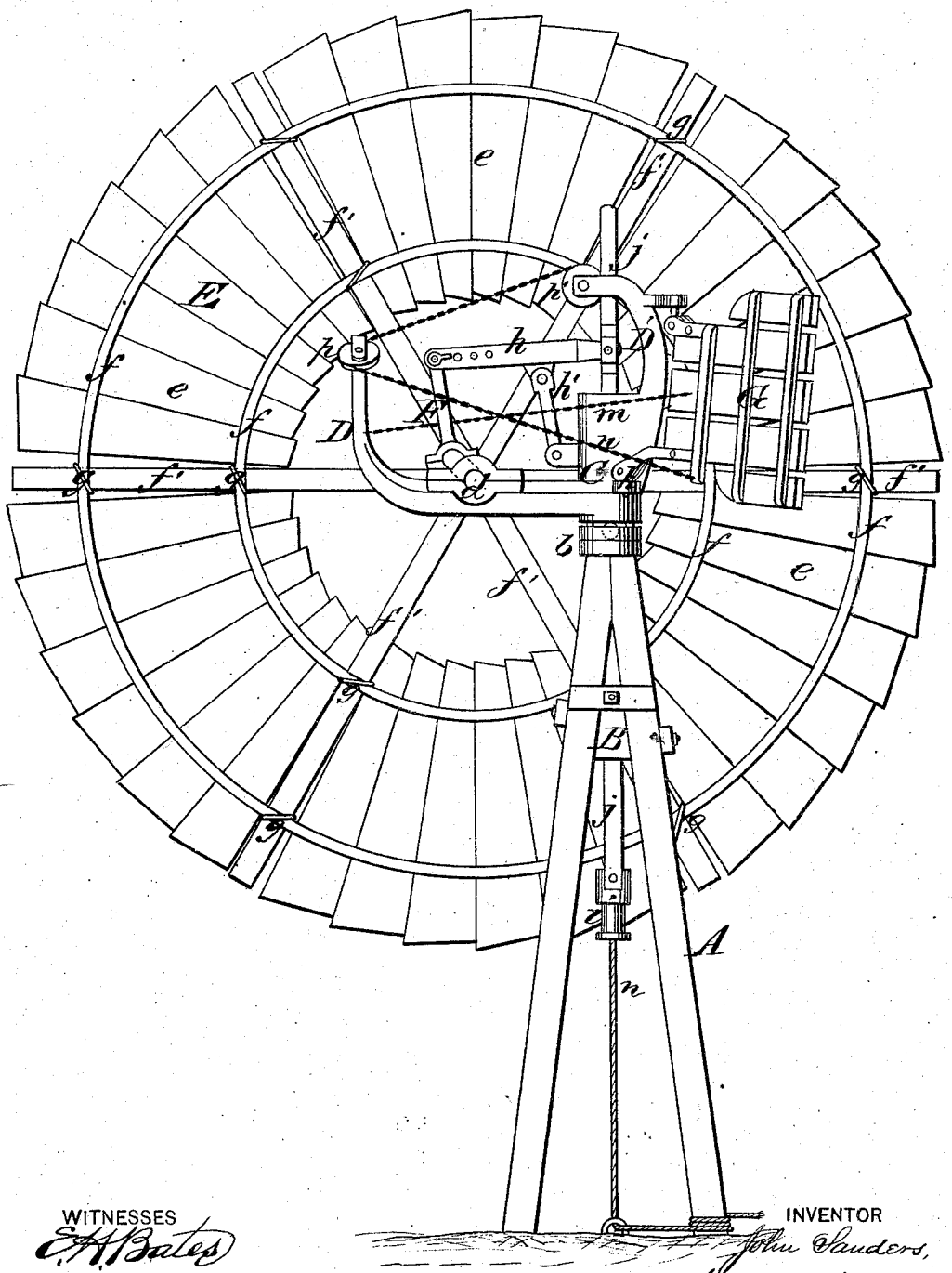
2 Sheets--Sheet 1.

J. SANDERS.

Wind-Mill.

No. 165,030. Patented June 29, 1875.

Fig. 1



WITNESSES

E. H. Bates

George E. Upham

INVENTOR

John Sanders,

Chipman Fenner & Co

ATTORNEYS

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

J. SANDERS.
Wind-Mill.

No. 165,030. Patented June 29, 1875.

Fig. 2

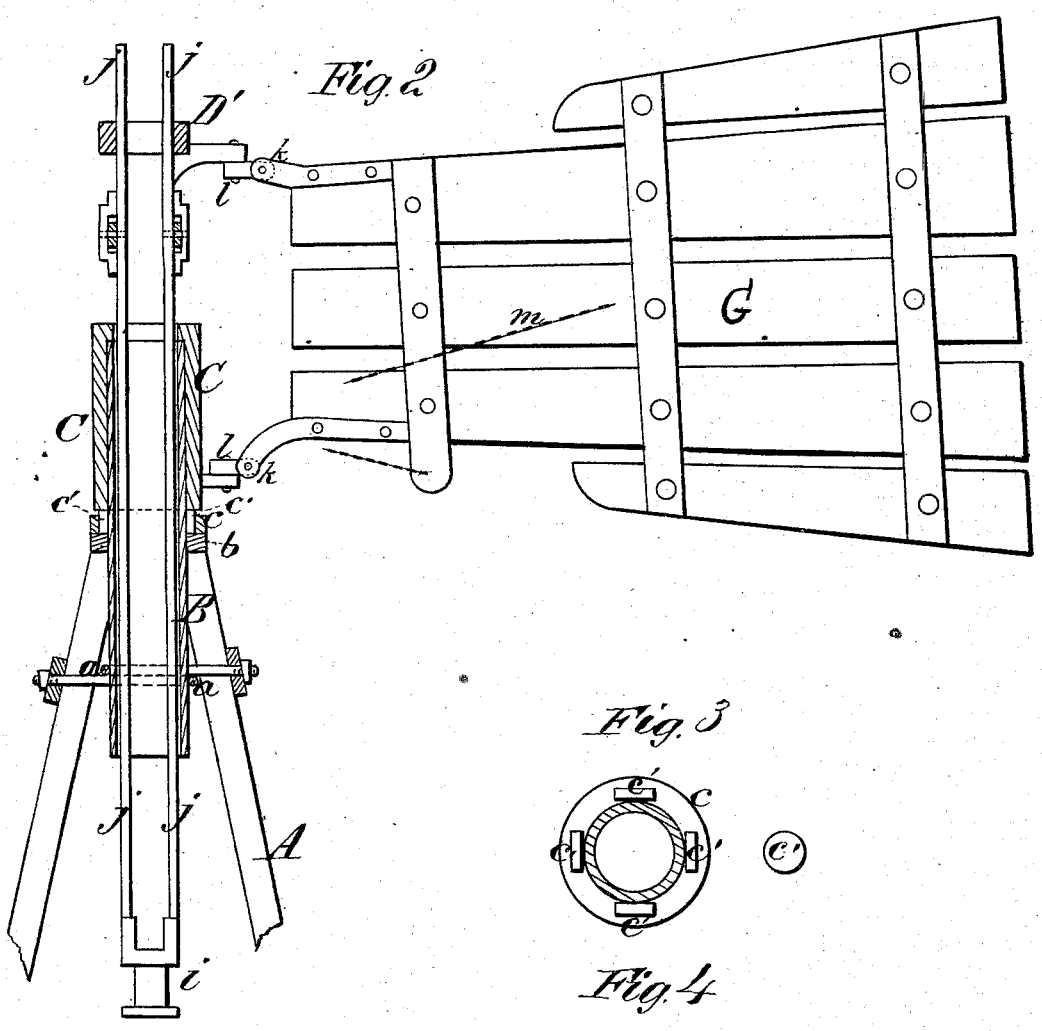
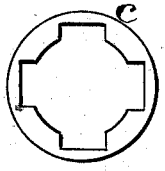


Fig. 3

Fig. 4



WITNESSES
E. H. Bates
George E. Upham

INVENTOR
John Sanders,
Chipman & Forman & Co
ATTORNEYS

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

JOHN SANDERS, OF GILEAD, MICHIGAN.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **165,030**, dated June 29, 1875; application filed January 16, 1875.

To all whom it may concern:

Be it known that I, JOHN SANDERS, of Gilead, in the county of Branch and State of Michigan, have invented a new and valuable Improvement in Windmills; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a rear view of my windmill. Fig. 2 is a vertical sectional view of the same, and Figs. 3 and 4 are detail views.

My invention has for its object to furnish a simple and effective means for making the wheel of a windmill automatically adjustable, so that it will edge to the wind, according to the force thereof.

My invention consists in the employment of blocks pivoted to the vane, as hereinafter more fully set forth, whereby the gravity of the vane is employed to return the wind-wheel when turned to its normal position.

In the annexed drawings, A designates the tower of the mill, and B a tube, which is rigidly secured to the upper end thereof by means of clamping-hooks *a*. This tube has a flange, *b*, formed on it, by which it is supported upon the upper end of the tower. C designates a tubular turn-table, on which two arms, D D′, are formed, for a purpose hereinafter explained. This turn-table is supported upon anti-friction wheels *c′*, which are held in recesses in a ring, *c*, and which roll upon the annular flange *b*. The wind-wheel E is keyed on a crank-shaft, *d*, which has its bearings in the arm D, and which gives motion to the pump-rod, as will be hereinafter explained. The wheel E is composed of narrow blades *e*, which are secured into hoops *f*, which hoops are rigidly secured to arms *f′* by means of clamps *g*. By thus securing the hoops *f* I do not weaken the arms *f′*, and I secure together the sections composing the hoops. F designates a pitman, which is applied to the crank of the shaft *d*, and adjustably attached to one end of a lever, *h*, which has its fulcrum on a vibrating link, *h′*, pivoted to a lug on the turn-table C. One end of lever *h* is pivoted to two parallel rods, *j j*, which pass through the tube B and turn-table C, and have a tubular connection, *i*, on their lower ends. The upper ends of the rods *j j* are guided by an overhanging portion of the arm D′. The tube *i* is suitably connected to the pump-rod. G designates the vane, which is composed of longitudinal and transverse boards suitably secured together. This vane is connected by means of pivots *k k* to blocks *l l*, which are pivoted to projections on the arm D′ and turn-table C. The pivots *k* allow the vane to rise and descend vertically as it swings around with the blocks *l*. The vane is prevented from descending from a position at right angles to the plane of the wheel E by means of a chain, *m*, and the vane is adjusted at any desired angle with respect to the plane of the said wheel by means of a chain, *n*, which is passed around pulleys *p p′*, and carried down through the tube B to the base of the tower, where it is attached to a cleat.

By connecting the crank of shaft *d* to the rods *j j*, as described, the wheel E lifts the pump while the crank is descending, thereby obtaining the advantage of the weight of the pitman F and momentum of the wheel E for balancing the mill.

It will be observed that the vane is hung so that it will descend by its own gravity as the force of the wind diminishes and the wheel's face is brought around to it.

I am aware that a windmill so constructed and arranged that the wind-wheel, when turned upon its vertical axis and its face brought to a plane parallel or approximately parallel with the vane or rudder, will, when released, return to its normal position by the gravity of the vane, has heretofore been employed, and I therefore lay no claim, broadly, to such invention.

What I claim as new, and desire to secure by Letters Patent, is—

The blocks *l l*, pivoted to projections on the arm D′, and also pivoted to the inner ends of the vane, in combination with the chain *n* and pulleys *p p′*, by means of which the vane rises and descends as it swings around, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN SANDERS.

Witnesses:

FREDERICK C. MATHER,

BYRON MARSH.