

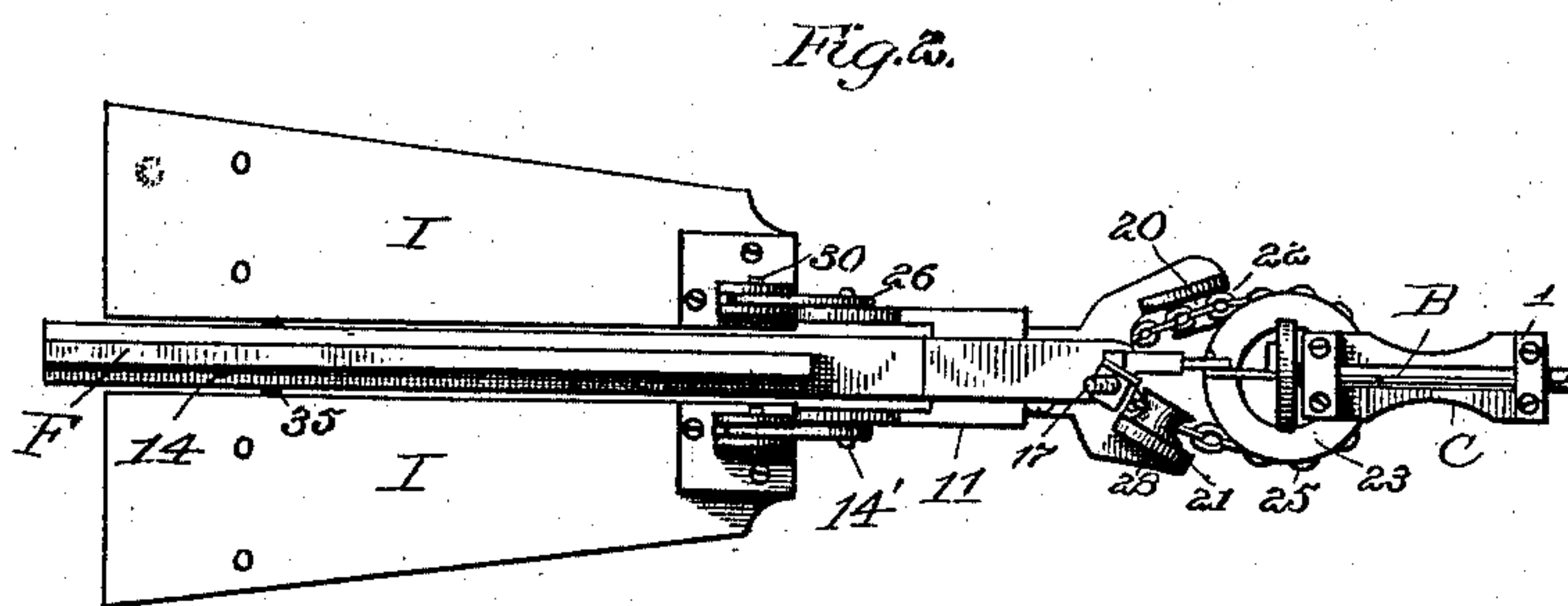
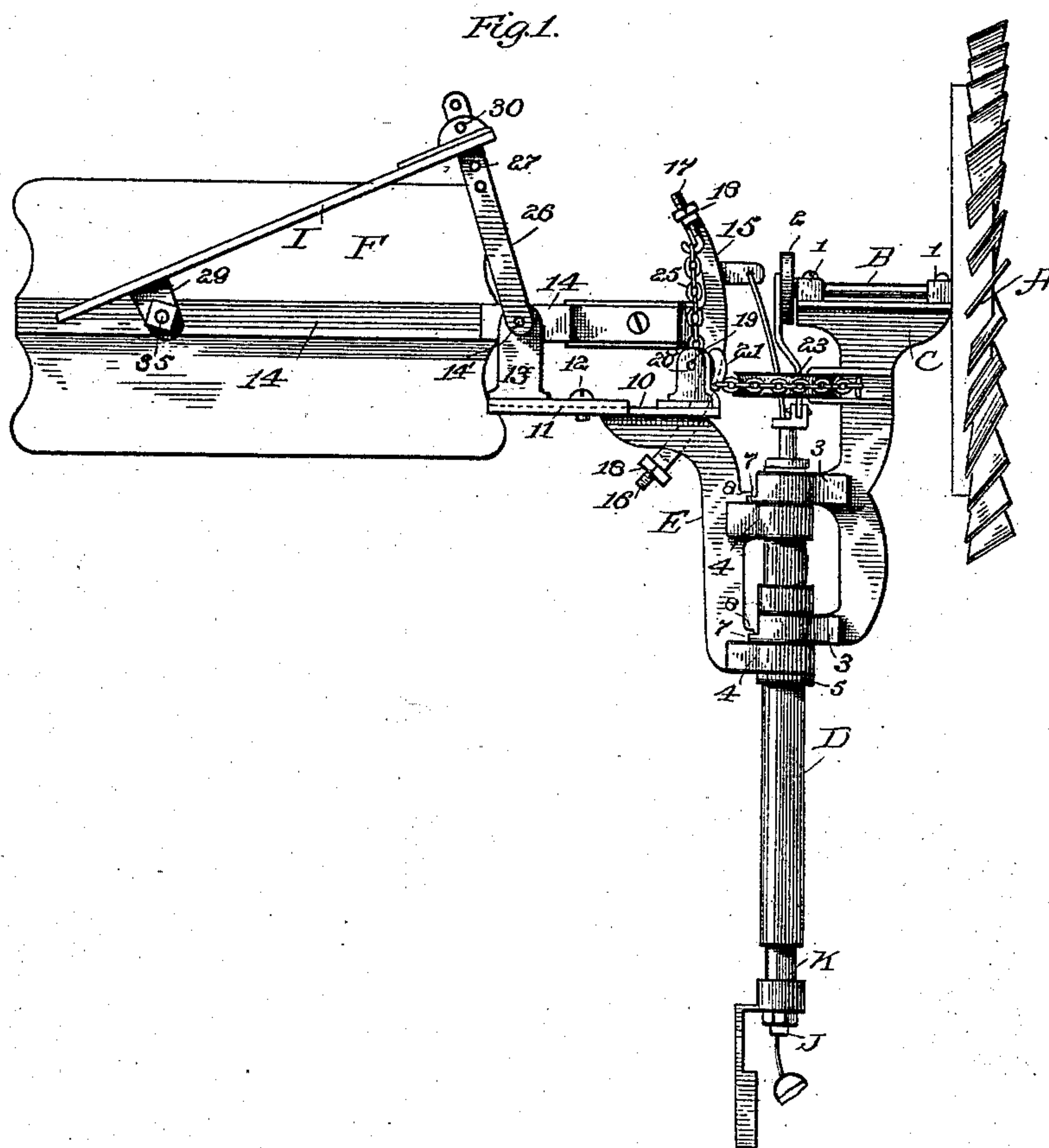
(No Model.)

2 Sheets—Sheet 1.

S. HANEY.
WINDMILL.

No. 270,059.

Patented Jan. 2, 1883.



Fittest:
Walter Donaldson
S.W. July

Inventor
Solomon Harey
by Ellis Spear
Atty.

(No Model.)

2 Sheets—Sheet 2.

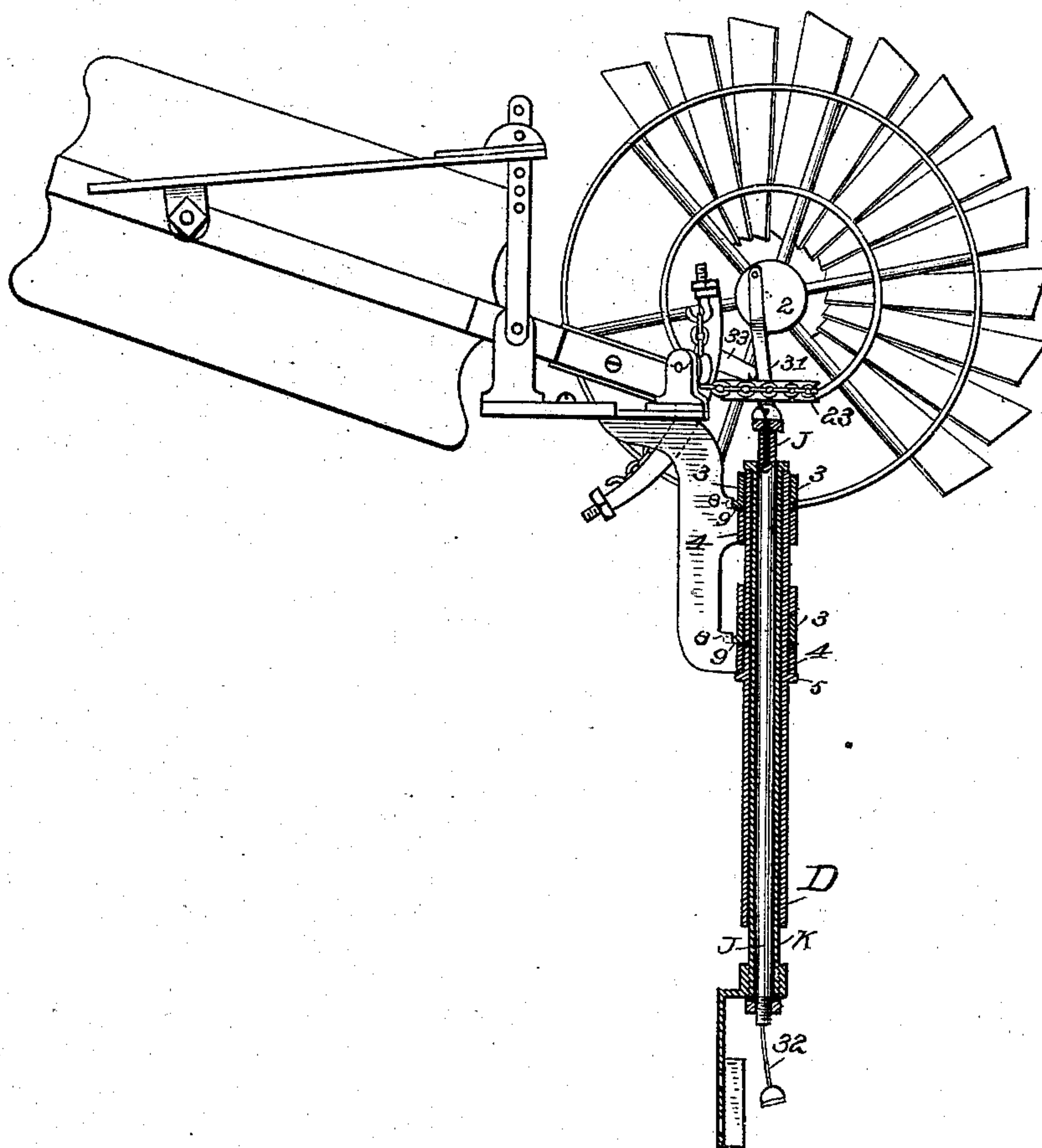
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Fig. 3.



Attest:

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UNITED STATES PATENT OFFICE.

SOLOMON HANEY, OF WATERLOO, IOWA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 270,059, dated January 2, 1883.

Application filed September 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON HANEY, of Waterloo, in the county of Black Hawk and State of Iowa, have invented a new and useful Improvement in Windmills; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to improvements in vertical windmills; and its object is to provide new means for rendering the mill self-governing in varying wind-currents, and in general to increase its effectiveness.

The invention consists, first, in the peculiar swiveled rod by which motion is communicated from the driving-shaft to the pump-rod or other machinery; further, in the peculiar construction of the tail-vane and its connection with the turn-table and wind-wheel; further, in the improved adjustable governor-vanes; further, in the manner of mounting the wheel and tail-vanes; and, finally, in the construction and arrangement and the novel combination of the operative parts, as fully hereinafter explained.

In the drawings, Figure 1 is a side elevation of the windmill. Fig. 2 is a top view; Fig. 3, a section through the swiveled tube.

In these drawings, A represents the wind-wheel, which is of the ordinary type of "solid" wheels, having a hub or spider, radial spokes connected by circular frames, and inclined slats set closely together. The wheel is mounted on a driving-shaft, B, which turns in boxes 1 of a bracket, C, and has upon its inner end an eccentric, 2.

D represents a tube or cylinder, which is adapted to be bolted rigidly or otherwise firmly secured to the tower or derrick posts. Upon this sleeve is mounted the bracket C, by means of arms 3 3, so that such bracket can swing freely in a horizontal direction.

E is a bracket provided with arms 4 4, by which it is mounted on the tube D. A flange, 5, is formed on such tube, which supports the lower arm of the bracket E, while upon such arm rests the lower arm of the bracket C. The upper arms of these brackets are also in contact, and the two brackets have a free movement upon the sleeve in one direction, limited by stops 7 on the arms 3 3, which bear against shoulders 8 on the arms 4 4. Stops 9 are also provided on the said arms 3 3, which engage with the opposite side of the shoulders 8 and

hold the brackets in line. At the upper end of bracket E is a flat plate, 10. Secured to this plate is a slotted slide, 11, adapted to be adjustably secured to plate 10 by a screw, 12. Upon this slide are ears or standards 13, and between these ears is pivoted, by a transverse pin, the beam 14, to which is attached the tail-vane F. The vane can therefore be adjusted longitudinally by moving the slide 11 forward or backward.

To the end of the beam 14 is secured a segment-shaped bar, 15. At each end of this bar is a hook-bolt, 16 17, held in place by nuts 18.

Journaled on pins 19 in standards 28, on opposite sides of the plate 10, are pulleys or sheaves 20 21. A chain, 22, is secured to the hooked bolt 16 on the lower end of 15, which passes over the sheave 20 and around one side of the large stationary guide-pulley 23, rigidly attached to the bracket C, and is secured at its other end to an eye on the bracket C. A similar chain, 25, is attached to the bolt 17 on the upper end of 15, and passes under sheave 21 and around the opposite side of pulley 23 is secured to the other side of bracket C.

Under ordinary circumstances the tail-vane and wind-wheel move together, and the wheel is thus kept in the wind; but for the purpose of automatically throwing the wheel out of wind in a gale or storm I have provided governor-vanes I I which act in connection with the chains and hinged brackets, in the manner now to be described.

Pivoted to the ears or standards 13, upon the pin 14', are inclined arms 26, which extend up upon each side and a little in front of the vane. At their upper ends they are perforated with a row of holes, 27. Passing transversely through the beam 14 is a shaft, 35, and upon this shaft, on each side of the vane, are mounted governing-vanes I I, by means of ears 29, through which the shaft passes. These vanes fit closely to the main vane, and are inclined upward at an angle of twenty-five degrees, approximately, being connected adjustably at their forward ends to the arms 26 by pins 30. It will be evident, now, that should the wind unduly increase, so that the pressure on the inclined vanes overcomes the dead-weight of the main vane F, the main vane will be lifted on its pivot, which will depress the segment 15, and by drawing on the chain 22 will turn the bracket

O, and thereby throw the wheel out of the wind. The relative angle of the vanes I I can be readily changed, so that the amount of pressure required to lift the main vane may be readily
 5 determined, and the rapidity with which the mill is to run conveniently regulated. As the wind decreases the weight of the vane overcomes the pressure and the chain 25 draws upon the bracket O and gradually brings the
 10 wheel into the wind again.

The pitman or connecting-rod which connects the driving-shaft to the machinery to be driven, is of peculiar construction. It is composed of concentric tubes J K, the tube J fitting
 15 closely within K and both working vertically within the outer cylinder.

To the inner tube, J, is attached the pitman proper, which is attached by a wrist-pin, 31, to the eccentric on the wind-wheel shaft, extending from the connection with J up through the
 20 open pulley 23, before described. A swivel is thus formed which insures a vertical descent of the pitman without any twisting of the wrist-pin. The connection to the machinery
 25 is made from the outer tube, K.

The mill may be governed by hand, independently of its automatic motion, by a cord, 32, secured to an arm, 33, on the segment which passes down through the inner tube, and hence
 30 is not affected by the rotation of the outer tube or the movement of the turn-table.

Having thus described my invention, what I claim is—

1. In a windmill, the combination of a wind-
 35 wheel mounted on a bracket so as to have a

horizontal movement, with a tail-vane mounted on a similar but independent bracket, and mechanism connecting the said tail-vane and wind-wheel, substantially as described.

2. The tail or rudder vane for a windmill, 40 pivoted so as to have a vertical movement, in combination with means, substantially as described, for imparting such vertical movement and mechanism for communicating such movement to the wind-wheel, for the purpose set
 45 forth.

3. The pivoted tail-vane having the segment 15 and the governing-vanes and secured to the movable bracket E, in combination with the
 50 wind-wheel similarly mounted upon a movable bracket, the connecting-chains, and the pulley-sheaves.

4. The combination, with the pivoted tail-vane F, of the side vanes pivoted upon a transverse pin passing through the tail-vane, and
 55 having means for changing their angle of inclination with relation to the said tail-vane.

5. Combined with the wind-wheel A and its driving-shaft, the pitman composed of concentric tubes J K, adapted to move together
 60 vertically, said tube J being connected to the driving-shaft and the tube K to the operating mechanism, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two sub-
 65 scribing witnesses.

SOLOMON HANEY.

Witnesses:

ROBT. M. KINGSLEY,
 H. A. LANE.