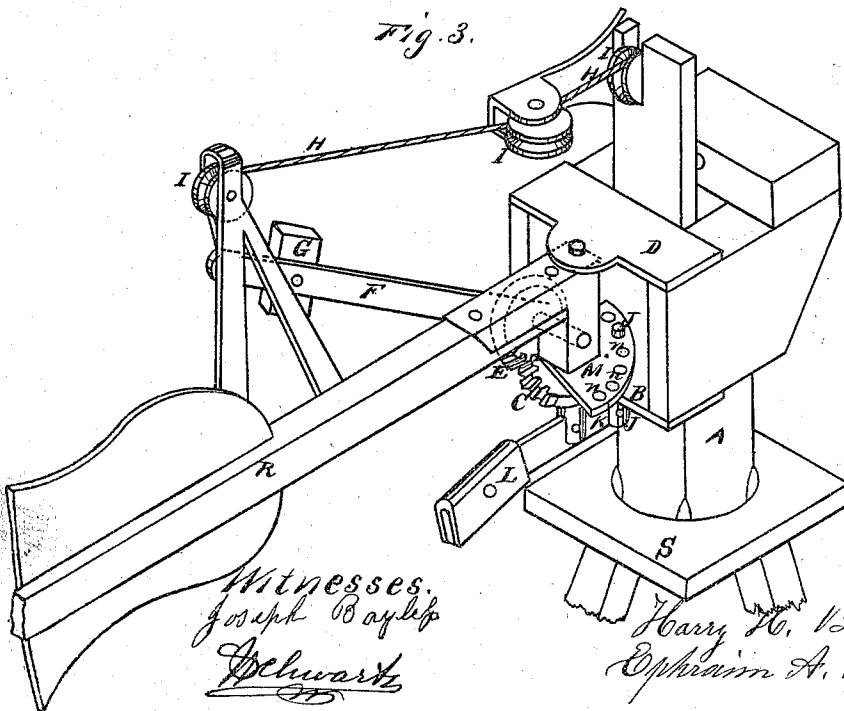
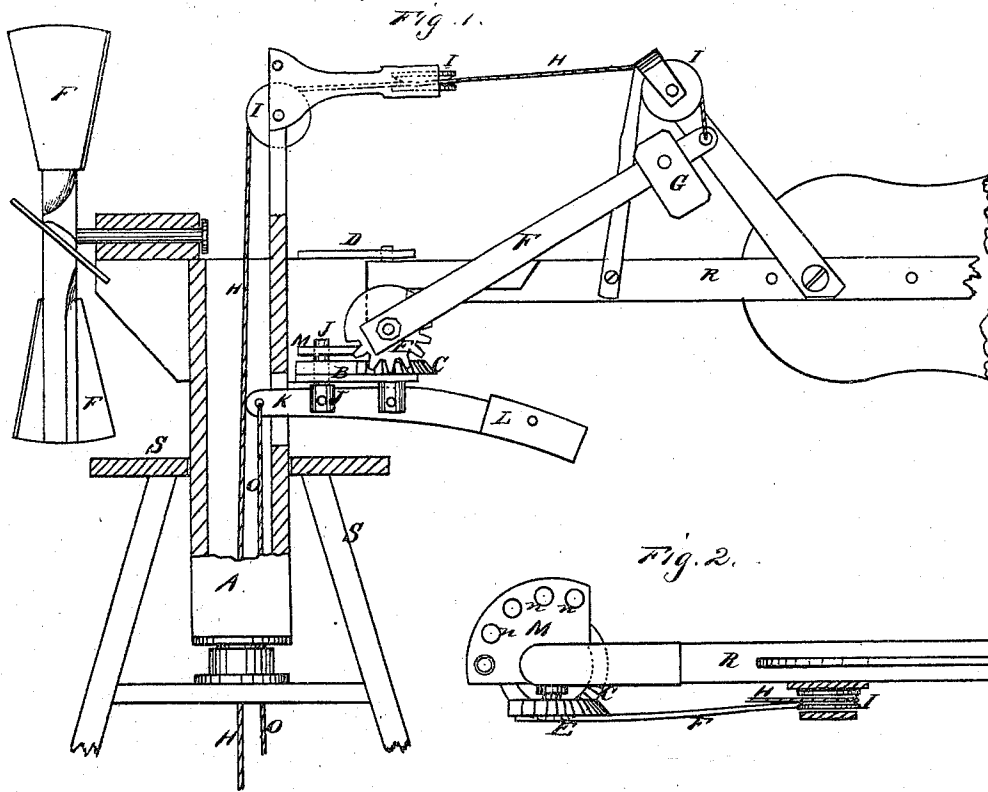


H. H. BODWELL & E. A. ATWOOD.

Wind-Mills.

No. 142,198.

Patented August 26, 1873.



Witnesses,
Joseph Bayliff
Delwartz

Harry H. Bodwell
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UNITED STATES PATENT OFFICE.

HARRY H. BODWELL AND EPHRAIM A. ATWOOD, OF SAN FRANCISCO, CAL.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. 142,198, dated August 26, 1873; application filed July 31, 1873.

To all whom it may concern:

Be it known that we, HARRY HORTON BODWELL and EPHRAIM ARUNA ATWOOD, of San Francisco city and county, State of California, have invented a Windmill; and we do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use our said invention or improvement without further invention or experiment.

Our invention relates to certain improvements in that class of windmills in which a swinging tail is employed to throw the wheel into or out of the wind, for the purpose of regulating its speed. Our improvements consist, first, in the use of two segmental bevel-gears, operating upon each other, one of which is secured to the wheel-support or turn-table, while the other is mounted upon a wrist-pin projecting from the side of the shoe, and a suitable operating-lever is provided, by the movement of which the gears can be turned so as to throw the tail to any desired angle with the wheel, when the action of the wind upon the tail will throw the wheel around to a greater or less angle with the line of motion of the wind, and thus retard or increase its speed. The operating-lever is weighted, so that when the tail is released from its locking device it will be turned to an angle with the wheel by the action of the weight, and the tail may also be mounted so as to swing at a small angle with the horizon. Our invention further consists in the employment of a perforated disk or segment, secured so as to turn with the tail, and a pin operated by a weighted lever, and passing through a plate upon the turn-table or wheel-support, moves vertically, so that when either of the perforations in the disk stand above the pin the latter will enter it, and thus lock the tail and wheel at the desired angle. Suitable cords extend from the two levers to a point within easy reach of the operator.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a side elevation of our mill, showing section of post or wheel-support. Fig. 2 is a plan or top view of the gears and locking-plate. Fig. 3 is a perspective view.

A is a vertical hollow post, upon which the wind-wheel F is mounted, its shaft turning in

suitable boxes. The post is pivoted so as to turn about its vertical axis, being supported in the usual manner upon the windmill-frame S, and this allows the wheel to take any position, according to the direction of the wind. A plate, B, is secured to this post, and a bevel-gear or segment, C, is cast with this plate. Above the plate B another plate, D, is secured to the post or wheel-support; or the two may be cast in one piece, if desired. These plates serve to support the tail R, which is hinged between them, so as to turn about a vertical axis and swing from side to side. Another bevel-gear or segment, E, is mounted upon a horizontal axis or wrist-pin at one side of the shoe, to which the inner end of the tail is secured, so as to gear with the horizontal segment C, and thus throw the tail and wheel to an angle with each other. A lever-arm, F, extends to some distance from the segment E, being secured to it, and a weight, G, at the end of this lever will cause it to fall, thus turning the tail when it is not locked. A cord, H, passes from the end of this lever over suitably-placed pulleys I I, and thence down to the ground, and by pulling this cord the lever will be again elevated, thus operating upon the gears so as to bring the tail again in a line with the wheel-axis and throw the wheel into the wind. In order to lock the wheel and tail at any desired angle with each other the horizontal plate B is perforated, and a pin, J, passes up through the hole. This pin is attached to a lever, K, hinged below the plate B, and the weighted end L of the lever will force the pin up. A segment or disk, M, is secured to the shoe of the tail just above the plate C, and perforations *n* are made around its edge, so that when either of them is brought over the pin it will fall into the hole, and thus lock the tail and wheel securely at any desired angle. A cord, O, serves to pull the lever down and release the pin, after which the tail can be turned, as desired, by the action of the weight G or the cord H.

The various portions of the mill may be somewhat modified or changed to suit different styles of mills.

By this construction we are enabled to produce a mill which is simple and very easily regulated.

Having thus described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. The bevel-gears E and C, mounted, respectively, upon the shoe and the wheel-support of a windmill, having a swinging tail, together with the operating-lever F and the cord or equivalent connection H, substantially as and for the purpose herein described.

2. The bevel-gear E, turning upon a wrist-pin projecting from the side of the shoe of the swinging tail R, and provided with the lever F and the weight G, for the purpose of turning the gear E and throwing the tail to an angle with the wheel-axis by operating upon the stationary gear C upon the wheel-support, substantially as herein described.

3. The locking device consisting of the pin

J, with its operating lever or spring K upon the wheel-support, and the plate M, with its perforations *n*, secured to the shoe of the tail R, substantially as and for the purpose described.

4. The cord O, in combination with the pin J, with its operating lever or spring K, and the perforated plate M, for the purpose of unlocking the device and allowing the tail to turn, substantially as herein described.

In witness whereof we hereunto set our hands and seals.

HARRY HORTON BODWELL. [L. S.]

EPHRAIM ARUNA ATWOOD. [L. S.]

Witnesses:

JOSEPH BAYLESS,
W. SCHWARTZ.