

W. C. KELLY.
HYDRAULIC MOTOR.
APPLICATION FILED SEPT. 12, 1910.

979,511.

Patented Dec. 27, 1910.

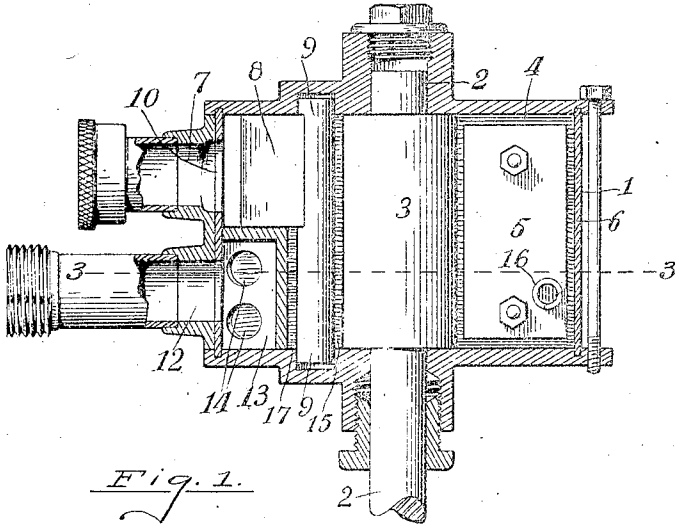


Fig. 1.

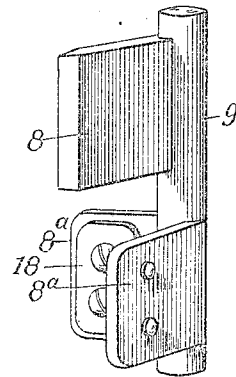


Fig. 5.

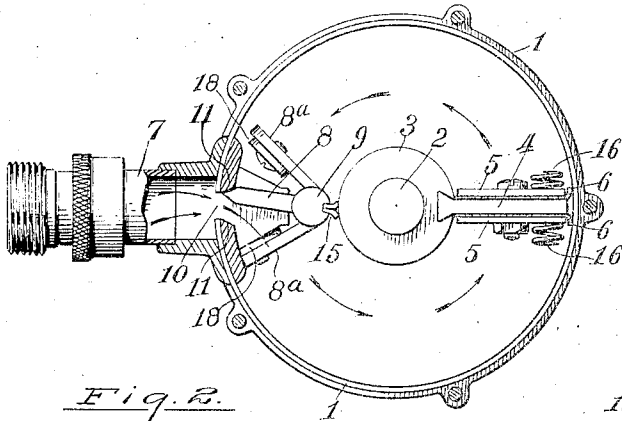


Fig. 2.

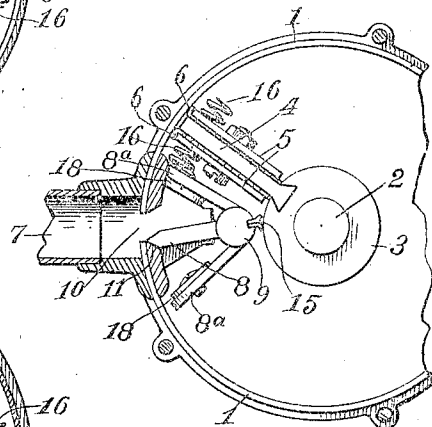


Fig. 4.

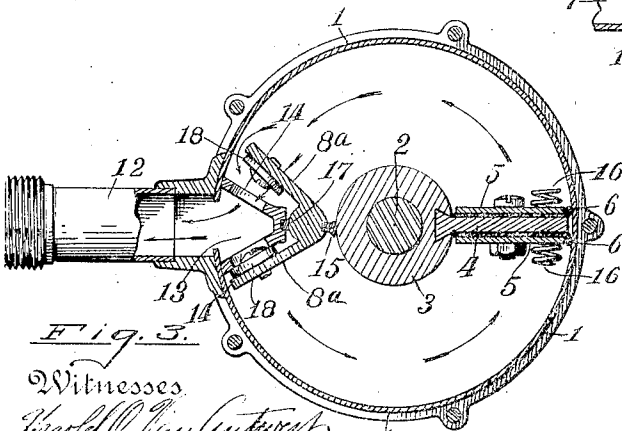


Fig. 3.

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HYDRAULIC MOTOR.

979,511.

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To all whom it may concern:

Be it known that I, WALLACE C. KELLY, a citizen of the United States of America, residing at Hastings, in the county of Barry and State of Michigan, have invented certain new and useful Improvements in Hydraulic Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in hydraulic motors, and its object is to provide the same with improved valve mechanism, and to provide the device with various new and useful features hereinafter more fully described, and particularly pointed out in the claims, reference being had to the accompanying drawings in which:

Figure 1 is a vertical section of a device embodying my invention. Fig. 2 a plan view of the same with the cap of the case removed and portions broken away. Fig. 3 a horizontal section on the line 3-3 of Fig. 1. Fig. 4 a detail similar to Fig. 2, and, Fig. 5 a perspective of the exhaust valves and deflector.

Like numbers refer to like parts in all of the figures.

1 represents a cylindrical case, in the axis of which is journaled a shaft 2 having a reciprocatory rotary motion. On the shaft is a cylindrical enlargement 3 having secured thereto a radially disposed abutment or piston member 4, on opposite sides of which are secured plates 5 to hold suitable packing 6 on the piston 4 and engaging the case to prevent water passing the piston in either direction.

At one side of the case and near the top is an inlet pipe 7 to admit water under pressure through a port 10 to the interior of the case. Extending from top to bottom of the case is an oscillating shaft 9 arranged close to the enlargement 3 and provided with a packing 15 to prevent water from passing therebetween; projecting from the upper part of this shaft is a deflector plate 8 adapted to swing within the port 10 from side to side of the same, and alternately engage the side walls 11 thereof, whereby the incoming water is alternately directed in opposite directions within the case. Beneath this deflector is an exhaust chamber 13 provided with packing 17 engaging the shaft 9 to prevent passage of water therebetween; the

exhaust chamber 13, rock shaft 9 and packings 15 and 17 together with the deflector 8, enlargement 3 and the piston 4 complete a partition across the case, and the piston is alternately acted upon by the pressure of the water to drive the same around within the case as the valve is shifted. At opposite sides of the exhaust chamber 13 are ports or openings 14 through which the water is alternately allowed to escape, these ports being alternately closed by valves 8^a projecting from the rock shaft 9 and spaced apart to alternately close the ports in the respective sides of the exhaust chamber, as the shaft 9 is oscillated. These valves are preferably provided with packing 18 to securely close the ports. On the piston 4 are mounted buffer springs 16 which alternately engage the valves 8^a to shift the same, together with the deflector. An exhaust pipe 12 communicates with the exhaust chamber 13 to carry away the water.

In operation the water admitted to the case through the pipe 7 and port 10 is directed by the deflector 8 in alternate direction as the same is shifted, passing into the case it presses against the piston 4 and turns the same about the axis of the shaft 2 until the buffer spring 16 engages an exhaust valve 8^a, and closes the same. This movement opens the exhaust valve at the opposite side of the chamber 13 and also shifts the deflector 8 to the opposite side of the inlet ports 10 which now directs the water in the opposite direction and thus oppositely moves the piston 4 until the operation of shifting the valves is repeated at the termination of the return stroke. The piston 4 is thus oscillated to and fro making nearly a complete revolution thus shifting the valve at each end of each stroke. By means of the shaft 2 motion may be imparted to any convenient mechanism in any convenient manner, as occasion may require.

What I claim is:

1. A motor, comprising a cylindrical case, a shaft journaled in the axis of the case, a piston carried by the shaft and traversing the interior of the case, an inlet port and an exhaust chamber at one side of the case, said chamber having opposing exhaust ports, a deflector shiftable from side to side of the inlet port, valves adapted to alternately close the exhaust ports, and means for shifting the valves and deflector by movement of the piston.

2. A motor, comprising a cylindrical case, a main shaft journaled in the axis of the case, a piston extending radially from the shaft and traversing the interior of the case, an inlet port and an exhaust chamber at one side of the case, said chamber having exhaust ports in its opposite sides, a rock shaft between the said chamber and the main shaft, a deflector and oppositely acting exhaust valves extending rigidly from the rock shaft, the deflector shiftable from side to side of the inlet port, and the valves alternately closing the exhaust ports.

3. A motor, comprising a cylindrical case, a main shaft journaled in the axis of the case, a piston extending radially from the said shaft and traversing the interior of the case, an inlet port in the side of the case, an exhaust chamber projecting inward within the case and below the inlet port, and also having exhaust ports in opposite sides, a rock shaft between the exhaust chamber and the main shaft, a deflector projecting radially from the rock shaft and closing the space between the same and the walls of the port and oscillating between the walls, and valves projecting from the rock shaft and alternately closing the exhaust ports.

4. A motor, comprising a cylindrical case, a main shaft in the axis of the case, a piston projecting radially from the shaft and traversing the interior of the case, packing projecting from the margins of the piston, a rock shaft journaled in the case parallel with the main shaft and near the same, packing between the shafts, an inlet port in the case opposite the rock shaft, and exhaust chamber beneath the inlet port and extending to near the rock shaft, packing between the said chamber and the rock shaft, a deflector projecting from the rock shaft and closing the space between the wall of the port and the shaft, and also shiftable from side to side of the inlet port, and exhaust valves projecting from the rock shaft and alternately engaging the sides of the exhaust chamber to close ports therein.

5. A motor, comprising a case having an

inlet port in its side, a rock shaft journaled in the case opposite the said port and spaced apart therefrom, a deflector extending radially from the said shaft and shiftable from side to side of the port, an exhaust chamber below the deflector and having its vertical walls radial to the rock shaft, and provided with exhaust ports and valves extending rigidly from the rock shaft embracing the exhaust chamber and spaced apart to alternately engage the said chamber and alternately close the exhaust ports.

6. A motor, comprising a cylindrical case, having an inlet port at one side, an exhaust chamber in the case below the said port and extending inward within the case, a main shaft journaled in the axis of the case, a rock shaft also journaled in the case between the main shaft and the exhaust chamber, a deflector projecting radially from the rock shaft and shiftable from side to side of the inlet port, valves projecting from the rock shaft and embracing the exhaust chamber and alternately engaging the same to alternately close ports therein, buffer springs on the piston to engage the exhaust valves, packing on the piston and also between the shafts and between the rock shaft and the exhaust chamber.

7. A motor, comprising a case having an inlet port in its side, an exhaust chamber projecting within the case and having converging sides provided with exhaust ports, a rock shaft journaled near the inner end of the chamber, a deflector extending rigidly from the rock shaft to the port and shiftable from side to side of the same, and valves also extending rigidly from the rock shaft and alternately engaging the respective sides of the exhaust chamber to close the ports therein.

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

WALLACE C. KELLY

Witnesses:

HARRY S. RITCHIE,

WILLIAM L. THORPE.