

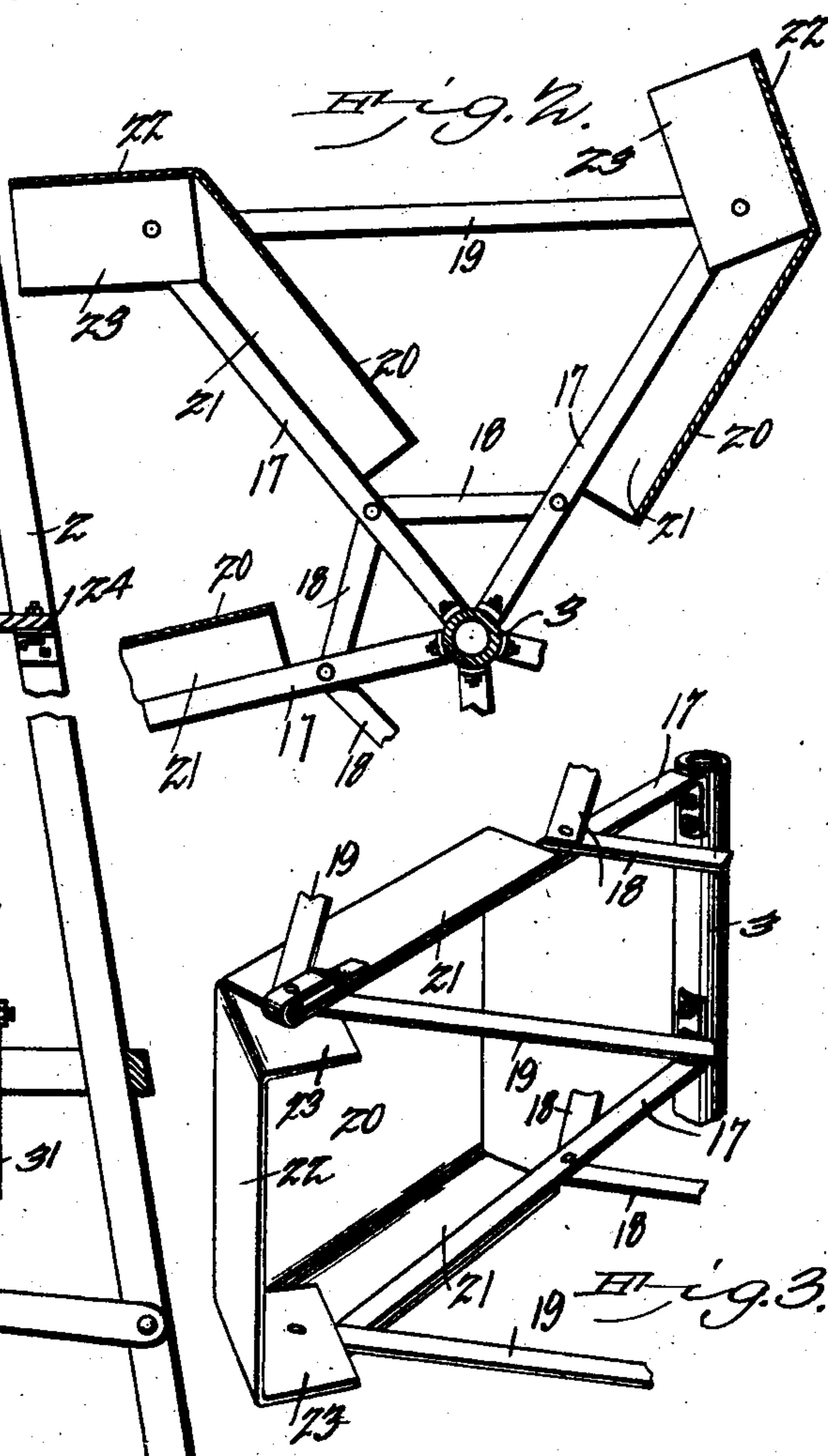
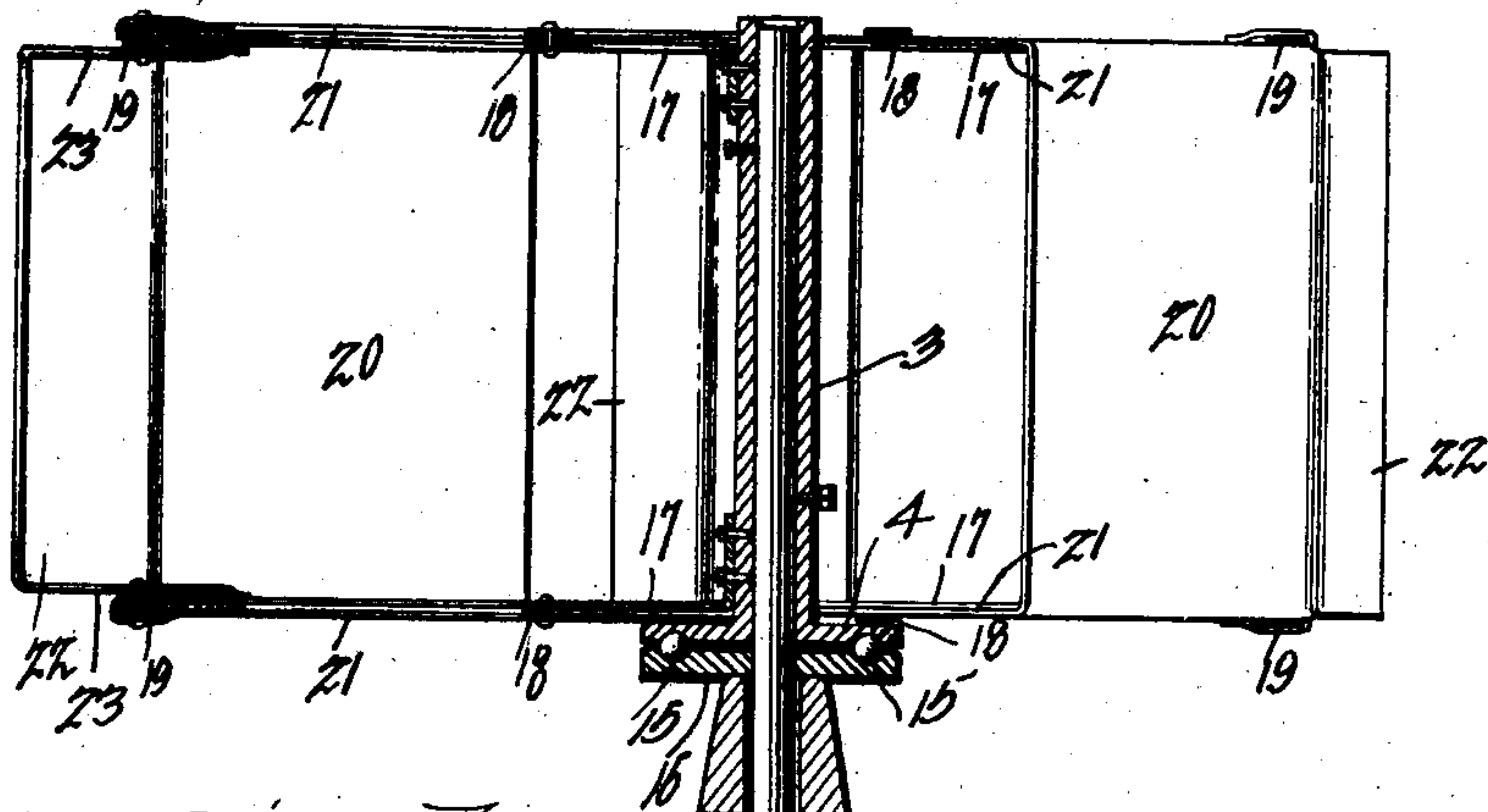
No. 721,227.

PATENTED FEB. 24, 1903.

J. J. PEARSON.  
WINDMILL.

APPLICATION FILED JUNE 20, 1902.

NO MODEL.



Witnesses

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# UNITED STATES PATENT OFFICE.

JAMES J. PEARSON, OF TULSA, INDIAN TERRITORY.

## WINDMILL.

SPECIFICATION forming part of Letters Patent No. 721,227, dated February 24, 1903.

Application filed June 20, 1902. Serial No. 112,529. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES J. PEARSON, a citizen of the United States, residing at Tulsa, in the Creek Nation, Indian Territory, have  
5 invented a new and useful Windmill, of which the following is a specification.

The invention relates to improvements in windmills.

The object of the present invention is to  
10 improve the construction of windmills and to provide a simple and comparatively inexpensive one of great strength and durability designed for pumping and adapted to be readily employed for a variety of other purposes,  
15 such as for shelling corn, operating a cider-mill, or the like.

A further object of the invention is to improve the construction of the wind-wheel and to provide one having its blades arranged so  
20 that after wind operates on the blades facing the wind it will pass through the wheels of the opposite side thereof and operate on the blades of that side.

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

In the drawings, Figure 1 is a vertical sectional view of a windmill constructed in accordance with this invention. Fig. 2 is a horizontal sectional view of the wind-wheel. Fig. 3 is a detail view of one of the blades and a portion of the frame of the wheel.

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

1 designates a vertical shaft journaled in suitable bearings of a tower 2 and connected  
40 with a horizontal wheel which is arranged at the top of the tower and which is suitably supported thereat by ball-bearings, hereinafter described. The horizontal fluid-operated wheel, which, although shown as a wind-wheel, may be placed in a current or stream  
45 to form a water-motor, is provided with a central vertical cleat 3, having a horizontal plate or annular flange 4 at its lower end, forming a turn-table, and provided at its lower  
50 face with an annular groove or ball-race for antifriction-balls, which are arranged in a corresponding groove or race of a bearing-

plate 16. The bearing-plate 16 is suitably mounted upon the top of the tower, and the antifriction-balls permit the wheel to rotate  
55 frictionlessly.

Extending from the upper and lower portions of the vertical tube 3, which is suitably secured to the shaft 1, are upper and lower radial arms or spokes 17, connected by inner  
60 and outer braces 18 and 19, and supporting-blades 20. The blades 20, which are spaced from the vertical tube to form an open center, are composed of radially or approximately radially arranged inner portions and  
65 angularly-disposed outer portions. The upper and lower edges or portions of the blades are bent horizontally to form upper and lower flanges. The upper and lower flanges  
70 21 of the inner radially-disposed portions are secured to the arms or spokes, which are arranged between the upper and lower flanges, as clearly shown in Fig. 3. The outer portions  
75 22, which are arranged at an obtuse angle to the inner portions, are provided with upper and lower flanges 23, located at the  
inner faces of the flanges 21 of the inner body portions of the blades. The outer portions of the blades are adapted to direct the  
80 wind toward the inner portions and they extend outward beyond the spokes or arms to catch the wind, and the flanges which connect the blades with the frame of the wheel  
offset the body portion of the blades from the arms or spokes, and each blade is intersected  
85 by the plane of another blade, the blade at one side being arranged in a plane at an angle to the plane of the blade at the opposite side. The wind or other fluid for actuating  
the wheel first acts upon the blades facing it,  
90 and these blades after receiving the impact of the wind deflect the same inwardly across the open center of the wheel to the opposite blades, which also receive the impact of the wind. By this construction a blade is first  
95 directly operated on by the wind while it is facing the same, and as soon as it passes around to the back of the wheel it is again operated on by the wind, which is directed  
against it by one of the blades which follows  
100 it. The second time the blade is acted upon by the wind it receives a glancing or angular impact of the same, and the open center of the wheel enables the wind to be deflected



across the same and assists in drawing the wind inward. This glancing or angular impact results from the arrangement of the blade at an outwardly-deflecting angle from the opposite blade, and by the double action of the wind upon the blades a maximum effect is obtained.

The shaft is supported between the top and bottom of the tower by a horizontal brace 24, having a suitable bearing to receive the shaft, which is also provided with an adjustable collar 25, having a set-screw and adapted to be arranged against the brace to hold the shaft against vertical movement; but any other suitable stop may be employed for this purpose. The shaft is provided at its lower end with a bevel-pinion 26, which meshes with a corresponding pinion 27 of a horizontal shaft 28. The horizontal shaft 28, which is mounted in bearings of a suitable support 29, projects slightly from opposite sides of the support and is located wholly within the tower. The support is provided with a bearing in which the lower end of the shaft is stepped. One end of the horizontal shaft is provided with a pulley 30, and the pinion which is mounted on the other end of the horizontal shaft is provided with a wrist-pin to which is connected a pump-rod 31; but any other form of eccentric may be employed for this purpose, and the pump-rod is detachably connected with the pinion to enable the windmill to be employed for operating other devices. The pulley 30, which is provided with a friction face or wheel 32, is adapted to receive a belt for connecting it to a corn-sheller, cider-mill, or other apparatus which may be operated by the windmill, and the pump-rod may be detached or the pump may be operated simultaneously with another device. The friction wheel or face 32 is arranged to be engaged by a metal strap or band 33, secured at one end to the tower and having its other end connected with a lever 34. The lever 34, which is fulcrumed at one end on the tower, is arranged to engage a ratchet-bar 35, having teeth 36 arranged at intervals and adapted to enable the brake to be applied to a greater or less extent. The brake may be applied to a greater or less extent for the purpose of controlling the speed of the windmill in high winds, and by this construction the windmill is adapted to operate in heavy winds and may be caused to rotate at the desired speed.

It will be seen that the windmill is exceedingly simple and inexpensive in construction,

that it possesses great strength and durability, and that it is capable of obtaining a maximum effect from a given force of wind, whereby it is adapted to operate in light winds.

What I claim is—

1. In a device of the class described, the combination of a vertical shaft and a fluid-operated horizontally-disposed wheel comprising a vertical tube mounted on the shaft, upper and lower arms or spokes extending from the top and bottom of the tube, inner and outer braces connecting the arms or spokes, and vertical blades having angularly-disposed inner and outer portions and offset from the vertical tube and provided with upper and lower horizontal flanges, substantially as described.

2. In a device of the character described, a horizontal wheel comprising a plurality of fixed vertical blades spaced from the center of the wheel and each intersected by the plane of the inner portion of another blade, said blades being each composed of a straight inner portion and a straight outer portion, the inner portion being arranged parallel to the radial axis of the wheel and the outer portion disposed at an angle to the inner portion, said blades being also provided with upper and lower horizontal flanges having inner and outer angularly-disposed portions, substantially as described.

3. In a windmill, the combination of a tower, a vertical shaft, a bearing-plate arranged at the top of the tower, a wind-wheel having a central tube secured to the shaft and provided at its lower end with a flange or plate arranged upon the bearing-plate, a support receiving the shaft, a short horizontal shaft extending from opposite sides of the support, gearing connecting one end of the horizontal shaft with the vertical shaft and provided with means for reciprocating a pump-rod, a pulley mounted on the other end of the horizontal shaft and having a friction wheel or face, a strap or band arranged to engage the same, a lever connected with the strap or band, and means for securing the lever at the desired adjustment, substantially as described.

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

JAMES J. PEARSON.

Witnesses:

H. F. ABY,  
R. E. LYNCH.