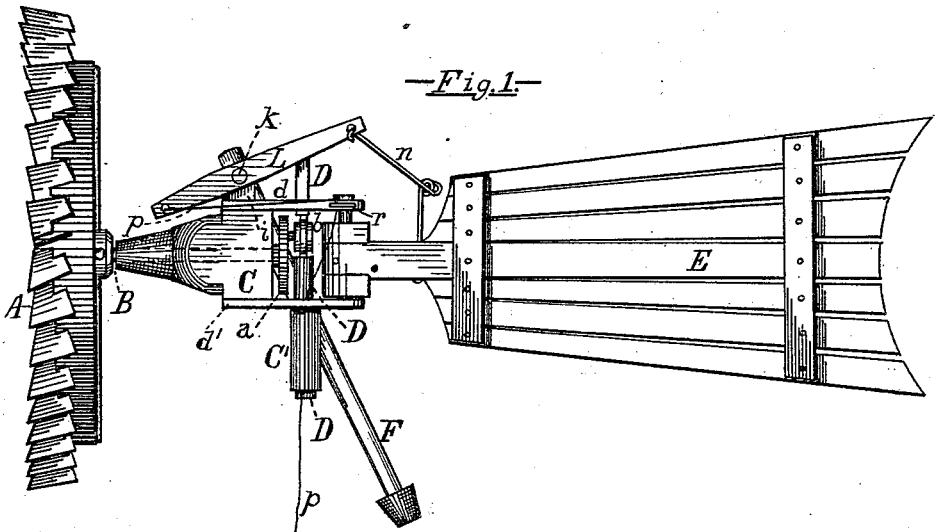
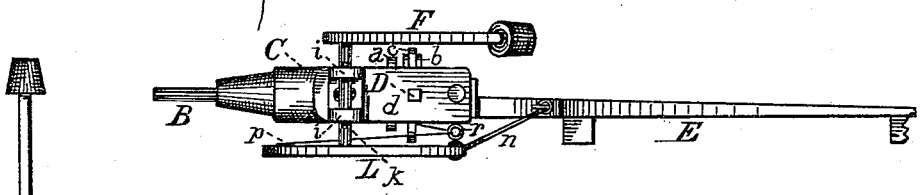
G. W. SWORD.
Windmill.

No. 211,805. Patented Jan. 28, 1879.

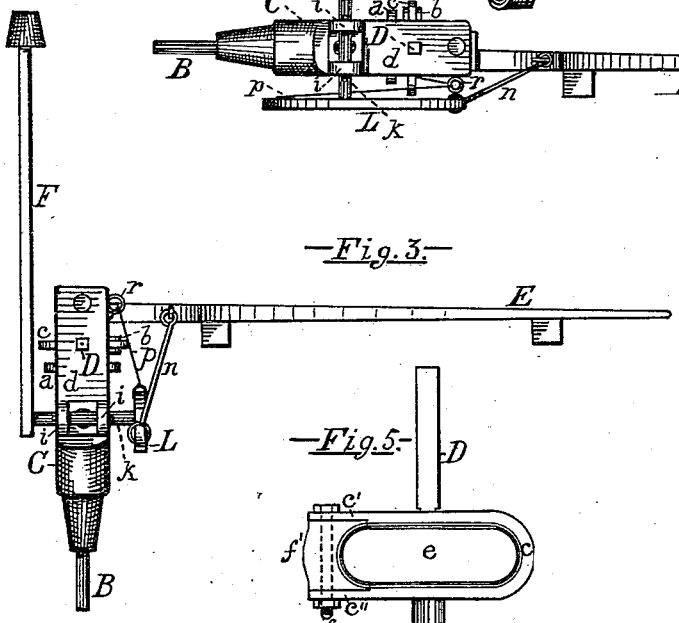
—Fig. 1.—



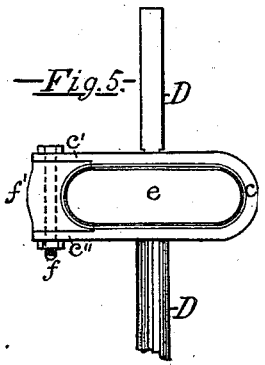
—Fig. 2.—



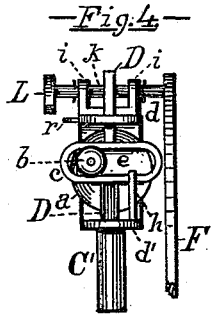
—Fig. 3.—



—Fig. 5.—



—Fig. 4.—



—WITNESSES:—

Charles E. Lewis.
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—INVENTOR:—

Geo. W. Sword
By his Atty
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UNITED STATES PATENT OFFICE.

GEORGE W. SWORD, OF LANARK, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **211,805**, dated January 28, 1879; application filed November 14, 1878.

To all whom it may concern:

Be it known that I, GEORGE W. SWORD, of Lanark, in the county of Carroll and State of Illinois, have invented a new and useful Improvement in Windmills, of which the following is a specification:

My invention relates to that class of windmills having a solid wind-wheel, which can be thrown out of wind by devices adapted for that purpose; and consists in the special construction and arrangement of parts, hereinafter described and claimed.

Referring to the accompanying drawings, Figure 1 is a side elevation, omitting the tower. Fig. 2 is a top view of same, with wheel removed. Fig. 3 is a top view, with wheel removed and the wheel-shaft turned as it would be when wheel is out of the wind. Fig. 4 is a view of the parts operating the plunger, the vane and wheel being removed. Fig. 5 is a view, on a larger scale, of plunger and cross-head, showing its removable end.

The wind-wheel A may be of any desired construction. In the present example it is a solid wheel, with its central part well open, and is keyed to the shaft B, which has suitable bearings in the swiveled part C, which turns on the hollow pivot C′. To the inner end of the shaft is attached a crank, *a*, the wrist-pin of which is provided with a grooved roller, *b*.

The plunger D has a vertical movement, and between the upper and lower bearings, *d* and *d′*, it is provided with a cross-piece, *c*, having a horizontal slot, *e*, the edges of which are rounded off to correspond with the groove on the roller, which latter is of the exact size to fit and move in the horizontal slot.

One end of the cross-piece is removable, to permit the entrance to the slot of the grooved roller, and this I consider an improvement.

The bolt *f* (see Fig. 5) passes through the upper part, *c′*, of cross-piece and the detachable end *f′* and the lower part, *c″*, and is secured in any suitable manner. The detachable end has on its upper and lower edges a V-shaped groove, which receives the corresponding angular-shaped parts *c′* and *c″* of the cross-piece, whereby the end is prevented from twisting out of position.

The vane E is hinged between the parts *d* and *d′* to permit of a sidewise movement, and its attachment is such that it does not stand in a direct line with the wheel-shaft and hollow pivot, as shown in Fig. 2.

A vertical pin or bolt, *h*, is attached to the part *d′*, (see Fig. 4,) and is so placed that, upon the vane coming in contact therewith, the wheel will be forced to swing in the right direction.

The parts constituting the regulator may be described as follows: On the top of part C, between the plunger and wind-wheel, are bearings *i*, in which turns the rock-shaft *k*, placed in a transverse direction to the wheel-shaft. On the end of the rock-shaft, projecting over the side on which the stop-pin *h* is fixed, is a weighted lever, F, and on the other end the lever L is placed centrally, and in position to be at right angles, or nearly so, with the weighted lever. To an eye in the upper end of lever L a rod, *n*, is attached, and connects with the vane, and to the lower end is attached a cord or chain, *p*, which passes through the eye *r*, placed on the part *d*, and thence passes through the hollow pivot, or otherwise in a suitable manner, to the ground.

The effect of pulling down on the cord or chain is to raise the weighted lever and draw the vane around in a line with the wheel, whereupon the force of the wind, acting on the vane, will swing the wheel and vane edgewise to the wind, and the wheel will cease turning.

The vane being attached to one side of an exact line with the wind-wheel shaft and hollow pivot creates a tendency on the part of the wheel to turn from the wind and in line with the vane when the wind blows unusually hard.

Having described my invention, I claim—

1. In a windmill, a plunger provided with the cross-piece *c*, in which is a horizontal slot, *e*, having a detachable end piece, *f′*, provided with V-shaped grooves in its upper and lower edges, which fit angular-shaped parts on the cross-piece, as set forth.

2. In combination, the wind-wheel A, shaft B, swiveled part C, hollow pivot C′, and the vane, hinged to the part C at one side of the

line of the wheel-shaft and hollow pivot, as set forth.

3. In combination, the rock-shaft *k*, provided at one end with the weighted lever F, and at the other end with the lever L, attached at or near its center, and in such position that its arms are at right angles, or nearly so, relative to the lever first mentioned, rod *n*, connected to the lever and vane, chain or cord *p*, and the hollow pivot, as shown and described.

GEORGE W. SWORD.

Witnesses:
J. O. SWORD,
H. S. PATERBAUGH.