D. C. BENJAMIN.

CURRENT WATER-WHEEL.

No. 184,575. Patented Nov. 21, 1876.

Fig. 1.

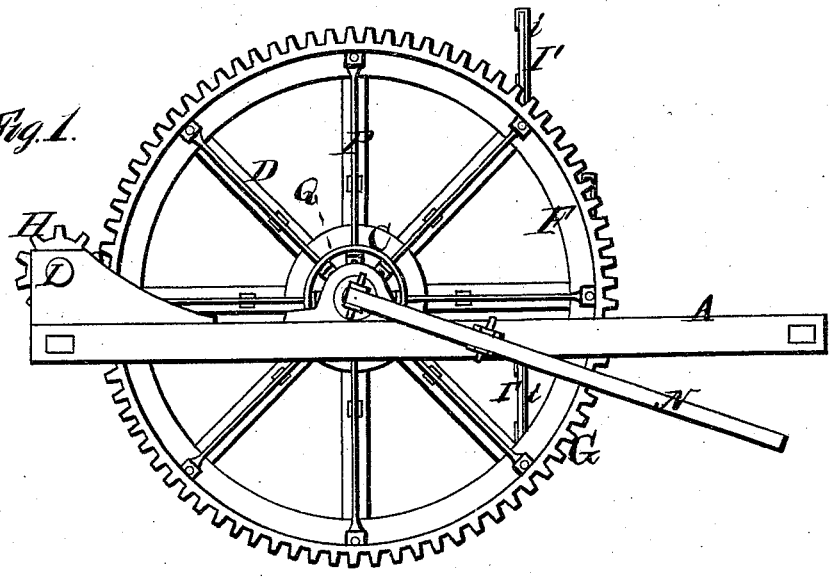


Fig. 2.

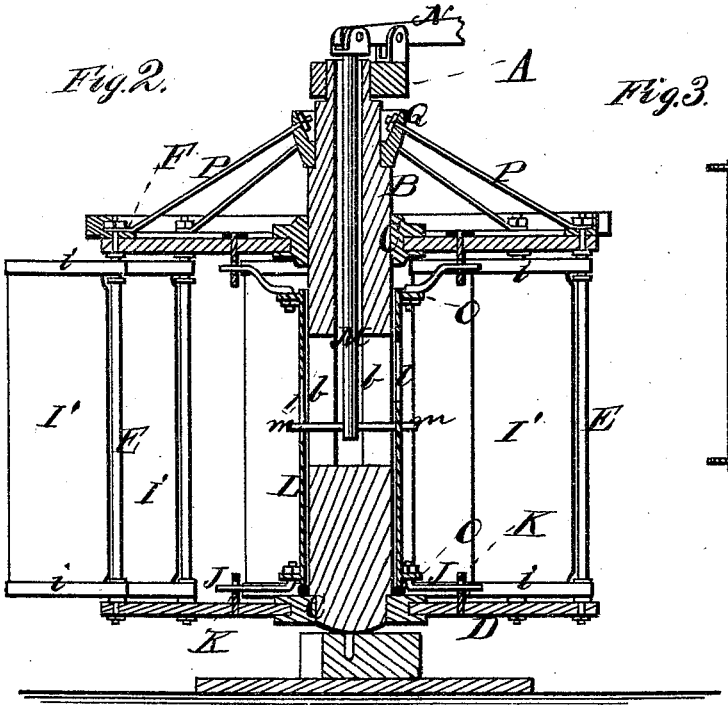
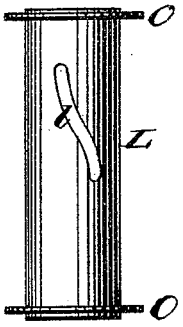


Fig. 3.



WITNESSES

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DESMOND O. BENJAMIN, OF LAWRENCE, KANSAS.

IMPROVEMENT IN CURRENT WATER-WHEELS.

Specification forming part of Letters Patent No. **184,575**, dated November 21, 1876; application filed October 21, 1876.

To all whom it may concern:

Be it known that I, DESMOND O. BENJAMIN, of Lawrence, in the county of Douglas, and State of Kansas, have invented a new and valuable improvement in Current Water-Wheels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a plan view of my current water-wheel, and Fig. 2 is a longitudinal vertical central sectional view of the same. Fig. 3 is a detail view thereof.

This invention relates to power-transmitting wheels which are actuated by currents of running water; and it consists, mainly, in means, hereinafter described, whereby said float-boards can all be freed by a single motion, making inoperative the wheel to which they are applied.

In the annexed drawings, A designates the frame which supports the rotating tubular shaft B of my improved current-wheel. Said frame may be made to float near the surface and anchored, or it may be sustained by rigid standards fixed in the bed or banks of the stream. In any case, said shaft is journaled in said frame. Said shaft carries, near each end, a hub, C, from which extend radial spokes D. The corresponding spokes of each series are connected by rods E E, that are parallel to shaft B. One of said series of spokes is provided with a rigidly-attached felly, F, having cogs G on its outer surface, so as to form, with said series of spokes and their hub, a large cog-wheel. Said cogs G mesh with and communicate motion to a small pinion, H, on a shaft, I, which is journaled at one side of frame A, and by means of which power is applied to any kind of machinery.

The rotation of said wheel is caused by the pressure of the current against float-boards I′, which are hung by pivoting-straps *i* from rods E. The lower ends of said float-boards are locked when in operation, and while in the upper part of their revolution, by the free ends of locking-rods J, which pass radially outward behind said float-boards, through perforated guide-plates K, one of which is secured to the inner side of each spoke D. During the lower part of their revolution, the force of the current and gravity operate to separate said pivoted float-boards from said rods and hold them nearly in a horizontal position, edgewise to the said current, which then exerts little or no force upon them. Thus, when the said current-wheel is submerged, the power that drives it round is not impeded by the resistance of its float-boards during any part of their revolution.

It is often desirable to throw the said wheel out of operation. This is effected by the following means: L designates a sleeve surrounding tubular shaft B, between hubs C C, and provided near its middle with two oblique slots, *l l*, which set over and across two longitudinal slots, *b b*, in said shaft. M is a longitudinally-reciprocating pitman, which derives motion from a lever, N, pivoted on the outside of frame A. Said pitman works inside of tubular shaft B, and is provided with a rod running through the said pitman and forming two projecting pins, *m m*, each of which passes up through one of said slots *b*, and one of said slots *l*. As sleeve L is loose upon shaft B, the pressure of pins *m m* against oblique slots *l l* causes said sleeve to turn whenever lever N is operated. Said sleeve L is provided at each end with a rigidly-attached annular flange, O, to which the inner ends of lock-rods J are pivotally attached. Thus, as said sleeve B is turned by drawing inward the long free end of lever N, the said lock-rods are retracted, and the said float-boards are set free (under all circumstances) at their inner ends. The pressure of the current will then be equal (though very slight) upon all parts of said wheel, which will, therefore, no longer turn. By thrusting out the long free end of lever N, sleeve B is turned in the opposite direction, and the float-boards are again locked as before. The action of said wheel will then recommence. Cogged felly F is braced by brace-rods P, which extend obliquely therefrom to an enlargement, Q, of shaft B.

Any other form of gearing may be substituted for the cog-gearing shown, and any

known mechanical equivalent for lever N. Various other modifications may be made without departing from the spirit and scope of my invention. For instance, one slot *b*, one slot *l*, and one pin *m* may be substituted for two of each; also, one central annular flange, with locking-rods attached, may be substituted for the two flanges and sets of lock-rods shown and described.

The above-described apparatus may be used as a tide-wheel as well as a current-wheel.

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

In a current-wheel, the tubular shaft B, having longitudinal slot *b*, in combination with loose sleeve L, having oblique slots, *l*, and annular flanges O, pivotally-connected locking-rods E, and longitudinally-reciprocating pitman M, having rod *m*, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

DESMOND O. BENJAMIN.

Witnesses:
THOMAS H. KENNEDY,
J. W. HOUGHTELIN.