(No Model.)

J. G. & J. HOF.

WINDMILL.

No. 361,157. Patented Apr. 12, 1887.

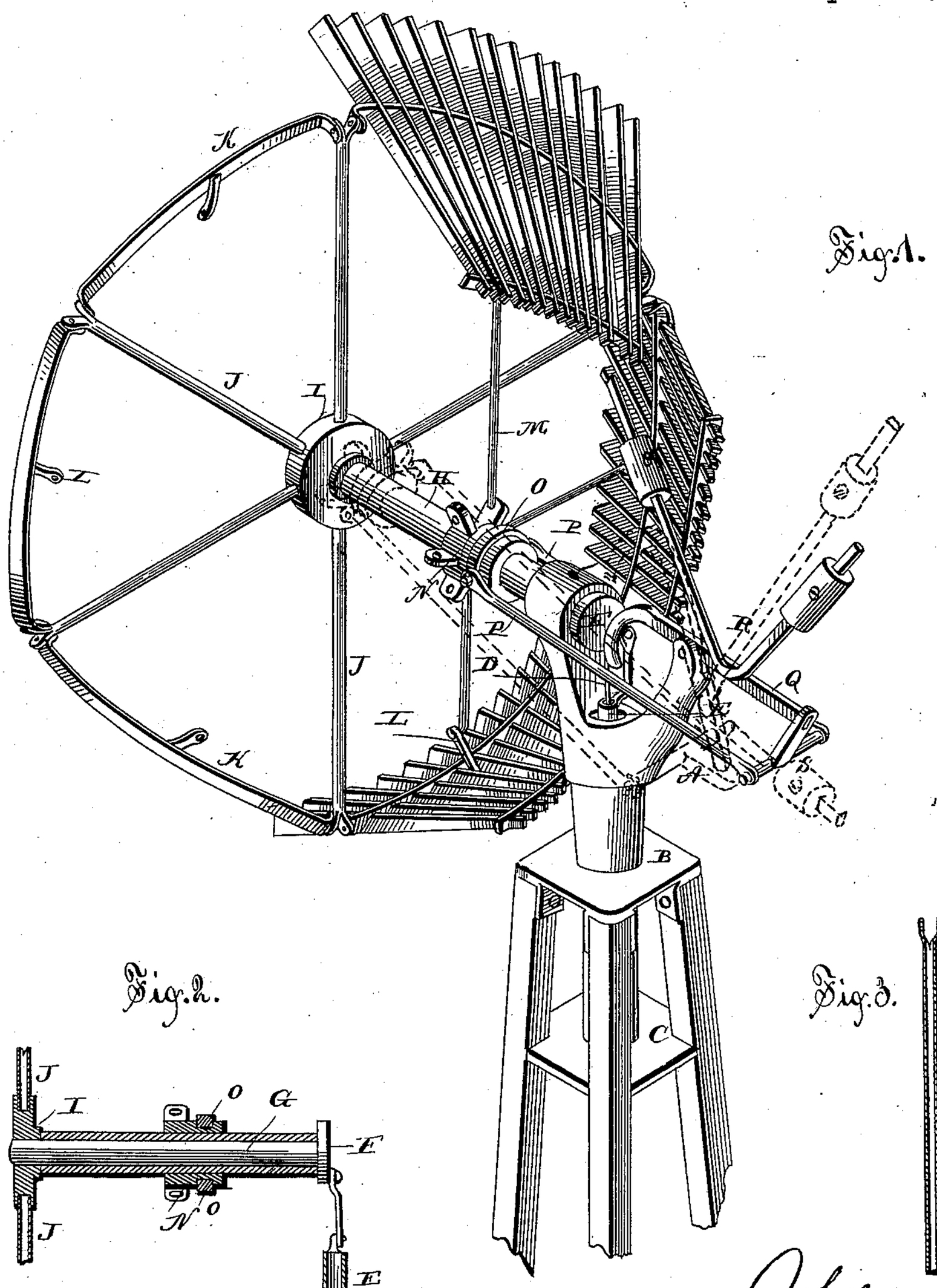

Fig. 1.

Fig. 2.

Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

JOHN G. HOF AND JACOB HOF, OF NORA SPRINGS, IOWA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 361,157, dated April 12, 1887.

Application filed January 22, 1887. Serial No. 225,071. (No model.)

To all whom it may concern:

Be it known that we, JOHN G. HOF and JACOB HOF, both residents of Nora Springs, in the county of Floyd and State of Iowa, have invented certain new and useful Improvements in Windmills; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of our improved windmill, showing the wings or sails as partially feathered and the controlling device in two positions, one being shown in dotted lines. Fig. 2 is a vertical axial section through the horizontal shaft and its appurtenances, and Fig. 3 is a longitudinal section through one of the radial arms of the wheel.

Like letters of reference indicate corresponding parts in the figures.

Our invention has relation to windmills which have no tail-vane; and it consists in the improved construction and combination of parts constituting the same, as will be hereinafter fully set forth.

Referring to the accompanying drawings by letters, A represents the supporting-frame, which is vertically journaled in the plates B and C at the top of the tower. This frame, as usual, has an axial bore for the passage of the control cord or chain D and the pitman-rod E, which is connected to the wrist-pin upon the disk F at the inner end of the horizontal shaft G. This shaft rotates in the sleeve H, which is firmly secured in one arm of the frame. To the outer end of the shaft is keyed the hub I, in which are formed sockets for the radial arms J. Said arms are made from iron rods or pipes and have their outer ends bifurcated, each bifurcation being provided with a bearing to receive the trunnions upon the ends of the cross-pieces K, which are secured to the back side of the wings. To the center of each cross-piece is secured an arm, L, at right angles to the wing. Links M are connected to the outer ends of these arms and to perforated studs upon a collar, N, which is adapted to slide upon the sleeve H. About the inner end of said collar is formed a groove, into which movably fits the two halves of the ring O. The ends of each half of the ring are turned outwardly to form trunnions, to which the governor is connected by means of the rods P.

The governor consists of the lever Q, which is fulcrumed in an upwardly-projecting arm of the supporting-frame, the weighted arms R, and the inverted-T-shaped piece S, which is secured at right angles to and at the end of the lever Q. It is to the ends of the cross-piece of this T-shaped part that the rods P are connected. The inner end of said lever is curved downwardly and provided with a groove in the periphery of the curved portion, in which groove the control-cord may lie, in order that said cord, as the lever is actuated thereby, may always pass straight through the bore of the supporting-frame.

The weight-arms R are formed in one V-shaped piece, secured at its angle to the lever in a manner such that the weights upon both levers will resist the feathering of the wings; but when the weight on the upper arm has passed over the fulcrum-point of the lever its weight aids in completely feathering the wings and in holding them in the feathered position.

In the operation of the mill the shaft rotates within the sleeve, while the collar rotates upon the sleeve and within the ring, and, subject to the movement of the lever, said collar is adapted to slide the entire length of said sleeve.

The action of the wind upon the wings is similar to that in other mills of this class, and likewise is the transmission of power from the wheel; but the manner of connecting the wings with the governor and the construction of the governor, together with that of the wheel itself, constitute our improvements.

Having thus fully described our invention, we claim—

The combination, with the wheel, the collar, and means for connecting them to each other and to the governor, of the governor, which consists of a lever fulcrumed to the supporting-frame and formed with a downwardly-curved and grooved inner end, an inverted-T-shaped

piece secured to the outer end of said lever, and weighted arms formed into a V-shaped piece, which is secured by its angle to the lever in a manner such that the weight on the upper arm may pass from one side to the other of the vertical through the fulcrum-point of said lever, as and for the purpose specified.

In testimony that we claim the foregoing as our own we have hereunto affixed our signatures in presence of two witnesses.

JOHN G. HOF.
JACOB HOF.

Witnesses:
A. A. BABCOCK,
CHAS. MILLER.