

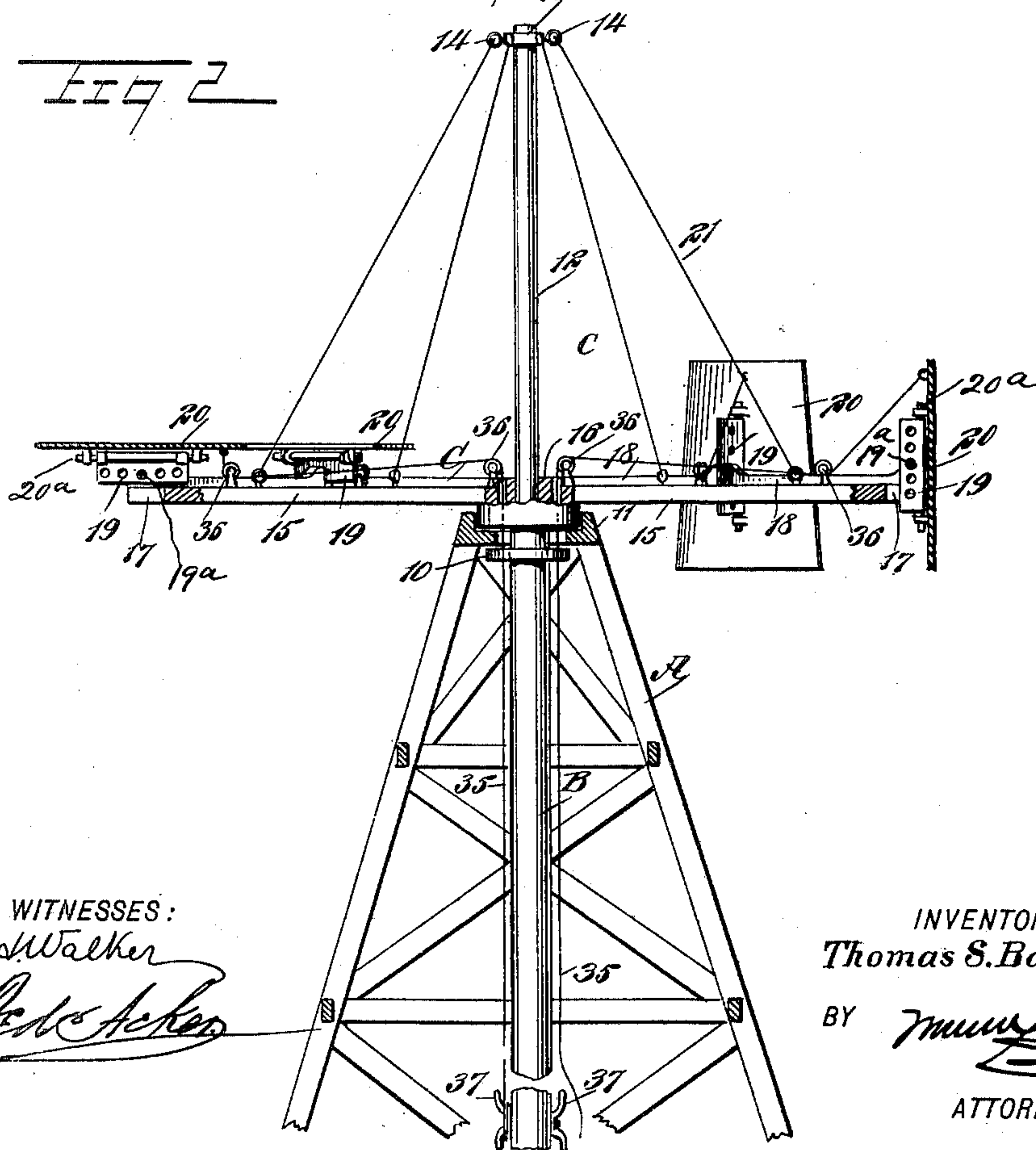
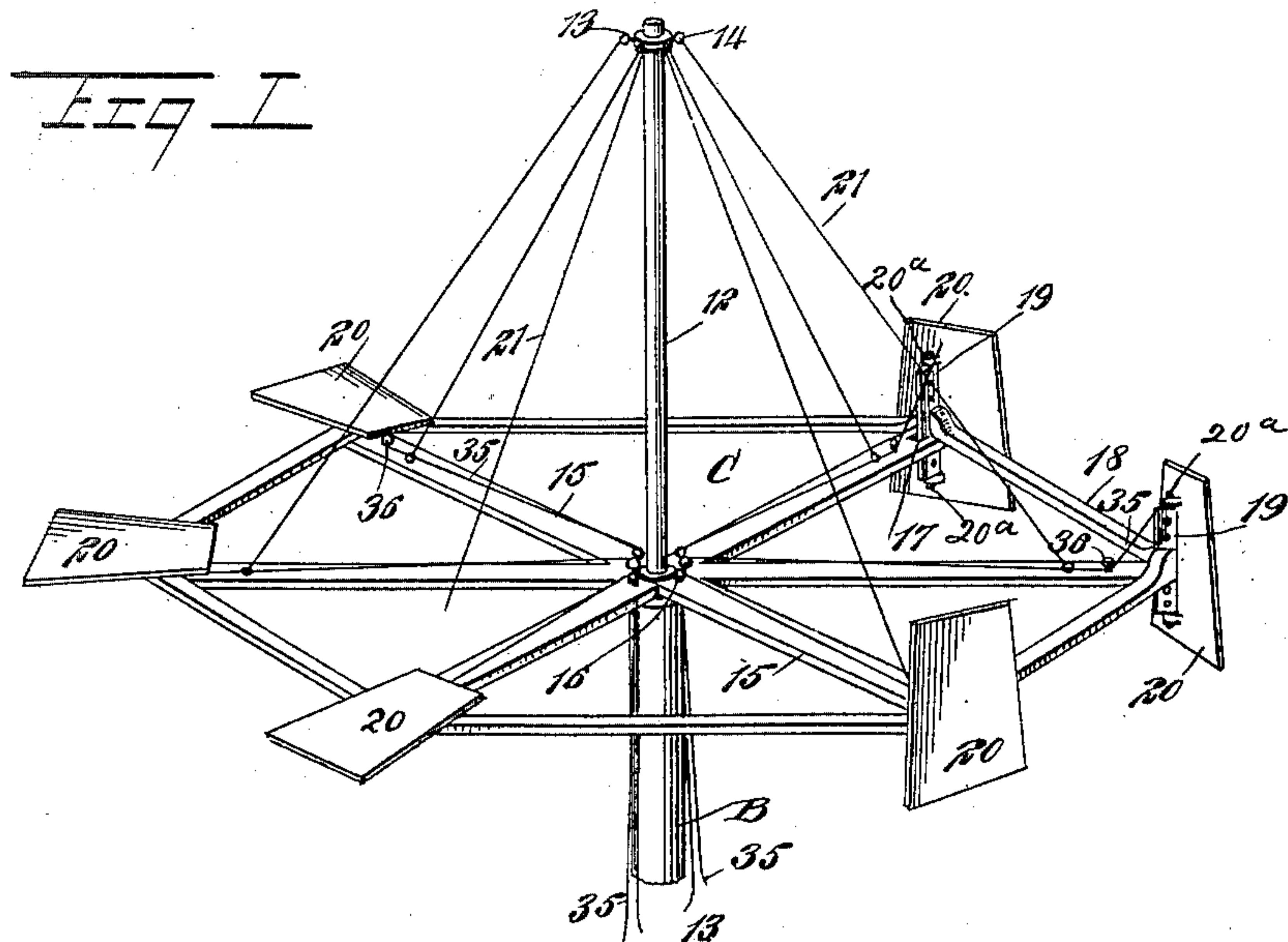
No. 667,965.

Patented Feb. 12, 1901.

T. S. BARWIS.
WINDMILL.

(Application filed June 23, 1900.)

(No Model.)



WITNESSES:

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INVENTOR
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BY

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UNITED STATES PATENT OFFICE.

THOMAS SHEPPARD BARWIS, OF VANCOUVER, CANADA, ASSIGNOR OF ONE-HALF TO ROBERT BURNS SKINNER, OF SAME PLACE.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 667,965, dated February 12, 1901.

Application filed June 23, 1900. Serial No. 21,317. (No model.)

To all whom it may concern:

Be it known that I, THOMAS SHEPPARD BARWIS, a subject of the Queen of Great Britain, and a resident of Vancouver, in the Province of British Columbia and Dominion of Canada, have invented a new and useful Improvement in Power-Wheels, of which the following is a full, clear, and exact description.

The purpose of this invention is to provide a simple, economic, and effective construction of wheel adapted to be operated by either wind or water and in which sails or wings are employed, so mounted that they automatically feather and otherwise adjust themselves to the elements and offer the least possible resistance when in the wind or when in line with ebbing or discharged water.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures.

Figure 1 is a perspective view of the upper portion of a wind-wheel constructed in accordance with my invention. Fig. 2 is a vertical section through the wind-wheel and the tower adapted to support the same.

A represents a tower of any approved construction, and B a shaft which is adapted to turn in the tower. This shaft is provided with a collar 10, just below the turn-table or upper portion 11 of the tower, and that portion 12 of the shaft B which extends above the tower is reduced in diameter, while at the upper portion of the shaft B a ring or clamp 13 or the equivalent thereof is secured, provided with eyes 14 or like devices, to which stretchers, guys, or braces may be attached.

A frame C is secured to the upper or reduced portion 12 of the shaft B, and the frame is preferably a hexagon in shape, although it may be given other contour; but in practice the hexagonal form has been found to be preferable. The frame C consists of a series of horizontal arms 15, which radiate from a hub 16, and a slot 17 is made at the outer end of each arm 15. The marginal portion of the frame consists of cross-bars 18, which consti-

tute the side members, and these cross-bars 18 extend from one arm 15 to the other and rest upon the said arms adjacent to the side walls of the slots 17 therein, and these portions of the side bars 18 which rest upon the arms 15 are vertically enlarged.

Vertical plates 19 are adjustably pivoted in the slots 17 of the arms 15 about horizontal axes 19^a, disposed approximately at a right angle to the respective arms, and wings or sails 20 are pivotally attached to the upper and lower portions of the said plates to turn about vertical axes 20^a, the pivotal attachment of the wings or sails being at or about a central point between their side edges; but the wings should be of such form or the pivot 20^a so located that the areas of the wing portions lying on opposite sides of the vertical plane passing through the said pivot will be different, or rather that the action of the wind on one of said portions will be stronger than on the other portion. The plates 19 are guided not only by the walls of the slots 17, but by the enlarged ends of the bars 18. The wings or sails extend about equally above and below the frame when said wings or sails are in a vertical position; but they may extend a greater or less distance above or below the frame C. Usually and preferably the sides of the wings or sails are tapered or inclined in opposite directions, so that the bottom portions of the wings or sails are somewhat wider than the upper portions. It will be observed that under this construction the wings or sails may assume a vertical position, an inclined position, or a horizontal position, in which latter position they rest upon the upper portion of the frame C. The inclined or horizontal position is only given to the wings or sails 20 when the wind is very high or the capacity of the machine is to be limited. Each sail or wing is preferably lowered independently—as, for example, a rope, chain, or cord 35 is attached to the upper rear portion of each sail or wing, and each rope 35 is passed over pulleys 36 on the frame C and down the shaft B to an attachment to a suitable cleat 37, as is shown in Fig. 2. Any form of latch may be employed as necessary to hold the wings or sails down. The frame is braced or strengthened by means of guy-

ropes 21, wires, or braces, and the said guy-ropes, wires, or braces are attached to the arms 15 and to the rings 14 at the upper portion of the shaft B.

5 The sails or wings 20 facing the wind will receive the full force of the wind and will cause the frame to revolve, and as the wings or sails are brought into the wind their edges are presented to the wind, and such sails offer the least possible resistance to the rotation of the frame. As the frame rotates it revolves the shaft B, from which power may be taken in any suitable or approved manner.

15 This construction of wind or water wheel is exceedingly simple, durable, economic, and effective, and the wheel may be adapted either as a tide-water wheel, a current-wheel, or it may be used in a flume, as required.

20 In operation, the sails remain perpendicular, taking advantage of the wind at every angle, and one sail feathers in the wind in turn as each sail comes into the wind; but the sails do not dip horizontally unless it is desired to have them do so in order to protect the mill from very heavy winds or sudden squalls. In such a case the sails may be pivoted higher, so as to give a greater area above than below the frame C, the lower part of the sails being heavier, the sails automatically resuming their upright positions when the great pressure ceases.

30 It will be understood that the water-wheel

will work when completely submerged in the water as effectively as the windmill does in the wind and that the water-wheel operates with equally-good effect when only partially submerged. 35

Having thus described my invention, I claim as new and desire to secure by Letters Patent— 40

A power-wheel, comprising a rotary frame having radial arms slotted at their outer ends, and side bars provided with spaced ends in alinement with the walls of the slots of said arms, plates or supports extending 45 into the said slots and between the ends of the side bars, and pivoted to the arms about axes disposed substantially in the plane of rotation of the frame and at right angles to the respective arms, wings or sails pivoted to the said supports about axes disposed in planes at right angles to the first-mentioned axes, and connections for swinging the wings or sails and their supports about the axes of the latter, to vary the angle which the sails 55 form with the frame's plane of rotation.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS SHEPPARD BARWIS.

Witnesses:

SAM. A. MOORE,
MAX MACGOWAN.