W. HENRY.

CURRENT MOTOR.

APPLICATION FILED JULY 31, 1913.

1,109,839

Patented Sept. 8, 1914.

2 SHEETS—SHEET 1.

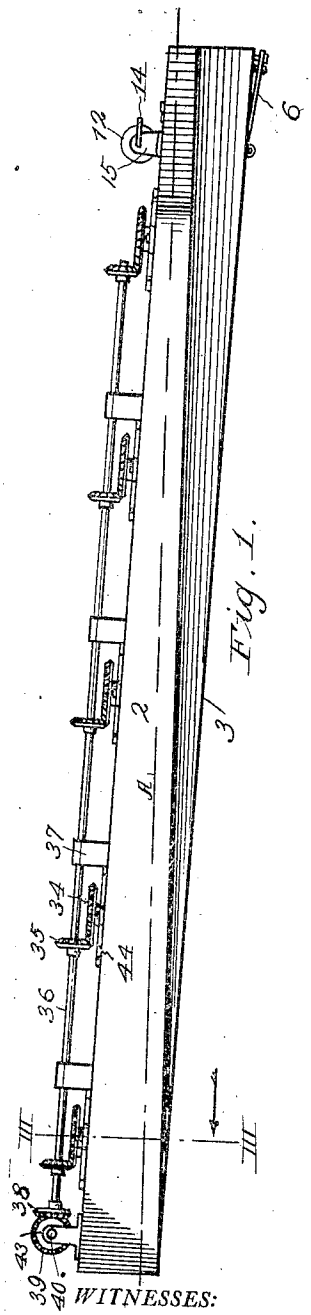


Fig. 1.

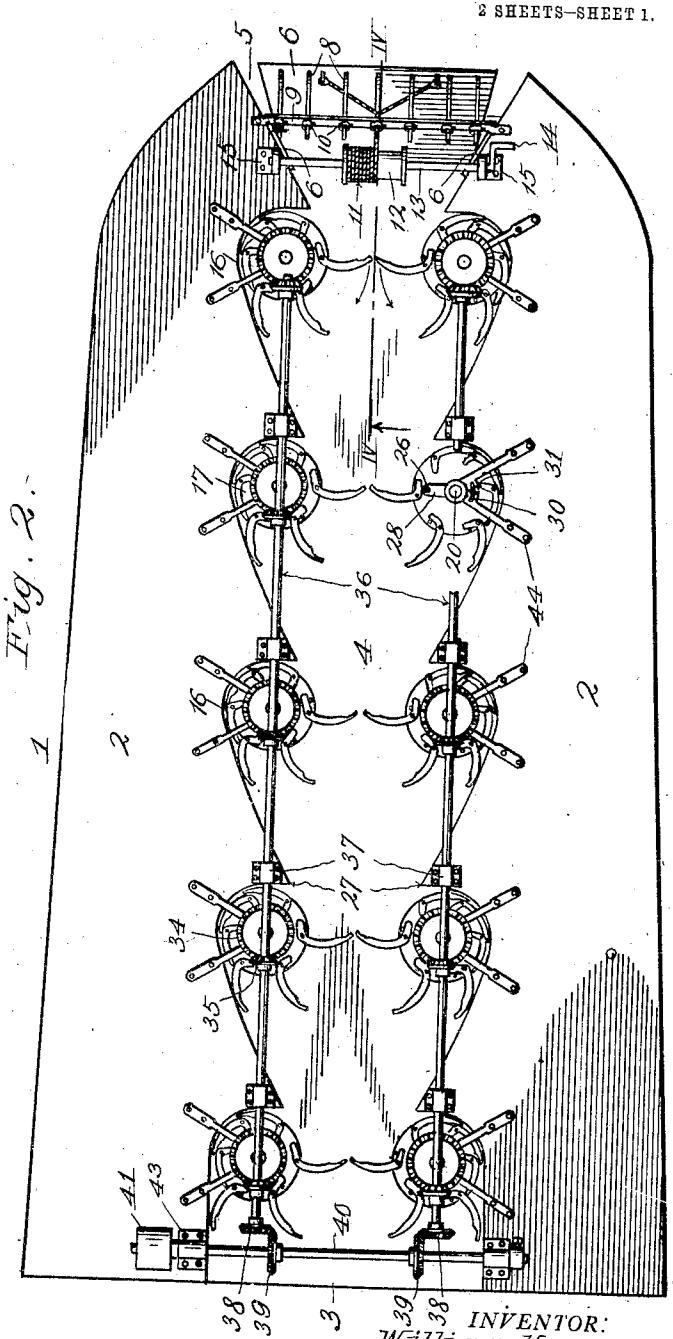


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

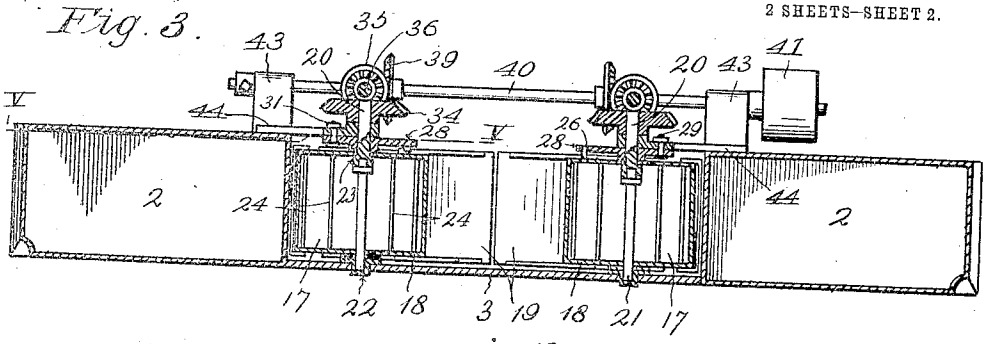


Fig. 4.

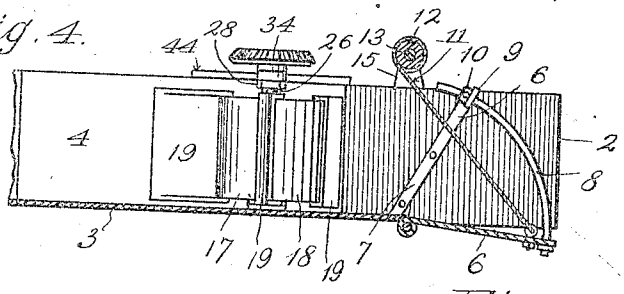


Fig. 5.

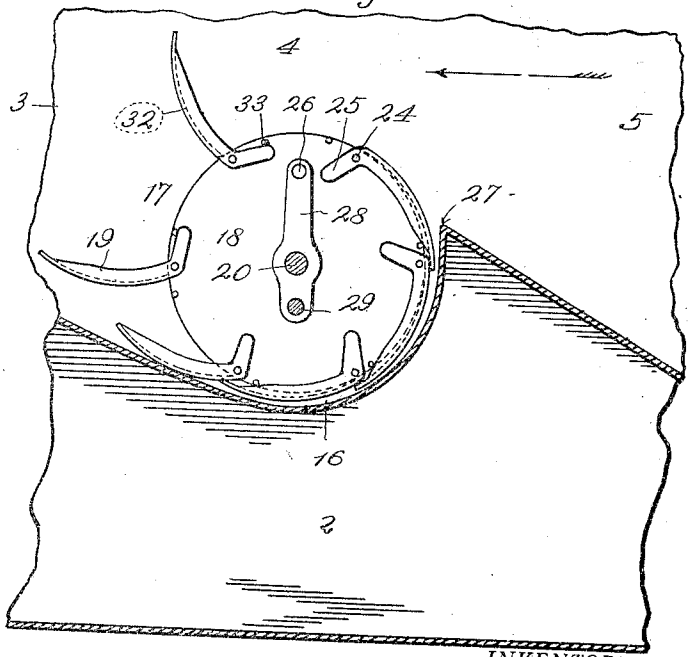
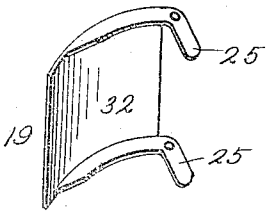


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM HENRY, OF NORTH KANSAS CITY, MISSOURI.

CURRENT-MOTOR.

1,109,839. Specification of Letters Patent. Patented Sept. 8, 1914.

Application filed July 31, 1913. Serial No. 782,376.

To all whom it may concern:

Be it known that I, WILLIAM HENRY, a citizen of the United States, residing at North Kansas City, in the county of Clay and State of Missouri, have invented certain new and useful Improvements in Current-Motors, of which the following is a specification.

My invention relates to improvements in current motors, and my object is to provide a machine of this character whereby the power of streams may be utilized to the best advantage for industrial purposes.

The invention embodies a float adapted to be anchored in a stream, and turbines mounted in a flume of said float to transmit the power of the current flowing through said flume.

In order that the invention may be fully understood, reference will now be made to the accompanying drawings, in which:

Figure 1 is a side elevation of the motor. Fig. 2 is a plan view of the motor. Fig. 3 is a cross section on line III—III of Fig. 1. Fig. 4 is a broken section on line IV—IV of Fig. 2. Fig. 5 is a broken section on line V—V of Fig. 3. Fig. 6 is a detail perspective of a blade of one of the turbines.

1 designates the float, which, in the present instance, comprises two airtight compartments 2 united by a bottom portion 3. Compartments 2 are arranged at opposite sides of a central flume 4 extending longitudinally through the float, as shown on Fig. 2. The bottom 3 of the flume 4, slopes upwardly from front to rear, so that water flowing through said flume will be carried upward above the normal water level A of the stream in which the machine is anchored. By thus lifting the water in the flume very little resistance or back pressure will be offered to its discharge. The mouth 5 of the flume is made flaring to raise the level and increase the pressure of the water at the entrance thereof, so that the water will flow through the flume with great rapidity, and thus exert considerable power on the turbines.

The compartments 2 are larger at the rear than in front to sustain the additional weight due to lifting the water at the rear of the flume, as above described. The entrance of water to the flume 4, is controlled by a gate 6, hinged to the front end of the flume bottom 3 and adapted to close against a pair of strips 7, secured to the opposite sides of the flaring mouth 5 of the flume. Logs and other debris floating down stream are prevented from entering the flume and possibly damaging the turbines by a fender consisting of a plurality of curved rods 8, fixed at their lower ends to the front portion of the gate 6 and projecting loosely through a guide-bar 9, extending transversely across the flume and secured to the top of the compartments 2. Rods 8 are provided with collars 10 to prevent their withdrawal through the openings in the guide-bar 9, when the gate 6 is lowered.

Gate 6 is controlled by a cable 11, secured at its lower ends to said gate and at its upper end to a drum 12, rigidly mounted upon a shaft 13, provided at one end with a crank 14 and journaled in bearings 15, mounted upon the front portion of the compartments 2. Each side of the flume 4 has a series of vertical pockets 16 to receive the turbines 17, whereby the power of the current flowing through said flume is utilized. The forward portions of pockets 16 are concentric with the turbines 17, to fold the blades of the latter as will hereinafter appear. Each turbine comprises a drum 18 and a plurality of blades 19, which latter are folded against the former by the sides of the pockets 16 when said blades are passing in an opposite direction to the current, so as to offer little or no resistance to the rotation of the turbine. Drum 18 is pivotally-mounted upon a stub-shaft 20 and loosely-mounted upon a shaft 21, which latter extends upwardly from a step-bearing 22 on the bottom 3 of the flume and enters a socket 23 in the lower end of the stub-shaft 20, see Fig. 3.

Each blade 19 is of the same curvature as its drum 18, so that it may fold snugly against said drum as shown on Figs. 2 and 5. Each blade is mounted at its front end upon a pivot 24 extending vertically through the drum, and each blade is provided at its top and bottom portions adjacent said pivot 24, with inturned crank-arms 25, the upper arm being adapted to contact a depending trip-pin 26 and swing the blade out into the path of the current just as the rear end of said blade passes the point 27 of its respective pocket 16. The trip-pin 26 depends from one end of an adjustable arm 28, pivotally-mounted upon stub-

shaft 20 and provided at its rear end with a bolt 29, which extends upward through a segmental slot 30, and is provided with a nut 31 to lock said arm 28 in any of its adjusted positions. By loosening the nut 31, the arm 28 may be adjusted in a horizontal plane on the shaft 20 to throw the trip-pin 26 closer to or farther from the pocket point 27, so that the blades will be opened sooner or later. The opening movement of the blades 19 is restricted by the rear edges of their vertical portions 32 contacting the sides of the drum 17, and the crank-arms 25 contacting stop-pins 33 projecting from the top of the drum 17.

The upper ends of the stub-shafts 20 are provided with rigidly mounted bevel wheels 34, which drive bevel wheels 35 mounted upon shafts 36, journaled in bearings 37 and extending longitudinally of the float. Each shaft 36 is provided at its rear end with a rigidly mounted bevel gear wheel 38, which drives a similar gear wheel 39 fixedly-mounted upon a shaft 40 provided with a fixedly-mounted pulley 41, for transmitting the power developed by the machine to a dynamo or other point of use. Shaft 40 is journaled in bearings 43 upon the rear portion of the compartments 2. Slots 30 extend through brackets 44, secured to the top of compartments 2 and constitute bearings for the stub-shafts 20.

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

1. A motor of the character described, consisting of a float having a flume extending therethrough, a gate pivoted at the entrance of said flume to control the flow of water therethrough, means for actuating said gate, segments secured at their lower ends to said gate, a transverse bar secured to the float and having openings through which said segments project, and water wheels mounted in the flume.

2. A motor of the character described, consisting of a float having a flume extending therethrough, two series of water wheels mounted in said flume, gearing connecting each series of water wheels, and gearing intermeshing with the first-mentioned gearing to transmit power therefrom.

3. A motor of the character described, consisting of a float having a flume extending therethrough, pockets in the sides of said flume, said pockets having curved portions, turbines mounted in said pockets, having pivoted blades adapted to be folded by the curved portions of said pockets during part of the revolution of the turbines, and means for unfolding said blades after they have passed out of contact with the pockets.

4. A motor of the character described, consisting of a float having a flume extending therethrough, turbines mounted in said flume, said turbines having pivoted blades adapted to fold to inoperative position, pockets in the sides of the flume having curved portions concentric with the turbines to fold the blades thereof during a portion of the revolution of said turbines, and means for tripping said blades to open position after they have passed out of contact with the pockets.

5. A motor of the character described, consisting of a float having a flume extending therethrough, pockets in the sides of said flume, turbines mounted in said pockets, having foldable blades with crank arms at the inner ends thereof, and a trip-pin against which said crank arms impinge and unfold the blades of the turbines.

6. A motor of the character described, consisting of a float having a flume extending therethrough, pockets in the sides of said flume, turbines mounted in said pockets, having foldable blades with crank arms at the inner ends thereof, a trip-pin against which said crank arms impinge and unfold the blades of the turbines, and adjustable arm carrying said trip-pin, and means for securing said adjustable arm at any point of its adjustment.

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

WILLIAM HENRY.

Witnesses:
F. G. FISCHER,
L. J. FISCHER.