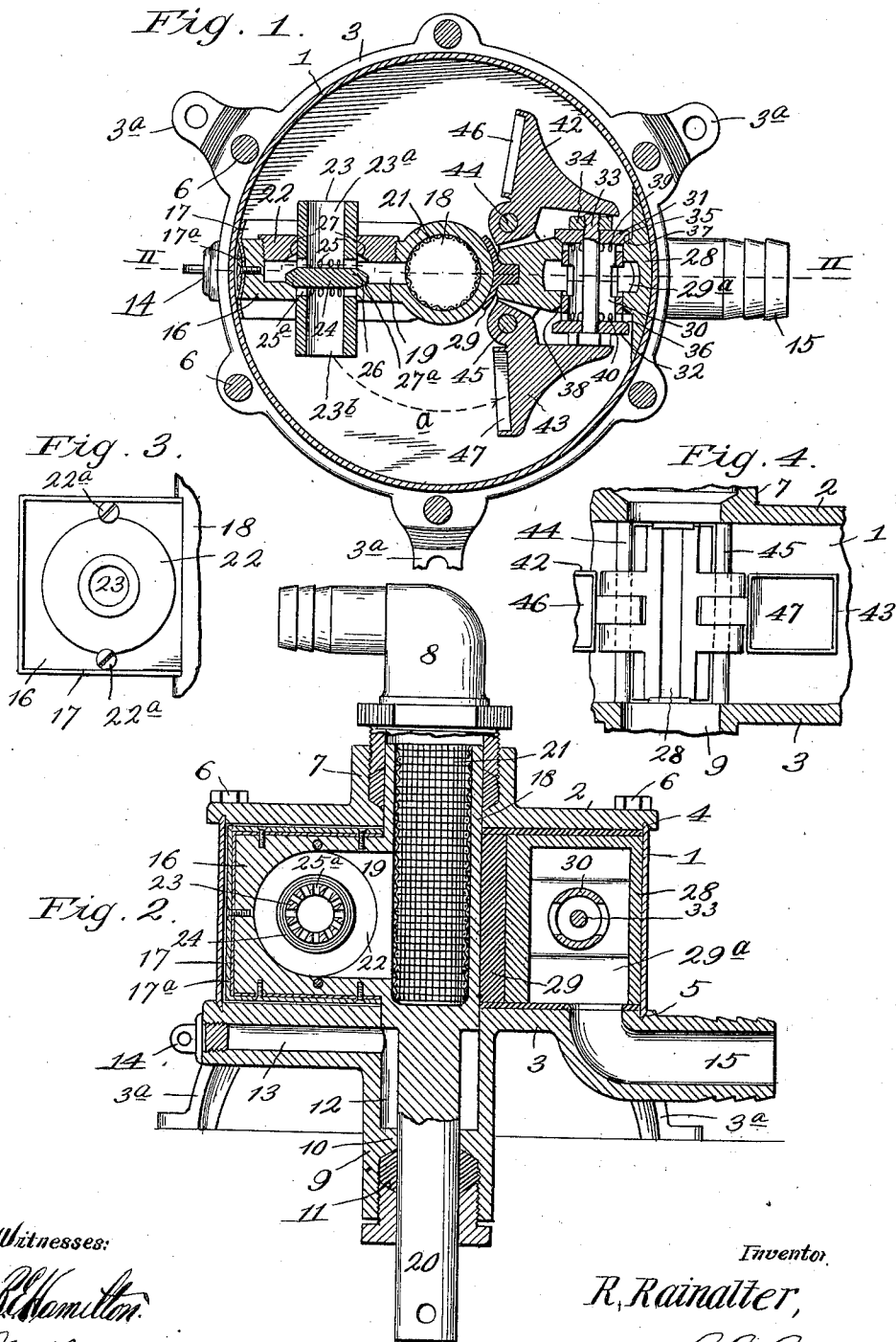


R. RAINALTER.
OSCILLATORY MOTOR.
APPLICATION FILED JAN. 18, 1910.

1,036,711.

Patented Aug. 27, 1912.

2 SHEETS—SHEET 1.



Witnesses:

R. Hamilton
M. Cox

Inventor,

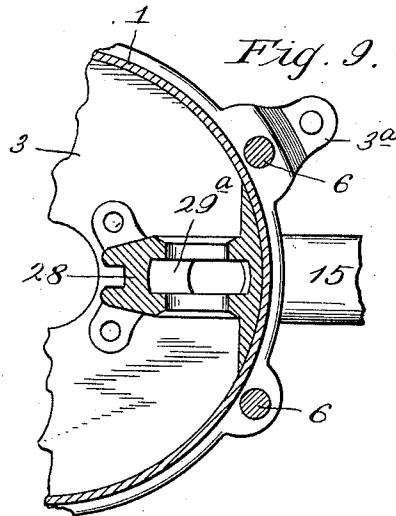
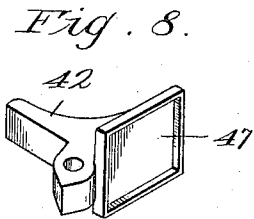
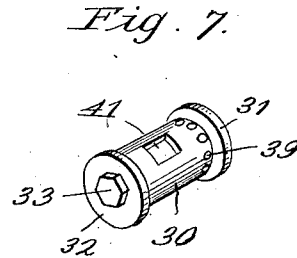
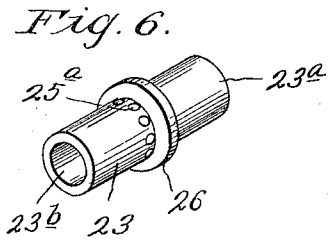
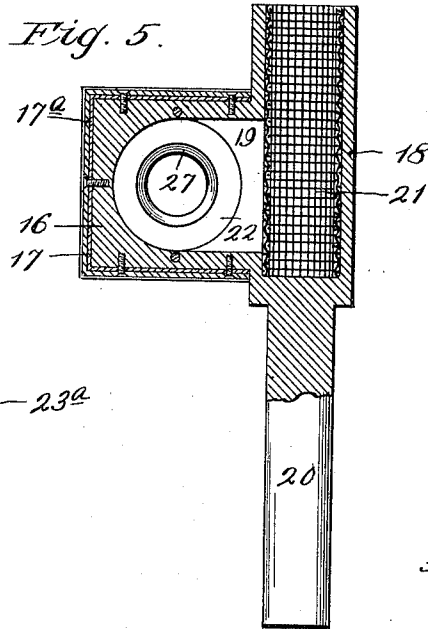
R. Rainalter,
By F. G. Fischer,
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UNITED STATES PATENT OFFICE.

RUDOLPH RAINALTER, OF ST. JOSEPH, MISSOURI.

OSCILLATORY MOTOR.

1,036,711.

Specification of Letters Patent.

Patented Aug. 27, 1912.

Application filed January 18, 1910. Serial No. 538,758.

To all whom it may concern:

Be it known that I, RUDOLPH RAINALTER, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Oscillatory Motors, of which the following is a specification.

My invention relates to improvements in oscillatory motors, and my object is to provide a simple automatic motor of this character for driving light machinery such for instance as washing machines.

The invention consists in the novel construction, combination, and arrangements of parts hereinafter described, and particularly pointed out in the claims, and in order that the invention may be fully understood reference will now be made to the accompanying drawings, in which:

Figure 1 represents a central horizontal section of my improved motor. Fig. 2 is a vertical central section on line II—II of Fig. 1. Fig. 3 is an inverted side elevation of an oscillatory piston employed in carrying out the invention. Fig. 4 is a broken section of the motor cylinder with a partition therein in elevation. Fig. 5 is a vertical central section of the oscillatory piston. Figs. 6 and 7 are detail perspectives of tubular valves employed in carrying out the invention. Fig. 8 is a detail perspective of one of the oscillatory levers for controlling the valves. Fig. 9 is a broken horizontal section through the center of the cylinder and partition with the outlet valve removed.

In carrying out the invention I employ a cylinder consisting of a jacket 1, an upper cylinder-head 2, and a lower cylinder-head 3, said cylinder-heads having circular grooves 4 and 5, respectively, to receive the beveled ends of jacket 1 in order to form a fluid-tight joint. The cylinder-heads are tightly drawn against the beveled ends of the jacket by a plurality of tie-bolts 6. The upper cylinder-head 2 has a centrally-disposed internally-threaded stuffing-box 7, to receive an inlet pipe 8 adapted to be connected by a hose to a faucet or other source of motive fluid. Cylinder-head 3 has a centrally-disposed tubular extension 9, divided by a transverse partition 10 into a stuffing-box 11 and a lubricant chamber 12, which latter has an inlet 13 extending radially through the cylinder-head and normally closed by a plug 14. Cylinder-head 3 is also

provided with a radially-projecting exhaust-tube 15 adapted to be connected to a hose or other means for carrying off the exhaust motive fluid, and said cylinder-head is further provided with supporting legs 3^a adapted to be secured to the lid of a washing-machine, not shown.

16 designates an oscillatory piston arranged within the cylinder and provided at three sides with packing 17, which snugly fits against the interior of the cylinder and prevents leakage of water between the same and the piston, said packing being held in position by a U-shaped clip 17^a. Piston 16 is provided at its rear upper side with a tubular portion 18 extending through the stuffing-box 7, and communicating with inlet pipe 8. Said tubular extension 18 leads to a chamber 19 in the piston, which latter is provided at its lower rear portion with a shank 20, extending through lubricant chamber 12, and the stuffing box 11, and adapted to be secured direct to the agitator of a washing-machine or other light machinery.

21 designates a strainer within the tubular extension 18 for straining the motive fluid of foreign matter before it enters chamber 19 in the piston, which latter is provided at one side with a screw-plug 22, so that access may be had to the chamber for the placing or removal of a tubular valve 23, which controls the escape of the fluid from the chamber into the cylinder. Plug 22 is locked in position by two overlapping screws 22^a. Valve 23 is divided by a partition 24 into a chamber 23^a and a chamber 23^b, which lead into the cylinder from chamber 19 with which they communicate through two peripheral rows of ports 25 and 25^a, respectively, arranged at opposite sides of the partition, see Fig. 1. Valve 23 is also provided with a centrally-disposed peripheral flange 26 having beveled sides, one of which is adapted to engage a seat 27 in plug 22, and the other a seat 27^a in the adjacent side of the piston. Flange 26 is narrower than chamber 19 so that valve 23 may move longitudinally and thus alternately bring the flange 26 into engagement with its seats.

28 designates a partition, which in conjunction with the piston 16 divides the interior of the cylinder in two parts, and in order to prevent leakage of motive fluid from one part to the other, I interpose packing 29 between said partition and the tubular portion 18 of the piston. Partition 28

has a chamber 29^a communicating with the exhaust tube 15, and provided with a centrally-disposed transverse tubular valve 30, through which the exhaust fluid is admitted
 5 from the cylinder to the chamber 29^a. Valve 30 is closed at one end with an integral head 31 and at its opposite end with a removable head 32, so that it may be readily placed in or removed from the partition.
 10 Head 32 is normally held in place by a bolt 33 extending longitudinally through the valve and provided at its threaded end with a retaining-nut 34. Heads 31 and 32 have beveled sides 35 and 36 to engage beveled
 15 seats 37 and 38, respectively, in opposite sides of partition 28. Valve 30 is provided near its ends with peripheral rows of inlet ports 39 and 40, and intermediate its ends with two outlet ports 41, which latter are
 20 in constant communication with chamber 29^a. The length of valve 30 exceeds the width of partition 28 so that it may move to and fro to alternately expose the ports 39 and 40, as will be hereinafter described.
 25 42 and 43 designate levers bearing against the ends of bolt 33 and pivotally mounted upon vertical pins 44 and 45, respectively, extending through lugs projecting from opposite sides of partition 28 and abutting at
 30 their ends against the cylinder-heads 2 and 3, which prevent said pins from moving up or down and thus becoming disconnected from the levers. Levers 42 and 43 are provided with pockets 46 and 47 for a purpose
 35 hereinafter referred to.
 The operation, briefly described, is as follows: When the several parts occupy the positions shown in Fig. 1, fluid entering chamber 19 through the tubular extension
 40 18, flows from said chamber into the cylinder through ports 25 and chamber 23^a, and upon impinging against the piston, forces the same in the direction of arrow *a*. The fluid also on entering pocket 46 of lever 42
 45 causes said lever to firmly hold valve 30

against seat 37 so that the fluid cannot escape to the exhaust tube 15 through perforations 39. As the fluid forces the piston in the direction of arrow *a* said piston in turn forces the fluid out of the cylinder through
 50 ports 40 and 41 and the exhaust 15. When valve 23 is brought into contact with lever 47, it pushes the same backward and causes it to move valve 30 longitudinally to close
 55 ports 40 and open ports 39. The pressure of valve 23 upon lever 43 moves said valve longitudinally to uncover its ports 25^a and close its ports 25 so that the fluid instead of flowing through the same from chamber 19,
 60 enters the cylinder through ports 25^a and reverses the motion of the piston.

Having thus described my invention, what I claim is:

1. A motor consisting of a cylinder, an oscillatory piston mounted therein, motive
 65 fluid supply means leading into the cylinder through said piston, a valve carried by the piston for controlling the entrance of the fluid into the cylinder, a partition in the
 70 cylinder communicating with an exhaust port, a valve movably-mounted in the partition for controlling the flow of motive fluid through said exhaust-port, and two levers
 engaging opposite ends of said valve to actuate the same, said levers being provided
 75 with pockets, for the purpose described.

2. A motor comprising an inlet valve, and a movable cup-shaped closure for obstructing the port thereof.

3. A motor comprising an inlet valve, and
 80 a cup shaped closure fulcrumed in registration therewith for obstructing the inlet valve port.

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

RUDOLPH RAINALTER.

Witnesses:

F. G. FISCHER,
 M. Cox.