

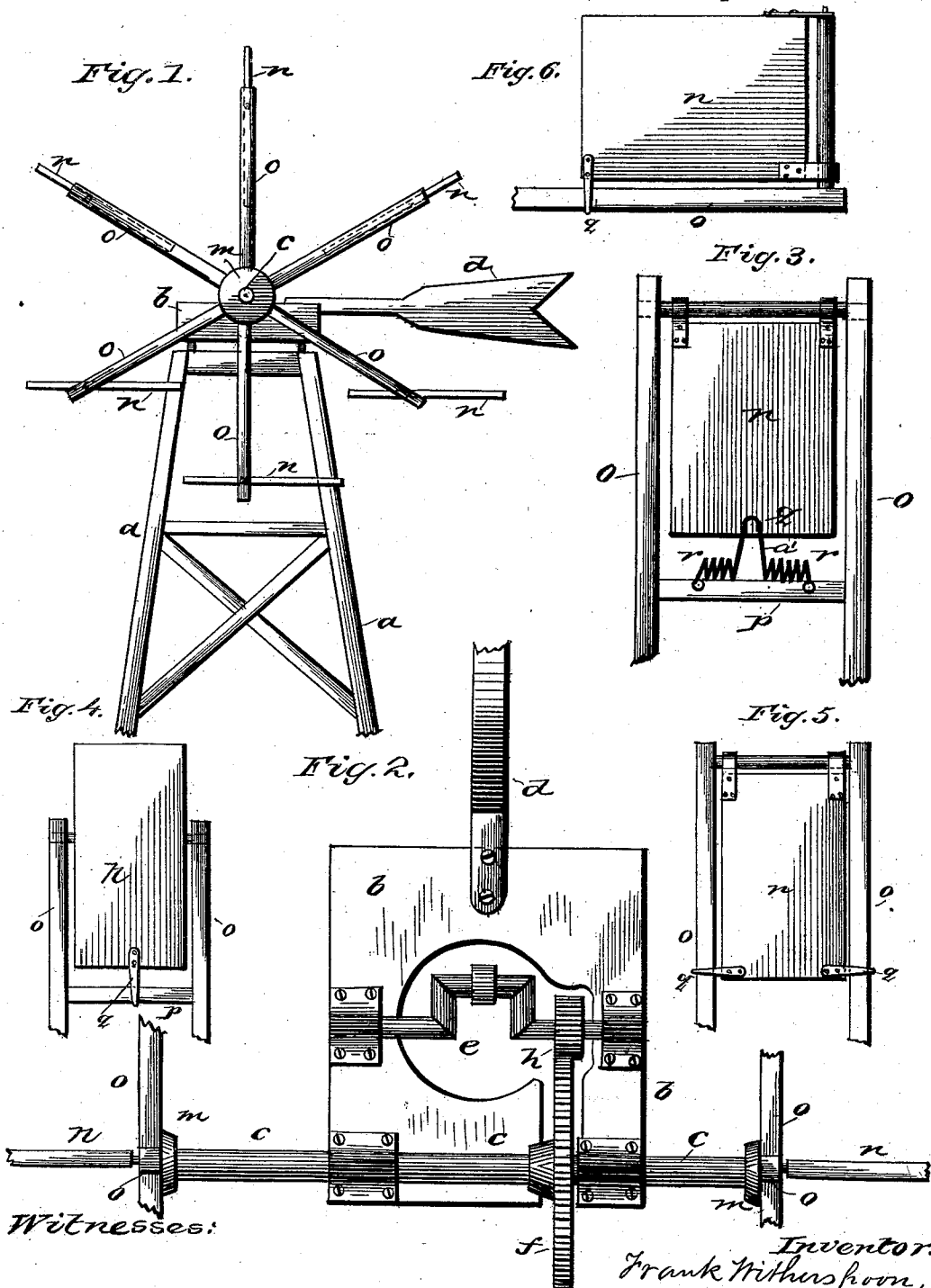
(No Model.)

2 Sheets—Sheet 1.

F. WITHERSPOON.
WINDMILL.

No. 297,904.

Patented Apr. 29, 1884.



Witnesses:

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John T. Mowton

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 7.

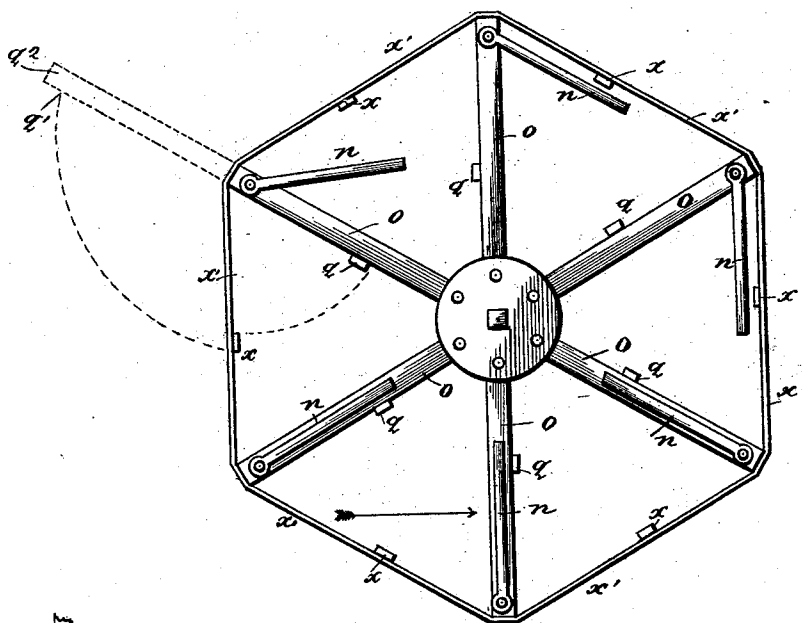


Fig. 8.

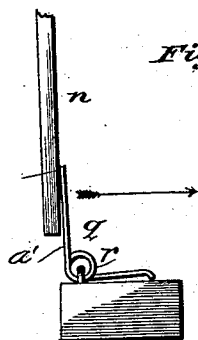


Fig. 9.

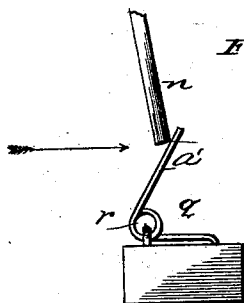
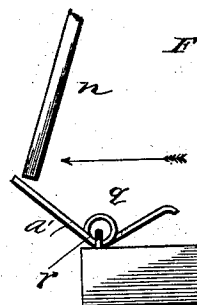


Fig. 10.



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UNITED STATES PATENT OFFICE.

FRANK WITHERSPOON, OF PARIS, TEXAS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 297,904, dated April 29, 1884.

Application filed August 14, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANK WITHERSPOON, a citizen of the United States, residing at Paris, in the county of Lamar and State of Texas, 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a side elevation of my improved windmill. Fig. 2 is a plan view of a portion of the windmill. Fig. 3 is a detail view showing one of the sails and tension-springs. Figs. 4, 5, 6, 7, 8, 9, and 10 are detail views of modifications of the invention.

This invention has relation to vertically or horizontally rotating wind-wheels; and it consists in the construction and novel arrangement of the pivoted sails and their detent-springs, as will be hereinafter fully described, and particularly pointed out in the claim appended.

Referring by letter to the accompanying drawings, *a* designates the derrick, *b* the turn-table, *c* the wheel-shaft, and *d* the vane. The wheel-shaft *c* has its bearings on the turn-table, and is geared to the crank-shaft *e* through gear-wheel *f* and the pinion *h* on said crank-shaft.

m designates the hub of the wind-wheel. The sails *n* are pivoted in bearings in the inner faces of the radial arms *o*, set into the hub *m* near each end, as shown. The bearings of the sails *n* are quite near the outer ends of the arms *o*. These radial arms *o* may be connected immediately below the lower edges of the sails *n* by a cross-bar, *p*, to which the detent *q* is attached, as shown in the drawings. The detent may be attached to the cross-bar to catch against the sail, or to the lower edge of the sail to catch against the cross-bar, or to the radial arm, or to one side of the sail, as shown in Fig. 6.

The tension-spring *r* is of such a strength that it will not yield in an ordinary wind,

but will hold the detent and sail in place; but when subjected to a heavy wind or gale the spring will yield and the sail will pass over the detent and swing idle.

The journals on which the sails are pivoted are located near the outer end of the radial arms, as shown. A wheel of this construction may be mounted on each end of the wheel-shaft where great power is required. It will be observed that the detent holds its sail during a little more than a half-revolution of the wheel, when the action of the wind disengages the sail from the detent and causes it to swing freely in returning toward the wind. The power of the wind is thus rendered effective on the same side of the wheel constantly, and the wheel will revolve with great power.

As the sails have a tendency to swing or play around too far in the wind when they have been forced over the detents, and thus offer resistance on their opposite faces to the wind, I have provided auxiliary detents, *x*, applied to suitable braces or arms, *x'*, to engage the sail after it has been released by the wind from the detent-spring *q*, at an angle between the detent *q* and a point, *q'*, on the arm, if extended to *q''*.

Fig. 8 shows the sail resting against the detent *q* when the wind is blowing at its usual rate.

Fig. 9 shows the sail passing by the auxiliary detent-spring in time of high wind, the spring yielding.

Fig. 10 shows the sail passing over the detent-spring in a direction opposite to that shown in Fig. 9 as it returns to its proper position, to be engaged by the detent on the arm of the wheel. These detents *q* consist of a piece of spring-wire having its outer ends coiled to form spiral springs *r r*, the free ends of which are connected to the cross-bar *p* of the radial arms *o*, and are provided with an intermediate loop-arm, *a'*, which is designed to engage the inner end of the sails, as before described.

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

In a wind-wheel, the combination of the turn-table, crank-shaft *e*, carrying the pinion

h, the shaft c, having the gear f, the wheel
having radial arms extending from the same
hub, with beams at right angles from their
outer ends, to which the sails are attached,
5 and the said radial arms and bar p, having de-
tents for controlling the sails, substantially as
specified.

In testimony whereof I affix my signature in
presence of two witnesses.

FRANK WITHERSPOON.

Witnesses:

T. J. CAMPBELL,
J. H. JOHNSTON.