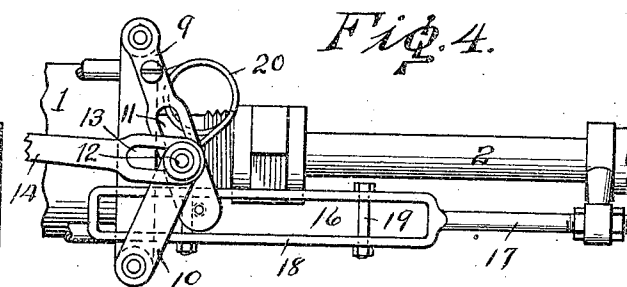
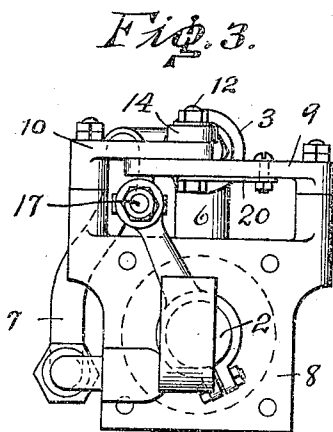
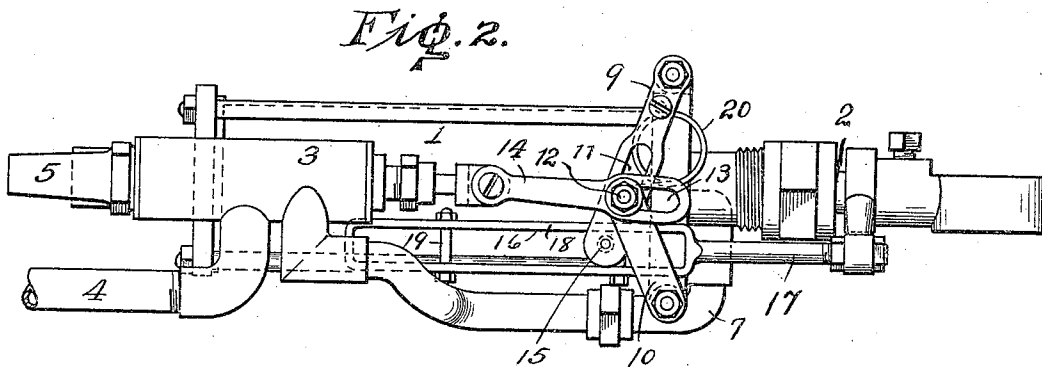
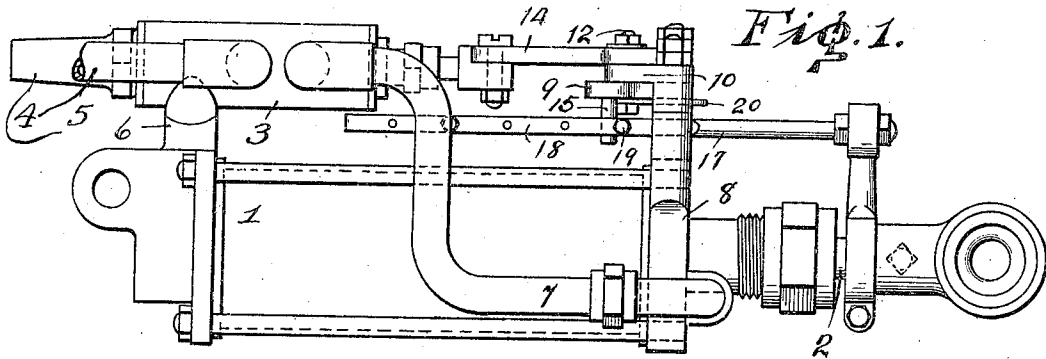


H. C. PHILLIPPI.
WATER MOTOR.
APPLICATION FILED APR. 13, 1909.

949,715.

Patented Feb. 15, 1910.



WITNESSES

Daniel Webster, Jr.
J. W. Kelly

Henry C. Phillippi
INVENTOR

BY

E. A. Kelly
ATTORNEY

UNITED STATES PATENT OFFICE.

HENRY C. PHILLIPPI, OF READING, PENNSYLVANIA.

WATER-MOTOR.

949,715.

Specification of Letters Patent. Patented Feb. 15, 1910.

Application filed April 13, 1909. Serial No. 489,566.

To all whom it may concern:

Be it known that I, HENRY C. PHILLIPPI, citizen of the United States, residing at Reading, in the county of Berks and State of Pennsylvania, have invented certain new and useful Improvements in Water-Motors, of which the following is a specification.

This invention relates to improvements in water motors and it consists of an improved attachment for shifting the valve.

Valve shifts of various forms have been devised heretofore for use on motors of this class and my object in the present case has been to provide a simple construction in which the action of the valve shift is positive.

The invention consists of a pair of arms pivotally secured at one end to the frame of the motor while their free ends are slidably engaged one with the other, and having also a sliding engagement with the valve rod. The arms are actuated by the valve rod until they reach the horizontal center line between their pivoted points, when a spring causes both the arms as well as the valve rod to finish their movement, the latter portion of which movement is more rapid than the earlier portion and causes the valve to close and open the ports promptly, which is essential in devices of this class.

As in all devices of this character, a suitable connection is made between the piston rod and the valve shifting attachment.

The invention is more fully described in the following specification and clearly illustrated in the accompanying drawing, in which:—

Figure 1 is a side elevation of my motor. Fig. 2 is a plan view thereof. Fig. 3 is an end view thereof. Fig. 4 is a partial plan view, showing the valve at the opposite end of the stroke, from that shown in Fig. 2.

The numeral 1 designates the cylinder and 2 the piston rod of the motor.

3 designates the valve casing in which is located an ordinary slide valve, adapted to open and close the ports in the usual manner.

The numeral 4 designates the water inlet or feed and 5 the outlet or exhaust. The action is the same as in other well known devices of this class: the water enters at 4 and passes through the inlet 6 to the valve and exhausts at 5, when the valve is at one end of the stroke; when the valve is at the other end, the water enters at 7 and exhausts at 5.

To the body of the motor 8, I secure two

pivoted arms 9 and 10, one at either side, with their ends overlapping each other. One of the arms is formed with an elongated slot 11 and a pin 12 passes through the end of the other arm and engages the said slot in such manner that it may slide freely therein. To this pin 12 is also slidably secured the slotted end 13 of the valve rod 14.

On the free end of the arm 9 I form a depending lug 15 and this lug is adapted to travel loosely in an elongated slot 16 formed in the rod 17 which rod conveys motion from the piston rod to the valve shifting mechanism. This rod 17 is secured at one end to the piston rod and moves with it. A portion of its body is made in the form of a yoke 18 and this is the portion in which the lug 15 travels. I have shown pins 19 in this yoke, passing crosswise through it, for the purpose of regulating the length of the stroke, that is, to determine at what point the valve shifting mechanism shall begin to operate.

It is clear that the piston rod will move the shift rod 17 and that this rod will travel until one of the pins in the slotted yoke comes in contact with the lug 15 on the arm 9, when its continued movement will carry the said arm with it, and this arm, by reason of its connection with the other arm 10 will cause the two to move together on their pivotal points; this movement will continue until the pin 12 reaches the end of the slot in the valve rod and it will then carry along with it, the valve rod; however, at the time the valve rod begins to move, the arms 9 and 10 have reached the center line between their pivotal points, and as soon as they have passed this center line their further movement will be suddenly accelerated by means of a spring 20 which is secured to the motor body and to one of the arms, thus throwing the valve rod and the valve also, with a quick movement. The adjustment of the parts is such that this sudden movement of the valve is accomplished just at the proper time.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent is:—

1. In a water motor a cylinder, a piston rod, a slide valve, a valve rod having an elongated slot formed in its end, a pair of arms pivotally secured to the motor, their free ends slidably engaging each other and the slotted end of the valve rod; a shift rod

connected to and operated by the piston rod, said rod having a slotted yoke formed in it, a lug on one of said arms adapted to move in said slotted yoke, means for regulating the length of the movement of said lug in said slot and a spring for completing the movement of said arms and valve rod.

2. In a valve shifting mechanism for water motors, a pair of arms pivoted to the motor body, one of which arms is provided with an elongated slot, a valve rod having an elongated slot in its end, a pin engaging the free end of one of said arms permanently and adapted to slide in the slot of the oppo-

site arm and also in the slot of the valve rod, a shift rod, a yoke formed on said shift rod, a depending lug on one of said arms adapted to slide in said yoke and a spring adapted to move said arms and valve rod after they have passed the center of their pivotal points.

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

HENRY C. PHILLIPPI.

Witnesses:

ED. A. KELLY,
M. C. KREIDER.