S. M. ABBOTT.
Wind-Mills.

No. 152,937. Patented July 14, 1874.

FIG. 1.

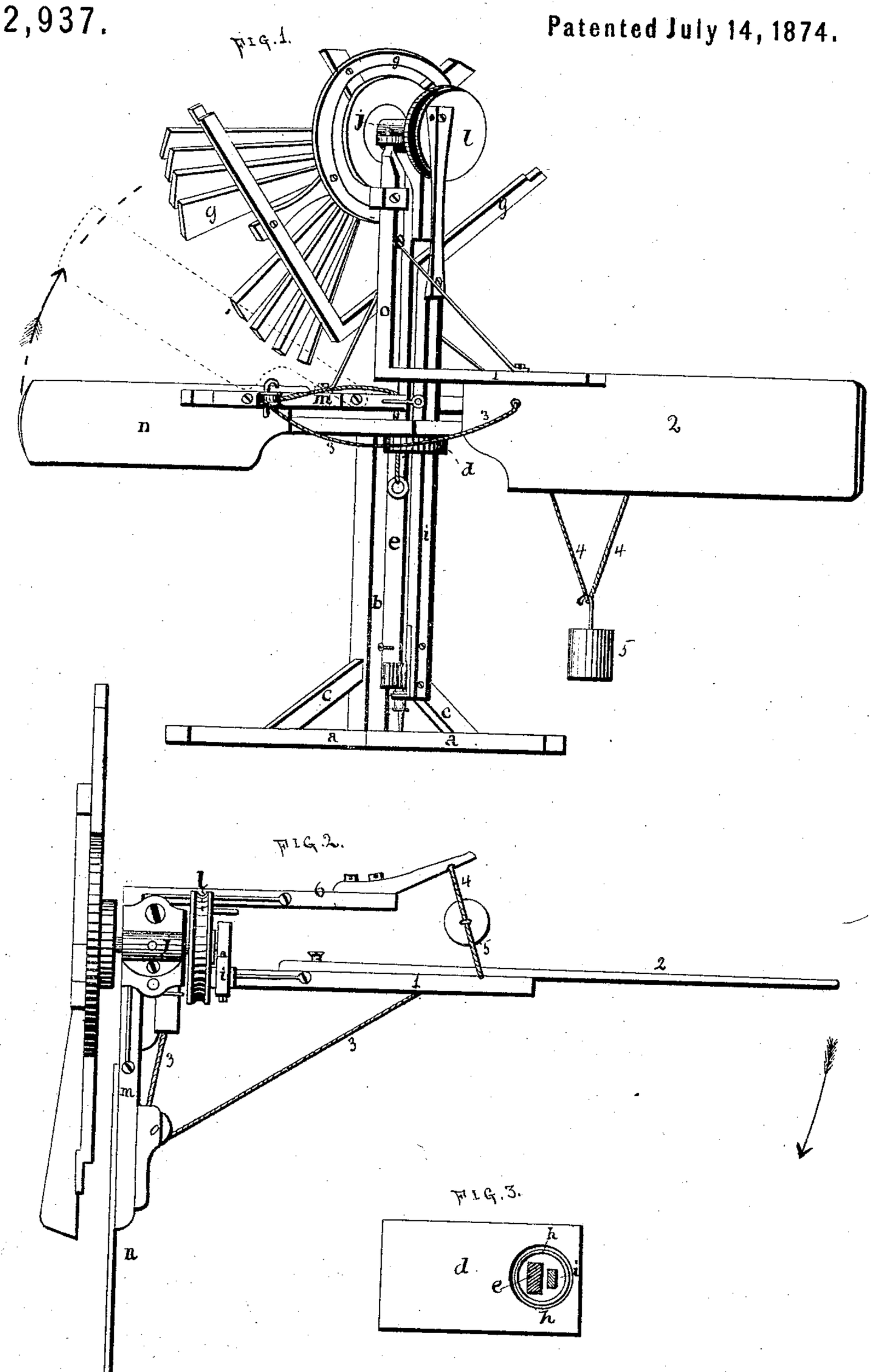

FIG. 2.

FIG. 3.

WITNESSES.
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UNITED STATES PATENT OFFICE.

SAMUEL M. ABBOTT, OF WILMINGTON, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **152,937**, dated July 14, 1874; application filed June 9, 1874.

To all whom it may concern:

Be it known that I, SAMUEL M. ABBOTT, of Wilmington, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Windmills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings which form part of this specification.

The nature of my invention relates to an improvement in windmills; and it consists in the arrangement and combination of devices, which will be more fully explained hereafter, whereby the mill is rendered more efficient in operation, and its construction cheapened and simplified.

The accompanying drawings represent my invention.

a represents two ground-sills, which cross each other in the center, from which point rises a post, *b*, which is strengthened on three of its sides by the braces *c*. To the top of this post is secured a support, *d*, which holds the mast *e* in a vertical position. This mast, instead of being stationary, as is generally the case, has its lower end stepped upon the top of one of the ground-sills, and revolves freely around, so as to present the wheel *g*, which is pivoted in suitable bearings upon its top, to the wind from any direction. Around the mast, inside of the support *d*, is placed a thimble, *h*, which serves to center the mast in position, to prevent it from being chafed and rubbed, and to allow the pitman-rod *i* to pass through without injury. The wheel *g* may be of any kind desired, and has its shaft journaled in the bearings *j*, rigidly secured to the top of the mast, so that the wheel-vane will cause the mast to turn freely around with it in any direction. On the rear end of the wheel-shaft is placed a grooved pulley, *l*, which serves not only to operate the pitman, but around which a belt can be passed for the purpose of operating a mill or other machinery, without the expense of providing means for detaching the pump and connecting the machinery in its place. When the wind is sufficiently strong two different kinds of work can be done by the mill at the same time—pumping water and running machinery. Extending outward from the mast at right angles, and rigidly secured to it, is an arm or lever, *m*, which is suitably braced and strengthened, and which has pivoted to it, near its outer end, the side vane *n*. This vane extends outward on a plane with the wheel, and is pivoted to its arm, so that it can be turned upward, as shown, so as to decrease its leverage, or made to extend horizontally outward, so that it will exert its full power upon the mast and keep the wheel more or less in line with the wind. When the wind becomes too strong its pressure against this face of the vane forces it backward, which movement rotates the mast, more or less, around, so as to bring the edge instead of the face of the wheel into the wind, and thus regulate its speed. Pivoted to the side of the mast in suitable bearings, is a vertical bar or post, *o*, which rotates around through a quarter of a circle. Extending horizontally outward from the lower end of this bar, and suitably braced thereto, is an arm, 1, to which the large vane 2 is fastened, which vane can sweep around through a quarter of a circle. Attached to one side of this vane is a cord or chain, 3, which passes around a pulley secured to the rear of the arm *m*, and over a second one secured to a bearing on the side of the mast, thence down within easy reach from the ground. When it is desired to stop the revolution of a wheel the vane 2 is drawn around until it is in line with the vane *n*, when the wheel at once turns its edge to the wind and stops. The vane 2 is secured to the mast about on a level with the lower edge of the wheel, so as to be down below the eddies of wind which are formed in the rear of the wheel by its rotation, and which eddies always cause the vane to drift to one side. By placing it low down the vane is freed from these disturbing influences, becomes more effective, and holds the wheel better in the face of the wind. Projecting horizontally backward from the mast, at right angles to the plane of the wheel, is an arm, 6, to the rear end of which is secured a cord or chain, 4, which has its other end attached to the side of the vane. Upon this cord or chain

is hung a weight, 5, which draws the vane back into position again after having been moved.

As soon as the wind becomes too violent its pressure against the side vane *n* causes the vane to turn the mast and wheel partly around, and at the same time the pressure of the wind against the outside of the large vane 2 causes it to swing around until it is on a plane with the side vane and wheel, when the wheel, presenting only its edge to the wind, instantly stops. As soon as the wind abates, the weight draws the vane 2 back into position again, and the wheel resumes its operation.

By securing the large swinging vane 2 to the vertical post or bar *o*, which is pivoted to the side of the mast itself, I am enabled to entirely dispense with the usual tower or framework which has always heretofore been used, and use simply the mast and a short supporting-post, *b*, thereby greatly reducing the cost of the mill.

I am aware that the tail-vane has been pivoted to the rear of the mast, so that it could be swung around to be in a line with the edge of the wheel, and that the combination of a fixed side vane and pivoted tail-vane are both old, and I do not desire to broadly claim such. My invention consists in the arrangement and combination of the devices here shown and described.

Having thus described my invention, I claim—

1. In a windmill the vertical post or bar *o*, pivoted to the side of the mast and supporting the swinging vane 2, substantially as set forth.

2. The vertical bar *o* pivoted to the side of the mast and supporting the vane 2, in combination with the side vane *n*, cords 3 4, weight 5, and pulleys for the cord 3 to pass around, which are located on the side of the side vane, substantially as shown.

3. The side vane *n* pivoted to the arm *m*, so that it can be raised and lowered vertically to increase and decrease its leverage on the mast, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of June, 1874.

SAMUEL M. ABBOTT.

Witnesses:
J. D. SMALL,
JAMES L. YOUNG.