

F. BURT.
Horizontal Wind-Wheel.

No. 168,608.

Patented Oct. 11, 1875.

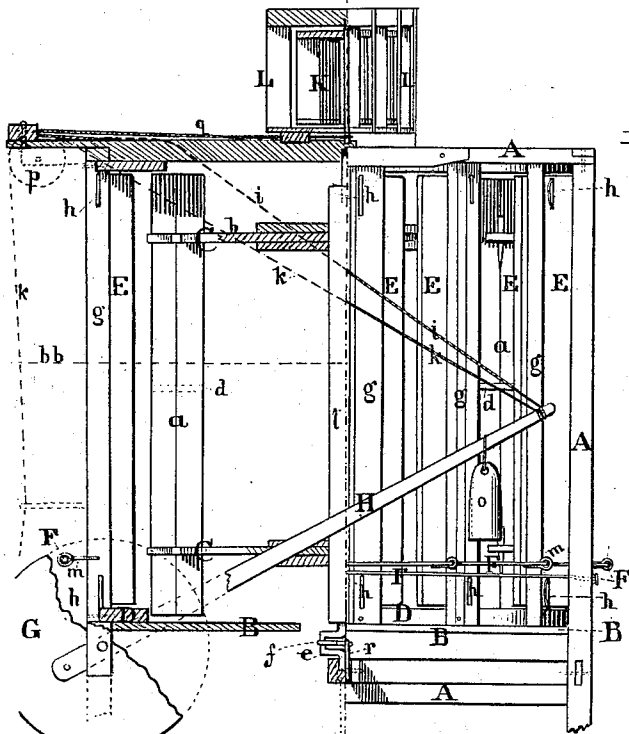


Fig. 1. Left divⁿ is vert. sec. on line "aa" fig. 2.
Right " " is an elevation.

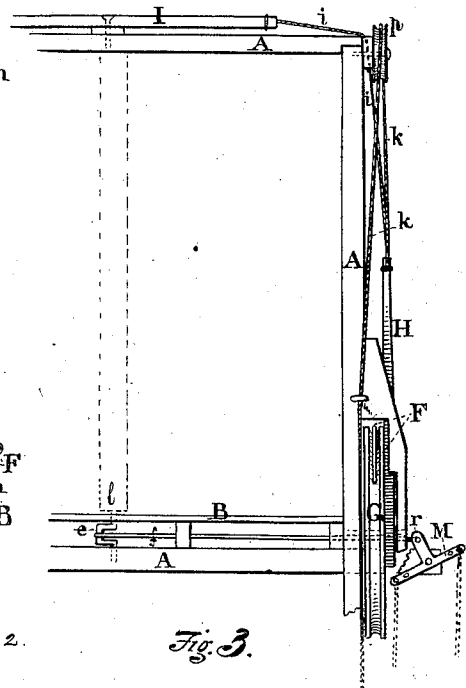


Fig. 3.

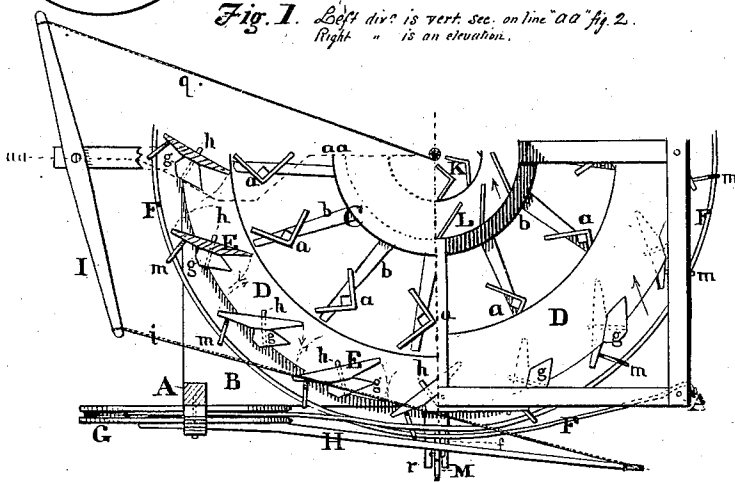


Fig. 2. (Left divⁿ is a horizontal sec. of
one fourth of Machine, on line "bb" fig. 1.
Right divⁿ is a Plan or superficial
view (of 1/4th) with sec. of Governor, K-L.)

Witnesses.
John Bar
E. Edison

Right Burt
by E. Thurston
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UNITED STATES PATENT OFFICE

FOGHT BURT, OF VAN WERT, OHIO.

IMPROVEMENT IN HORIZONTAL WIND-WHEELS.

Specification forming part of Letters Patent No. **168,608**, dated October 11, 1875; application filed August 31, 1875.

To all whom it may concern:

Be it known that I, FOGHT BURT, of Van Wert, Van Wert county, Ohio, have invented an Improvement in Horizontal Wind-Wheels; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents an elevation or vertical section on line *a a*, Fig. 2; Fig. 2, a horizontal section on line *b b*, Fig. 1.

This is an improvement in horizontal wind-mills inclosed in adjustable slats or shutters; and the first part of the improvement consists in the use of trough-shaped vanes, which present a more effective surface to the wind; second, in the mode of hanging and operating the shutters which inclose the wheel; third, in the mechanism for cutting off high winds, automatically applied to the shutters; fourth, in the automatic closing of the shutters by action of water from the overflow from the full tank falling into a bucket. This is the old horizontal wind-wheel inclosed within a circle of vertical shutters to admit or to cut off the wind. The radial vanes of the wind-wheel are trough-shaped, presenting the hollow side to the wind. The slats or shutters are pivoted at their middle by hinges, assisted by springs or hinges, which are at once springs and pivots, acting to keep the shutters in their normal position, *i. e.*, open; and these are all closed simultaneously by the construction of an encircling wire, which passes through a staple or eye projecting from the outer edge of each shutter. One end of said wire is fixed to one of the four corner-posts, or other point, while the other end, after making the circuit of the shutters, is fixed in the channel in the periphery of a wheel or pulley attached to another post, and governed by a horizontal governing wind-wheel above or on top of the machine by means of a lever and cord attached to a lever on said pulley, which tightens the wire and shuts off the wind from the wheel. This pulley and lever is also operated to close the slats in the same way by means of a cord, which passes up from the said lever over a second pulley, and attached beneath an over-

flow-spout at the water-tank to a bucket, the filling of which bears down the cord and raises the lever, which now closes the shutters.

In the drawings, which represent one of the forms in which I construct my wind-wheel, A A represent a rectangular frame, which incloses the wind-wheel C and its shutters E E; B, a horizontal platform supporting the wheel; C, the wheel, having a vertical axle or shaft, *l*, pivoted above and below in the frame A A, and ending below the platform B in a crank, *e*. The wheel has several radial arms, *b*, which carry the trough-shaped vanes *a*, so made to give greater impetus to the wheel. D D represent circular horizontal rings above and below the shutters E, to which either end of their respective standards *g g*, &c., are attached. These rings are attached, respectively, to the platform B and to the frame above. E E are the vertical adjustable shutters which encircle the wheel C, by which the supply of wind is regulated. These are each attached to their respective standards *g*, along a central rib on said shutters, by means of a flat piece of rubber, *h*, or other elastic material set in mortises in said shutters and standards, in such a manner as to hold the shutters elastically to the inner face of their respective standards, which latter have their said faces inclined tangentially to the wheel, or, rather, in the direction of the normal or open position of the shutters. Any other hinge which will have the same effect may be used in conjunction with an auxiliary spring to keep the shutters open. From the outer edge of each shutter projects an eye or staple, each of which is threaded by the encircling wire F, which is fixed at one end to one of the corner-posts A, and, after making the circuit of the shutters, the other end is extended to the channel in the pulley G and fixed therein. This pulley or grooved wheel G is pivoted vertically to one of the corner-posts, opposite the post in which the other end of the wire is fixed. To the outer face of this pulley G is attached a lever, H, to the end of which the cord *i* of the lever I on the top of the machine is attached. This lever I is a horizontal one, and is connected at its other end to the axle of a horizontal governing-wheel, K, above the wind-wheel by

a cord or wire, *g*. A second cord or chain, *k*, passes from the end of said lever *H* over a small pulley, *p*, above the pulley *G*, along the groove of the latter, down to the bucket, whose mouth is below the end of the tank overflow-spout, which, on filling, raises the lever and closes the shutters. A weight, *o*, at the same end of the lever helps to enlarge the circle of the wire *F*, and relax it when the wind is light, and keep the shutters open. *K*, the governing-wheel, to regulate the wind upon the wheel, also inclosed in shutters *L*; but the latter are fixed, and arranged tangentially to the wheel within. This wheel *K* has a wire or cord, *q*, attached to its axle, which runs to the lever *I*, before described, and is adjustable at any point on the arm of said lever to obtain a proper working tension upon the wire *F* in closing the shutters *E* in a high wind. *M*, the "walking" or piston beam to work the pump or pumps, the vertical arm *r* of which beam is connected to the crank *e* of the shaft *l* of the wheel *C* by means of the rod *f*.

The operation of this wind-wheel is as follows: In an ordinary wind the weight *o* of the lever *H* keeps the wire *F* extended or from constricting the shutters *E E*, &c. When the wind is too strong the governor-wheel *K* winds up the cord *q*, which causes the lever *I* to tighten the wire *F*, by rotating the pulley *G* and closing the shutters *E* more or less, pre-

venting the access of the wind to the wheel, causing the edges of the shutters to be all brought into a line or circle not to overlap each other, as in other shutters for the same purpose. Again, when tank is full, an overflow-spout fills the bucket at the end of the cord *k*, and elevates the lever *H*, tightens the wire *F*, and closes the shutters.

What I claim as my invention is—

1. The combination of the shutters *E E*, provided with a central rib, the elastic hinges *h h*, or equivalents, and the eyes or staples *m m*, arranged and operating as described.

2. The combination, with the eyes *m m* and shutters *E E*, &c., of the constricting-wire *F*, arranged and operating substantially as described.

3. The combination, with the wire *F*, of the pulley *G*, lever *H*, provided with weight *o*, and cord *k*, substantially as described.

4. The combination, with the lever *H*, of the cord *i*, lever *I*, cord *q*, and governing-wheel *K*, provided with shutters *L*.

In testimony that I claim the foregoing windmill improvement I have hereunto set my hand this 1st day of August, A. D. 1875.

FOGHT BURT.

Witnesses:

C. P. EDSON,
EDGAR BURT.