No. 848,894. PATENTED APR. 2, 1907.

G. D. GILBERT.

WATER WHEEL.

APPLICATION FILED NOV. 29, 1904.

2 SHEETS—SHEET 1.

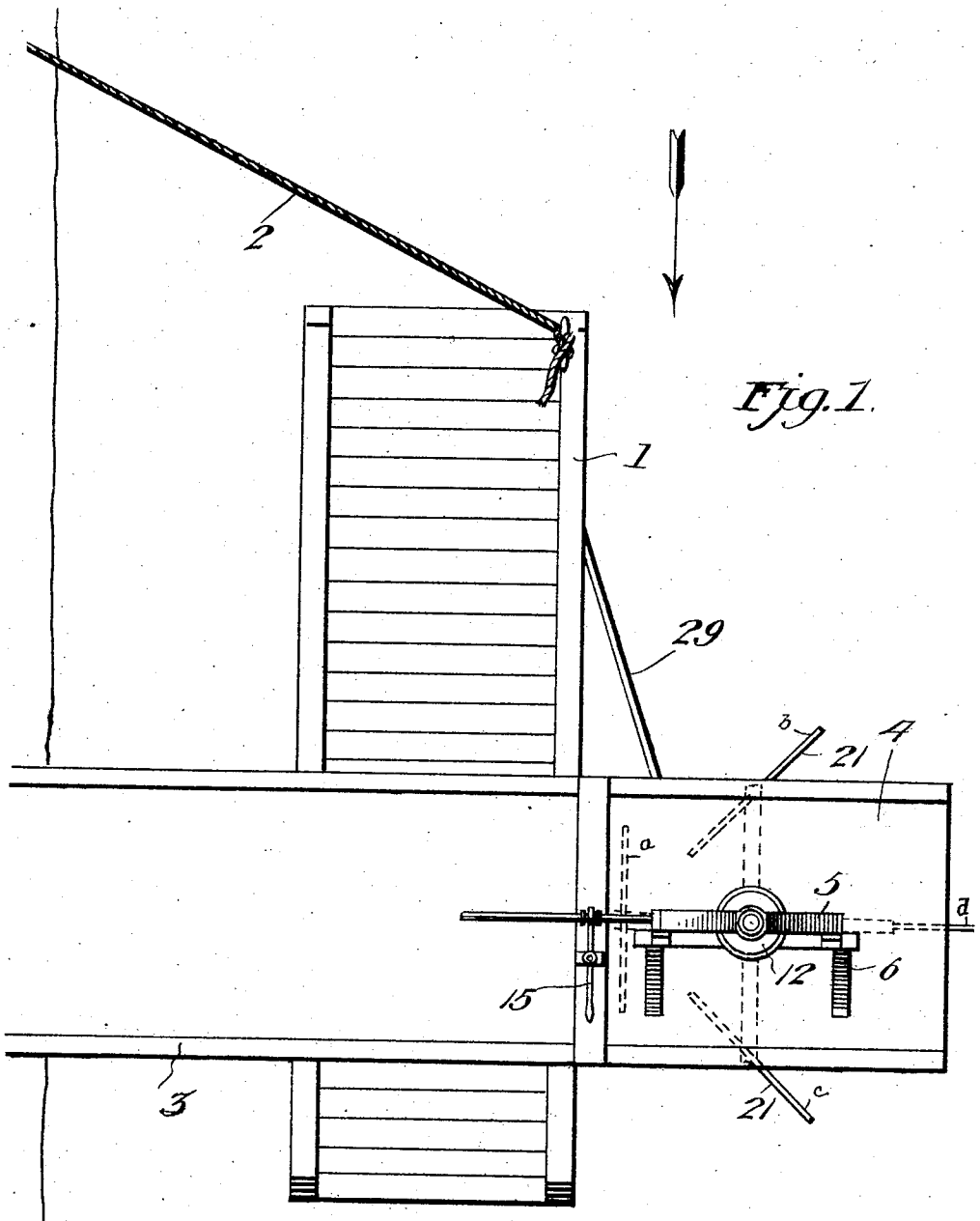

Fig. 1.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

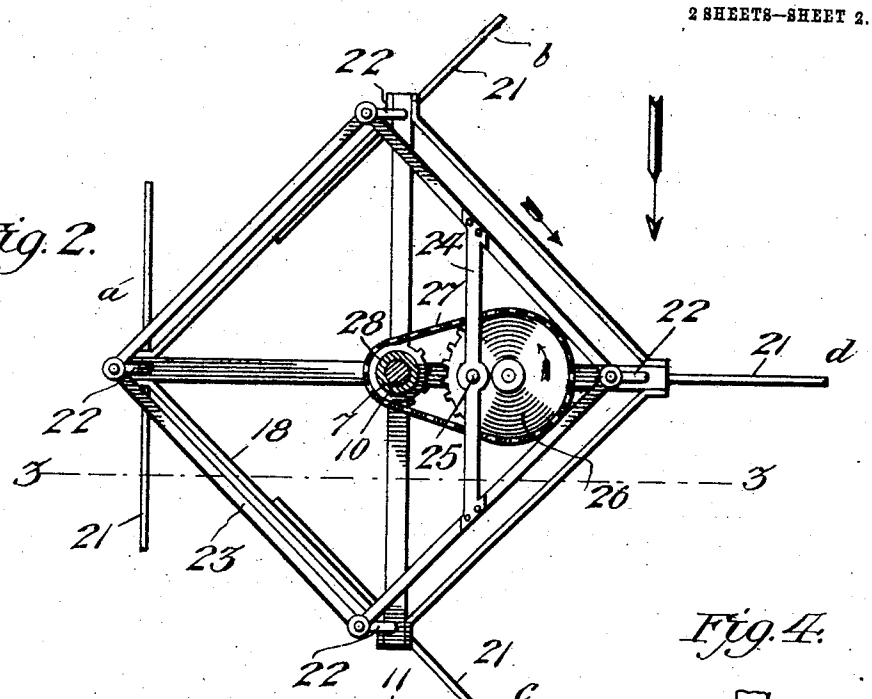

Fig. 4.

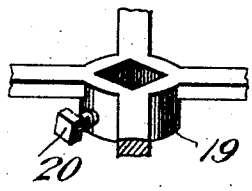

Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE D. GILBERT, OF JENNINGS, MONTANA.

WATER-WHEEL.

No. 848,894. Specification of Letters Patent. Patented April 2, 1907.

Application filed November 29, 1904. Serial No. 234,767.

To all whom it may concern:

Be it known that I, GEORGE D. GILBERT, a citizen of the United States, residing at Jennings, in the county of Flathead and State of Montana, have invented new and useful Improvements in Water-Wheels, of which the following is a specification.

This invention relates to water-wheels.

The objects of the invention are to improve, strengthen, and simplify the construction of such devices; furthermore, to increase their efficiency in operation and to decrease the expense attending their manufacture and instalment.

With the foregoing and other minor objects in view, which will appear as the description proceeds, the invention resides in the particular combination and arrangement of parts and in the exact details of construction hereinafter described and claimed as a practical embodiment thereof.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a float or pontoon, showing the improved water-wheel in connection therewith. Fig. 2 is a plan view of the water-wheel *per se*. Fig. 3 is a vertical section on the line 3 3 of Fig. 2. Fig. 4 is a detail perspective view showing the manner of attaching the radial arms of the water-wheel to the shaft.

Like reference-numerals indicate corresponding parts in the several views.

The reference-numeral 1 indicates a pontoon or float which may be of any suitable form and construction, said pontoon being illustrated as moored to the bank of a stream by means of a line 2. Extending transversely across the pontoon 1 is a gang-plank 3, which connects with the bank, said gang-plank being carried on the opposite side of the pontoon to form an extension 4, which acts as a suitable support for the improved water-wheel hereinafter described. If desired, two water-wheels may be employed, one on each side of the pontoon, so as to balance each other, although but one water-wheel has been illustrated in the drawings. Mounted upon the extension 4 is a supporting-frame 5, which is held in position by any suitable braces 6. The frame 5 is vertically arranged and of diamond form and is held in position at its base by the braces 6, which may be of any convenient form and construction. Connected with the lower end of the frame 5 is a sleeve 7, which extends through the extension 4 and is provided with a collar 8, resting upon the upper surface of said extension. The upper and lower corner portions of the frame 5 are provided with bearings 9 9′, the sleeve 7 being formed on or suitably connected with the lower bearing 9′. The rotary water-wheel shaft 10 is journaled in said sleeves and bearings and is provided at its upper end with a head or enlargement 11, resting upon the upper bearing and serving to hold the shaft from downward displacement.

The shaft 10 is adapted to be rotated by means of the water-wheel hereinafter described, and in order to utilize the power thereof a bevel-wheel 12 is mounted thereon, said bevel-wheel 12 meshing normally with a bevel-wheel 13 upon a power-shaft 14. The power-shaft 14 is adapted to be moved longitudinally by means of a lever 15 in order to throw the bevel-wheel 13 into and out of mesh with the wheel 12 to control the rotation of said shaft 14.

The water-wheel proper comprises upper and lower sets of radial arms 16 17, which are spaced apart from each other on the shaft 10, as shown, said radial arms being braced by means of connecting-rods 18. As shown in Fig. 4, the shaft 10 is squared to receive the hub 19 of the radial arms, said hub being secured in place by a tightening-screw 20. Pivotally mounted between the outer ends of each set of radial arms 16 and 17 is a blade 21, which is provided at its upper end with a crank 22. Supported upon the cranks 22 is an operating-frame 23, which is eccentrically connected, by means of a cross-piece 24 and pin 25, with a sprocket-wheel 26, journaled upon one of the radial arms 17 of the water-wheel. The sprocket-wheel 26 is connected, by means of a sprocket-chain 27, with a small sprocket-wheel 28, fixed immovably upon the sleeve 7. The sprocket-wheel 26 is preferably twice the size of the sprocket-wheel 28, so that a complete revolution of the water-wheel will cause the half-revolution of the wheel 26.

In order to deflect the current from the blade which is in feathering position, a shield or deflector 29 is attached to the float or pontoon 1 in any suitable manner.

Constructed as above described the operation of the improved device is as follows: Let

it be supposed that the current of the stream is running in the direction of the arrow. The arrangement of the water-wheel is such that the blade *a* is in line with the current, so as to feather the same, the blades *b* and *c* are disposed at an angle thereto, so as to induce the rotation of the wheel, and the blade *d* is arranged broad side to or transversely across the current, as shown. As the water-wheel proper rotates the operating-frame 23 will rotate therewith; but the sprocket-wheel 26 will cause said frame to have an additional rotation in a direction reverse to the rotation of the water-wheel, so as to turn the blades 21 gradually and maintain them always in the relative positions illustrated in Fig. 2, the movement of each crank suggesting the double movement of the earth around the sun.

I am aware that the water-wheels have been constructed heretofore with blades adapted to be moved into certain relative positions with respect to the direction of the current, and I do not claim this broadly as my invention. My invention is merely an improved and simplified construction of such devices in the particulars hereinbefore set forth.

By using an operating-frame connected with the cranks of the different blades relative wabbling movement or displacement of the blades is effectually prevented, and the strength and efficiency of the device is materially increased.

The device of the present invention thus constitutes an improvement over the forms of devices which employ sprocket-chains alone for moving the blades.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

In a current-motor, the combination of a float, a transverse gang-plank carried thereby and provided with an extension, braces on said extension, a vertically-arranged diamond-shaped supporting-frame held by said braces, a sleeve fixed to the lower corner portion of the supporting-frame and extending through the gang-plank extension and provided with a sprocket-pinion, a water-wheel shaft extending through said sleeve and journaled in bearings at the upper and lower corner portions of the supporting-frame, said sleeve being provided with a collar resting on the plank extension to sustain the parts firmly in position, a water-wheel fixed to said shaft below the plank extension and provided with pivoted blades having cranks, a rectangular operating-frame connected at its corner portions with said cranks, said operating-frame being provided with a cross-piece between two of the arms thereof, a sprocket-wheel journaled upon one of the arms of the water-wheel and having a crank-pin connected with said cross-piece, a chain passing around said sprocket-wheel and the sprocket-pinion on the stationary sleeve, a power-shaft journaled in one of the side corner portions of the supporting-frame, and intermeshing gears connecting said shaft with the water-wheel shaft.

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

GEORGE D. GILBERT.

Witnesses:
F. P. BROWNE,
EDWARD DAWSON.