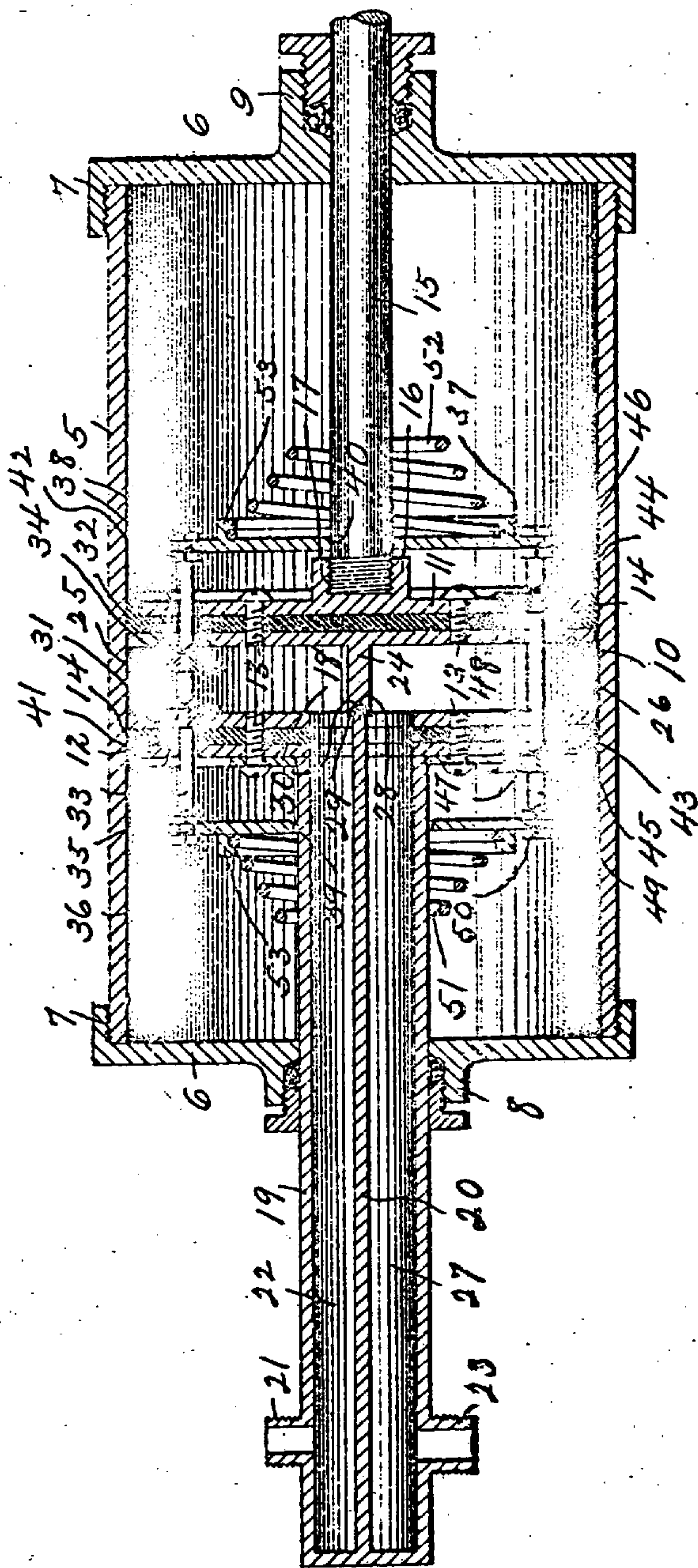


L. C. LEWIS.
WATER MOTOR.
APPLICATION FILED OCT. 7, 1907.

899,058.

Patented Sept. 22, 1908.



Witnesses

Carl Stoughton

Frank J. Campbell.

Inventor

Lewis C. Lewis

By

Chester C. Shepherd.

Attorney

UNITED STATES PATENT OFFICE.

LEWIS C. LEWIS, OF COLUMBUS, OHIO, ASSIGNOR TO THE MONARCH SPECIALTY MANUFACTURING COMPANY, OF COLUMBUS, OHIO, A CORPORATION OF OHIO.

WATER-MOTOR.

No. 899,058.

Specification of Letters Patent.

Patented Sept. 22, 1908.

Application filed October 7, 1907. Serial No. 398,210

To all whom it may concern:

Be it known that I, LEWIS C. LEWIS, citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Water-Motors, of which the following is a specification.

My invention relates to water motors and has for its object the provision of a device of this character constructed in such manner that it may be very simply and consequently very cheaply manufactured, while operating fully as well as devices of more expensive construction.

Further objects and advantages of the invention will be set forth in the detailed description which now follows.

The figure shown in the accompanying drawing is a vertical section of a water motor constructed in accordance with the invention.

Referring to the drawing, the numeral 5 designates the cylinder of the water motor, said cylinder being made from a length of tubing. Heads 6 are screwed upon this cylinder as at 7 and these heads carry stuffing boxes 8 and 9 of the usual and well known construction. Slidably disposed within the cylinder 5 is a piston which is composed of the central substantially H-shaped member 10 and plates 11 and 12, said plates 11 and 12 being secured to the plates of the H-shaped member by screws 13 and said plates 11 and 12 serving to clamp cup leathers 14 between themselves and the plates of the H-shaped member. A piston rod 15 is threaded into a boss 16 of the plate 11 as at 17. This piston rod 15 extends through the stuffing box 9 and may be connected in any desired manner to the member to be driven. The screws 13 also bolt a plate 18 to the plate 12 and a sleeve 19 is threaded into this plate. The sleeve 19 extends through the stuffing box 8 and a horizontal wall 20 separates the upper portion of this tube from the lower portion thereof.

A nipple 21 is threaded for the reception of the coupling member of a hose, not shown, it being understood that a rubber or like flexible hose is connected to this nipple for the purpose of conveying water under pressure to the upper chamber or passage-way 22 of the sleeve 19. A nozzle 23 is adapted to have the coupling member of a hose, not shown, connected thereto for the purpose of

conveying the exhaust water away from the motor, it being understood that the flexibility of the hose, permits it to conform to the movement of the sleeve.

A horizontal wall 24 which is a portion of the H-shaped member 10, divides the piston into two chambers, an upper chamber 25 and a lower chamber 26. The plate 12, the left hand cup leather 14 and the H-shaped member is cut through to bring the passage-way 22 into communication with the chamber 25 and to bring the chamber 26 into communication with the exhaust passage 27 which lies below the horizontal wall 20. If desired, the wall 24 may be recessed as at 28 for the reception of a gasket 29 and the front edge of the wall 20 may be reduced as at 30, so that when the plate 18 is forced up against the plate 12 by the screws 13, this reduced end of the wall 20 will bear against and expand the gasket 29 to form a water-tight connection between the walls 20 and 24. Valve seats 31 and 32 are formed in the H-shaped member and valves 33 and 34 are adapted to engage these seats. These valves are mounted upon a valve stem 35 which extends entirely through the piston and is connected at its outer ends to yokes 36 and 37 by nuts 38. Openings 39 and 40 are formed in these yokes, the yoke 36 sliding upon the sleeve 19 and the yoke 37 sliding upon the piston rod 15.

Ports 41 and 42 lead through the opposite sides of the piston from the valve seats 31 and 32, while ports 43 and 44 lead from the interior of the piston to valve seats 45 and 46. These valve seats 45 and 46 are adapted to be engaged by valves 47 and 48, these latter valves being mounted upon a stem 49, this latter stem being connected at its outer end to the yokes 36 and 37 by nuts 50. Springs 51 and 52 are supported from the faces of the yokes by recessed members 53.

The operation of the device is as follows: With the parts in the position illustrated in the drawing, water enters through the nipple 21 and passage 22 to the chamber 25, passing from said chamber through the port 42 to the right hand end of the piston where it acts to drive the piston toward the left. At this time the water from the left hand end of the piston is being exhausted through the port 43, chamber 26, passage 27 and nipple 23. When during the movement of the piston toward the left, the spring 51 strikes the

left hand head of the cylinder, said spring will be first slightly compressed to store up power, and then after the compression of this spring has reached a given point, the spring will act to throw the valves and the yokes quickly toward the right. This will seat the valve 34 and unseat the valve 33 and will seat the valve 47 and will unseat the valve 48. Water will then pass from the chamber 25 to the left hand end of the piston to drive the piston toward the right and the water at the right hand end of the piston will pass through the port 44 to the chamber 26, then out of the passage 27 and the nipple 23. The outlet through the nipple 23 is of slightly greater area than the inlet through the nipple 21, to prevent back pressure.

I am aware of the fact that valves of this character have been mounted in a movable piston and I do not broadly claim this structure, but I am not aware that a sleeve 19 divided by a horizontal wall into two separate passages in the manner shown, whereby the water may both be conducted to the motor and from the motor through a single tube, has ever been employed.

I therefore claim:

In a water motor, the combination with a piston having a transverse wall which divides said piston into two chambers, said piston having ports formed through the walls thereof, of valves controlling the flow of liquid through said ports, a cylinder in which said

piston is slidably disposed, a tubular member which passes through one end of said cylinder and is connected to said piston, a wall which divides said tubular member longitudinally into an inlet passage and exhaust passage, said tubular member being closed at its outer end, a nipple adapted to have a flexible conductor connected thereto, said nipple serving to conduct fluid to the inlet passage, a second nipple also adapted to have a flexible conductor secured thereto, there being a port formed through the second nipple for the conducting of fluid from the exhaust passage, the outlet through said second nipple being of greater area than the inlet through the first named nipple, the inlet passage communicating with one of the chambers of the piston and the outlet passage communicating with the other chamber of the piston, there being a groove formed in the edge of the transverse wall, a conducting member seated in said groove, the free edge of the divided wall of the tubular member being reduced to enter said groove, and means for binding said tubular member tightly against said piston.

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

LEWIS C. LEWIS.

Witnesses:

A. L. PHELPS,

LESTER SHEPHERD.