No. 852,022. PATENTED APR. 30, 1907.

J. KIRSCHWENG.

CURRENT MOTOR.

APPLICATION FILED NOV. 23, 1905.

2 SHEETS—SHEET 1.

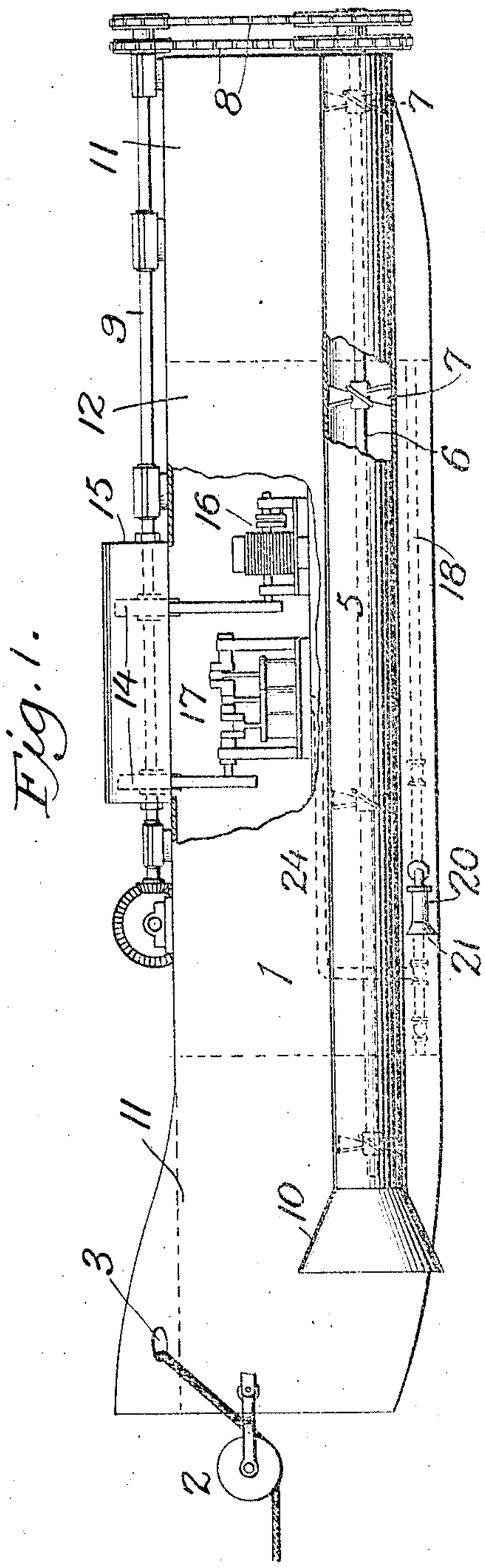

Fig. 1.

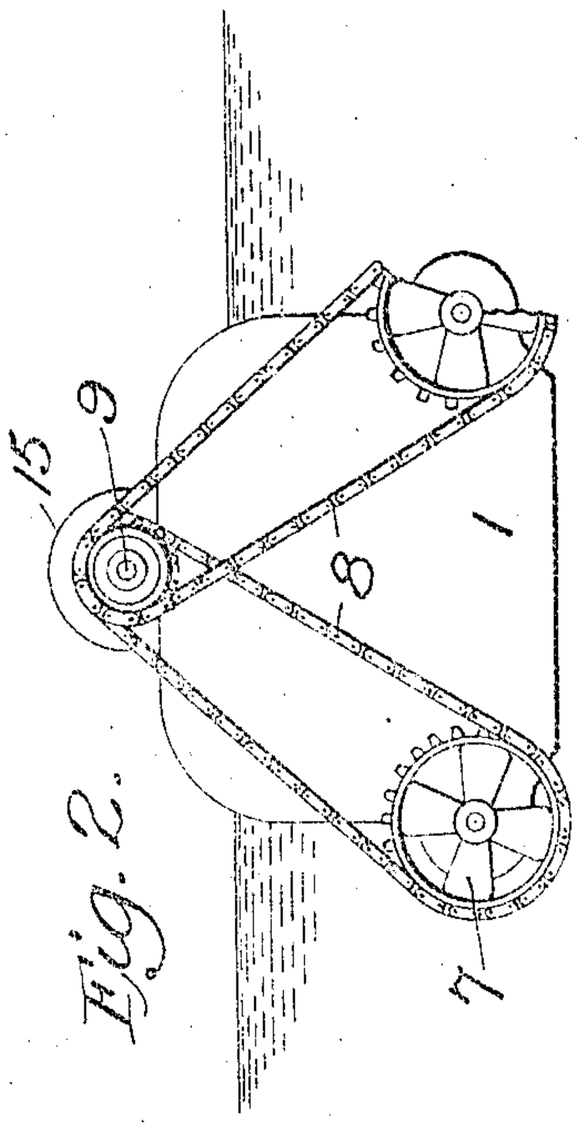

Fig. 2.

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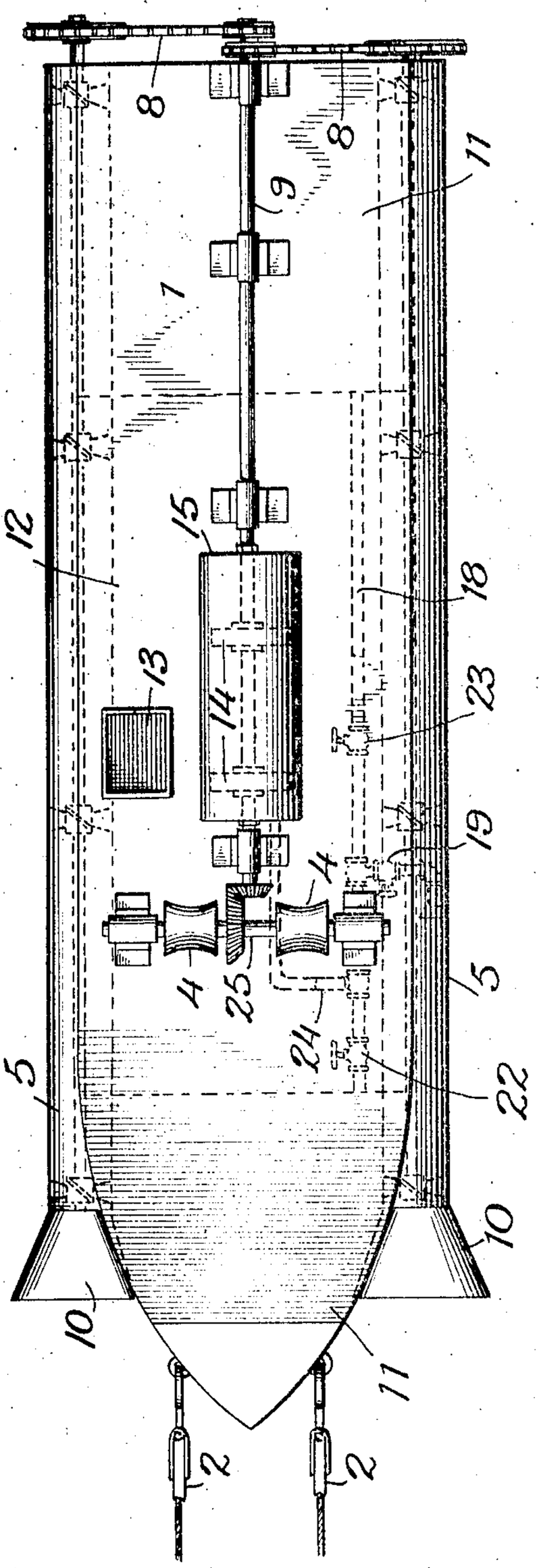
2 SHEETS—SHEET 2.

Fig. 3.



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CURRENT-MOTOR.

No. 852,022. Specification of Letters Patent. Patented April 30, 1907.

Application filed November 23, 1905. Serial No. 288,639.

To all whom it may concern:

Be it known that I, JOHN KIRSCHWENG, a citizen of the United States, residing in Butte, Silverbow county, Montana, 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, such as are adapted to be located in swiftly moving streams, and other places where swiftly-moving currents of water are available, and comprises a boat or float provided with water tanks or compartments whereby its draft or the depth to which it is submerged may be regulated, and provided also with current wheels located in suitable channels and arranged to be revolved by the action of the current, and with means operated by such wheels whereby the power developed through the rotation of said current wheels may be rendered available. The said boat or float customarily comprises, in addition to the said water tanks or compartments, a machinery compartment within which is located a pump, driven by the said current wheels, whereby the water in said tanks may be pumped out when desired; and other machinery to be driven by said current wheels, as for example an electric generator, may also be located in the same or a similar compartment and may be driven similarly.

The object of my invention is to improve apparatus for utilizing the power of currents of water, and to make such apparatus simple, efficient, portable, self-contained, capable of being maneuvered by its own power, and capable of being submerged to any desired depth and of being floated, when required, by its own power.

I will now proceed to describe my invention with reference to the accompanying drawings, in which one form of current motor apparatus embodying my invention is illustrated, and will then point out the novel features in claims.

In the said drawings: Figure 1 shows a side view of one form of current motor constructed in accordance with my invention, a portion of the side of the boat and a portion of one of the propeller tubes being broken away to show the interior mechanism. Fig. 2 shows a rear elevation of the form of current motor shown in Fig. 1, and Fig. 3 shows a top view thereof.

In the said drawings, 1 designates the hull of the boat or float carrying the current wheels and other machinery. While I do not limit myself to any particular type of hull, that illustrated, which is similar to the hull of a canal-boat, for example, is well suited for the purpose. The bow is somewhat sharper than that of the conventional canal boat, by preference, as shown in the drawings, in order that there may not be excessive strain on the anchors and cables. This hull is designed to be anchored in the stream or current from which power is to be derived, and for this purpose the boat may be provided with sheaves 2, near its bow and preferably well down toward the bottom of the boat, and anchor cables may pass through these sheaves and through hawse-holes 3 to capstan-drums 4 or other suitable fastening means.

The boat is provided with one or more propeller tubes 5, (the boat shown is provided with two such tubes) within which are propeller shafts 6 carrying current wheels 7, which may be similar to ordinary propeller wheels. The tubes 5 are preferably formed in longitudinal half-sections or other fractional sections, so that by removing a portion of one of the tubes access may be gained to its interior at any portion thereof. The shafts 6 have suitable bearings. At their ends they are connected by suitable means, such as sprocket gearing 8, to a shaft 9 carried by the hull and in the instance shown extending longitudinally thereof on the deck.

The propeller tubes 5 preferably have funnel-mouths 10, as shown, so that the velocity of the water within said tubes shall be amplified as much as possible.

The hull is provided with water tanks and compartments, 11, 11 (arranged at the bow and stern, in the instance shown) which compartments should be of sufficient capacity to completely submerge the boat if filled completely. The hull is also provided with a water-tight machinery compartment 12, to which access may be had through a hatch 13.

The shaft 9 is arranged to drive suitable machinery located within this compartment 12. To this end it is provided with one or more pulleys 14, which I customarily locate within a deck-house 15, the interior of which is open to machinery compartment 12. Shaft 9 may pass through water-tight stuffing boxes in the ends of this deck-house. I have shown shaft 9 as belted to an electric generator 16 and to a pump 17, the former particularly intended to convert into avail-

able form the energy imparted by the current wheels to shaft 9, the latter particularly intended to be used in pumping out the water-compartments 11 when so desired.

For filling and emptying water compartments 11, 11, a pipe line 18 is provided. This pipe line may be connected to the water outside the boat through a valve 19 and forwardly directed pipe 20 provided with a funnel-mouth 21. Valves 22 and 23 permit either or both compartments 11 to be filled at will. The pump 17 is connected by its suction pipe 24 to pipe 18, and hence may pump water from either or both tanks, or compartments, 11, or from the outside connection 20, at will. The pump may therefore be used either to pump out the tanks or to pump water for any other purpose.

The shaft 9 is connected by suitable gearing to a windlass shaft 25 carrying the capstan-drums 4 above mentioned. By means of this windlass the boat may be veered to one side or the other, or may be moved up stream, by its own power.

In practice, the boat, once brought to the proper spot by its own power or otherwise, and there anchored, is submerged to the depth which is most suitable. Submersion may be complete, if desired, as the machinery compartment is water-tight, and it is easy to provide suitable locks so as to gain access to the machinery compartment without flooding it even when the boat is submerged. In this way the boat may be sunk to the bed of a stream of considerable depth, if found desirable, thus entirely avoiding interference with navigation. The boat being in position, the water flowing through the propeller tubes 5 causes the wheels 7 to revolve, the power thereby obtained being transmitted to shaft 9 through the sprocket gearing shown, and thence being transmitted to the machinery within compartment 12.

By means of a current motor constructed as described I am able to generate power without expense other than the first cost of the installation, and the insignificant expense of maintenance and occasional attendance.

The entire plant is portable in the highest degree, and being completely submergible, may be located at or near the bottom of navigable streams without interfering with navigation.

The funnel-mouths 10 of tubes 5 may be made of any desired size and flare, and materially increase the velocity of the streams flowing through said tubes and therefore the power obtainable. The boat may be provided with as many of these tubes 5 as desired. Likewise, the boats may be built of different sizes, and any number of the boats may be arranged in series, thus making it practicable to obtain large amounts of power from streams etc.

It will be understood that the tubes 5 may be omitted if desired, the wheels 7 and shafts 6 revolving in open water. But the use of said tubes, in connection with the funnel mouths 10, is preferred, because of the increased velocity of water past the wheels thereby obtainable.

What I claim is:—

1. In a current motor, the combination with a supporting hull adapted for submersion and provided with water tanks of a capacity adapted to cause submersion of said hull when said tanks are filled and a hermetically sealable machinery compartment, and with one or more current wheels, of a pump within said machinery compartment, and driven by said current wheel or wheels, means for admitting water to said tanks, and means connecting said pump to said tanks.

2. In a current motor, the combination with a supporting hull adapted for submersion and provided with submersion water tanks and with a hermetically closable machinery compartment, a power shaft passing through a wall of such compartment, and a current wheel connected to said shaft, of means for admitting water to said tanks.

3. In a current motor, the combination with a supporting hull adapted for submersion and provided with submersion water tanks and with a hermetically closable machinery compartment, a power shaft passing through a wall of such compartment, and a current wheel connected to said shaft, of means for admitting water to said tanks, and a pump located within said machinery compartment, driven by said shaft, and connected to said tanks to empty the same.

4. In a current motor, the combination with a supporting hull provided with one or more longitudinal shafts carrying current wheels, and with a longitudinal deck shaft driven thereby, and provided also with a hermetically-closable chamber, of power-converting machinery located within said hermetically-closable chamber and driven from said deck shaft, and a windlass likewise driven by said shaft and adapted for maneuvering the hull.

5. In a current motor, the combination of a supporting hull having within it a hermetically closable machinery chamber, one or more longitudinal shafts carrying current wheels, a longitudinal deck shaft extending into said chamber, sprocket gearing connecting said deck shaft and current wheel shaft, and machinery within said chamber driven from said deck shaft.

6. In a current motor, the combination of a supporting hull having within it a closed machinery chamber, one or more longitudinal shafts carrying current wheels and extending substantially to the stern of the hull, a longitudinal deck shaft likewise extending substantially to the stern of the hull, gearing

at the stern of the hull connecting said shafts, a transverse windlass shaft forward of said machinery chamber, gearing connecting the windlass shaft and said longitudinal deck shaft, and machinery within said chamber likewise driven by said longitudinal deck shaft.

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

JOHN KIRSCHWENG.

Witnesses;
B. K. WHEELER,
WM. H. SNELL.