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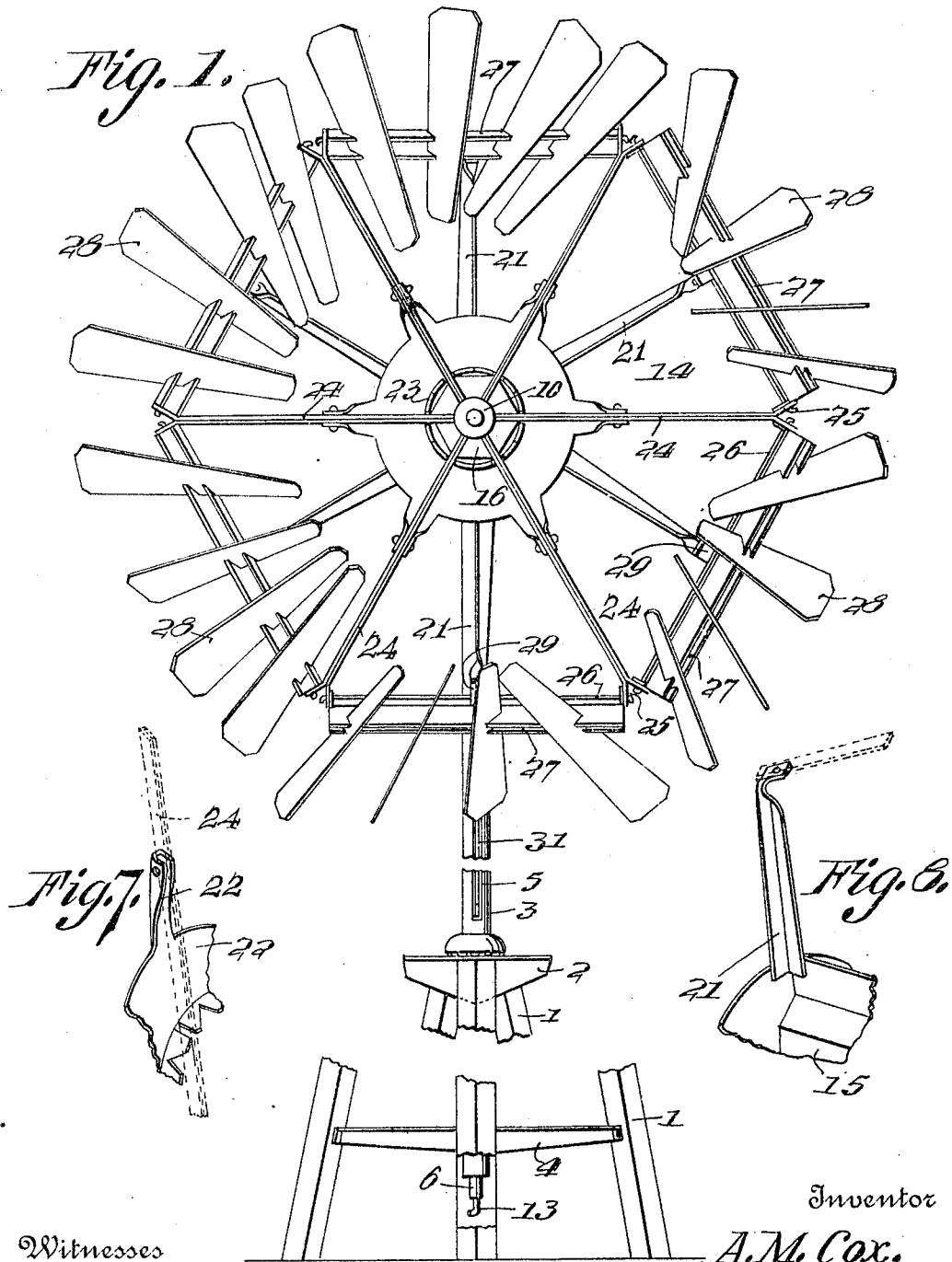
WINDMILL.

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UNITED STATES PATENT OFFICE.

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WINDMILL.

955,768.

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To all whom it may concern:

Be it known that I, ALPHEUS M. COX, a citizen of the United States, residing at Haviland, in the county of Kiowa and State of Kansas, have invented certain new and useful Improvements in Windmills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved windmill.

The object of the invention is to provide a simply constructed and efficient windmill which will produce a maximum amount of power with a minimum consumption of energy and which is self adjusting to regulate its speed.

Another object is to so construct a windmill as to dispense with the wrist pin in ordinary use.

With the foregoing and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front elevation of this improved windmill, with the parts in operative position; Fig. 2 is a side elevation, partly in section, of the upper portion thereof; Fig. 3 is a transverse vertical section taken on the line 3—3 of Fig. 2; Fig. 4 is a vertical transverse section taken on the line 4—4 of Fig. 2; Fig. 5 is a similar view taken on line 5—5 of Fig. 2; Fig. 6 is a detail perspective view of one of the sections of the windmill; Fig. 7 is a detail sectional view of a portion of the wheel; Fig. 8 is a similar view of another portion. Fig. 9 is a detail vertical sectional view of a portion of the wheel and standard.

In the embodiment illustrated, the wind or power wheel is supported in an ordinary windmill tower or frame 1, having a platform 2 at its upper end and provided with a central aperture, through which a hollow shaft 3 extends. The lower portion of the tower is provided with a brace 4, through which the shaft 3 also extends, ball bearings being preferably provided for said shaft where it passes through said platform and

brace. This shaft 3 is provided with a longitudinally extending slot 5, preferably arranged just above the platform 2 for a purpose hereinafter to be described.

A hollow spindle 6 extends through the shaft 3 and is provided midway its length with a laterally extending lug 7 which projects through the slot 5 in the shaft 3 and is designed to be connected with an eccentric to be described. A hollow shaft 8 extends laterally from the upper end of the shaft 3 and is designed to support the wind wheel, hereinafter described. A spindle 9 extends through the shaft 8 and is provided at its outer end with a head 10 and the inner end thereof is connected with the free end of one arm of a bell crank lever 11 which is fulcrumed on a tail vane 12 which is also secured to the upper end of the shaft 3 and extends substantially in alinement with the shaft 8. An element 13 is secured to the free end of the other arm of said lever 11 and extends downwardly through the hollow spindle 6 into position for convenient operation, said member 13 being operable to move said rod or spindle 9 inwardly to cause the head thereof to engage means, hereinafter described, on the wind wheel for operating the vanes or blades of said wheel to throw them into inoperative position.

A wind wheel 14 is mounted on the shaft 8 and is preferably provided with two wooden boxings 15 and 16, each of which is preferably constructed of two separably connected members 17 and 18, secured together by bolts or other suitable means to provide for the ready removal and assembling of the parts by an unskilled workman. A sleeve 19 is arranged between these boxings 15 and 16 and is designed to hold the wheel against slipping longitudinally on the spindle. The wheel 14 is preferably constructed, as shown, having a plurality of radially extending arms, as 21, arranged at the inner end of the hub of said wheel and a number of similar arms, as 22, are arranged at the front end of the hub of the wheel in staggered relation to the arms 21. The front end of the hub of this wheel is also provided with a plurality of longitudinally extending slit lugs, as 23, which are arranged to form an annular flange on the outer face of the wheel hub. A plurality of

bars, as 24, are pivotally mounted intermediately of their ends in the free ends of the arms 22 and the inner ends of these bars 24 converge toward each other and are

5 mounted in the slits of the lugs 23 with their ends arranged below the head 10 of the spindle 9 in position to be engaged by said head, for a purpose hereinafter described. The outer ends of these bars 24

10 are bifurcated and flared outwardly in opposite directions, said bifurcated ends 25 being apertured to receive the opposite ends of rods as 26, one of which is mounted between two of the adjacent bars. Pivotally

15 mounted on these rods 26 are bars 27 which are preferably substantially U-shaped in cross section and on which are mounted a plurality of obliquely disposed blades, as 28, having the inner ends thereof converging

20 toward each other. A spring arm, as 29, is rigidly secured at one end to each of the arms 21 and at its opposite end is pivotally connected with the member 27 at a point midway of its length, and at the rear of the

25 connection of said blades to said member 27, whereby it will be obvious that the inward movement of the spindle 9 will cause its head 10 to engage the free ends of the bars 24 and move their other ends outwardly to

30 rock the member 27 carrying the blades 28 to throw said blades into substantially horizontal position to render them inoperative, the blade carrying members 27 being adapted to swing independently of each other.

35 When the blades are thrown into horizontal position, the spring arms 29 are bent or bowed inwardly, owing to the fact that the pivotal connection thereof with the members 27 is out of alinement with the hinged

40 connections of said members with the bars 24. When the inner ends of the bars 24 are released, the spring arms 29 straighten out and force the blades into operative position. A toothed eccentric 30 is mounted

45 on the rear face of the hub of the wheel 14 and on the rotation of said wheel meshes with teeth arranged on the inner face of an annular member 20 to which a spring bar 31 is connected at one end. This bar 31 is

50 connected at its other end with the lugs 7 on the spindle 6, whereby the spindle 6 is reciprocated within the shaft 3 and a pump (not shown) connected with the lower end of said spindle thereby operated. When it is desired to throw the wheel out of operation,

55 the member 13 is moved downwardly, thereby drawing the spindle 9 to its extreme inward movement and causing all of the blades carried by the sections 27 to be held in substantially horizontal position. When the

60 wind exceeds a certain speed, the revolution of the wheel throws the weight of the sections 27 on the spring arms 29 which will cause said arms to bend or be bowed inwardly and thereby throw the blades 28

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more or less out of a vertical plane according to the velocity of the wheel and thereby reduce the speed of the wheel and cause it to rotate at a predetermined speed.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention, as defined in the appended claims.

Having thus described my invention, what I claim is:

1. A windmill comprising a supporting structure, a standard revolvably mounted therein, an arm extending laterally from the upper end of said standard, a wind wheel revolvably mounted on said arm and having radially extending arms at one end of the hub thereof, spring bars fixed at one end to said arms, similar arms extending from the other end of the hub and arranged in staggered relation to the first mentioned arms, members pivotally mounted intermediately of their ends on said last mentioned arms, a series of obliquely disposed blades mounted between the outer free ends of said members, and means operable to engage the inner free ends of said members for throwing said blades into inoperative position.

2. A windmill wheel comprising a hub, arms extending radially from one end of said hub, similar arms extending from the other end of the hub, an annular flange on the outer end of said hub provided with a plurality of spaced open slots, bars pivoted intermediately of their ends in the free ends of said last mentioned arms with their inner ends converging and extending through said slots, a member operable longitudinally of said hub and having a head for overlapping the inner ends of said bars, blade carrying members pivotally connected with the free outer ends of said bars, resilient arms fixed at one end to said first mentioned radial arms and pivotally connected at their other ends to said blade carrying members, and means operable to engage the free inner ends of said bars to swing said blade carrying members to throw the blades into inoperative position.

3. A windmill wheel comprising a hub, arms extending radially from one end of said hub, similar arms extending from the other end of the hub, an annular flange on the outer end of said hub provided with a plurality of spaced open slots, bars pivoted intermediately of their ends in the free ends of said last mentioned arms, blade carrying members pivotally connected with the free outer ends of said bars, resilient arms fixed

at one end to said first mentioned radial
arms and pivotally connected at their other
ends to said blade carrying members, and
means for controlling the head overlapping
5 the free inner ends of said bars to swing
said blade carrying members to throw the
blades into inoperative position.

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

ALPHEUS M. COX.

Witnesses:

ISAAC N. CARVER,
SYLVESTER JONES.