E. WILLIAMS.

WIND-MILLS.

No. 182,394. Patented Sept. 19, 1876.

Fig. 1.

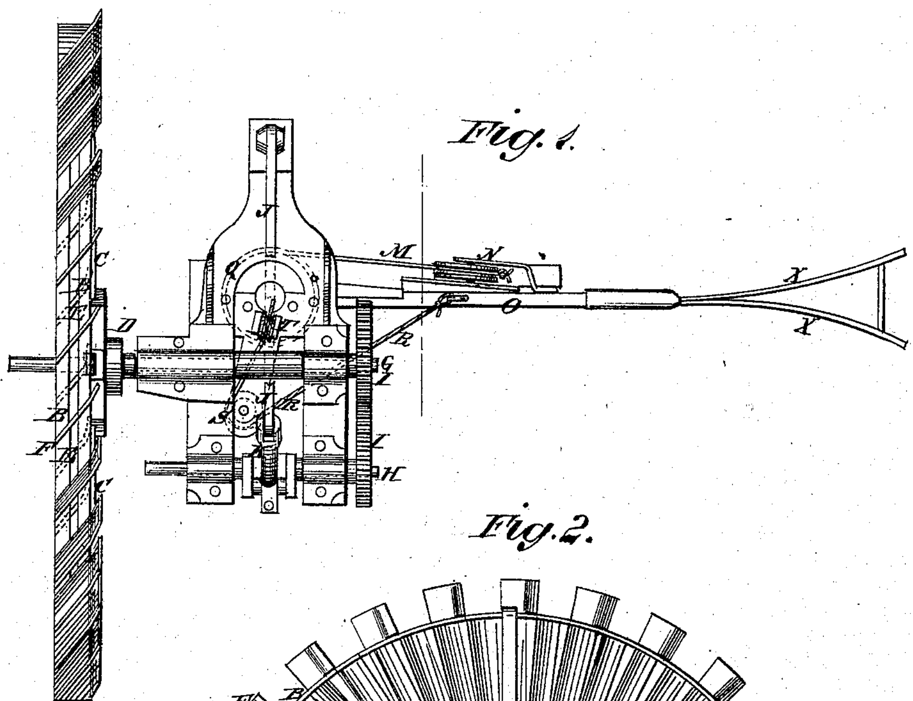
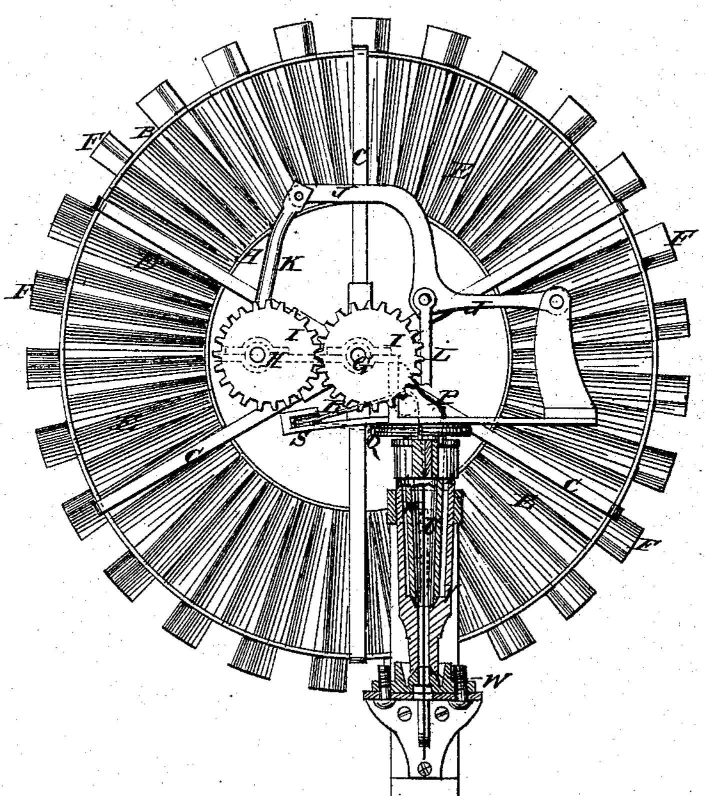


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD WILLIAMS, OF POTOSI, WISCONSIN.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **182,394**, dated September 19, 1876; application filed May 16, 1876.

To all whom it may concern:

Be it known that I, EDWARD WILLIAMS, of Potosi, in the county of Grant and State of Wisconsin, have invented a new and Improved Windmill, of which the following is a specification:

The invention consists of a solid wheel of sheet metal, the vanes of which are of concave form in cross-section, and there is a secondary set of curved vanes outside of the rims to increase the capacity of the wheel. The power is transmitted to the pump-rod by a pair of eccentric-wheels, and a lever giving increased leverage on the upstroke, with quicker motion on the downstroke, and enabling the wheel to lift from a greater depth. The tail-vane is double, and diverges each way, so that the wind has greater power to hold it steady. The connecting-rod works upward from the crank to a lever, having the pump-rod connected to it in such manner that the pump-rod has but little vibration in the hollow axis of the turn-table, and thus does not require so much space as when the crank works over hollow axes. The main stem is set in an adjustable step, for plumbing the turn-table readily when the tower settles.

Figure 1 is a top view of my improved windmill; and Fig. 2 is a section on line *x x*.

Similar letters of reference indicate corresponding parts.

The wheel is constructed of two wrought-iron bands, A B, fitted on the arms C radiating from the hub D, concave metal vanes E, and the short concave vanes F, attached to the outside of the outer band B. Instead of making the crank on the wheel-shaft G, there is a counter crank-shaft, H, turned by the eccentric-wheels I, to give a slow and powerful upstroke and quick downstroke, and the crank-shaft is coupled to the lever J by connecting-rod K, so that the pump-rod L, which is connected to the lever, is not subject to the vibrations of the crank. The wheel is held in the wind by the weighted cord M, suspended from a pulley on tail-vane O, and pulling the table P by the pulley Q. R is a cord for stopping the wheel by hand. It is connected to the tail-vane, and passes around pulleys S and T and down the hollow axis. The table which supports the wheel is mounted on the inner stem U, which turns in the outer stem V, on which the tail-vane O is mounted. The stem V rests in the adjustable oil-box W, by which the wheel can be righted readily when the tower settles. X represents the laterally-diverging plates of the tail-vane, to enable the wind to have better effect and hold it steadier.

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

1. The combination, in a windmill, of the crank-shaft for working the pump-rod, and eccentric gears connecting said crank-shaft with the wheel-shaft, substantially as specified.

2. The combination, in a windmill, of a lever, J, having the pump-rod L connected to it, and a crank-shaft connected with said lever and located to one side of the hollow axis in which the pump-rod works, substantially as specified.

his
EDWARD × WILLIAMS.
mark.

Witnesses:
GEORGE KINNEY,
HENRY B. COONS.