E. CRUMP.

Wind-Mills.

No. 146,049. Patented Dec 30, 1873.

Fig. 1.

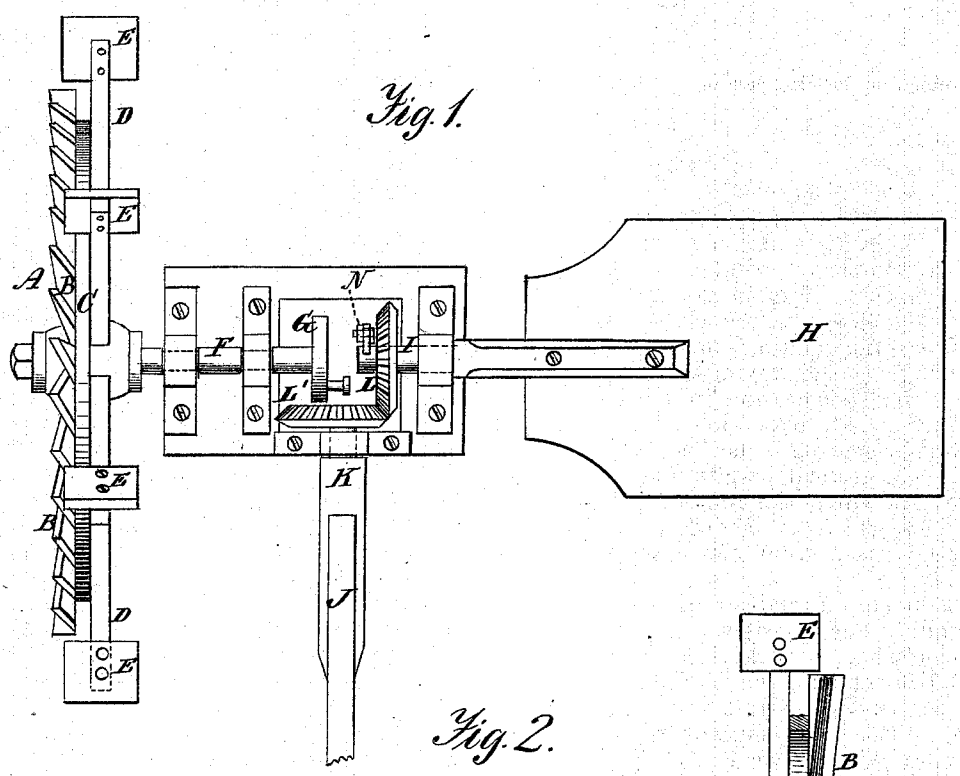

Fig. 2.

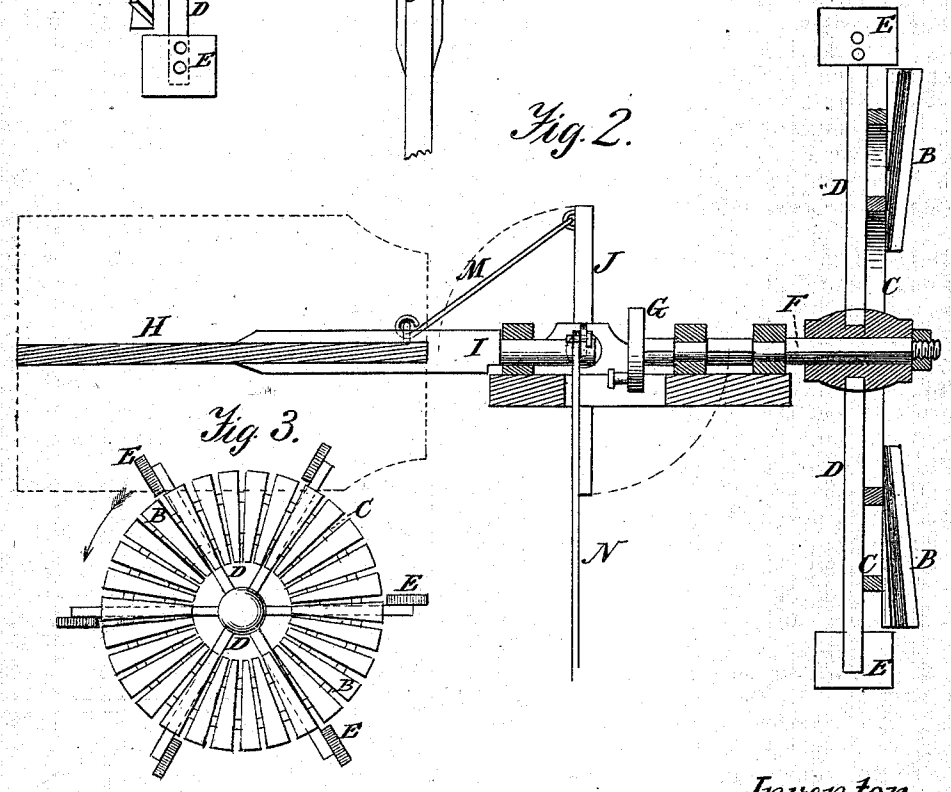

Fig. 3.

Witnesses.
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AM. PHOTO-LITHOGRAPHIC Co. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

EDWARD CRUMP, OF WATERLOO, WISCONSIN.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **146,049**, dated December 30, 1873; application filed June 24, 1873.

To all whom it may concern:

Be it known that I, EDWARD CRUMP, of Waterloo, in the county of Jefferson and State of Wisconsin, have invented a new and useful Improvement in Windmills; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view of a machine in which spur-gearing is used to turn the vanes. Fig. 2 is a vertical longitudinal section of a machine in which the rod M is used to turn the vanes, which are shown in dotted lines; and Fig. 3 is a front elevation of the wind-wheel.

This invention relates to an improvement in windmills; and consists, first, in providing the wind-wheel with a series of fans placed beyond the ends of the blades or sails of the wheel, their edges parallel with the axis of the wheel, so that they offer resistance to the rotary motion of the wheel, for the purpose of regulating the speed of the wheel by preventing it from being increased beyond a certain degree.

In the accompanying drawing, A is the wind-wheel, which may be of ordinary construction. Blades B are secured to circular ribs C, attached to radial arms D in such a manner as to catch the wind when the wheel A faces it. A series of fans, E, are secured to the ends of the radial arms D, beyond the ends of the blades B, in such a manner as to offer resistance to the rotary motion of the wheel A by meeting the wind. F is the shaft upon which the wheel A revolves, provided with a crank-wheel, G, to which the pitman for driving the machinery is attached. The vane or tail H is secured to a shaft, I, in line with the shaft F. The side vane or side tail J is secured to a shaft, K, at right angles with the shafts F and I. The ends of the shafts I and K are in such proximity that they may be connected by spur-gearing L L′. When spur-gearing is not used, a rod, M, connects the lower edge of the vane H with the upper edge of the side vane J, in such manner that they can each be turned from a vertical to a lateral position, or vice versa, their positions being at all times opposed—that is to say, when the vane H is vertical the side vane J is lateral, and vice versa. The change of position is effected by pulling or pushing the rod N connected to the shaft I.

The first part of the invention is especially adapted to regulating windmills used in pumping water. Without the fans E a strong wind will revolve the wheel A so rapidly as to cause the water to be drawn over the top of the pump, and in a great measure defeat the operation of the pump; but by using the fans E the speed of the wheel A can be so regulated as to cause an almost uniform speed. The fans E are not so large as to prevent a fair speed, but are sufficiently large to prevent a speed that would force the water over the top of the pump. When the wheel A faces the wind and is in operation the vane H is vertical, and prevents the wheel from turning from the wind.

When it is desired to stop the mill the rod N is operated so as to throw the vane H to a lateral position and the side vane J at the same time to a vertical one, at which time the wind catches the side vane J, and acts upon it until it has been turned with its end edge to the wind, in which position it has carried the wheel A around and left it edgewise to the wind. The wheel A is then inoperative. To again set it in operation it is only necessary to reverse the positions of the vane H and side vane J by manipulating the rod M, when the wind will carry the wheel to its proper position.

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

A series of fans, E, in combination with the wheel A, constructed and operating substantially as described, for the purpose hereinbefore set forth.

In testimony that I claim the foregoing improvement in windmills, as above described, I have hereunto set my hand and seal this 19th day of June, 1873.

EDWARD CRUMP. [L. S.]

Witnesses:

CHAS. S. CHESNEY,

THEODORE MUNGEN.