

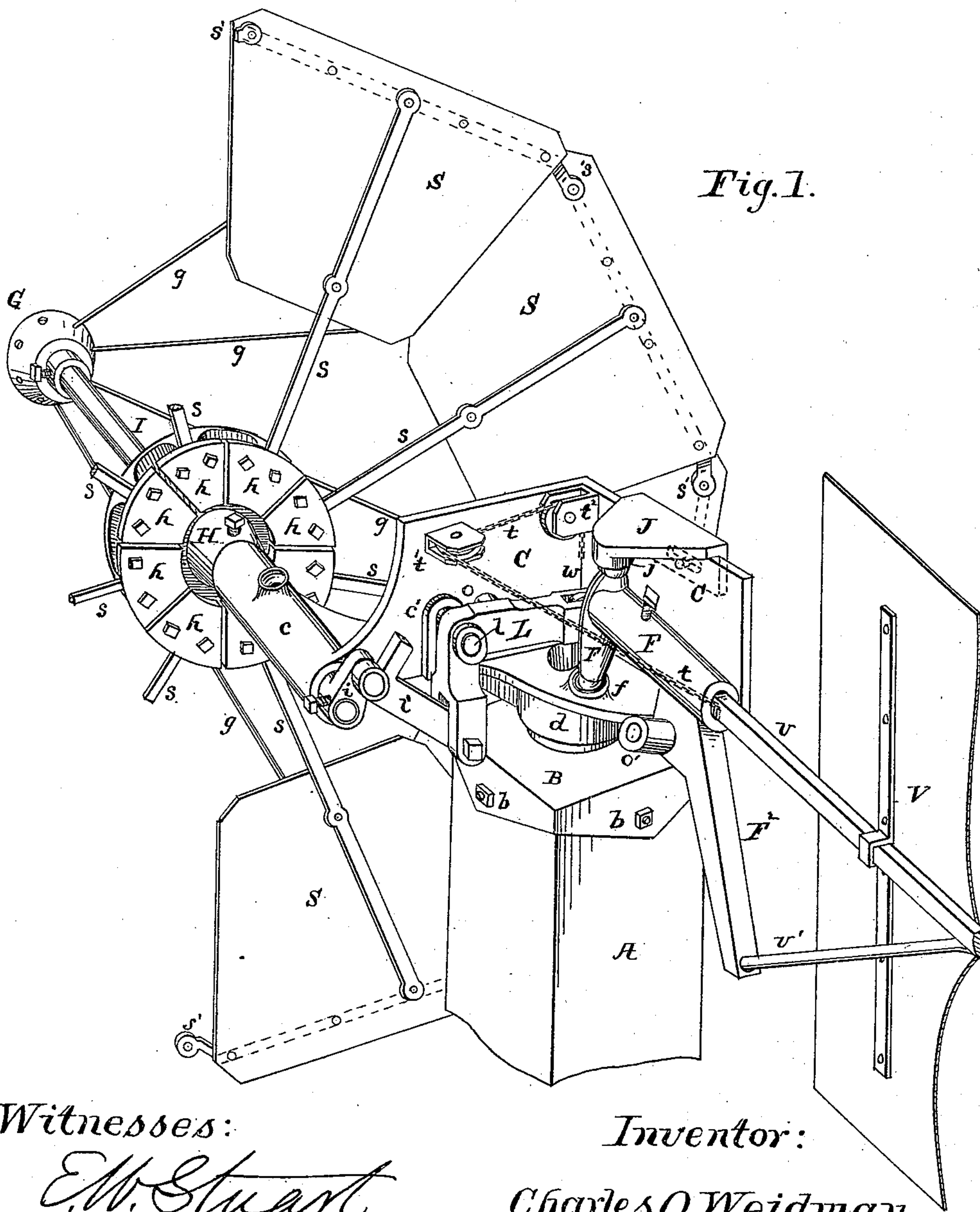
(No Model.)

2 Sheets—Sheet 1.

C. O. WEIDMAN.  
WINDMILL.

No. 446,307.

Patented Feb. 10, 1891.



Witnesses:

*E. W. Stuart*

*J. H. Stuart*

Inventor:

*Charles O. Weidman,*

*by C. P. Humphrey, atty.*

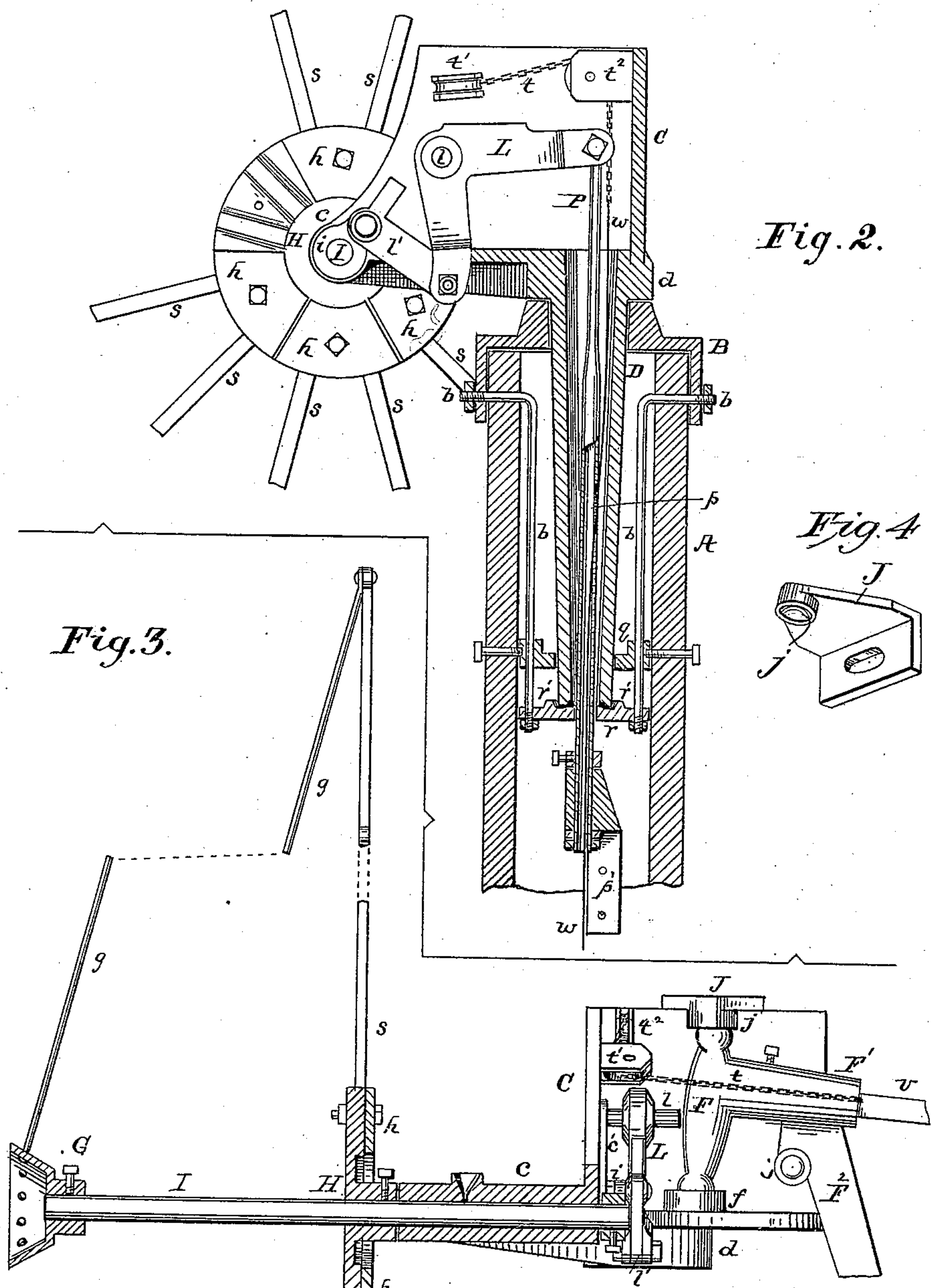
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# UNITED STATES PATENT OFFICE.

CHARLES O. WEIDMAN, OF MONTVILLE, OHIO.

## WINDMILL.

SPECIFICATION forming part of Letters Patent No. 446,307, dated February 10, 1891.

Application filed November 14, 1888. Serial No. 290,859. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES O. WEIDMAN, a citizen of the United States, residing at Montville, in the county of Medina and State of Ohio, have invented a certain new and useful Improvement in Windmills, of which the following is a specification.

My invention relates to certain novel improvements in windmills, which improvements will be fully understood from the following description and claims.

Practically my improved windmill will be made of metal, although it will be obvious from the following description that certain parts may be made of other material.

In the accompanying drawings, in which similar letters of reference indicate like parts, Figure 1 is a perspective of my improved windmill with parts of the sails and vanes cut away; Fig. 2, a vertical section of the same through the central spindle at a right angle with the windmill-shaft; Fig. 3, a vertical section through the line of the windmill-shaft, and Fig. 4 a perspective of the adjustable bracket to sustain the upper end of the vane-pivot.

The entire machine is supported in the usual manner on a vertical hollow post A, on the top of which is a metallic cap B, having a central opening surrounded by a raised rim to receive the central spindle, and is retained by two L-shaped bolts *b b*, one arm of each of which passes out from the inside of the post A and is secured by a nut, the other arm serving to sustain the plate *r*, on which the central spindle rests, being held up and adjusted by nuts. By this device I avoid the necessity of two sets of bolts, one to sustain the plate and one to sustain the cap.

The working mechanism is connected with and supported on a head C, which consists of a base substantially a quadrant, having a cup-shaped bearing *f* for the lower end of the vane-pivot and an opening at its inner angle for the pump-rod and provided with upright walls on its straight sides, one of which supports a long bearing *c* for the windmill-shaft and a boss *c'*, from which the crank-shaft projects. On the bottom of the head C is a shoulder *d*, beneath which depends a hollow spindle D, which enters the opening in the

cap B and rests on the plate *r*. The lower end of the spindle D (imperfectly shown in Fig. 2) is beveled on the outside and rests on a boss on the plate *r*, about which is a raised rim *r'*, leaving an intermediate annular channel in which a supply of oil is placed to constantly lubricate the bearing. Immediately above the plate *r* is a collar *q*, held and adjusted by bolts through the post A, which retains the spindle D centrally in position. By this arrangement I secure a minimum of friction on the spindle, as it bears only on the plate *r*, the rim of the cap B and the collar *q* serving simply as guides.

In the bearing C is journaled a shaft I, on which is mounted the windmill or, to use a better expression to distinguish it from the entire apparatus, the "wind-wheel," and at the inner end a crank *i*, connected with the pumping mechanism hereinafter described. On the shaft *c* is a hub H with a radial flange having radial grooves in which rest the sail-arms *s*, where they are clamped by segmental plates *h*, retained by bolts. This construction enables the wheel to be readily taken apart for transportation or repair. Upon the outer ends of the arms *s* are riveted sails S, and across the outer edge of each is an iron strap *s'*, which projects beyond the sails and passes diagonally to the end of the strap of the next succeeding sail, thereby firmly uniting the outer edges of adjacent sails. On the outer end of the shaft I is a hub G, having a cup-shaped flange perforated with a series of holes equal in number with the sails, in each of which is fastened a brace-rod *g*, which extends and is riveted to the upper end of one of the arms *s*, thereby preventing the sail being bent backward by a violent wind. On a pin *l*, projecting from the boss *c'*, is pivoted a bell-crank L, one end being united with the outer end of the crank *i* by a link *l'* and the other with the upper end of the pump-rod P, which passes through the center of the hollow spindle D. The pump-rod P is solid at the top, but hollow from a short distance below the head C to its end, where it bears a yoke *p'*, to which a continuation of wood is attached, and at one side has slot *p*, through which a shifting-wire *w* passes. In the bearing *f* rests one end of the vane-pivot F, its upper end



resting in a similarly-shaped bearing *j* in the lower face of the bracket *J*, which is bolted to one wall of the head *C* and has a slotted bolt-hole by which it is rendered horizontally adjustable. These bearings *f j* are so arranged that the pivot *F* stands diagonally to the axis of the spindle *D*, its upper end inclined from the front wall of the head and toward the side wall. Projecting from the pivot *F* is a hollow sleeve *F'*, in which the vane-shaft *v*, carrying the vane *V*, is held by a set-screw, and from the bottom of which projects a diagonal arm *F''*, which affords a support for a brace *v'*. This brace *v'* rests in a socket in the end of the arm *F''*, and is united with the outer end of the vane-shaft *v*. By thus pivoting the vane its weight constantly tends, as it stands in the line of the wind, to swing the head *C* on the spindle *D*, so as to bring the wind-wheel in the face of the wind.

Attached to the outer end of the sleeve *F* is a chain *t*, which passes through the pulleys *t' t''*, attached to the walls of the head, and terminates in the wire *w*, hereinbefore referred to, which extends down the post *A* to a point where it can be readily reached. By drawing this wire *w* the vane will be swung around parallel with the plane of the wind-wheel and bring the latter edgewise to the wind, so that it will not be moved thereby. The bell-crank *L* is free to slide laterally on the pin *l* a short distance, and has on its side nearest the front wall of the head a buffer *o*, which engages the wall when the bell-crank is pressed inward.

On the arm *F''* is a buffer *o'*, which encounters and presses the bell-crank *L* when the vane is swung around parallel with the wind-wheel, thereby forcing the buffer *o* against the front wall of the head *C*, thereby constituting an effective brake to arrest further motion.

In operation the vane, being in position at

right angles with the plane of the wheel, holds the latter against the wind; but as the velocity of the wind increases, the wind-wheel being journaled at one side of the spindle *D*, will swing the head around until the velocity decreases, when the vane, by the action hereinbefore described, will turn it back, thus rendering the mill practically self-regulating.

I claim as my invention—

1. The combination, in a windmill, of a head with a depending spindle, a hollow post, a cap having a central opening to hold said spindle, a plate to form a step for said spindle, and bolts bent at substantially a right angle, their ends provided with screw-threads and nuts and arranged to pass, respectively, through said cap and plate to retain said cap on said post, sustain said plate, and regulate its distance below said cap, substantially as shown and described.

2. The combination, with the revoluble head of a windmill having a fixed bearing for the lower end of the vane-pivot, of an adjustable bracket having an under bearing for the upper end of said pivot to regulate its inclination, and means, as a bolt, for uniting said bracket and head, substantially as shown and described.

3. The combination, in a windmill, of a revoluble head with a vertical wall, a bell-crank pivoted on a pin projecting from said wall to communicate motion from the wind-wheel to the pump-rod and having a boss to engage said wall, and a pivoted vane arranged to swing toward said bell-crank, having a buffer to engage said bell-crank and force it toward said wall, substantially as shown and described.

In testimony that I claim the above I hereunto set my hand.

CHARLES O. WEIDMAN.

In presence of—

E. W. STUART,  
F. H. STUART.