

(No Model.)

2 Sheets—Sheet 1.

T. J. VANCE.
WATER MOTOR.

No. 507,294.

Patented Oct. 24, 1893.

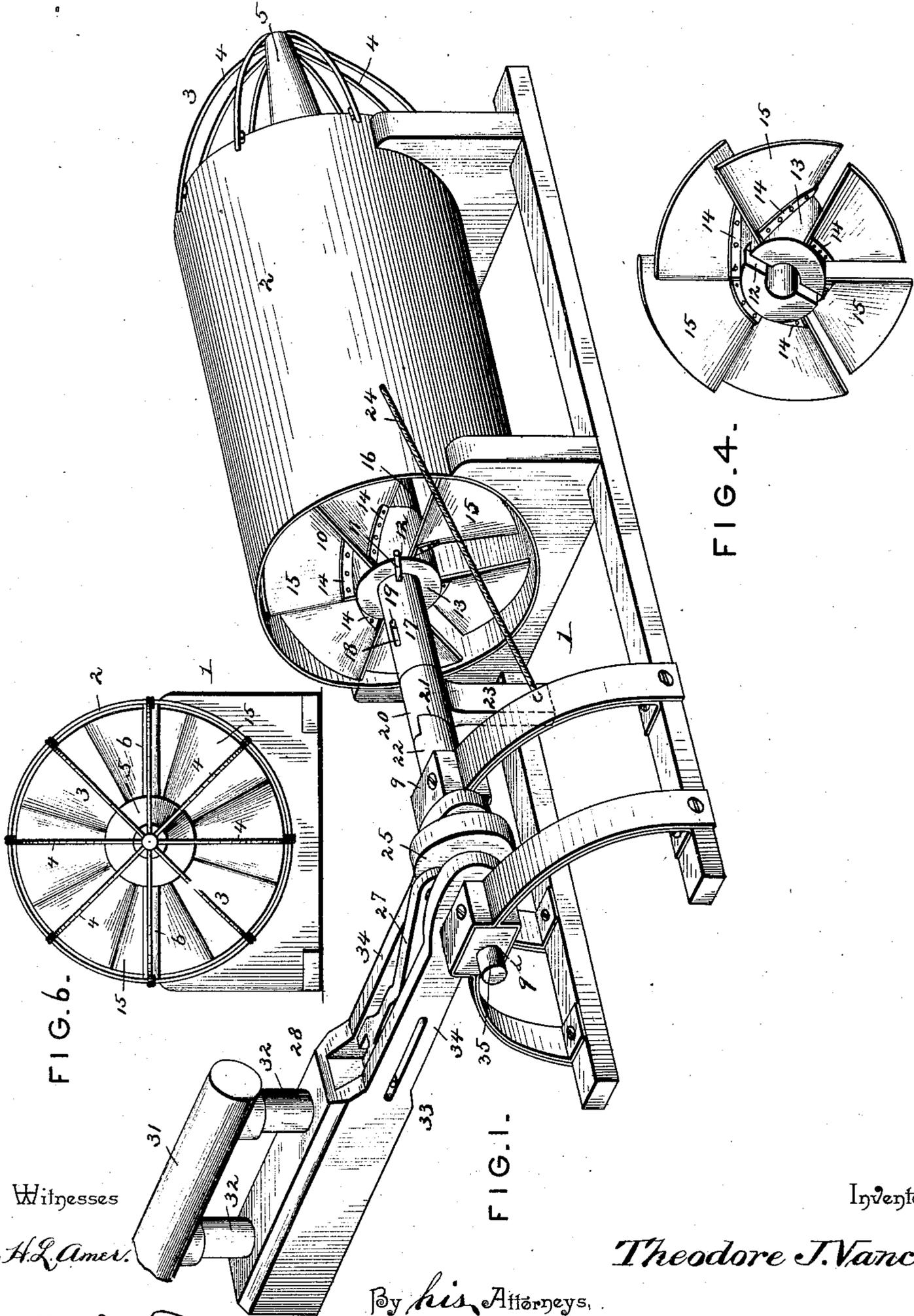


FIG. 6.

FIG. 4.

FIG. 1.

Witnesses

H. L. Amer.

[Handwritten signature]

Inventor

Theodore J. Vance.

By his Attorneys.

[Handwritten signature]

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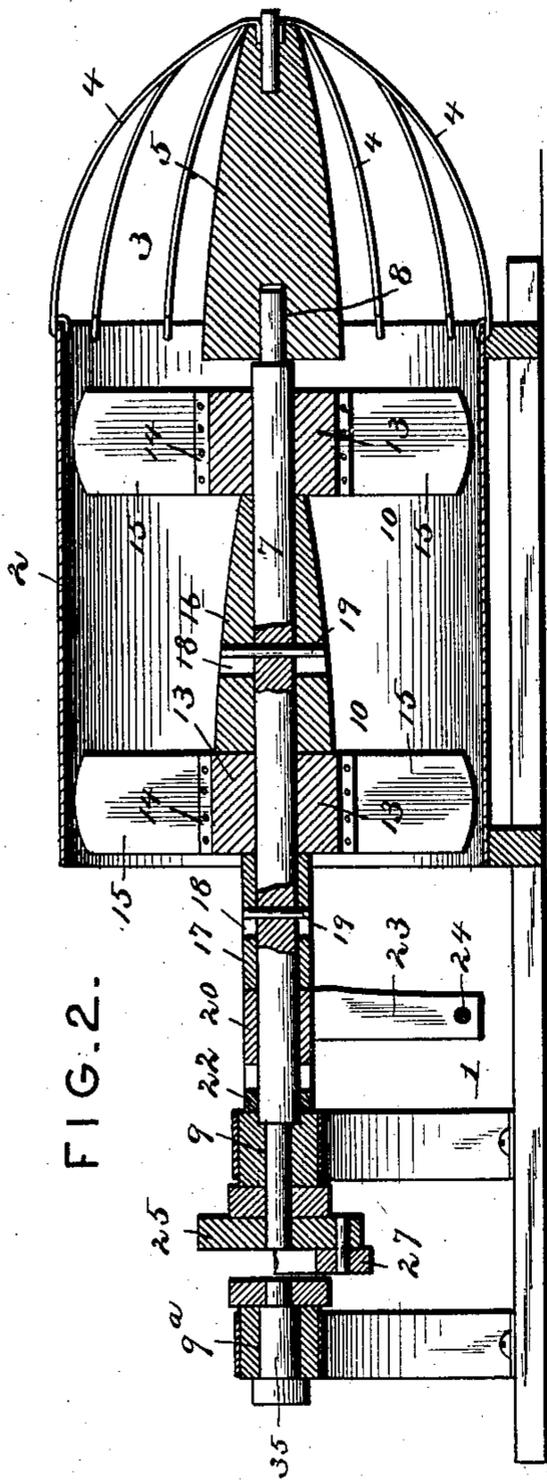


FIG. 2.

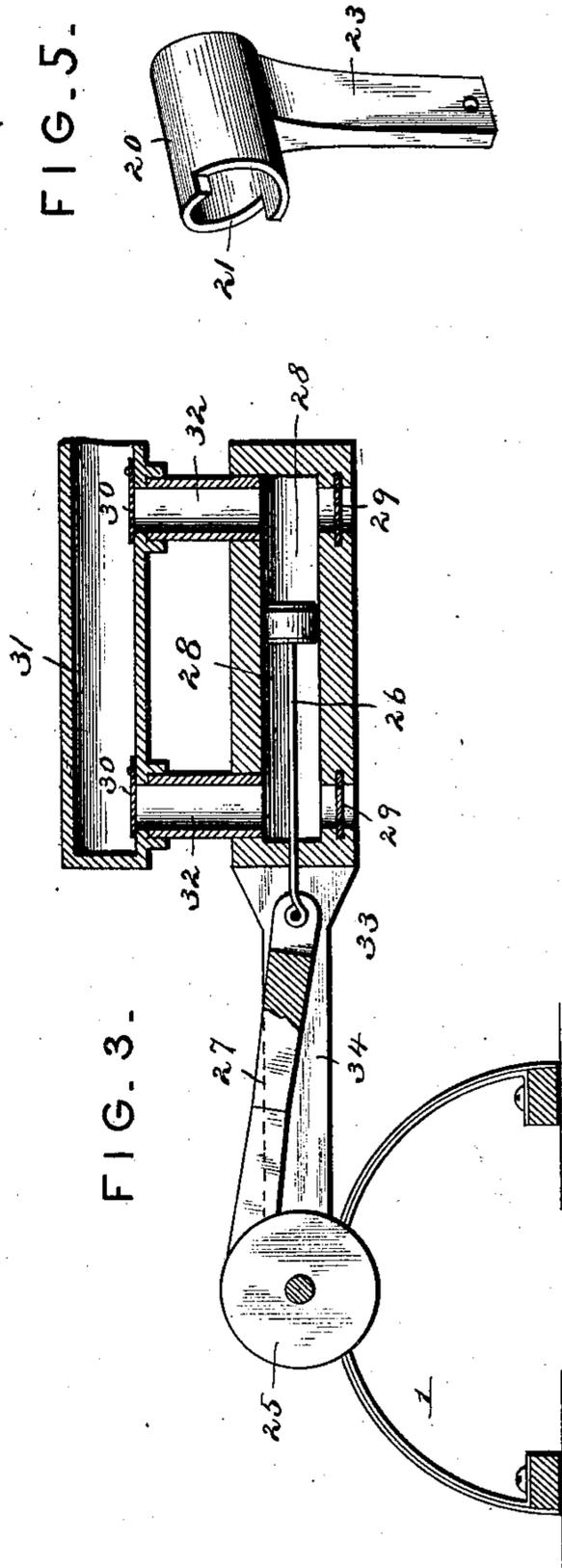


FIG. 3.

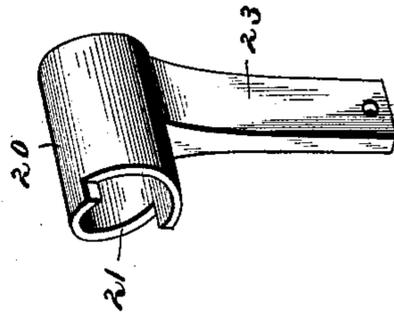


FIG. 5.

Witnesses

H. L. Amer.

[Handwritten signature]

Inventor

Theodore J. Vance.

By *his* Attorneys,

Ca. Snow & Co.

UNITED STATES PATENT OFFICE.

THEODORE J. VANCE, OF ROSEBUD, MONTANA.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 507,294, dated October 24, 1893.

Application filed May 31, 1893. Serial No. 476,143. (No model.)

To all whom it may concern:

Be it known that I, THEODORE J. VANCE, a citizen of the United States, residing at Rosebud, in the county of Custer and State of Montana, have invented a new and useful Water-Motor, of which the following is a specification.

My invention relates to an improved water motor for use in connection with streams, rivers, or other running water, and the objects in view are to provide a simple and efficient device which can be disposed upon the bed of the stream to avoid drift and enable the device to operate during cold weather when the surface of the stream is frozen; and to provide a readily operated mechanism for throwing the parts out of operative relation and for returning them automatically to their operative positions.

Further objects and advantages of my invention will appear in the following description and the novel features thereof will be particularly pointed out in the claims.

In the drawings—Figure 1 is a perspective view of a motor embodying my invention. Fig. 2 is a vertical sectional view taken axially through the wheel-shaft. Fig. 3 is a sectional view of the cylinder, conducting pipe and connections. Fig. 4 is a detail view of one of the wheels. Fig. 5 is a similar view of the trip lever. Fig. 6 is a front view of the wheel casing.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the framework which is adapted to be anchored by any suitable or approved means to the bed of the stream, such means not being illustrated in the accompanying drawings, and 2 designates a wheel-casing which is fixed upon said framework and is provided with open ends or heads; such casing being adapted to be arranged with its axis parallel with the direction of the flow of the stream. That end of the cylinder casing 2 which is toward the source of the stream, and which for convenience I will term the upper or front end of the casing, is provided with a screen or guard 3 formed of bars or rods 4 which are secured at their rear ends to the casing and are connected at their adjacent front ends to the apex of a conical spreader 5 which is disposed in alignment

with the axis of the casing and is secured at its rear end or base to a brace 6 which is arranged diametrically in the cylinder at its front end.

7 represents the shaft which is arranged axially in the cylinder with its front end mounted rotatably in a bearing 8 in the rear end or base of the conical spreader, and is mounted at its rear end in a bearing 9 which is formed in the frame-work and is arranged a short distance from the rear end of the cylinder. Upon this shaft are rotatably mounted the loose water-wheels 10, one being disposed at the front end of the cylinder and the other at the rear end thereof. This shaft carries radially disposed locking-pins 11 which are adapted to engage notches 12 in the rear ends of the hubs 13 of the breast-wheels, whereby when the wheels are pressed rearwardly by the action of the current they will be brought into engaging position with the locking-pins. The hubs 13 are provided with a suitable number of radially-disposed ribs 14 to which are bolted, respectively, the inner ends of the wings or paddles 15. Between the wheels and fitting slidably upon the shaft is a sleeve 16 which is of such a length as to bear at its extremities against the facing sides of the hubs of said wheels when both are in engagement with the locking-pins 11, and arranged slidably upon the shaft in rear of the rear water-wheel is a similar sleeve 17. These sleeves are held from rotation independently of the shaft by means of slots 18 engaged by guide-pins 19 carried by the shaft. Arranged in operative relation to the rear end of the sleeve 17 is a trip-lever 20 which is provided with a cam face 21 to act with a stationary or fixed cam 22 which is carried by the framework. This trip-lever is provided with a handle or arm 23 which is adapted to be held by gravity in the pendent position shown in Fig. 2. When said handle or arm is in its pendent position the cam faces, above described, are snugly interlocked thus relieving the water-wheels of forward pressure and enabling the latter to be repressed by the force of the current into operative relation with the locking-pins. To the end of the handle or arm is connected an operating guard or rope 24 by which said handle or arm may be elevated or carried through

an arc which is sufficient to force the water-wheels forwardly out of engagement with the locking-pins. When the trip lever is released the water-wheels are automatically locked to the shaft, as will be understood.

Fixed to the rear end of the shaft is a crank disk 25 to which is connected a plunger rod 26 by means of a pitman 27. The plunger operates in the pump cylinder 28, such cylinder being provided with the inlet valves 29 and the outlet valves 30, and the conductor pipe 31 being connected with the cylinder by means of the leads 32. This cylinder is carried by a pivotal frame 33, having parallel arms 34 which are pivotally connected to the frame-work of the motor; one of said arms being mounted upon the shaft between the crank disk and the bearing 9 and the other arm being provided with a lateral stud 35 which is mounted in an adjacent twin bearing 9^a. By this construction the cylinder may be arranged at any desired inclination or in any preferred position with relation to the bed of the stream and is held in operative relation to the shaft of the motor by means of the pivoted frame.

The screen bars with which the front end of the cylindrical casing is provided serve to prevent objects from floating into the casing and interfering with the operation of the wheels, and the conical spreader which is arranged opposite the center of the front wheel and the base of which is equal in diameter to the hub of the wheel is designed to spread the force of the water and distribute it to the outer ends of the paddles in order that the entire force of the current may be utilized.

Various changes in the form, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of my invention.

Having described my invention, what I claim is—

1. In a submerged water motor, the combination with a shaft and connections, of a concentric casing, water-wheels loosely mounted upon said shaft, locking-pins carried by the shaft to engage said wheels, and a trip device for disengaging the wheels from the locking-pins, substantially as specified.

2. In a submerged water motor, the combination with a shaft and connections, and a concentric wheel casing, of water-wheels

loosely mounted upon said shaft, locking-pins carried by the shaft to engage the wheels, sleeves slidably mounted upon the shaft and connected to the wheels, and a trip lever arranged in operative relation to the sleeves whereby the latter may be operated to disengage the breast-wheels from the locking-pins, substantially as specified.

3. In a submerged water motor, the combination with a shaft and connections, and a concentric wheel casing, of water-wheels loosely mounted upon said shaft within the casing, locking-pins carried by the shaft to engage said wheels, sleeves slidably mounted upon the shaft in operative relation to the wheels; a trip lever rotatably mounted upon the shaft and having a cam face to co-act with a similar fixed cam, said trip lever being provided with a gravity handle or arm, and a flexible operating medium connected to the free end of said handle or arm, substantially as specified.

4. In a submerged water motor, the combination with a suitable anchored frame-work, a shaft mounted in suitable bearings therein, a fixed wheel casing concentric with said shaft, water-wheels mounted upon the shaft, and connections between said wheels and the shaft, of a cylinder and connections, arms fixed to said cylinder and pivotally connected to the frame-work concentric with the shaft, a plunger fitted in said cylinder, and operating connections between the plunger and the shaft, substantially as specified.

5. In a water motor, the combination with a shaft and connections, and a concentric wheel casing, of water-wheels loosely mounted upon said shaft within the casing and comprising hubs provided with radial ribs, and wings or paddles bolted at their inner ends to said ribs, said hubs being provided in their rear ends with notches, fixed locking-pins carried by the shaft to engage the notches in the hubs of the wheels, and a trip device whereby the wheels may be disengaged from said locking-pins, substantially as specified.

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

THEODORE J. VANCE.

Witnesses:

JOHN LAUGHREY,
THOMAS HALL.