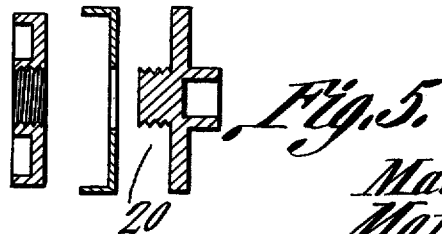
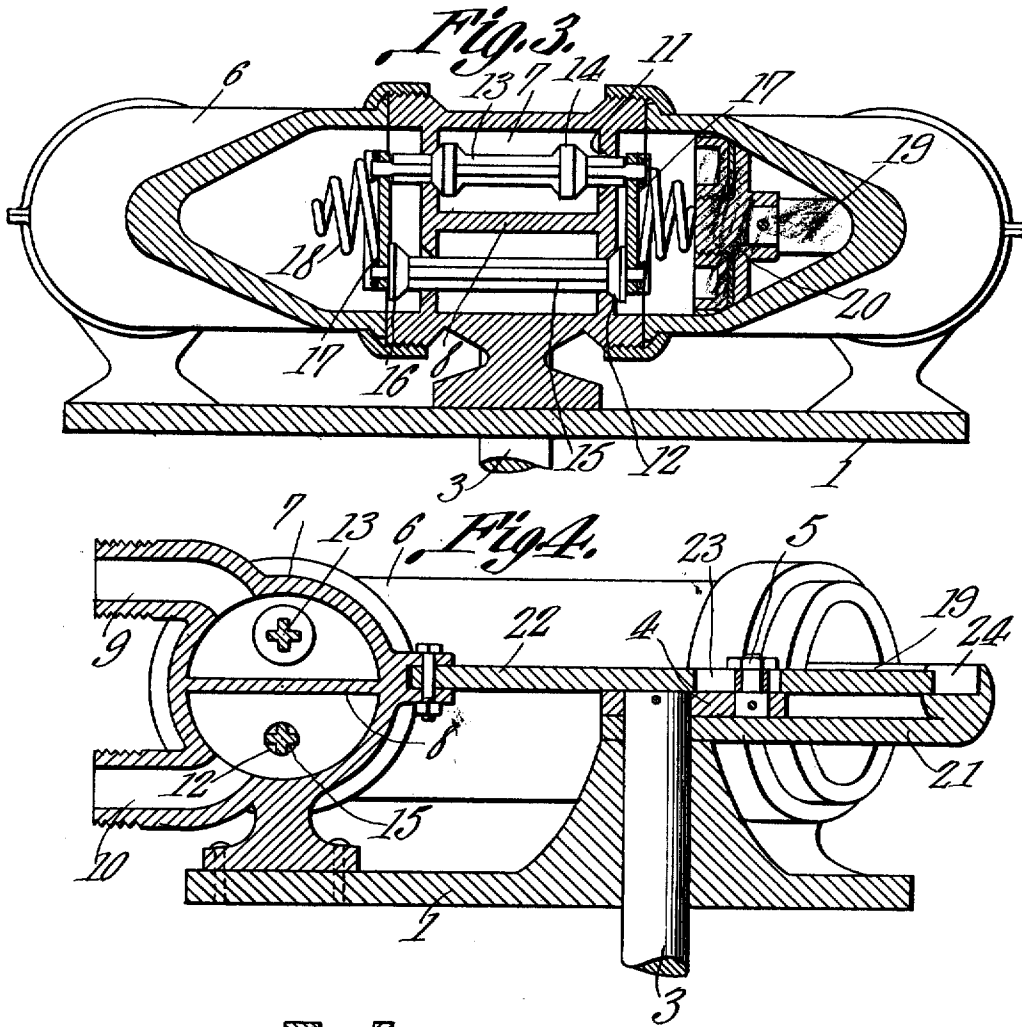


M. J. WEBER & M. HUGGINS.
SEMIROTARY MOTOR.
APPLICATION FILED AUG. 29, 1910.

1,006,157.

Patented Oct. 17, 1911.

2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

MATTHEW J. WEBER AND MARK HUGGINS, OF COLUMBUS, OHIO.

SEMIROTARY MOTOR.

1,006,157.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed August 29, 1910. Serial No. 579,386.

To all whom it may concern:

Be it known that we, MATTHEW J. WEBER and MARK HUGGINS, citizens of the United States, residing at Columbus, in the county of Franklin, State of Ohio, have invented a new and useful Semirotary Motor, of which the following is a specification.

This invention has relation to semi-rotary motors especially adapted to be used upon washing machines and it consists in the novel construction and arrangement of its parts as hereinafter shown and described.

The object of the invention is to provide a motor of the character indicated which is adapted to be operated by fluid pressure as for instance water, and is so arranged as to oscillate a dasher shaft upon its axis and automatically control the movement of its part to accomplish the operation upon the dasher shaft as indicated.

With this object in view the motor includes primary cylinders mounted upon a base and preferably of arcuate configuration. The said cylinders are connected together by means of a valve chamber which in turn is provided with an inlet and an outlet port. The said chamber is divided by means of a partition into an upper and lower compartment and valves are located in the said compartments and are adapted to govern the passage of the actuating element through the same. A piston rod is provided at its opposite ends with heads which are located in the respective cylinders and a shaft is journaled in the said base, and the said piston rod is provided with an arm which is freely journaled upon the shaft. A crank is attached to the upper end of the said shaft and a second arm is pivoted with relation to the cylinders and valve chamber, and is provided with a free end which lies in a notch provided upon the piston rod. The last mentioned arm is provided with an elongated slot which receives an upstanding stud mounted upon the crank of the said shaft.

In the accompanying drawings,—Figure 1 is a top plan view of the motor applied to a washing machine. Fig. 2 is a horizontal sectional view of the motor. Fig. 3 is a transverse sectional view of the motor cut on the line 3—3 of Fig. 1. Fig. 4 is a transverse sectional view of the motor cut on the line 4—4 of Fig. 1. Fig. 5 is a sectional view of one of the piston heads of the

motor showing the several parts thereof separated.

The motor consists of a base 1 which is adapted to be applied to the top of a washing machine 2 in any usual manner. The upper end portion of a dasher shaft 3 is journaled in the base 1 and the said shaft may be provided with any suitable form of dasher (not shown). A crank 4 is fixed to the upper end of the dasher shaft 3 and in turn is provided with an upstanding stud 5. Cylinders 6 are mounted upon the base 1 and are preferably of arcuate configuration, although they may be of other shape. The said cylinders are spaced from each other at one end and a valve chamber 7 connects the other ends of the said cylinders together. The valve chamber 7 is divided into upper and lower compartments by means of a horizontally disposed partition 8 and an inlet port 9 communicates with the upper compartment and an exhaust or outlet port 10 communicates with the lower compartment of the said valve chamber 7. The valve chamber 7 is provided at its ends with ports 11 which communicate with the interiors of the cylinders 6 and the interior of the upper compartment 7 in the said chamber. The said chamber is also provided with ports 12 which communicate with the interiors of the cylinders 6 and the lower compartment of the said chamber. A valve stem 13 passes through the upper compartment in the chamber 7 and at its end portions projects through the ports 11. Valves 14 are fixed to the stem 13 and are located within the upper compartment of the chamber 7 the distance between the said valves 14 being slightly less than the distance between the ports 11 at the opposite ends of the chamber 7. A valve stem 15 extends through the lower compartment of the chamber 7 and at its end portion projects through the ports 12 at the opposite ends of the chamber. Valves 16 are fixed to the end portions of the stem 15 and are adapted to close against the outer end portions of the said ports 12. The distance between the valves 16 is slightly greater than the distance between the ports 12 at the opposite ends of the chamber 7. Plates or bars 17 connect the adjacent end portions of the valve stems 13 and 15 together and the said plates or bars 17 are located beyond the ends of the chamber 7.

Helical or coiled springs 18 are mounted upon the plates or bars 17 and are located in the end portions of the cylinders 6.

A piston rod 19 (preferably of arcuate configuration) is located in the spaced end portions of the cylinder 6 and is provided at its opposite ends with pistons 20. The said pistons are of special construction and will be described in detail hereinafter. An arm 21 is fixed to the intermediate portion of the piston rod 19 and the said arm at its inner end is journaled upon the upper end of dasher shaft 3. An arm 22 is pivoted at one end to the valve chamber 7 and is provided with an elongated slot 23 which receives the stud 5 upon the crank 4. The piston 19 is provided with a socket 24 which receives the outer or free end portion of the arm 22.

In operation, when a fluid under pressure is permitted to enter the upper compartment of the chamber 7 through the inlet port 9 one of the valves 14 will be seated against one of the ports 11 and the other valve 14 will be spaced from the other port 11. Therefore the said fluid is permitted to pass through that port 11 which is open and will enter one of the cylinders 6 and close that valve 16 which is in the said cylinder against the port 12 at the end of the chamber 7 upon which it is adapted to operate. At the same time the fluid pressure will operate upon the piston 20 and move the same together with the piston rod 19 away from the valve chamber 7. This movement on the part of the piston rod 19 will bring the other piston 20 toward the valve chamber 7 and when the last mentioned piston comes in contact with the coiled spring 18 the plate 17 and the valve stems 13 and 15 will be moved whereby that valve 14 which has been away from its port will be moved against the said port and that valve 16 which has been away from these ports will be moved against its port 12. Thus the supply of fluid under pressure is cut off from the first mentioned piston 12 and the said fluid is permitted to exhaust through one of the ports 12 and the exhaust port 10, while the fluid under pressure will pass from the upper compartment in the valve chamber 7 against that piston 20 which has just come in contact with the coiled spring 18 and the said piston 20 will be moved away from the valve chamber 7. Thus a reciprocatory movement is imparted to the piston rod 19. Inasmuch as the outer end portion of the arm 22 is located in the socket 24 provided

in the piston rod 19 the said arm 22 is swung as a lever and by reason of the fact that the stud 5 upon the crank 4 is located in the elongated slot 23 provided in the arm 22, an oscillatory movement is imparted to the crank 4 and dasher shaft 3.

Having described the invention what we claim as new and desire to secure by Letters Patent is:—

1. A motor comprising a base, a shaft journaled in the base, a crank attached to the shaft, a stud mounted upon the crank, cylinders mounted upon the base, a valve chamber connecting the cylinders together and having an inlet and outlet port, a partition dividing the valve chamber into compartments, ports communicating with the interiors of the cylinder and the said compartment, valve stems projecting through the ports and carrying valves, plates connecting the valve stems together, springs located upon the said plates and being housed within the cylinders, valves located upon the valve stems, a piston rod arranged for reciprocation in the cylinders, pistons attached to the piston rod and adapted to come in contact with the springs upon said plate, an arm attached to the piston rod and journaled upon the said shaft, an arm pivotally mounted and having an elongated slot which receives said stud, said piston rod having a recess which receives the outer portion of the last mentioned arm.

2. A motor comprising cylinders, a valve chamber connecting the cylinders together and provided with valve mechanism, a piston rod arranged for reciprocatory movement in the cylinders, pistons carried by the piston rod and adapted to operate the valve mechanism, a shaft journaled between the cylinders, a crank mounted upon the shaft, a stud mounted upon the crank, an arm fixed to the piston rod and journaled upon the said shaft, an arm pivotally mounted and having an elongated slot which receives the stud, said piston rod having a socket which receives the outer end portion of the last mentioned arm.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

MATTHEW J. WEBER.
MARK HUGGINS.

Witnesses:

ROBERT T. SIMPSON,
EDMUND DRUMM.