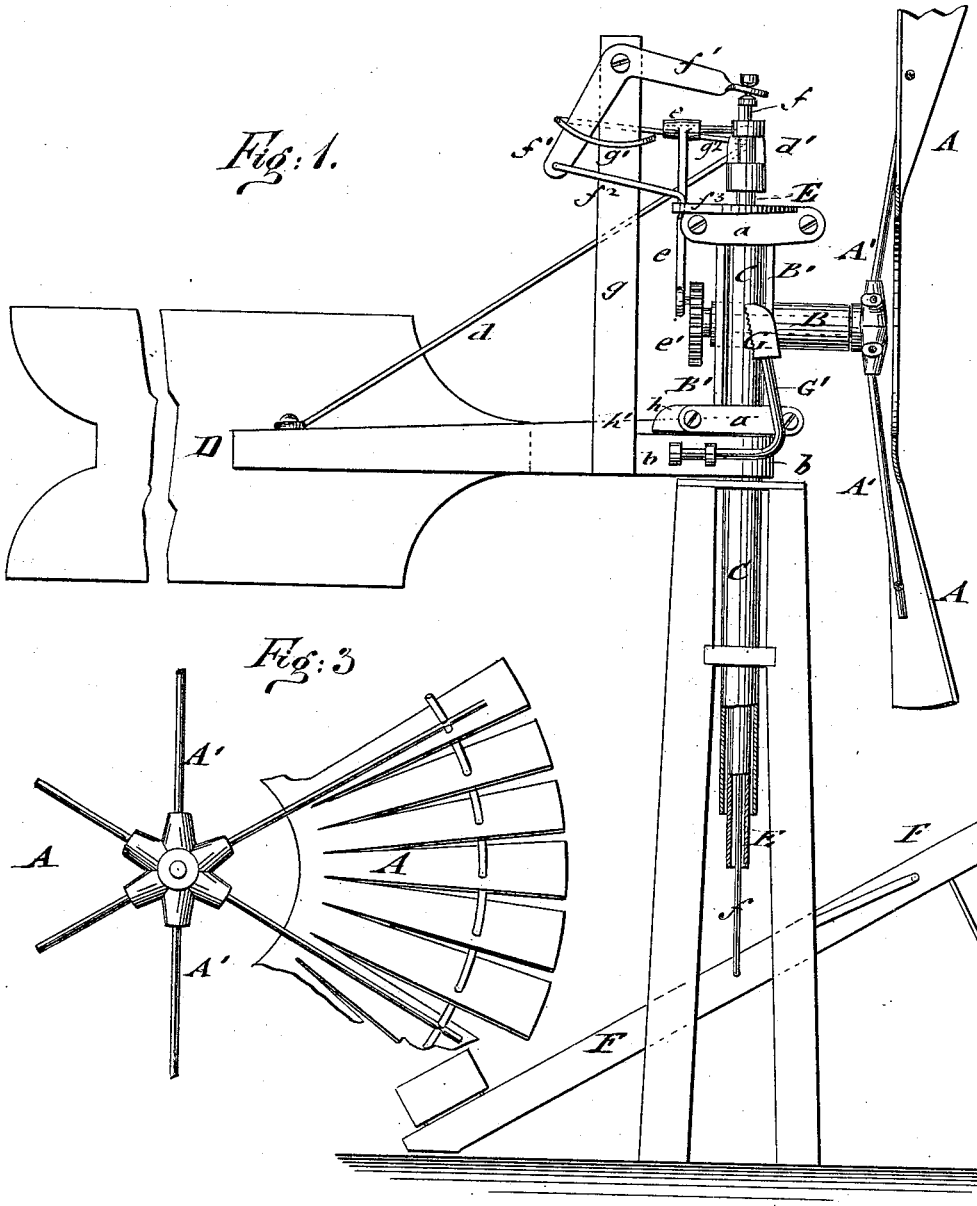
G. B, DEAN.
Windmill.

No. 201,166. Patented March 12, 1878.

Fig: 1.



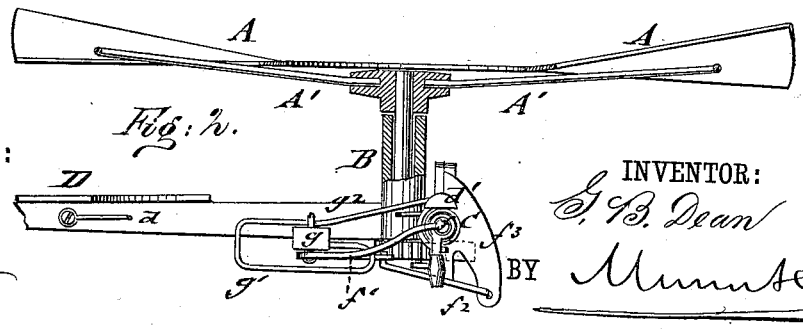


Fig: 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

GEORGE B. DEAN, OF LAMOILLE, ILLINOIS, ASSIGNOR TO HIMSELF AND MATTHEW BUHLER, OF SAME PLACE.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **201,166**, dated March 12, 1878; application filed January 15, 1878.

To all whom it may concern:

Be it known that I, GEORGE B. DEAN, of Lamoille, in the county of Bureau and State of Illinois, have invented a new and Improved Windmill, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a side elevation, partly in section, of my improved windmill. Fig. 2 is a top view, partly in horizontal section, of the same, showing the wheel in position parallel to the vane; and Fig. 3 is a front view of the wheel, showing the construction of the same in detail.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved windmill, for pumping and other purposes, that is constructed almost entirely of iron, with the exception of the wheel and vane, in a simple, cheap, and durable manner, and so as to dispense with the use of heavy and complicated turn-tables, oil-boxes, and joints.

The invention consists of a wheel whose shaft turns in a horizontal box of a horizontally-supported and swinging sleeve, that is stopped in one direction by a bottom ear or extension of T shape, forming contact with the vane-arm at right angles thereto by the brake, brake-arm, and lever-guard. The motion of the wheel is transferred by a crank-disk and rod to the pump-rod, and the wheel adjusted at any angle to the vane, to regulate its speed, by a bell-crank-lever connection of a center rod with a crank-arm of the revolving sleeve.

Referring to the drawing, A represents a wind-wheel that is constructed of radial wings secured to an exterior circle of a spider-frame, A′, of radial arms and solid center sockets of the wheel-shaft. The inner ends of the wings are united at some distance from the shaft, and connected by a stiffening brace-ring concentric thereto.

The shaft of the wind-wheel A revolves in a horizontal box, B, that is cast in one piece with a horizontal sleeve, B′, supported by cross-straps *a* on an upright tube, C, revolving in bearings of the mill-frame. The vane D swings also, by a suitable bearing, *b*, on the tube C, the horizontal sleeve B′ resting on the bearing of the vane. A brace-rod, *d*, extends from the arm of the vane in upward direction to a sleeve-support, *d′*, of the tubular pump-rod E, which latter is moved up and down inside of the supporting-tube C by a pivot-rod connection, *e*, with the crank-disk *e′* of the wheel-shaft.

The position of the wheel at any suitable angle to the vane is regulated by a connecting-rod, *f*, that extends from a treadle or lever, F, at the lower part of the mill-frame, through the tubular pump-rod, to some distance above the same, and connects by collars or stops at the upper end with a fulcrumed angular or bell-crank lever, f^1, whose lower arm is united by a rod or link, f^2, to a fixed crank-arm, f^3, of the horizontally-swinging sleeve B′. The bell-crank lever f^1 is fulcrumed to a vertical support or standard, *g*, of the vane, and the lower arm of the same guided in a guard device, g^1, of the standard *g*, said guard device retaining the wheel, when in position, either at right angles to the vane or parallel thereto. The guard and standard are connected by an extension-rod, g^2, with the braced sleeve *d′*, so as to stiffen the standard and secure the rigid position of guard and lever-fulcrum.

The revolving disk of the wheel-shaft is toothed or notched at the circumference, and thrown against a friction-brake, G, that is attached by a brake-rod, G′, to the arm of the vane. The friction-brake is applied to the crank disk and wheel, when the latter is in position, sidewise of the same, so as to stop the mill entirely. When the wheel is exposed to the full power of the wind, at right angles to the vane, it is retained in this position by the guard bearing on the bell-crank lever, and by a T-shaped ear or extension, *h*, of the lower cross-strap *a* of the sleeve B′, which extension fits into a groove, *h′*, of the vane-arm. The extension *h* forms an additional stop for the wheel, when it is thrown out of sail, by bearing against the brake-arm G′.

In this latter case a threefold stop for the wheel is obtained—namely, the brake, the guard, and the brake-rod and extension-rod. Thus a reliable construction of the wheel is obtained, which is brought closer to its hori-

zontal and vertical shafts than in other windmill constructions, and which transmits thereby its full power in any position to the pump-rod. The pump-rod receives a direct up-and-down motion from the crank-wheel without being cramped, so as to effectually accomplish the steady working of the mill.

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

1. As an improvement in windmills, the combination of the revolving wheel, horizontally-movable sleeve, having horizontal box, and separately-swinging vane, with mechanism to set the wheel parallel to, or at right angles, or at any other angle to the vane, substantially as and for the purpose set forth.

2. The combination of the horizontally-movable sleeve B′, having wheel-shaft-supporting box B, upper crank-arm f^3, and lower ear or extension h, with the vane D, a lever or treadle acted bell-crank lever, f^3, and a guard device, g^1, of the same, substantially as specified.

3. The horizontally-movable sleeve B′, being cast in one piece with the horizontal wheel-shaft box B, and having a lower ear or extension, h, in combination with the revolving wheel-shaft, having pump-operating crank-wheel e', and with a friction-brake, G, and fixed brake-rod G′ of the vane-arm, substantially as and for the purpose set forth.

GEORGE B. DEAN.

Witnesses:

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