F. T. STARRY.

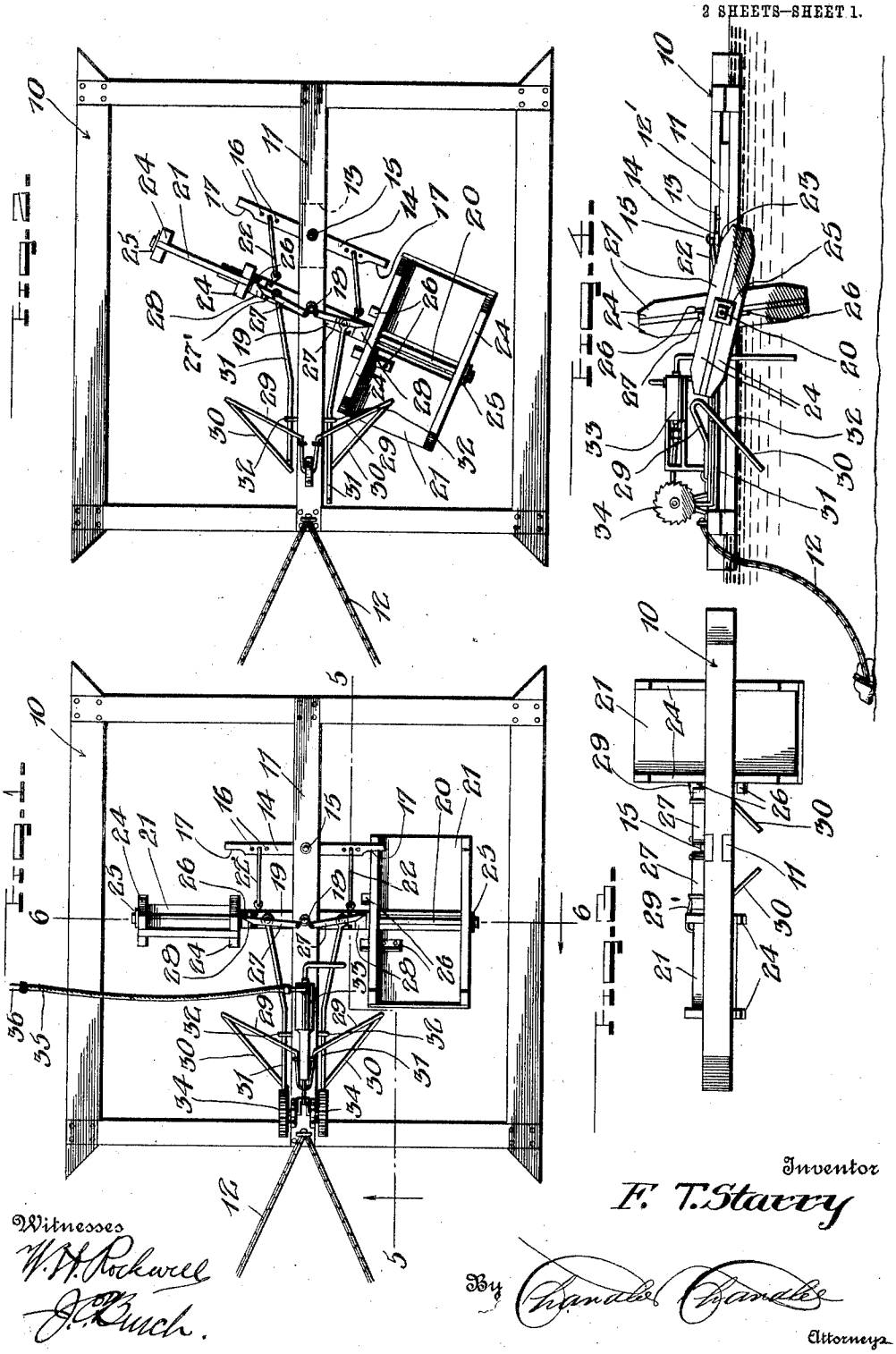
CURRENT MOTOR.

APPLICATION FILED AUG. 26, 1912.

1,068,283.

Patented July 22, 1913.

2 SHEETS—SHEET 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 5.

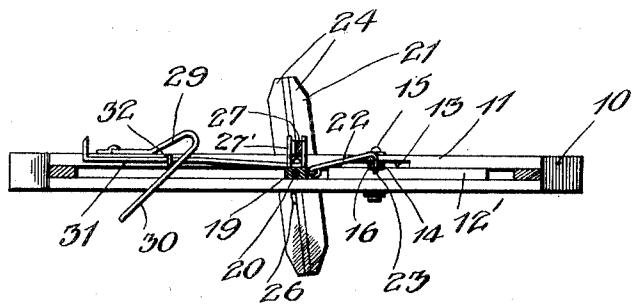


Fig. 6.

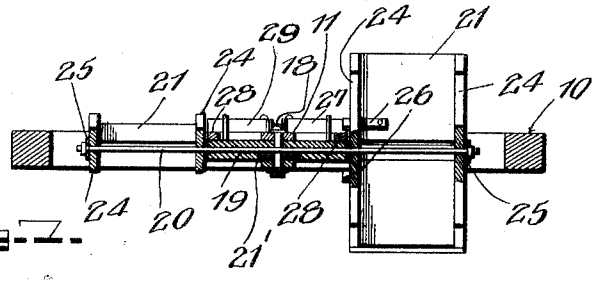


Fig. 7.

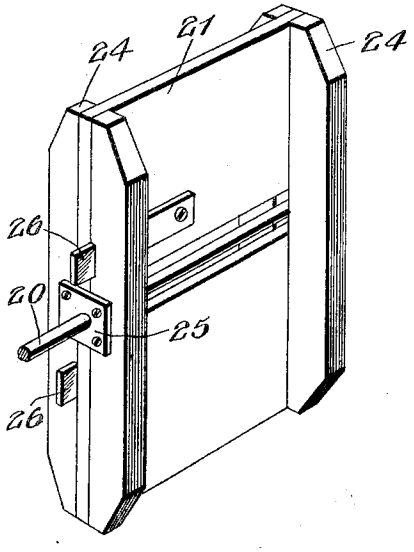
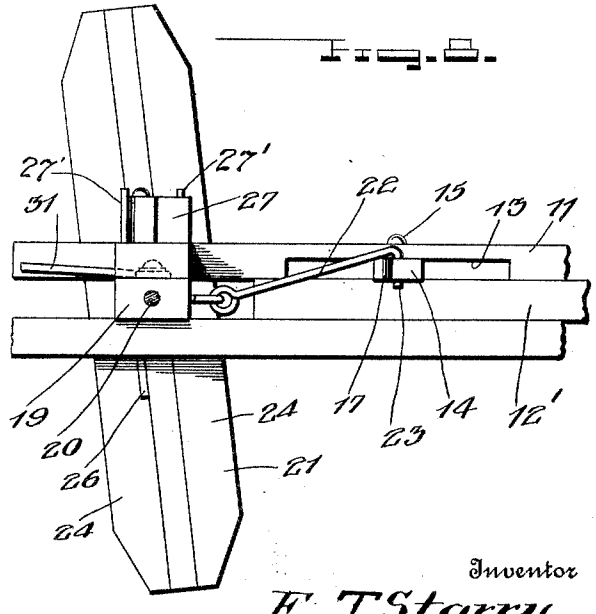


Fig. 8.



Witnesses

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CURRENT-MOTOR.

1,068,283. Specification of Letters Patent. **Patented July 22, 1913.**

Application filed August 26, 1912. Serial No. 717,141.

To all whom it may concern:

Be it known that I, FRANK T. STARRY, a citizen of the United States, residing at Blueslide, in the county of Pend Oreille, State of Washington, have invented certain new and useful Improvements in Current-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.

This invention has special reference to novel and useful improvements in current motors and the object of the invention is to provide a device of this character for efficiently deriving power from a running stream and especially adapted for the operation of a pump.

The essential object of the invention is the provision of a novel and durable motor construction having means for controlling the movements of a pair of intermittently rotatable paddles or blades and for transmitting oscillatory movement of a support for the paddles to reciprocable movement for operating a pump or other machinery.

With the above and other objects in view, the invention consists of certain combinations and arrangements of parts as will be hereinafter more fully described, claimed and illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of my improved current motor as mounted in a body of water with the paddles in position when the water is forcing one paddle and the other paddle is in a position previous to its release. Fig. 2 is a similar view but showing one paddle at the end of its stroke and the other paddle returning to an operative position. Fig. 3 is an end elevation of the motor with the parts in position as shown in Fig. 1. Fig. 4 is a side elevation of my improved current motor with one side of the frame removed. Fig. 5 is a sectional view taken on the line 5—5 of Fig. 1. Fig. 6 is a cross sectional view taken on the line 6—6 of Fig. 1. Fig. 7 is a detail perspective view of one of the paddles. Fig. 8 is a fragmentary side elevation enlarged and with one of the paddles removed.

As illustrated, my improved current motor embodies a float in the form of a rectangular frame 10 having a central connecting member 11 formed of spaced upper and lower members producing a support for the working parts of the motor. The float is suitably anchored by a chain or other flexible member 12 so as to freely move up and down with the tide and wave and so that the central supporting member 11 will extend in a direction of the flow of the water.

Longitudinally mounted between the upper and lower members of the support 11 is a bearing member 12′, the same extending beneath a recess 13 formed transversely in the lower face of the upper member of the bar so as to pivotally support a reciprocating limiting member 14 transversely pivoted through the support on a vertical pivot 15. The limiting member 14 is provided with a plurality of openings 16 on either side of the support for adjustment of the strokes of the paddles while the free ends and forward edges thereof are beveled as shown at 17 to permit escapement of the paddles more freely at the limits of their operative strokes. Also pivoted on a vertical pivot pin 18 beyond the recess 13 and between the spaced members of the supporting bar is a transverse bearing 19 which carries a paddle shaft 20, the ends of which stationary shaft are extended beyond the ends of the bearing for the retention of rotatable paddles or blades 21 thereon. The bottom face of the bearing 19 is provided with a wear plate 21′ which increases the life thereof and insures of free pivotal movement of the bearing, while the ends of the latter member are connected to the protruding portions of the limiting bar by links 22 having hooks 23 at their free ends engageable with either of the plurality of openings 16, so that when the links are moved outwardly the strokes of the paddles are correspondingly shortened or vice versa.

Each of the paddles 21 comprises a pair of face members connected by end cleats 24 which are reinforced with bearing plates 25 for rotatably mounting the paddles on the shaft and secured to opposite faces of the paddles as well as on opposite sides of the shaft are plates 26, the ends of which project beyond the inner cleats and form stop means for preventing rotation of the paddles on their operative strokes. This last mentioned action is made possible through the medium of pawls 27 pivoted at their inner ends to the supporting member 11 and having their outer ends beveled in a down stream direction or toward the bar 14. The outer ends of the pawls engage between limiting pins 27′ which are carried by the shaft

bearing near its free ends and project upwardly therefrom to limit the movements of the pawls during the opposite movement of the shaft ends and paddles while the pawls are supported on enlargements 28 around which the projecting portions of the plates 26 travel whereby the pawls will serve to prevent rotation of the paddles to inoperative positions until the ends of the shaft have fully traversed the arcuate paths due to the pivotal action of the shaft and its bearing member on the vertical pivot 18. During this operation of one paddle, the limiting member 14 will also be shifted so that the inner cleat of the paddle on its operative stroke will overlie the limiting member due to the disengagement of the projection of the plate of the paddles from the pawl at that side of the supporting member and the inner cleat of the other paddle will clear the opposite extremity of the limiting member to permit free rotation of the paddle to an operative position.

From the above it will be seen that while one of the blades is moving down stream on its operative stroke, the other blade or paddle is moving up stream and in order to hold it in an inoperative position and to guide it to an operative position when the other paddle has finished its operative stroke, a frame embodying a pair of outwardly and upwardly diverging arms 29 is provided, the same being centrally secured to the supporting bar and having resilient portions or free extremities 30 which are engaged by the edges of the paddles so that the latter will slide down the same and be freed to move to an operative position when the other paddle has moved to an inoperative position.

In order to transmit motion from the movement of the shaft, a connecting rod or plunger 31 is pivotally secured to the bearing member at each side of the support and operates in a guide 32 to operate suitable machines carried on the support or float, such as a pump 33 having a double ratchet gear 34 operated by the connecting rods to convert reciprocating motion of the latter into rotary motion of the pump. A flexible pipe 35 leads from the pump to a pipe 36 so that the float may have free movement in the water. Thus, it will be evident that only the lower bar will be immerged in the water and the working parts will therefore not be subject to the resistance which would otherwise be caused and an increased amount of working power is therefore derived by the operation of the paddles for the pumping of water or the like.

I claim:

1. A current motor comprising means supported to swing horizontally, paddles rotatable near the ends of said means and adapted to rotate independently and alternately, means for holding said paddles against rotation on their inoperative strokes and pivoted means operated by movement of the swinging means to hold the paddles against rotation on their operative strokes while the alternate paddle is being released.

2. The combination with a float having a supporting member formed of spaced bars and a bearing member pivoted between the same; of a shaft carried by said bearing and extending through opposite sides thereof for swinging movement above a body of flowing water, blades rotatable on the shaft beyond the bearing member, pawls pivoted on the supporting member, means on the bearing member for limiting the opposite movements of the pawls and shifting the latter during the swinging of the shaft and bearing member, projections extending from each blade on opposite sides of the shaft to engage a pawl and hold a blade in an operative position in its movement with the stream, connecting rods pivoted to the bearing member to be reciprocated oppositely on swinging of the latter and a rotary mechanism receiving motion from said rods.

3. A current motor comprising a float forming a support, flexible means for anchoring the float whereby the latter may freely move up and down with the tide and waves, an oscillatory member carried by the float, a limiting bar pivoted to the float, links connected to the oscillatory member and adjustably connected to the limiting member whereby the latter will move with the oscillatory member, rotatable paddles carried by the oscillatory member to intermittently rotate during the movement of the latter, said bar holding each paddle against rotation on its inoperative stroke and resilient means retaining each paddle against movement until it has completed its inoperative stroke and the other paddle has completed its operative stroke.

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

FRANK T. STARRY.

Witnesses:

FRANK SNELLING,

A. W. BEACHLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."