

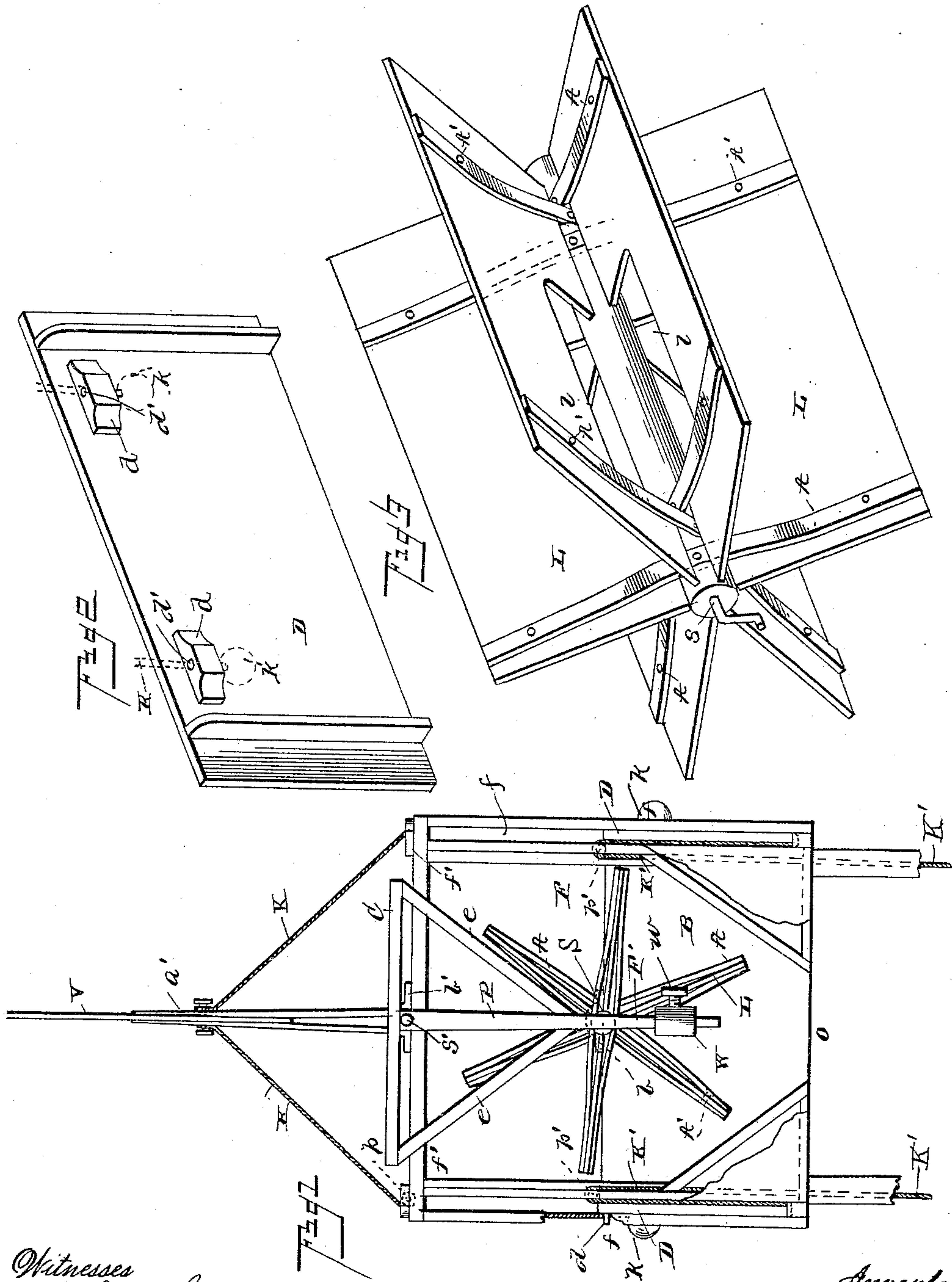
(No Model.)

2 Sheets—Sheet 1.

E. F. HABERLEIN.
WINDMILL.

No. 411,550.

Patented Sept. 24, 1889.



Witnesses
John Smiric
A. L. Collamer

Inventor
Edward F. Haberlein
By his Attorneys,
C. Snow & Co.

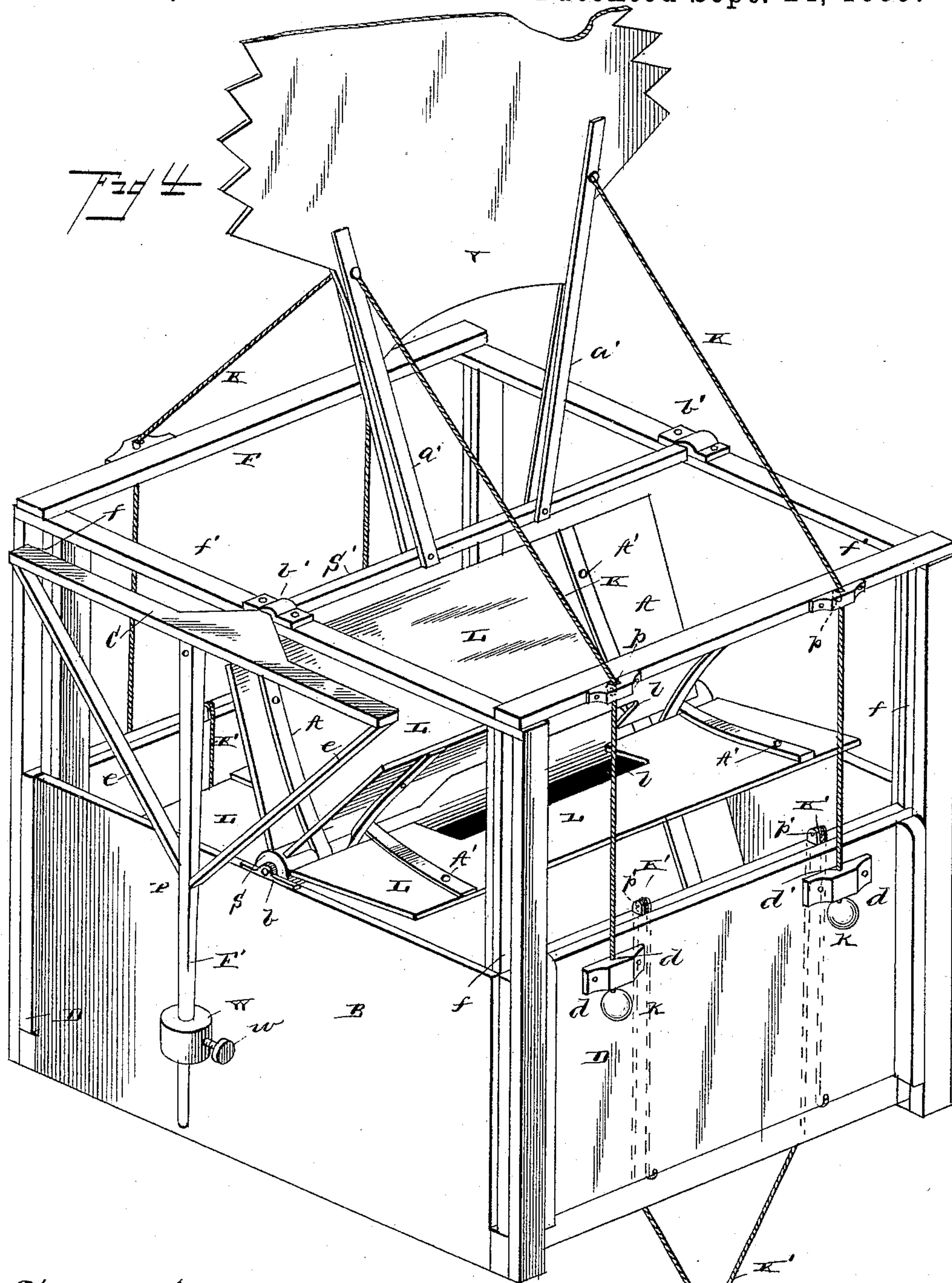
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Chas. Snowdon

Inventar

Edward F. Haberlein

UNITED STATES PATENT OFFICE.

EDWARD FREDERIC HABERLEIN, OF McPHERSON, KANSAS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 411,550, dated September 24, 1889.

Application filed April 24, 1889. Serial No. 308,371. (No model.)

To all whom it may concern:

Be it known that I, EDWARD FREDERIC HABERLEIN, a citizen of the United States, residing at McPherson, in the county of McPherson and State of Kansas, have invented a new and useful Windmill, of which the following is a specification.

This invention relates to windmills of that class known as "overshot," and in which an automatic regulator is provided; and the invention consists of the construction and arrangement of the several parts comprising said regulator, together with other details, all as will be fully described in the following specification.

In the accompanying drawings, forming a part of this specification, and in which the same letters of reference are applied to similar parts throughout, Figure 1 is a side view of my machine complete, partly broken away to show the internal construction. Fig. 2 is a perspective view of one of the doors removed. Fig. 3 is a perspective view of the wheel proper. Fig. 4 is a perspective view of the machine complete.

The letter B designates the body or box portion of the frame of my improved windmill, provided with a central opening O, preferably having a bottom, and being supported at some distance from the ground upon an upright post or other suitable support. This box is preferably square in cross-section, and from its corners rise four slotted uprights *f*, connected at their upper ends by horizontal bars *f'*, comprising an open frame-work F. In bearings *b*, at front and rear of the box B, are journaled the ends of the windmill-shaft S, upon which the blades are mounted in a manner which will be hereinafter described.

My improved automatic regulator is constructed as follows: A shaft *S'* is journaled in bearings *b'* on the horizontal bars *f'*, over said bearings *b*, and said shaft carries upright arms *a'*, having a vane V supported between their upper ends. Upon one end of said shaft *S'* is keyed a pendulum-rod P, to whose body F' a weight W is removably and adjustably attached by a set-screw *w*. This end of the shaft also carries a cross-piece C, from whose outer ends inclined braces *e* extend downwardly and inwardly to the pendulum-rod P,

for the purpose of preventing vibration and play thereof upon the shaft *S'*. Doors or gates D are mounted at each side of the box B, and slide vertically in the slotted uprights *f*. Near the upper edge of said doors are secured cleats *d*, having eyes *d'*, and cords K, extending from said vane-supporting arms *a'* over pulleys *p* on the side bars, pass through said eyes and are provided with small weights *k* on their lower ends, for a purpose to be hereinafter set forth. Other cords K' extend upwardly through the bottom of the box B, pass over pulleys *p'* in the upper edge of the sides of said box, and are connected to the lower edges of said doors, as seen in the drawings.

The wind-wheel proper is composed of the main shaft S and of the blades L, carried thereby. Said blades are mounted between the inner adjacent faces of arms A, which are applied in pairs to the opposite faces of said shaft, near the ends thereof, being preferably seated in mortises therein and secured thereto by transverse bolts A'. The arms A extend completely across the wheel and support two blades, one at either side of the shaft. The blades L are cut away at *l*, near the shaft S, for a purpose hereinafter explained. The box B has its inner side corners beveled to prevent suction, as shown in the broken portion of Fig. 1.

The operation of my improved wind-mill is as follows: The body having been mounted on a post with the doors D facing toward the two points of the compass from which the prevailing winds of that part of the country blow, (as, for instance, to the north and south in the State of Kansas,) the least zephyr will rotate the wheel, and the latter by being connected to a pump or to other machinery will drive it in a manner which will be well understood. If, however, the velocity or violence of the wind increases, the vane will be turned partially upon its shaft, and such turning will draw upon the cords K and partially close the door D, which stands to the windward of the wheel, a further closing being the result of increased violence, and a complete closing resulting from a gale or hurricane, all operated automatically by the vane in a manner which will be obvious. As the door D on the

windward side is drawn up and partially closed by the vane, there will be a corresponding loosening of the cords leading to the door on the opposite or leeward side, and this
 5 loosening is taken up and the cords prevented from kinking and becoming entangled with the machinery by the weights *w*, which draw the cords through the eyes *d'*. If at any
 10 time it is desired to close one or more of the doors *D* from the ground and by hand independently of the vane, the cords *K'* are drawn upon by the operator and the doors will be closed as desired. It will be understood that the wind enters at the windward side, strikes
 15 the blades which are exposed above the box, and turns the wheel. That portion thereof which strikes a blade before it has reached a vertical position follows down the same, passes through the opening *l* therein, and out
 20 through the leeward side of the box. If any portion of the wind is carried by the blades down into the box, it passes out the opening *O* at the bottom thereof, and the beveled inner corners of said box also serve to prevent
 25 the banking up of air therein, which would serve to retard the motion of the wheel.

If desired, I may provide the front and rear faces of the frame *F* with doors similar to the side doors *D D* and capable of being closed
 30 by cords *K'* from the ground in the same manner, whereby the wheel can be entirely housed if it is desired to stop all motion thereof, because the closing of the side doors *D D* will not always stop the rotation of the wheel entirely, unless the wind be exactly transverse
 35 to the machine.

If the machinery which is to be run by the machine be light or offers little resistance, the weight *W* on the pendulum *P* may be raised
 40 or removed entirely, whereby the regulating mechanism will be quickly brought into play when the violence of the wind increases; but the machinery itself will offer much resistance and overcome the force of the wind to a
 45 considerable degree, and hence less regulation is required.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

50 1. In a windmill, the doors *D*, having the

cleats near their upper edges, said cleats being provided with eyes *d'*, and the slotted frame *F*, in which said doors slide vertically, one at each side of the machine, in combination with an upright vane *V*, journaled upon said
 55 frame and adapted to be depressed by the force of the wind in either of two directions, cords *K*, leading from said vane over pulleys *p*, mounted upon said frame and passing through said eyes, and weights *W* upon the
 60 lower ends of said cords below said cleats, the whole adapted to be operated substantially as and for the purpose set forth.

2. In a windmill, the combination, with the frame, the doors *D*, and the wheel journaled
 65 in said frame, of the shaft *S'*, journaled transversely across the top of said frame, the upright vane *V*, mounted upon said shaft, cords connecting said vane and doors, the pendulum-rod *P*, keyed to and depending from one
 70 end of said shaft, the cross-piece *C*, also carried by the end of the shaft, braces *c*, connecting the ends of said cross-piece with the body of said pendulum, and the weight *W*, adjustably mounted on said pendulum, as and for
 75 the purpose set forth.

3. In a windmill, an overshot wheel mounted upon a horizontal axis, in combination with a closed box *B*, in the upper edge of which said
 80 axis is journaled, a frame-work mounted upon said box, all sides of which are open, and doors *D*, adapted to be raised vertically in said frame above said box on either side of said wheel and close the sides, as and for the
 85 purpose set forth.

4. In a windmill, the box *B*, having closed sides and provided with an opening *O* in its bottom, the inner corners of said box being beveled for the purpose set forth, in combination with an overshot wheel journaled on
 90 a horizontal axis in bearings in the upper edge of said box, as set forth.

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

EDWARD FREDERIC HABERLEIN.

Witnesses:

LILIAN BARBER,
 W. KUANS.