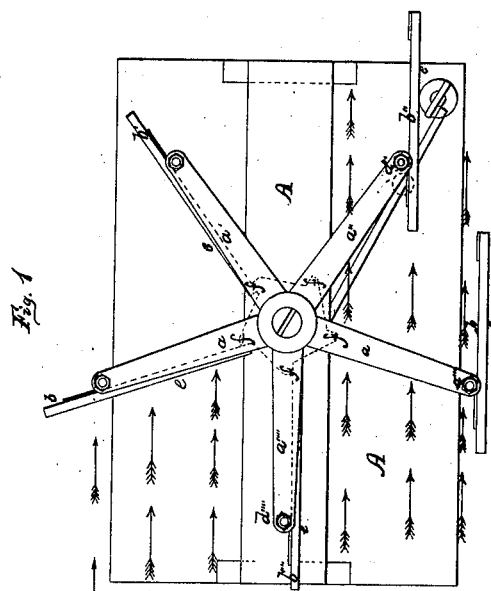
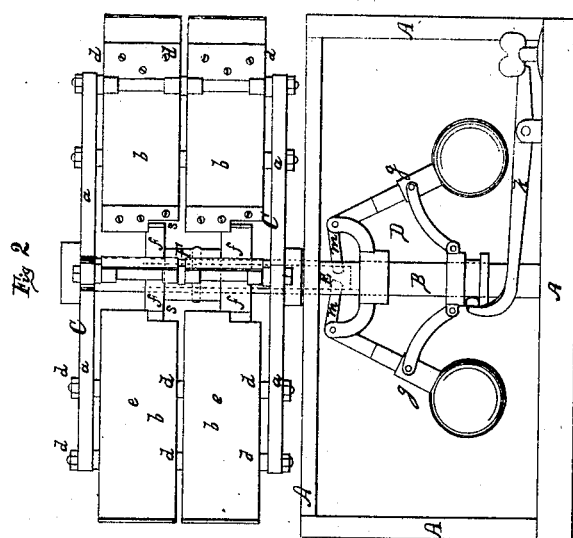


No. 52,773.

PATENTED FEB. 20, 1866.

H. C. THRALL
WIND WHEELS.



Witnesses
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IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. 52,773, dated February 20, 1866.

To all whom it may concern:

Be it known that I, HENRY C. THRALL, of Springfield, Hampden county, Commonwealth of Massachusetts, have invented a new and Improved Current-Wheel, of which I do hereby declare that the following is a full and exact description, reference being had to the accompanying drawings, and to letters of reference marked thereon.

In the drawings, Figure 1 is a plan, and Fig. 2 a side view, of my invention.

This invention consists of a wheel which can be used in a current of wind or water for the purpose of obtaining power, and in combining therewith a regulator so arranged that the variations in the force of the current may not materially increase or diminish the speed of the wheel.

I will first describe the construction of my machine. It consists of a suitable frame, A, through which passes an upright shaft, B. Above the frame the wheel C is attached to this shaft. This wheel consists of the radial arms *a a' a'' a''' a''''*, to which are pivoted the wings *b b'*, &c., at *d d'*, &c. These are held, when pressed on the side C, by the projections *f f*, &c., but are free to move in the other direction.

Within the lower part of the frame I place the governor or regulator D, which is similar in construction to the ordinary governor for steam-engines, &c. This is attached to the shaft B, and the arms *g g'* connect with an interior shaft, E, which is attached to the piece F, on which are the projections *f f*, before mentioned. This piece is free to move up and down the shaft B operated by the governor.

The operation of this invention I will now describe. The arrows shown in Fig. 1 represent a current of wind or water flowing against the wheel. The effect on the side G is to force the wings *b* back against the piece F at the inner end, and thus the force of the current is brought to bear on the arms of the wheel on this side, while on the other side, there being nothing to hold the wings, they fly out and present no resisting-surface to the current except their edges, consequently the unequal pressure on the two sides causes the wheel to revolve in the direction of the arrow *a*. As

the wings on the side H revolve toward G they turn on their pivots *d''' d''''*, and when they pass to the other side also come under the pressure of the current, while the others are relieved, and thus a continuous revolution is kept up.

The governor operates to release some or all of the wings when the speed becomes too great and hold them again when it decreases in the following manner: When the speed of the shaft B increases beyond its ordinary rate the balls of the governor fly out by their centrifugal force and the arms *m m'* operate the rod E and pull downward the sliding piece F, thus bringing its upper edge below the lower edge of the notches *s* in the upper half of the wings, so that they are free to swing like vanes in any direction. A further increase of speed releases the lower half of the wings in the same manner, and as soon as the speed decreases the slide is forced up again and the wings operate as before. By dividing the wings into a larger number of parts perfect regulation of speed is accomplished. The lever K is used to stop the machine by raising the governor-balls and lowering the slide F, so that the wings are allowed to fly out freely, as before mentioned.

This machine, as thus far described, is best applicable to a current of wind. In a water-current the position of the governor and wheel would be reversed and the governor placed above the wheel, and other unessential alterations made in the arrangement of the parts.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of one or more wings, *b*, with one or more arms, *a*, piece F, and shaft B, when arranged substantially in the manner and for the purpose herein set forth.

2. In combination with the combination named in the first clause of this claim, the regulator or governor D, when arranged substantially in the manner and for the purpose herein set forth.

HENRY C. THRALL.

Witnesses:

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