

C. H. ST. CLAIR.  
WIND WHEEL.

No. 104,918.

Patented June 28, 1870.

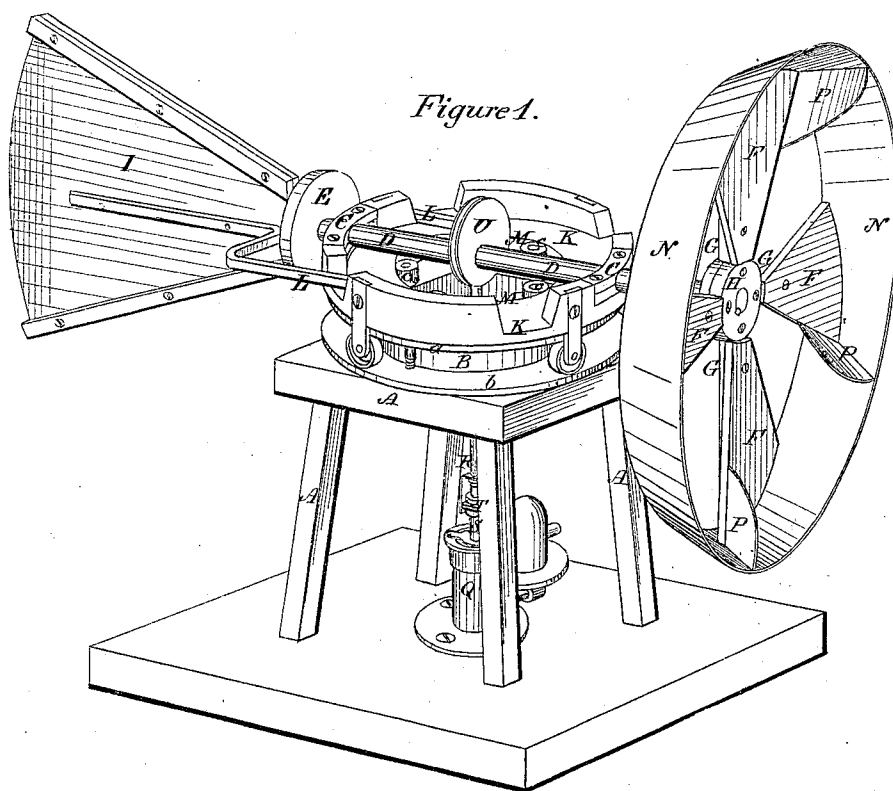


Figure 1.

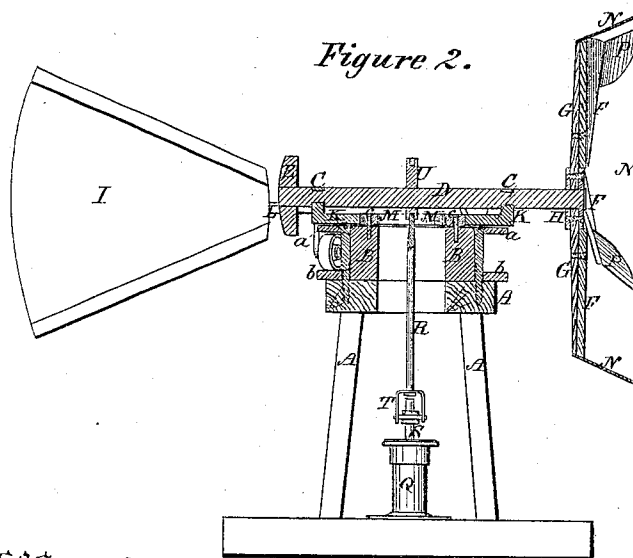


Figure 2.

Witnesses.  
Geo. W. Peardon.  
Wm. C. McIntire

Charles H. St. Clair  
By his Attorneys,  
Wepherman & Johnson

# United States Patent Office.

CHARLES H. ST. CLAIR, OF NEW ORLEANS, LOUISIANA.

Letters Patent No. 104,918, dated June 28, 1870.

## IMPROVEMENT IN WIND-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES H. ST. CLAIR, of the city and county of New Orleans and State of Louisiana, have invented certain new and useful Improvements in Wind-Wheels; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing of the same, which makes part of this specification, in which—

Figure 1 represents a view, in perspective, of a wind-wheel, embracing my improvements.

Figure 2 represents a vertical section, taken through the axis of the wheel-shaft.

It often occurs, in driving mills, pumps, &c., by wind-power, that the force of the wind is not sufficient to overcome the resistance of the machinery to revolve the wind-wheel.

It is the object of my improvement to remedy this difficulty; and

It consists in encircling the wings of the wheel with a flaring rim, projecting in front thereof a sufficient distance to gather and concentrate the wind directly upon the wings, and prevent its escape over the ends thereof, in connection with oblique buckets, arranged on the inner side of the flaring rim, so as to catch the wind concentrated by the latter, and direct it obliquely against the surface of said wings, in such manner as to form an auxiliary circumferential wind-wheel in advance of the radial wings, whereby the force of the wind concentrated by the rim and its buckets can only escape from the wheel through the openings between the wings, and thus cause the wheel to be revolved by a less force of wind than it otherwise would.

My improvement also consists in securing the centering and carrying-plate of the wind-wheel shaft to a double-flanged casting, by arranging the anti-friction rollers between the said flanges, in such manner as to support the centering turning-plate thereon, and also serve as the means of securing it in position, and allowing it full freedom to turn and be controlled by the action of its wind-vane.

It will be seen, therefore, that the rollers serve the two purposes of supporting the carrying-plate upon the lower and locking it between the upper flange of the centering base-plate, and this arrangement, while being cheap, is also durable, and allows the carrying-plate to turn with little friction.

In the accompanying drawing—

A represents the frame, upon which the several parts of the mill are arranged and supported.

A vertical casting, B, is secured to the top of this frame, and forms the base, upon which the wind-wheel is mounted.

It is constructed with an upper, *a*, and a lower flange, *b*, so as to leave an annular space between them, for a purpose to be presently described.

Upon this base the carrying-plate of the wind-wheel is supported and centered, so as to prevent it touching the upper flange *a* of the base; and the shaft D of the wind-wheel is fitted in bearings C thereon, and carries, at one end, the winged wheel, and at the other a balance-wheel, E.

The wings F are secured to radial arms, G, attached to a hub, H, so that their inclination may be adjusted and set as desired; and the vane I, for keeping the wheel always to the wind, is secured to the carrying-plate K by a yoke-frame, L, as shown in fig. 1 of the drawing.

The carrying-plate has an annular opening, M, and the upper side of the base B is fitted with four vertical anti-friction rollers, *c*, arranged at equal distances from the center, for the purpose of maintaining the central position of the carrying-plate.

The wings of the wheel are encircled by a rim, N, secured to the arms G, so as to project in front thereof a short distance, and flare outward, for the purpose of concentrating and holding the wind directly upon the wings, and thus prevent it from passing off at their ends.

The interior flaring surface of this rim N is provided with oblique wings or buckets P, arranged so as to form a continuation of the wings of the wheel, and constitutes an auxiliary annular wheel surrounding the oblique wings. As the wind strikes the oblique buckets P, they act in connection with the inner flaring face of the rim N, and deflect it, in two directions, directly upon the face of the wings, and they, therefore, act in conjunction to obtain a double action of the wind, so that the wheel must be turned with a much less force of wind than would be required to turn a wheel having only radial wings.

The rim N should not project enough to cause the wind against its outer side to interfere with the action of the vane, and its flaring position assists in producing this result.

The wings of the wheel are secured to the hub and rim in any suitable manner that will allow them to be adjusted to vary their inclination.

The mill, thus constructed, is arranged to work a pump, Q, the connecting-rod R of which is attached to the sucker-rod S by a swiveling or universal joint, T, and its vertical movement obtained by an eccentric, U, on the wheel-shaft, so that the connecting-rod R will revolve with the turning of the carrying-plate without interfering with the working of the pump.

A brake may be applied to the shaft D or bal-

ance-wheel, in any suitable manner, for the purpose of preventing the too great velocity of the wheel when the wind is high.

Having thus described my improvements,

I claim—

1. The inclosing-rim N, with its oblique buckets or wings P, in combination with the wind-wings F, substantially as herein shown, and for the purposes specified.

2. The arrangement of the auxiliary oblique buckets P, at the outer ends of the wings F, in such manner as to form, in connection with the flaring rim N, a continuation at the side and end of each wing F, as herein shown, and for the purpose specified.

3. The base B, having an upper and a lower annu-

lar flange, *a* and *b*, and the supporting-rollers of the carrying-plate K, arranged between these flanges, supporting the carrying-plate upon the lower, and locking it in position by the upper flange, as herein shown and described.

4. The combination of a wind-wheel, constructed as described, with the centering and carrying-plate K, the wind-vane I, the double-flanged base B, and the supporting and locking-rollers, the several parts being constructed, arranged, and operating as herein shown and described.

CHARLES H. ST. CLAIR.

Witnesses:

WALTER W. JOHNSON,  
JOEL T. ST. CLAIR.