(No Model.)

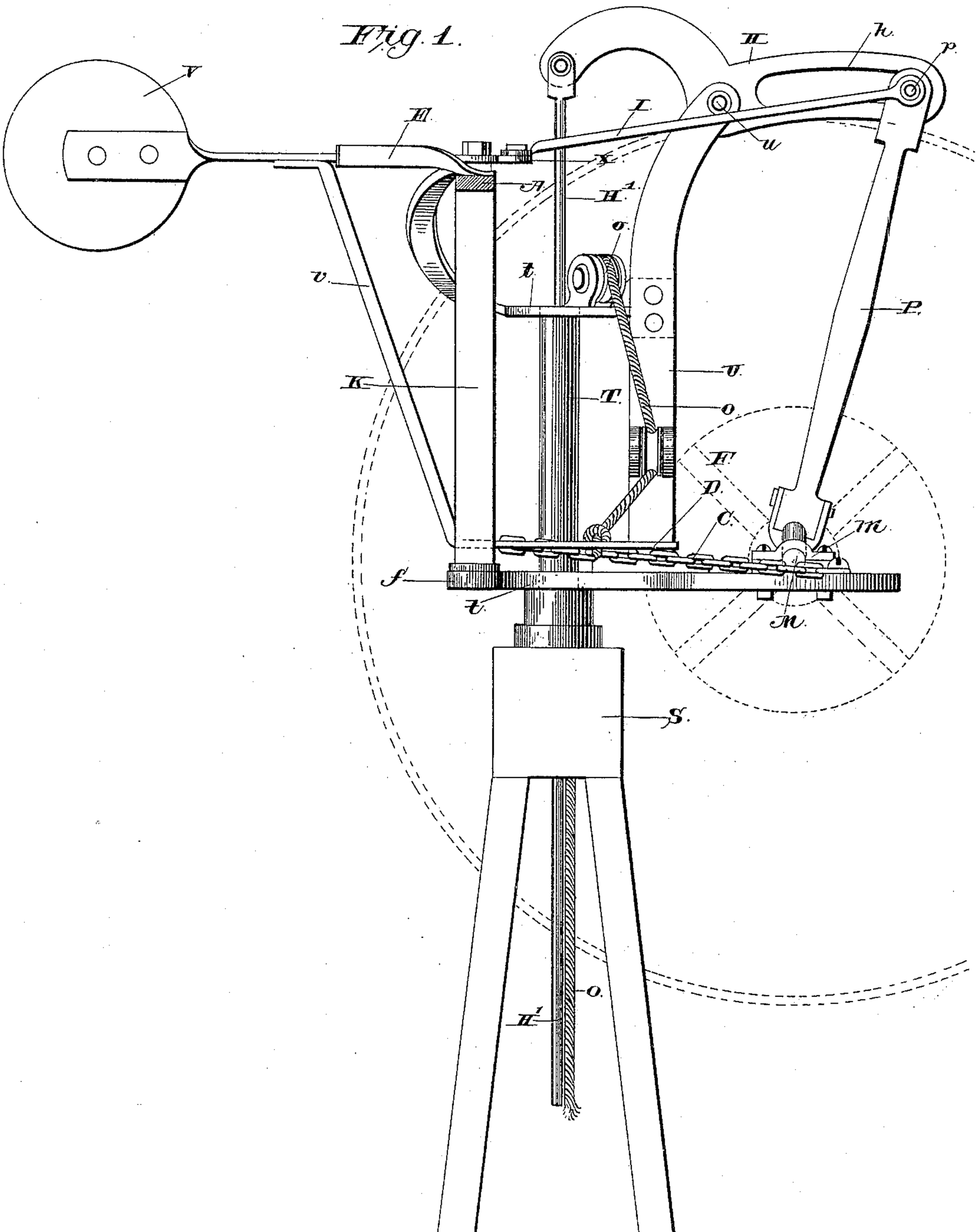
2 Sheets—Sheet 1.

E. DE WITT.

WINDMILL.

No. 432,696. Patented July 22, 1890.

Fig. 1.



Witnesses
M. Fowler
N. L. Gollamer.

Inventor
Elvert De Witt
By his Attorneys
C. A. Snow & Co.

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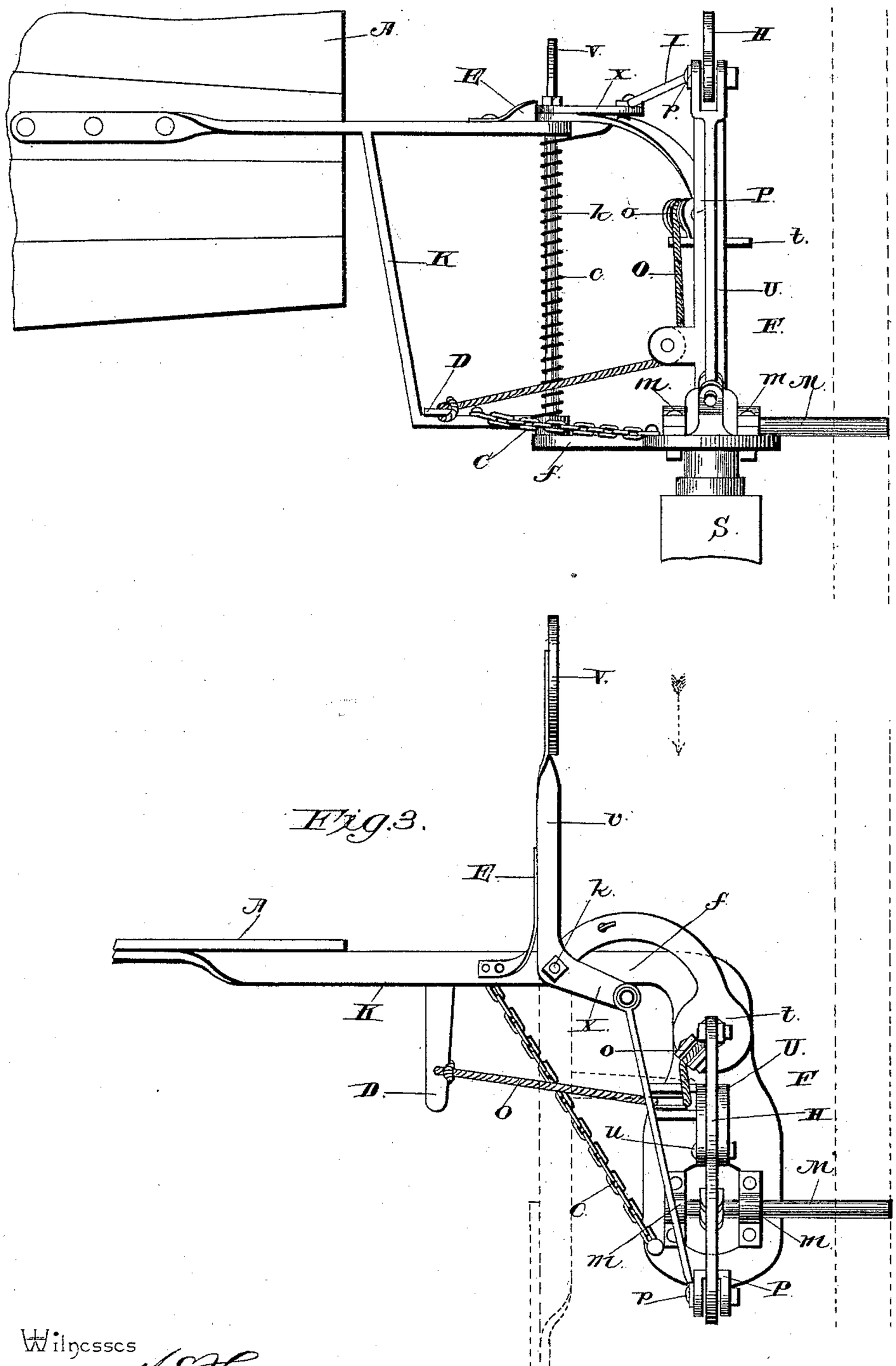

Fig. 2.

Fig. 3.

Witnesses

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N. L. Gollamer.

Inventor

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By his Attorneys,

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

EVERT DE WITT, OF HANFORD, CALIFORNIA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 432,696, dated July 22, 1890.

Application filed January 22, 1890. Serial No. 337,707. (No model.)

To all whom it may concern:

Be it known that I, EVERT DE WITT, a citizen of the United States, residing at Hanford, in the county of Tulare and State of California, have invented a new and useful Windmill, of which the following is a specification.

This invention relates to windmills; and it consists of means, substantially as hereinafter described and of the peculiar construction set forth, for throwing the wheel edgewise to the wind to stop its motion, for increasing and decreasing the length of stroke imparted to the pump-rod, and for automatically controlling such adjustment in the length of stroke by a separate vane actuated by winds of variable strength.

In the drawings Figure 1 is a rear elevation of my improved windmill, the wheel being indicated by dotted lines. Fig. 2 is a side elevation, the wheel being similarly indicated. Fig. 3 is a plan view, the tail being shown in dotted lines in the position to which it is drawn to stop the operation of the machine.

The letter S designates the support or standard upon which my improved windmill is mounted, and in the upper end of said support is a tubular shaft T, upon which the frame-work F of the "head" of the machine is journaled in bearings *t t*, loosely engaging the exterior of said tube. Said frame-work is approximately L-shaped, the bearings *t* being located at its angle, and is composed of a single lower piece having near one end journals *m* for the main shaft M of the wheel. Rising from this lower piece near the tube T is the strong upright U, and from a point near the center of the length of said upright extends an upper piece which carries the upper bearing *t*, and thence follows approximately the direction of the rearwardly-extending arm *f* of the lower piece. Although I have specifically described the frame-work as thus constructed, still it is a matter almost entirely of preference; but I have found that when such frame-work is constructed in substantially the manner indicated and illustrated the best results are to be obtained and the strongest form of frame-work is thus produced.

The upper end of the upright U is laterally bifurcated, and on a pin *u*, through said bifurcated end, is pivoted the lever H of the pump. The inner end of this lever is connected by the rod H′ with the piston of the pump, although of course any other suitable machinery besides a pump can be operated by the vertical reciprocation of the rod. The outer end of the lever H is provided with the curved slot *h*, and a pitman-rod P, having an upper forked end, is connected by a bolt or pin *p* with this slot, the lower end of the pitman-rod engaging the crank of the main shaft M between the bearings *m*, as will be readily understood. By this construction the rotation of the wheel imparts a reciprocatory motion to the upper end of the pitman-rod P, and when said upper end stands at the outer end of the slot *h*, (which is preferably the same distance from the pivot-pin *p* of the lever H as is the point of connection of the other arm of said lever with the rod H′,) the same length of stroke is given to the pump-rod H′ as is imparted by the crank of the main shaft. When, however, the upper end of the pitman-rod is moved to the inner end of the slot *h*, it will be readily seen that the outer arm of the lever H is very much decreased in length, whereby a much increased length of stroke will be given to the inner end of the arm of the lever, but will of course necessitate greater power to run the device.

The wheel of this improved windmill may be of any of the well-known "solid-wheel" patterns and is of course driven by the force of the wind directly against its face. The tail A of my improved windmill is mounted in a bracket K, composed, preferably, of upper and lower members, and a vertical rod *k* passes through apertures in the inner ends of these members, as well as through apertures in the rear ends of the two rearwardly-extending arms of the frame, whereby said bracket is pivoted in said frame. A chain C connects said bracket preferably with the lower front member of the frame-work, whereby the bracket is prevented from turning outwardly farther than to a position parallel with the main shaft M, and a coiled spring *c* upon said rod *k* exerts pressure on the bracket, tending to throw it to its outermost position with the chain C taut. Secured preferably to the lower arm of the bracket and at right angles thereto is a stud D of such a length that when the bracket is turned inwardly on its pivotal

rod *k* this stud will abut against some fixed portion of the frame-work—as, for instance, the upright U—and cause the inward motion of the bracket to cease when the tail A has reached a position in a plane exactly parallel with the face of the wheel. An operating-cord O is connected to this stud and leads under a pulley, and thence preferably upward over another pulley *o* in the top of the frame and down through the tube T to the ground. When this cord is drawn upon, the bracket K will be drawn inwardly around its pivot until the stud D strikes the upright U, and at this time the tail A will stand parallel with the wheel. As the wheel is of the solid-wheel character, and as this turning will throw it "edge on" to the wind, it will then remain quiet. As soon as the tension on the cord O is released, the spring *c* will throw the bracket K outwardly from the dotted-line position of Fig. 3 to the full-line position, whereby the wheel will be caused to face the wind and its operation will recommence.

The letter V designates a supplemental vane or fan, which is carried by a supplemental bracket *v*, whose arms are pivoted on the pivot-rod *k*, which holds the main bracket, and whose upper arm is extended beyond said pivot and bent at nearly a right angle, as shown at X. A pitman-rod I connects the free end of this arm X with the pin *p* of the rod P, which engages the slot *h*, whereby when the vane V stands in its normal position—that is, at some distance beyond the outer side of the tail A—the pin *p* will be in the outer end of the slot *h*, and when the vane V is blown farther and farther inwardly toward the tail and against the force of an expansion spring, as E, for throwing it normally outward, the pin *p* will be drawn farther and farther inward in the slot *h* and the length of stroke imparted to the pump-rod H′ will be correspondingly increased. If, therefore, a light breeze is blowing no appreciable result is produced and the vane V retains its normal position. The crank motion of the main shaft M is then imparted through the pitman-rod P to the outer end of the lever H, whereby a short stroke is produced on the pump-rod and by a lever (*i. e.*, the lever H) of comparatively good length; but when a strong wind is blowing, tending to rotate the wheel very rapidly, the vane V is forced inwardly toward the tail and the point of connection between the pitman-rod P and the lever H is moved, so that the crank motion of the main shaft M is then imparted to the lever H at a point much nearer the pivot. The pump-rod H′ will in this case be given a much longer throw, doing much more work and requiring much more power, whereas the other arm of the lever (*i. e.*, the lever H) has been greatly reduced in length. It will thus be seen that a light wind has little work to perform and good leverage of the machinery to aid it, while a strong wind has much more work to perform and shorter leverage of the machinery to overcome, according as the strength of the wind increases.

From the above description it will be seen that my improved windmill may be thrown entirely out of motion by a single pull upon the operating-cord, or may be put again in motion by releasing the tension thereon, and that a certain resistance is offered to the force of strong winds automatically by the mechanism used, throwing more work onto the main shaft at that time. Under all ordinary conditions of weather an ordinary solid-wheel windmill with the proper bevel to its blades will answer every purpose for use in this machine, as the vane V is so proportioned and the length of the arm X and slot *h* are such that the device will automatically adjust itself to variable forces of the winds and need not be thrown out of operation by the cord O, except in the case of a wind which amounts almost to a hurricane. If desired, however, the user can of course employ a "feathered-blade" wheel, which will trip at the moment desired and be thrown out of operative position with each blade edge on when the wind becomes too strong.

My improved machine is not liable to breakage, for the reason that it automatically adjusts itself, as above described, whereby the speed of rotation of the wheel is kept within certain bounds—that is to say, the size of the supplemental vane is such that the increased force from the wind draws the pins *p* inwardly just fast enough to shorten the length of the outer arm of the lever H and necessarily to correspondingly lengthen the stroke of the inner arm of said handle, so as to throw sufficiently more work upon the main shaft and upon the wheel as the wind increases to maintain the same speed of rotation of the wheel at all times, or at least until the supplemental vane is forced to the extreme inner limits of its movement. At this time a wind too strong for any wind-wheel will be blowing and the device will throw the wheel out of operative position.

Having described my invention, what I claim is—

1. In a windmill, the combination, with the frame having an upright U, a lever H, pivoted between its ends in the upper end of said upright and provided with the slot *h* in its outer arm, and the pump-rod H′, connected to the inner arm of said lever, of the wind-wheel, the crank-shaft M, rotated thereby, the pitman-rod P, connected with said crank, the pin *p*, passing through the upper end of said rod and loosely engaging said slot, and means, substantially as described, for moving said pin in the slot nearer to or farther from the pivotal point of said lever, as and for the purpose set forth.

2. In a windmill, the combination, with the frame having an upright U, a lever H, pivoted between its ends in the upper end of the said upright and provided with the slot *h* in its outer arm, and the pump-rod H′, connected

to the inner arm of said lever, of the wind-wheel, crank-shaft M, rotated thereby, the pitman P, connected with said crank, the pin *p*, passing through the upper end of said rod and loosely engaging the said slot, the vane V, pivoted in said frame at an angle to be struck by the wind, and the connecting-rod I between said vane and said pin *p*, whereby the force of the wind will cause the automatic adjustment of said pin nearer to the pivotal point of the handle, as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

EVERT DE WITT.

Witnesses:
THEODORE A. MOON,
B. A. FASSETT.