

No. 658,969.

Patented Oct. 2, 1900.

G. WALTER.
CURRENT MOTOR.

(Application filed Aug. 31, 1899.)

(No Model.)

Fig. 1.

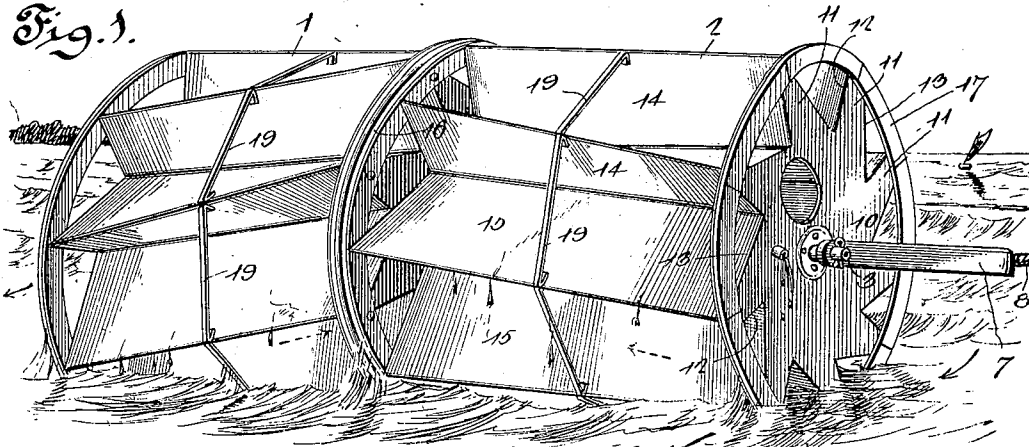
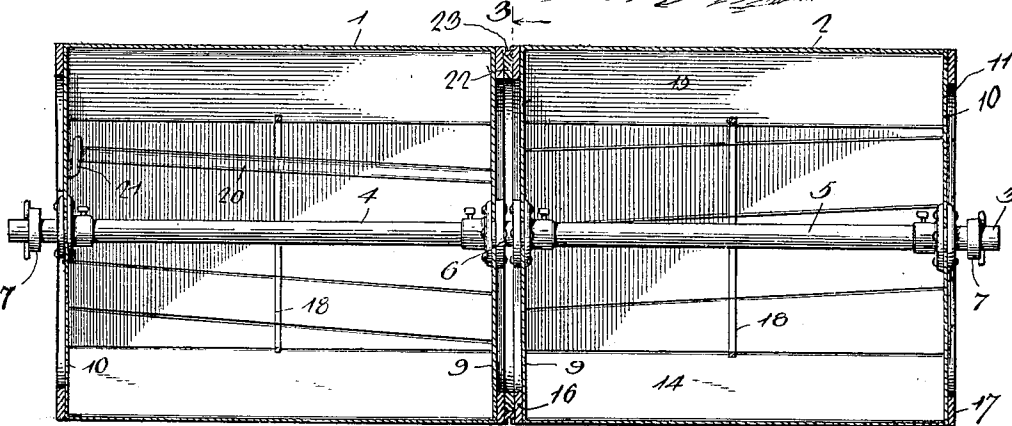


Fig. 2.

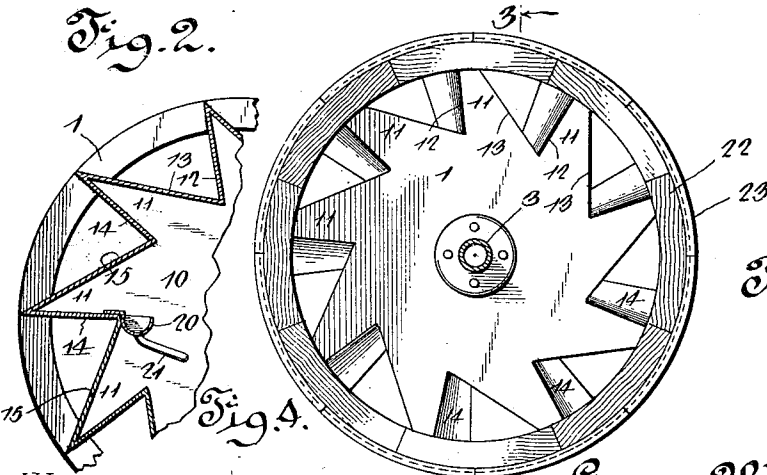


Fig. 3.

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE WALTER, OF FORT BENTON, MONTANA.

CURRENT-MOTOR.

SPECIFICATION forming part of Letters Patent No. 658,969, dated October 2, 1900.

Application filed August 31, 1899. Serial No. 729,086. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WALTER, a citizen of the United States, residing at Fort Benton, in the county of Choteau and State of Montana, have invented a new and useful Current-Motor, of which the following is a specification.

My present invention relates to a novel water-motor of that particular class designated "current-motors."

The object of the invention is the production of a motor of this character which will offer the least possible resistance to the current. To the accomplishment of this general object the subordinate objects of the invention are the provision of blades of sufficient displacement to raise the drum proper above the surface of the water and disposed longitudinally in a manner to cause their gradual presentation to the water and to effect the discharge of the air imprisoned between the paddles to the elimination of this source of resistance to the operation of the motor.

Various other subordinate objects will be hereinafter referred to as the necessity for their accomplishment is developed in the succeeding description.

Referring to the drawings, Figure 1 is a perspective view of my motor complete and in operation. Fig. 2 is a central longitudinal section through the subject-matter of Fig. 1, the shaft being shown in elevation; and Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 2.

Referring to the numerals of reference on the drawings, like numbers indicating corresponding parts throughout the several views, 1 and 2 indicate twin drums mounted on a common shaft 3, preferably composed of two sections 4 and 5, coupled together, as indicated at 6, and supported by a frame (not illustrated) or by a yoke 7, attached to the end of a rope 8. Where this latter method of mounting is employed, the motor is simply placed in the current and the end of the rope made fast.

Ordinarily a float or other buoyant support is required for the motor; but the peculiar form of my drums renders them capable of being self-sustaining, and it is simply necessary, therefore, that provision be made for the proper positioning of the motor in the

stream. These drums being identical in their specific aspects, I shall proceed to a detail description of one and shall then point out the relation it bears to the other. The drum is composed of a pair of terminal heads 9 and 10, having a peripheral configuration resembling gigantic saw-teeth—that is to say, the periphery of the head is made up of a series of substantially though not accurately triangular blade ends 11, the edges 12 and 13 of which converge to a point and are disposed, respectively, in the line of a radius of the drum and in a direction tangential to a circle concentric with its axis. These blade ends or teeth are set in alternating relation, the radial edges of the opposed teeth or blade ends being connected by front blade-plates 14 and the tangential edges by rear blade-plates 15.

16 and 17 indicate circular rims bolted to the opposite faces of the drumheads at the outer edges of the blades and serve, when the motor is drawn from the water, to constitute means for preventing injury to the blades as the motor is rolled over the ground during the transportation of the drum.

The inner ends of the several blade-plates are connected and braced by interior braces 18, and the edges or peaks of the several blades are preferably spaced and braced by exterior transverse braces 19.

In order to effect the removal of such small quantities of water as may find a way into the drums, I provide in each drum a cup or trough 20, extending along the inner edge of one of the plates 14, from each of which cups extends a drain-tube 21, piercing the outer end of the drum adjacent to its axis. It will be seen that at each revolution of the drum a certain amount of the leakage will be elevated by the plate 14 and will be deposited into the trough 20, from whence it will be discharged through the drain-pipe 21 to the exterior of the motor.

The alternating arrangement of the opposite ends of the blades dispose them spirally with respect to the axis of the drum, which causes the edge or peak of each blade to be presented gradually to the water, one end being first submerged and the opposite edge being finally submerged as the drum is rotated.

By reference to Fig. 1 of the drawings it will be seen that as the lower end of adjacent blades are presented to the water the entire open end of the bucket at the outside of the drum will first be submerged, causing the air imprisoned within the bucket to be gradually forced toward the opposite end of the drum or in the direction of the dotted arrow in that figure. It will also appear that by reason of the considerable dimensions of these blades their displacement will be sufficient to retain the body portion of the drum entirely out of the water, thereby preventing it from presenting that resistance to the flow of the current which usually produces what is known as "dead-water" in front of the motor. Further, the tangential arrangement of the rear plates of the blades will cause them to assume an almost vertical position as they leave the water, thereby preventing any accumulation of water in the bucket.

As stated, a pair of drums thus constructed are coaxially mounted; but preferably the longitudinal direction or spiral trend of the blades of the several drums are opposed and preferably the contiguous ends of the blades of the drums are alternated. This relation of the parts is necessary in order that the motor will be centralized by the blades taking water, as usual, at the outer or inner ends of both of the drums, the alternation being necessary in order that as the air imprisoned in the bucket is driven in the direction of the opposed drum it may find unrestricted egress.

Any suitable means for transmitting power generated by my motor may be employed; but I prefer to mount a felly 22 between the opposed rims 16 and bolt or otherwise secure to the felly a number of segments 23 of any form of power-transmitting gear which may appear expedient—as, for instance, a sprocket, rope, or other wheel where a chain, rope, or other form of gearing is desired to be employed.

The operation of my motor is as follows: Supposing it may be properly positioned in a stream and anchored by means of the rope 8, secured, for instance, to a tree on the shore, the displacement of the submerged blades will, as stated, support the body of the motor above the water. As the current moves in the direction indicated by the arrows in Fig. 1, the several blades are successively presented to the water by their gradual submersion from end to end, and the air imprisoned in the buckets intermediate of the blades is forced endwise and finally escapes at the opposite end of the drum. By reason of the tangential relation of the rear blade-plates said plates assume, as stated, a vertical position as they leave the water and prevent the

lifting of a weight of water which would in any manner retard the operation of the motor, and the spiral arrangement of the several blades prevents the violent impact of the blade along its entire length with the water, which, as is well understood in the art, results in a momentary checking of motors heretofore employed in the manner specified; but while the present embodiment of my invention appears at this time to be preferable I do not desire to limit myself to the structural details illustrated, as it is obvious that many changes, modifications, and variations may be made without departing from the spirit of the invention, and I therefore reserve the right to make such changes as may come properly within the scope of the protection prayed.

As shown in the drawings, the heads at the mutually-adjacent ends of the drums are connected by means of bolts, and through the medium of these bolts the drums may be disconnected and may be adjusted to cause the blades of one drum to lie at different points with respect to the blades of the other drum, thus permitting a different delivery of water from one set of blades to the other under different conditions.

What I claim is—

1. A water-motor comprising a plurality of coaxial drums having blades disposed at angles to the axes of the drums, and the blades of one drum being arranged at an angle to the blades of the other drum and in staggered relation thereto, the inner and outer edges of the blades being straight and said drums being disposed to receive the water in a direction at right angles to the common axis of the drums.

2. A water-motor comprising a hollow drum having blades disposed at an angle to the axis of the drum, the inner and outer edges of each blade being straight, each of said blades including two plates with their outer edges in mutual contact and with their inner edges separated and in contact with the inner edges of the plates of the adjacent plates of the succeeding blades.

3. A water-motor comprising a drum having longitudinally-inclined buckets, drip-cups within the drum arranged to receive the leakage into the buckets and terminating in drip-tubes extending toward the axis of the drum.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE WALTER.

Witnesses:

WM. H. BOYLE,
J. J. DONNELLY.