

No. 720,750.

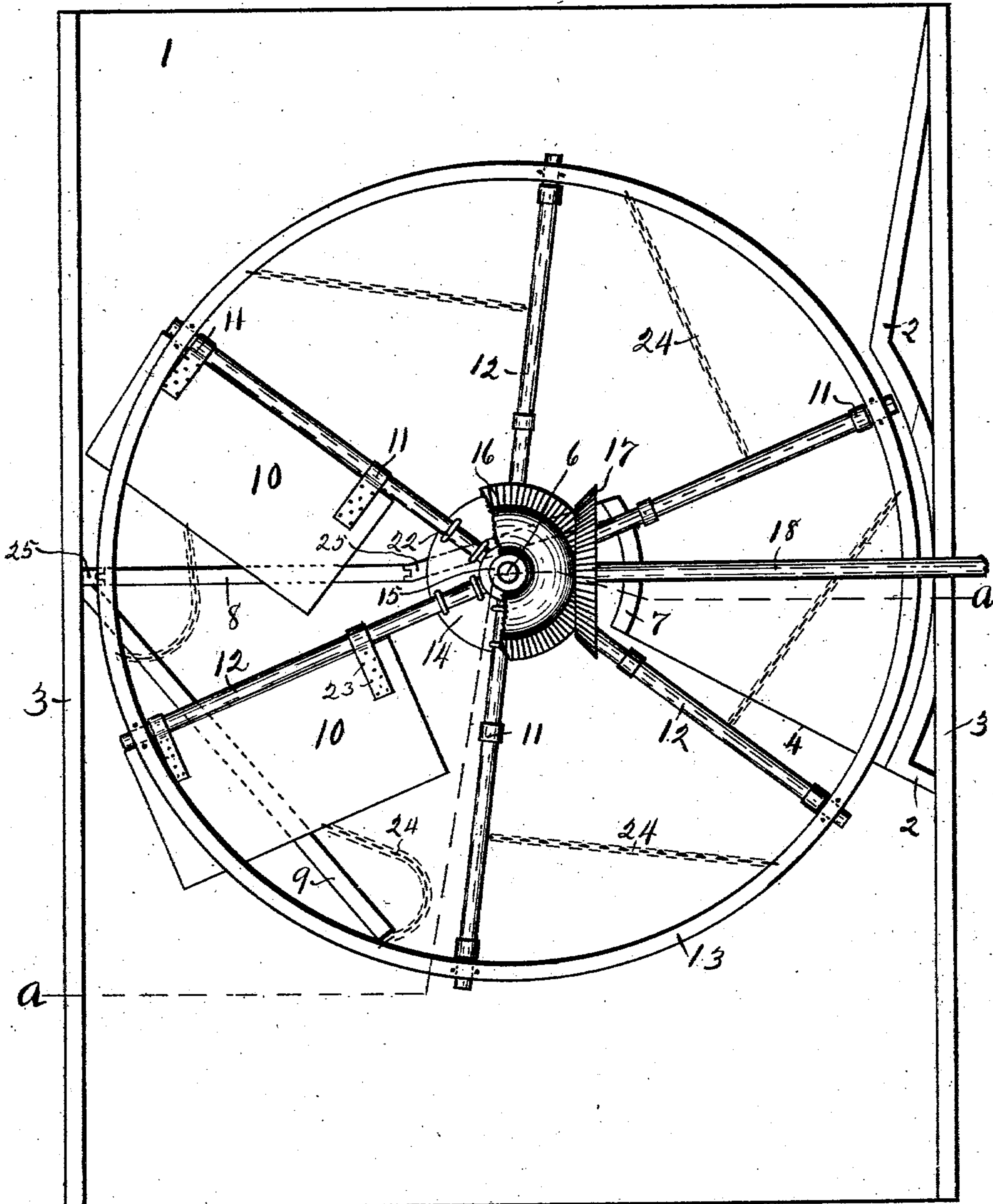
PATENTED FEB. 17, 1903.

E. A. SPEEGLE.
CURRENT WATER WHEEL.
APPLICATION FILED MAR. 17, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
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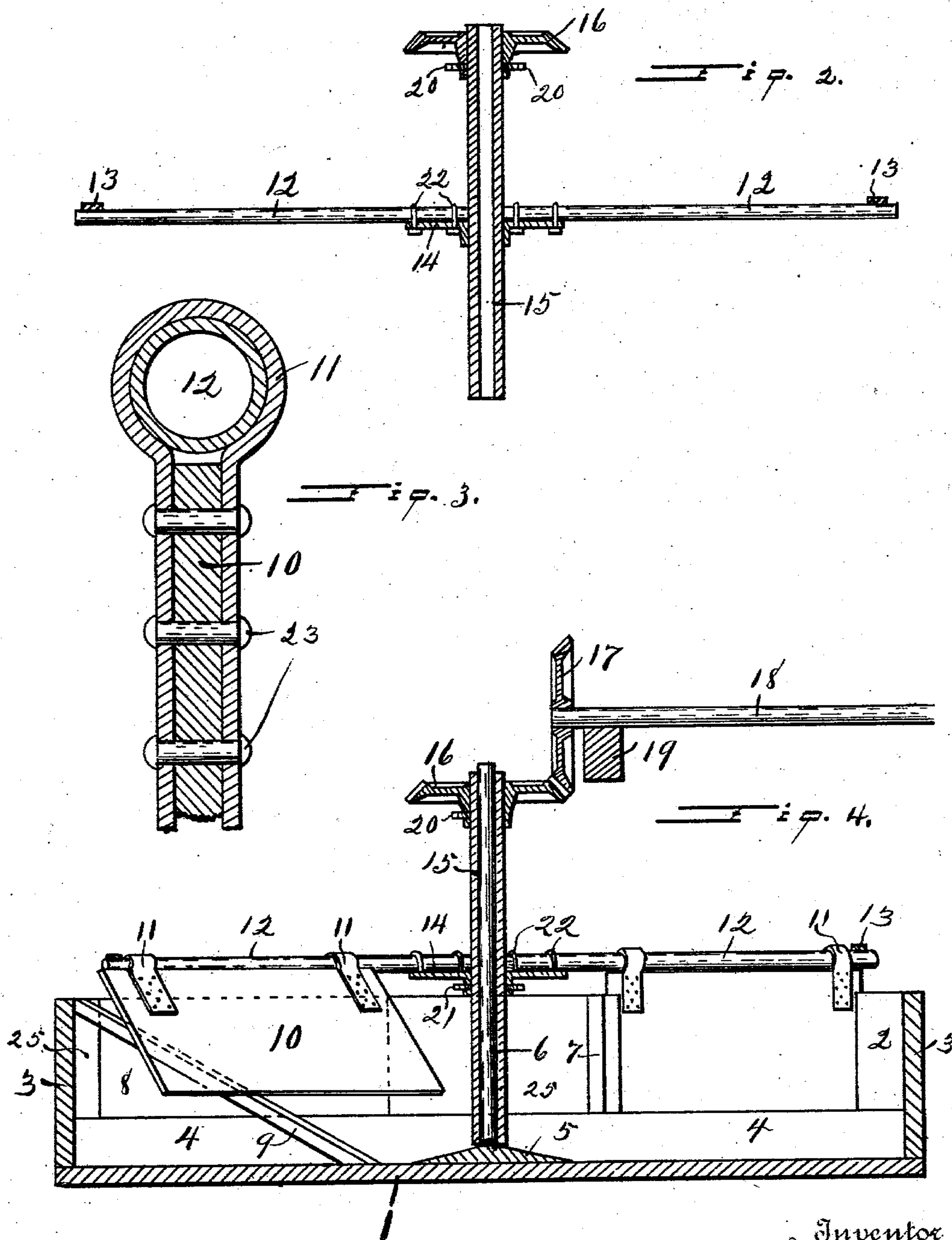
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UNITED STATES PATENT OFFICE.

EMANUEL A. SPEEGLE, OF STOCKTON, CALIFORNIA.

CURRENT WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 720,750, dated February 17, 1903.

Application filed March 17, 1902. Serial No. 98,529. (No model.)

To all whom it may concern:

Be it known that I, EMANUEL A. SPEEGLE, a citizen of the United States, residing at Stockton, in the county of San Joaquin, State of California, have invented certain new and useful Improvements in Current Water-Wheels; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of motors which derives its source of motion from running water and is adapted principally to a location within a sluice or water way provided with a dam and gate by which the flow of the water is controlled.

It consists mainly of a stationary vertical standard suitably attached within the sluiceway, to which sleeve are attached wings or paddles, an inclined bar for supporting said wings or paddles when out of the water, a gateway for controlling the direction of the current, and of such other novel constructions and devices in connection with the above as will be hereinafter described, and particularly pointed out in the claim.

In the annexed drawings, Figure 1 is a plan view of my improved current-motor, showing the passage through the sluice and the actuating-gearing of the motor. Fig. 2 is a detached view showing the arms, to which are attached the wings or paddles, and the revolving sleeve or hollow shaft with the bevel-gear attached. Fig. 3 is a detailed view of a hinge by which the paddles or wings are attached to their respective arms. Fig. 4 is a section taken in the plane indicated by the lines *a a*, Fig. 1.

Similar characters of reference indicate corresponding parts in the several views.

1 designates a section of a sluice-box within which the rush of water is admitted for the purpose of actuating my current-motor. On the free side of the sluice-box is a curved sluiceway 2, so that the pressure of the current of water may be directly applied to the

wings or paddles, to be hereinafter described, so as to produce the most direct results.

3 designates the sides of the sluice-box.

4 is a step or drop, so as to give the water a slightly direct fall when the wings or paddles are directly at right angles to the sluice-box.

5 is a foot-plate in the center of the sluice-box, to which is rigidly attached a vertical standard or spindle 6.

7 is a curved sluiceway located directly opposite the curved sluiceway 2 and constituting with it the point at which the current strikes the wings of the motor directly.

8 is a gate or a dam which directs the flow of the water between the ways 2 and 7, as will be hereinafter shown.

9 is an inclined bar for the purpose of raising or tilting the wings or paddles as they arrive at a position behind the gate 8 as they swing out of the current running between the ways 2 and 7.

10 designates the swinging wings or paddles, supplied with hinges 11, by which they are attached to horizontal supporting-arms 12, of any required number. The arms 12 are strengthened at their extreme outer ends by an encircling band 13.

15 is a sleeve or hollow shaft encircling the set standard or spindle 6 and has attached to it a plate 14, to which are attached the arms 12 by yokes 22. A bevel-gear 16 is attached near the apex of the sleeve 15 by a set-screw 20 and is engaged by a bevel-gear 17, which in turn is attached to a horizontal driving-shaft 18, supported by a cross-beam 19.

21 is a set-screw by which the plate 14 is held in position upon the sleeve 15.

Rivets 23 attach the hinges 11 to the wings 10. The wings or paddles 10 are provided with chains 24, which are attached to the lower edges of the wings or paddles 10 and to the band 13 at suitable points.

25 is a dam containing the gate 8, as heretofore shown, which dam diverts the flow of water so that it strikes directly upon the tilting wings or paddles as they drop into the water after passing over the inclined bar 9 and the dam 25.

The mode of operating my improved current-motor is as follows: The water is ad-

mitted into the sluice-box 1. The gate 8 in the dam 25 having been previously closed the full force of the current strikes the wings or paddles 10 directly between the outlet afforded between the curved ways 2 and 7, each paddle as it passes out of the current into the still water behind the dam 25 impinging upon the inclined bar 9 and sliding upward thereon is permitted by the hinges 11 to drop into the water again in front of the dam 25 to again receive the force of the current, thus continuously rotating the sleeve 15 on the standard 6, actuating the driving-shaft 18 by means of the gears 16 and 17, the shaft 18 being connected to any machinery, &c., by such suitable means as is desired. As will be observed, the formation and location of the ways 2 and 7 are such that the wings 10 will receive the full force of the current when they are in the most advantageous position, while the drop or step 4 increases the force of the current at the most direct point of pressure.

By loosening the set-screw 21 the plate 14 may be elevated upon the sleeve 15 and secured in a position above the flow of the water when it is not desired to operate the motor. Under these circumstances where the sluice-box is located in a tideway where the water is allowed to flow through an open sluice into a reservoir while the tide is rising the gate 8 may be opened to permit of a free flow of the water until the turn of the tide, when the plate 14 may be lowered and the wings or

paddles again placed in position to receive the force of the current caused by the return flow of the water from the reservoir. Any suitable means may be employed to raise the wheel and retain it in its raised position for the purpose just stated; but as such means forms no part of my present invention I have deemed it unnecessary to illustrate same.

I am well aware that a sleeve or hollow shaft rotating upon a standard or spindle has been heretofore used in connection with current-motors. I therefore do not broadly claim that construction; but

What I claim, and desire to secure by Letters Patent, is—

In a water-wheel, the combination of a rectangular sluice-box, a dam therein at a right angle to one of the walls of the box and extending inwardly to a point upon the opposite side of the shaft of the wheel, curved walls forming a sluiceway, the inner wall joining said dam, a stationary shaft mounted adjacent to said dam, and a wheel mounted to rotate upon said shaft, the same comprising feathering-paddles, together with the inclined bar at the outer end of the dam, substantially as described.

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

EMANUEL A. SPEEGLE.

Witnesses:

J. C. WHITE,

CHARLES WHITSON.