W. ALGER.

Current and Tide Wheel.

No. 206,289. Patented July 23, 1878.

Fig. 1.

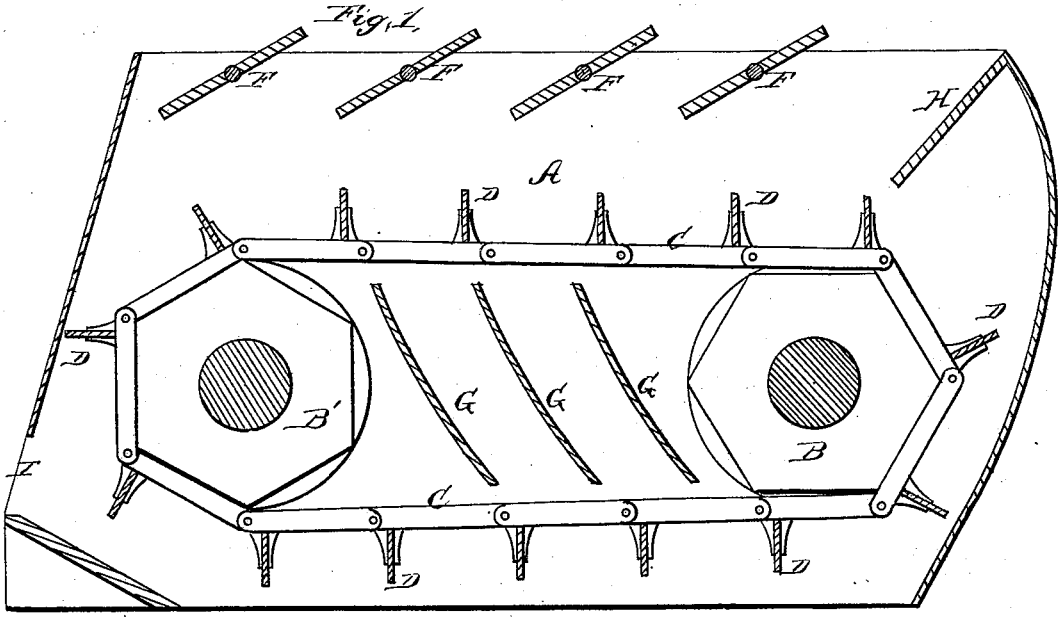


Fig. 2.

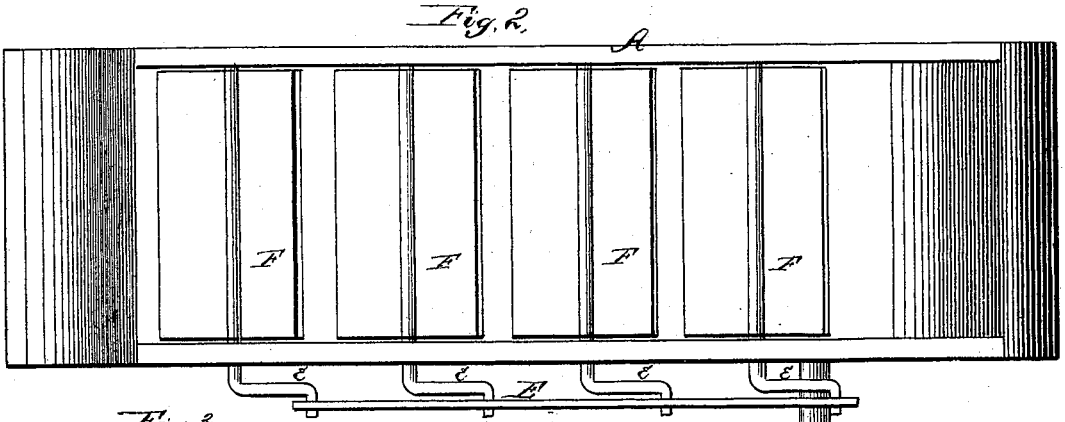


Fig. 3.

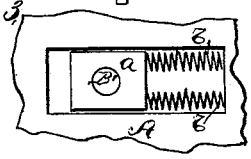


Fig. 4.

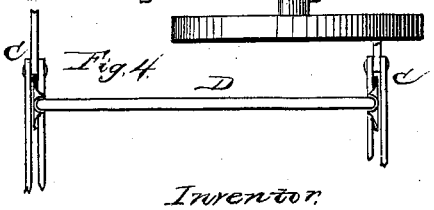
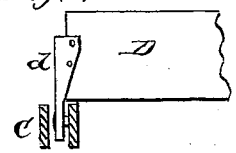


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM ALGER, OF GRAND RAPIDS, MICHIGAN.

IMPROVEMENT IN CURRENT AND TIDE WHEELS.

Specification forming part of Letters Patent No. **206,289**, dated July 23, 1878; application filed February 6, 1878.

To all whom it may concern:

Be it known that I, WILLIAM ALGER, of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Double-Acting Current and Tide Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The nature of my invention consists in the construction and arrangement of a tide-wheel, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a central vertical section. Fig. 2 is a plan view; and Figs. 3, 4, and 5 are details of my improved tide-wheel.

A represents a box or frame of any suitable dimensions, in which are placed two drums or pulleys, B B′, made polygonal-shaped, as shown, the sides being of equal size. The journals of the drum B have their bearings in the sides of the box or frame A, while the journals of the drum B′ are placed in boxes *a a*, which are located in slots or grooves in the sides of the frame, and suitable springs *b b* are placed in said slots or grooves, to bear against the boxes for the purpose of keeping the endless chains C C at the proper tension. These chains are placed around the equal-sided drums B B′, and are made of elongated links or pivoted bars of the same length as the width of the sides of the drums.

To the chains C C are secured a number of paddles, D D, at equal distances apart. The ends of these paddles are fastened in flanged arms *d d*, which are riveted or otherwise permanently secured to the links or bars of the chains.

In the upper sides of the frame-work is pivoted a series of gates, F F, for the purpose of directing the current of the stream or the current of the incoming or outgoing tide to the paddles D D. On one side the journals of these gates are provided with cranks *e e*, which are connected by a bar, E, so that they can all be operated at one time and adjusted all at the same angle.

Between the pulleys B B′, and between the upper and lower portions of the chains, is a series of chutes, G, which may be either stationary or adjustable, for the purpose of redirecting the current or tide a second time upon the paddles D on the lower side.

In case of any timber or other obstructions getting into the wheel, the springs *b b* will yield and allow such obstructions to pass through without breaking the chains.

H is a chute to prevent the current acting in the wrong direction upon the paddles. I is an opening to allow the surplus water to escape.

In the drawing the wheel shows the action of the current or tide going one way; but it is evident that by using a series of gates, F, on the opposite or lower sides the return tides can be utilized, driving the wheel in the same direction and with the same force and power.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the polygonal-shaped drum B, having stationary bearings, the polygonal-shaped drum B′, having yielding bearings, the endless chains C C, and the paddles D D, substantially as and for the purposes herein set forth.

2. The adjustable gates F F, in combination with the wheel composed of the endless chains C C and paddles D D, for the purposes herein set forth.

3. The chutes G G, arranged within the wheel, composed of the endless chains C C and paddles D D, for the purposes herein set forth.

4. The combination of the frame A, pulleys B B′, endless chains C C, paddles D D, adjustable gates F F, chutes G G and H, and opening I, all constructed substantially as and for the purposes herein set forth.

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

WILLIAM ALGER.

Witnesses:

WM. M. ROBINSON,

HENRY J. FELKER.