

No. 698,116.

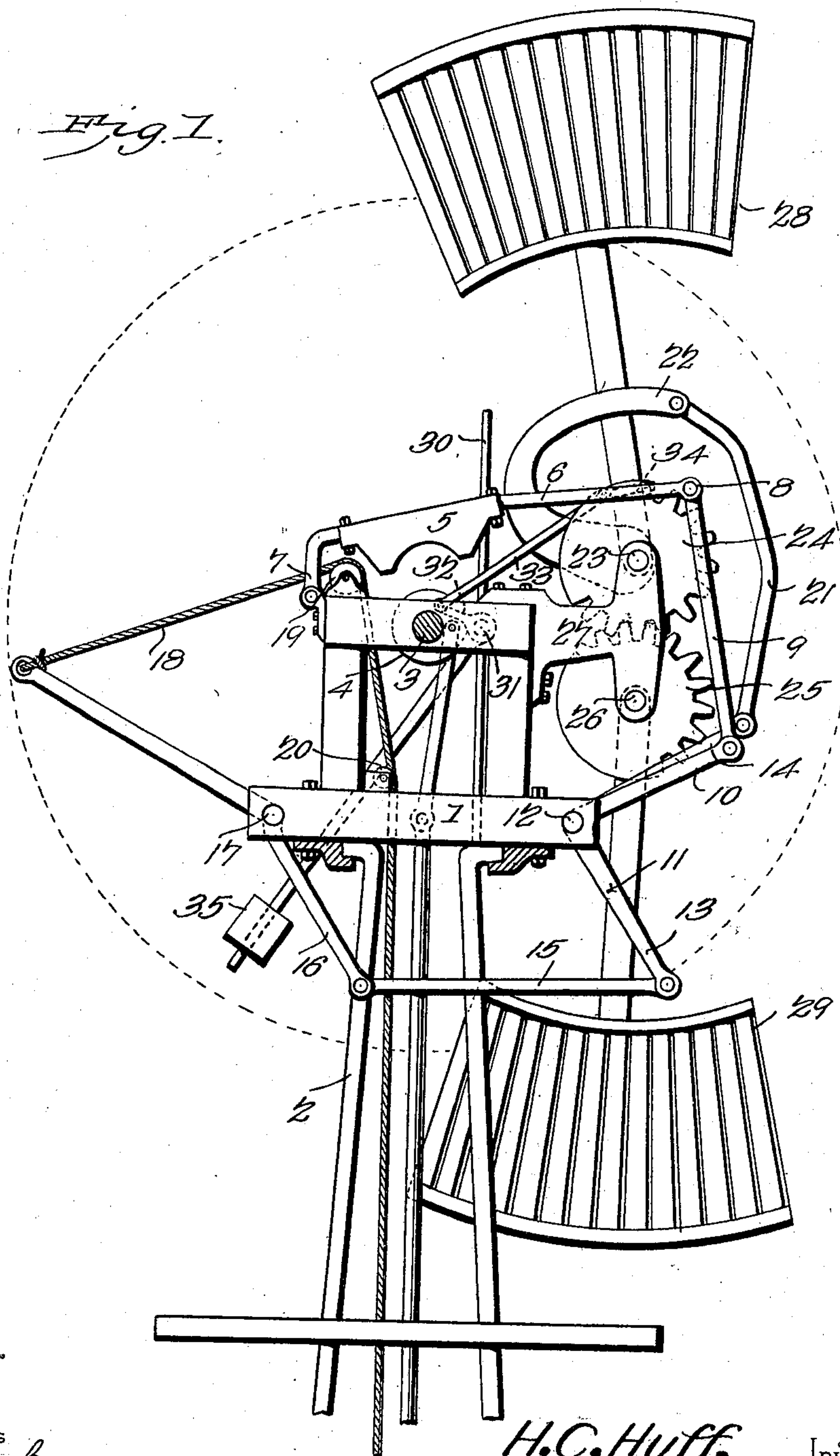
Patented Apr. 22, 1902.

H. C. HUFF.
WINDMILL.

(Application filed Jan. 20, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
E. H. Stewart
J. H. Riley

by

H. C. Huff Inventor.
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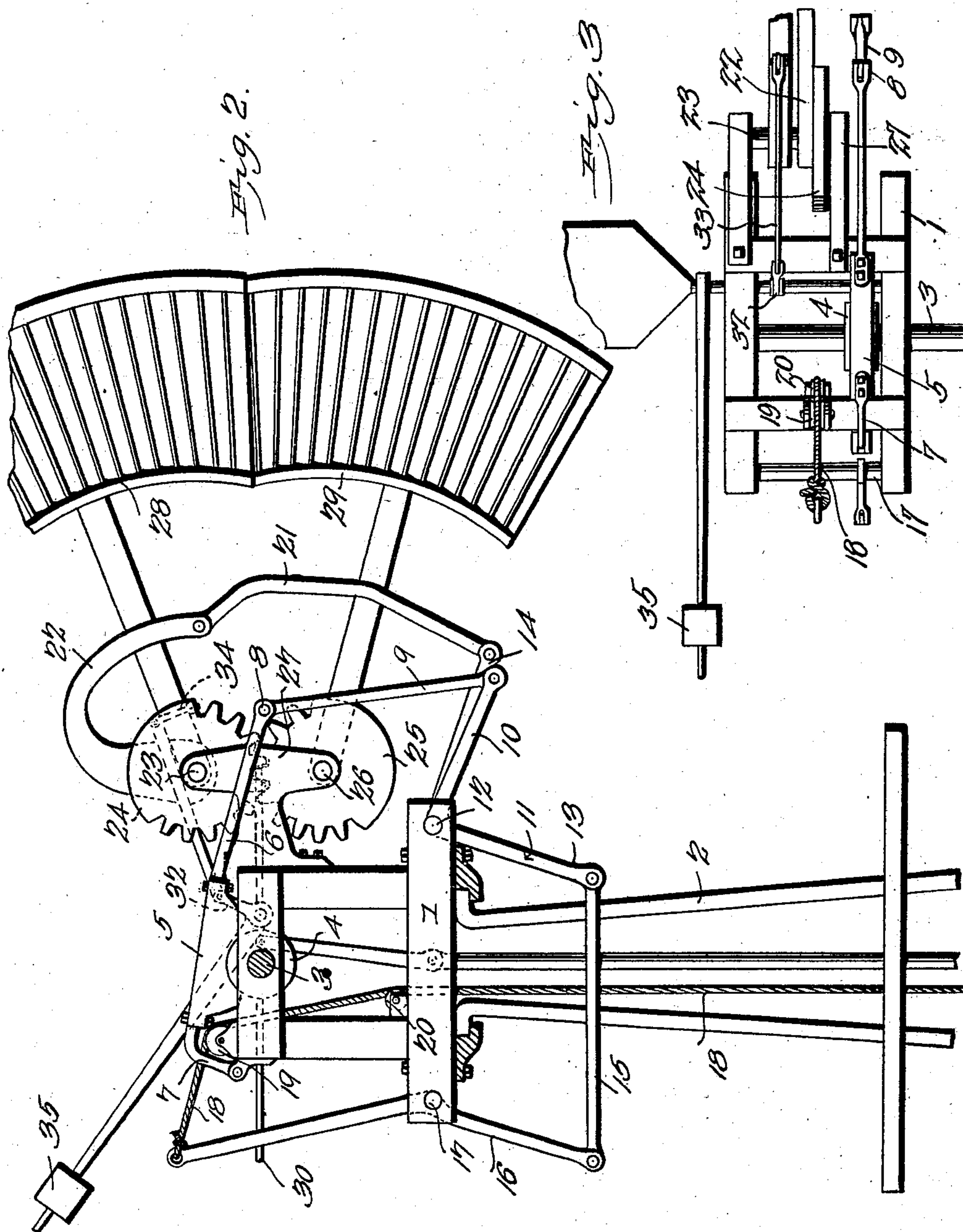
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UNITED STATES PATENT OFFICE.

HIRAM C. HUFF, OF WINANS, SOUTH DAKOTA.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 698,116, dated April 22, 1902.

Application filed January 20, 1902. Serial No. 90,532. (No model.)

To all whom it may concern:

Be it known that I, HIRAM C. HUFF, a citizen of the United States, residing at Winans, in the county of Roberts and State of South Dakota, have invented a new and useful Windmill, of which the following is a specification.

The invention relates to improvements in windmills.

10 The object of the present invention is to improve the construction of windmills and to provide a simple and comparatively inexpensive one adapted should the wind increase in force beyond a predetermined degree to form
15 a supplemental tail or vane at right angles to the main tail or vane, whereby the wind-wheel will be turned out of the wind, and capable when the wind abates of automatically throwing the wind-wheel into the wind.

20 The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

25 In the drawings, Figure 1 is an elevation of a windmill constructed in accordance with this invention and illustrating the position of the parts when the windmill is in operation, the position of the wind-wheel being indicated by dotted lines. Fig. 2 is a similar
30 view illustrating the position of the parts when the wind-wheel is turned out of the wind. Fig. 3 is a plan view of a portion of the windmill.

35 Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a rotary frame mounted upon a tower 2 in any suitable manner and provided with suitable bearings for a main shaft 3, disposed horizontally and designed to carry a wind-wheel (not shown) of any desired construction, and it also has mounted upon it a brake-wheel 4, which is engaged by a brake-shoe 5 to check and stop the rotation of the wind-wheel when the latter is turned out of the wind, as hereinafter explained. The brake-shoe is secured to a brake-lever 6, fulcrumed at one end 7 on the rotary frame at
45 one side thereof and connected at its other end 8 by a rod or link 9 with an arm 10 of a bell-crank lever 11. The bell-crank lever 11

is fulcrumed at its angle on the rotary frame at the bottom thereof, preferably by means of a shaft or pintle 12, and it consists of an
55 arm 13 and diverging arms 10 and 14. The shaft or pintle 12 is journaled in suitable bearings of the rotary frame, and the arms 10 and 14, which diverge, extend outward in the same general direction from the rotary
60 frame. The arm 13 extends downward and is connected by an approximately horizontal link or rod 15 with the lower arm of an upright lever 16. The upright lever 16 is fulcrumed between its ends at 17, and its other
65 arm is secured to a flexible connection 18, consisting of a rope, cord, wire, or the like and arranged on guide-pulleys 19 and 20 and extending to the base of the tower to enable the windmill to be controlled from that point.
70

The arm 14 of the bell-crank lever is connected by a link 21 with a curved arm 22 of a rock-shaft 23, which carries a gear 24, and the latter meshes with a corresponding gear 25 of a shaft 26. The shafts 23 and 26 are
75 journaled in upper and lower bearings of brackets 27, and they also carry supplemental vanes 28 and 29, arranged in an upright position and extending beyond the periphery of the hinged wheel, as indicated in Fig. 1 of
80 the drawings, when the windmill is in operation. The gears 24 and 25 are provided throughout a portion of their peripheries with teeth, and the remaining portion of their peripheries is smooth, a sufficient number of
85 teeth being provided to permit the swing of the supplemental vanes and to cause the latter to oscillate in unison.

The supplemental vanes consist of stems and a curved series of blades arranged to cause
90 the wind to tend to swing the supplemental vanes to the right from the position illustrated in Fig. 1 to that illustrated in Fig. 2. When the blades are swung downward to the position illustrated in Fig. 2 of the drawings,
95 they are arranged in a plane parallel to that of the wind-wheel, and they form a supplemental vane for turning the wind-wheel out of the wind.

The main vane 30 consists of a blade mounted on a shaft 31, adapted to be rotated by the means hereinafter described to turn the vane from the vertical position (illustrated in Fig. 1 of the drawings) to the horizontal posi-
100

tion, (shown in Fig. 2,) whereby the main vane will be rendered ineffective and will permit the supplemental vane to control the wind-wheel.

5 The shaft 31, which is disposed horizontally, is provided with a short arm 32, which is connected by a link or rod 33, and the latter extends from the said short arm 32 to the stem of the supplemental vane 28, being preferably secured to the same by an eyebolt 34; 10 but any other suitable means may be employed for connecting the vane shaft or spindle with the supplemental vanes or the gears. When the supplemental vanes are swung 15 from the position shown in Fig. 2 to that illustrated in Fig. 1, the main vane will be returned to a vertical plane and will turn the wind-wheel into the wind.

The vane-shaft is also provided with a 20 weighted arm 34, having an adjustable weight 35, adapted to counterbalance the weight of the supplemental vanes, and it is also capable of returning the same to the position shown in Fig. 1 when the wind abates. The weight 25 holds the supplemental vanes in the position shown in Fig. 1, and it may be moved inward and outward on the arm to secure the desired leverage. When the supplemental vanes are 30 swung to the approximately horizontal position, (shown in Fig. 2,) the brake-shoe will be swung downward into engagement with the brake-wheel and will check the rotation of the wind-wheel and finally stop the same.

What I claim is—

35 1. In a windmill, the combination of a rotary frame, a main vane carried by the rotary frame and capable of partial rotation to turn it from a vertical to a horizontal position, a pair of supplemental vanes arranged normally in an up- 40 right position and adapted to swing therefrom to approximately a horizontal position to form a vane at an angle to the main vane for turning the wind-wheel out of the wind, gears meshing with each other and connected with 45 the supplemental vanes, and connections between the supplemental vanes and the main vane, substantially as and for the purpose described.

50 2. In a windmill, the combination of a rotary frame, a wind-wheel shaft provided with a brake-wheel, a main vane having a horizontal

shaft mounted on the frame and provided with a short arm, a supplemental vane arranged normally in an upright position and adapted to swing to an approximately hori- 55 zontal position at an angle to the main vane, and connected with the said arm, whereby the main vane will be partially rotated when the supplemental vane is oscillated, a brake- 60 lever having a shoe arranged to engage the brake-wheel, and means for oscillating the brake-lever simultaneously with the supplemental vane, substantially as described.

3. In a windmill, the combination of a rotary 65 frame, a wind-wheel shaft having a brake-wheel, a main vane journaled on the frame and capable of partial rotation, supplemental vanes, gears connected with the supplemental 70 vanes and meshing with each other to cause the said supplemental vanes to oscillate in unison; means for connecting the supplemental vanes with the main vane, an arm con- 75 nected with the supplemental vanes, a bell-crank lever having diverging arms, one of the arms being connected with the said arm, a brake-lever connected with the other diver- 80 gent arm, and an operating-lever connected with the bell-crank lever, substantially as described.

4. In a windmill, the combination of a rotary 80 frame, a main vane movably mounted on the frame to arrange it in an effective position and to carry it to an ineffective position, sup- 85 plemental vanes mounted on the frame and normally extending upward and downward therefrom and capable of swinging simultane- 90 ously in opposite directions and adapted to be arranged approximately in a horizontal position to form a vane at an angle to the main vane, and means for connecting the main vane 95 with the supplemental vanes, whereby the main vane will be arranged in an ineffective position when the supplemental vanes are in substantially a horizontal position, substan- 90 tially as described.

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

HIRAM C. HUFF.

Witnesses:

CATHERINE C. FOWLER,
OLE S. JOHNSON.