

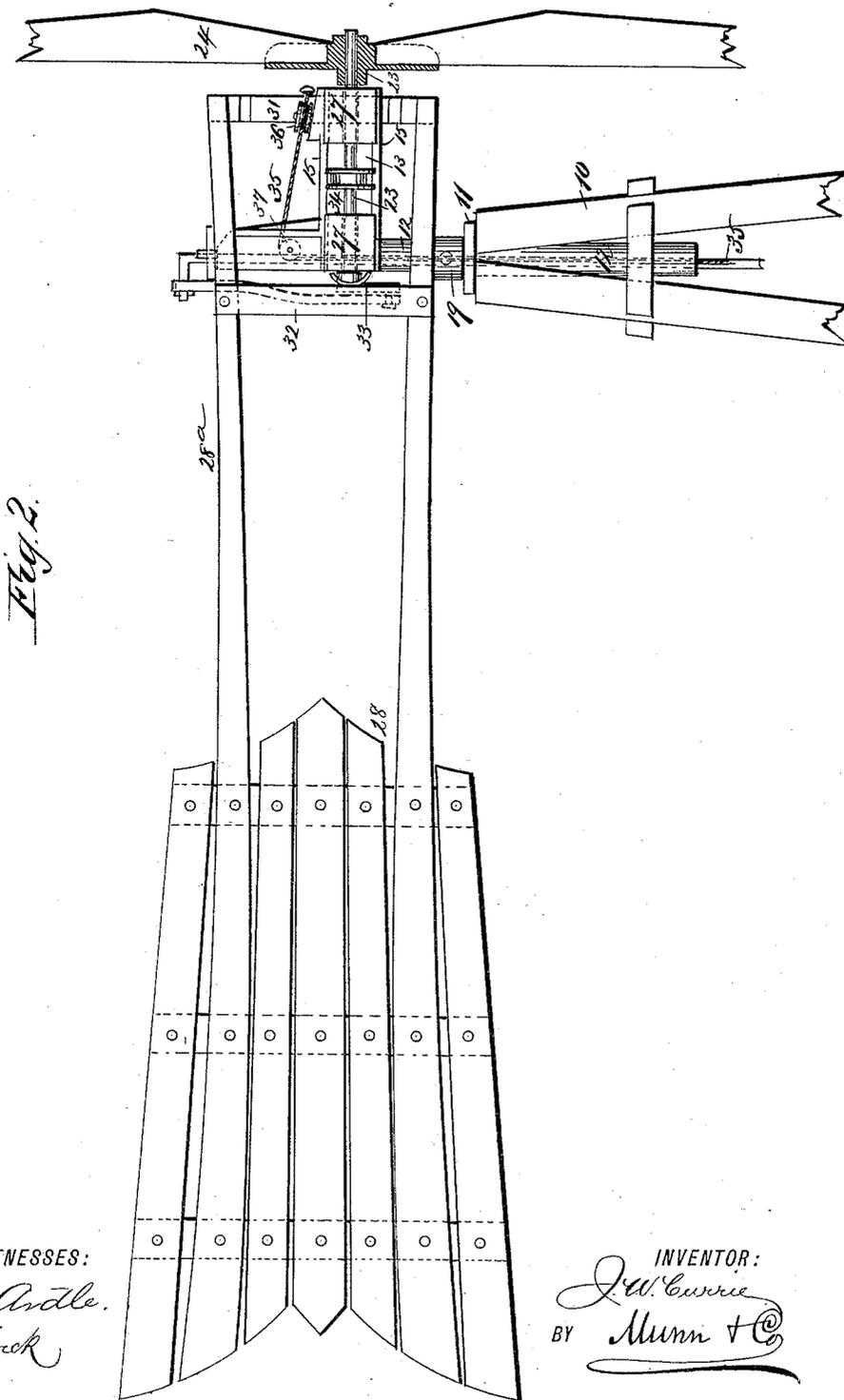
(No Model.)

3 Sheets—Sheet 2.

J. W. CURRIE.
WINDMILL.

No. 409,932.

Patented Aug. 27, 1889.



WITNESSES:

J. M. Andle.
L. Sedgwick

INVENTOR:

J. W. Currie
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ATTORNEYS.

(No Model.)

3 Sheets—Sheet 3.

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Fig. 4.

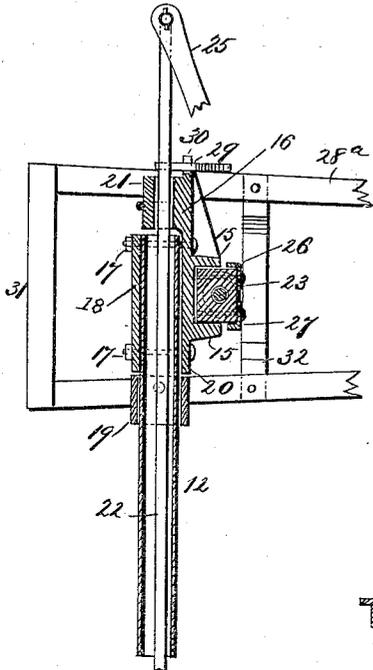


Fig. 3.

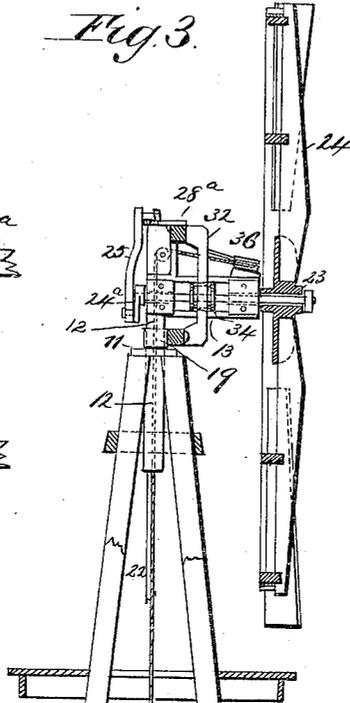


Fig. 5.

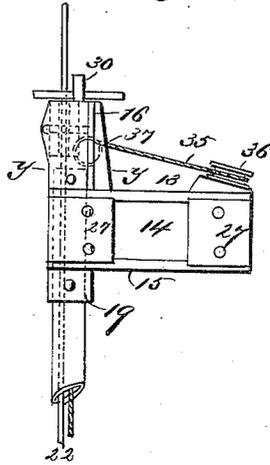
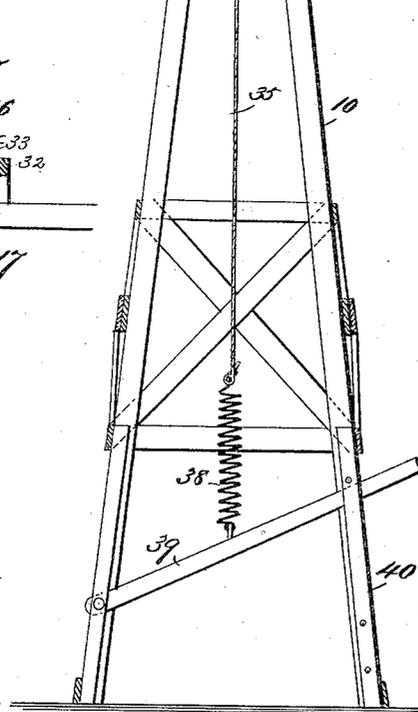
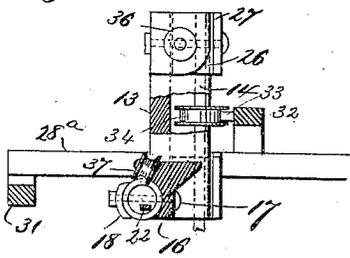


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOHN WELLS CURRIE, OF SOLOMON CITY, KANSAS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 409,932, dated August 27, 1889.

Application filed July 31, 1888. Serial No. 281,550. (No model.)

To all whom it may concern:

Be it known that I, JOHN WELLS CURRIE, of Solomon City, in the county of Dickinson and State of Kansas, have invented new and useful Improvements in Windmills, of which the following is a full, clear, and exact description.

My invention relates to windmills, and has for its object to simplify the construction of the same and so unite the several parts as that in the event one casting-box or other single part should break that portion only need be replaced.

The object of the invention is also to comparatively free the piston-rod from friction, to use a larger wheel-shaft than ordinary, and provide wooden boxes for said shaft which may be expeditiously and conveniently detached and replaced when found desirable; and the further object of the invention is to provide an improvement in the manner of pivoting the vane.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the windmill with the wheel thrown out of the wind, and Fig. 2 is a similar view with the wheel thrown in the wind, the wheel being in vertical section. Fig. 3 is a vertical section taken partially on line *xx* of Fig. 1. Fig. 4 is a vertical section through the piston-tube and the vane and wind-wheel frame. Fig. 5 is a side elevation of the windmill, illustrating the attachment thereto of the tube; and Fig. 6 is a transverse section through the vane and wheel frame on line *yy* of Fig. 5, a portion of said frame being broken away.

In carrying out the invention the tower is built in any approved manner and provided with a metal head 11, in which head the piston-tube 12 is held to rotate, the said tube being attached to the vane and wind-wheel frame 13. The vane and wind-wheel frame is constructed of metal, cast or otherwise manipulated to form a right angle, as best shown in

Fig. 5. The horizontal member 14 of the frame is provided at top and bottom with parallel longitudinal ribs 15, extending from the outer end across the vertical member 16, forming a groove for the blocks, hereinafter mentioned, in which the wind-wheel shaft is journaled. Upon the side of the frame 13 opposite to that containing the ribs 15 and at the angle of said frame the upper end of the tube 12 is vertically secured by passing bolts 17 through the vane and wheel frame, the tube, and a vertical semicircular clip 18, engaging the tube, as best shown in Figs. 4 and 6, the said bolts being secured by nuts, or in any suitable or approved manner. Upon the tube 12 a sleeve 19 is held to revolve, which sleeve, resting upon the head 11, retains the tube in position by reason of a bearing at its upper edge against the lower end of the clip 18, and a semicircular lug 20, extending vertically downward from the angle of the combined vane and wind-wheel frame. Above the tube 12 and in vertical alignment therewith a tubular bearing 21 is clipped or bolted to the upper side surface of the perpendicular member 16 of the frame 13, in which bearing, and also in the tube 12, the piston-rod 22 is held to reciprocate. The piston-rod 22 is connected with the horizontal shaft 23 of the wind-wheel 24 by a crank 24^a and pitman 25, the former being secured to the wheel-shaft and the latter pivotally connected to the said crank and piston-rod, as best shown in Fig. 3. The wind-wheel shaft 23 is journaled in wooden bearing-blocks or boxes 26, detachably attached to the horizontal member of the combined vane and wind-wheel frame, the attachment being effected by providing the outer surface of the blocks with a detachable clip or metal cover-plate 27 and bolting through the cover and block into the frame. The pitman 25 is preferably made of wood, and the wooden boxes or bearing-blocks are so secured to the frame that the downward pressure of the wheel-shaft will be against the grain. The clips or covers 27 for the boxes or bearing-blocks are purposed to retain the same in position and prevent splitting. By reason of the solid frame 13, I am enabled to use a much larger wheel-shaft than usual and also a larger wheel. The

vane 28 is provided with an apertured horizontal lug 29 integral with the upper edge a short distance from the forward end, which lug is pivoted through the medium of said aperture upon a pin-like projection 30, integral with the upper end of the vertical member of the combined vane and wind-wheel frame, as best shown in Fig. 4. The lower side of the vane vertically aligning the upper pivotal point is secured to the sleeve 19. The forward end of the turn-table 28^a of the vane 28 is provided with a cross-bar 31, adapted when the wind-wheel is thrown into the wind, as illustrated in Fig. 2, to engage the frame 13 upon the smooth face of the horizontal member and hold the wheel at right angles to the vane. Immediately to the rear of the pivotal point of the said turn-table a second cross-bar 32 is attached, provided with a semicircular brake-shoe 33, which brake-shoe is adapted to engage with a grooved pulley 34, secured upon the wheel-shaft, as shown in Fig. 3, when the wheel is carried out of the wind or parallel with the vane. The vane is manipulated from the ground by a rope or chain 35, attached to the forward end of said vane, as shown in Fig. 2, which rope or chain is passed around a pulley 36, pivoted upon the horizontal member of the frame 13, over a second pulley 37, pivoted upon the vertical member of said frame and down through the tube 12. The lower end of the rope is secured to a coil or spiral spring 38, which spring is in turn secured to a lever 39, pivoted to the tower and sliding in a suitable rack 40.

By connecting the pull rope or chain to the coil-spring any desired tension may be applied and the mill made to run fast or slow. The spring, moreover, allows the wheel to take more or less wind, as required, insuring a uniform speed.

By placing the wheel-shaft at one side the center of the piston-rod the mill may do its work upon the upstroke of the crank, and it will be observed, also, that there is no side pressure upon the piston-rod, whereby power is economized and the piston-rod preserved from wear.

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

1. The hereinbefore-described improvement in windmills, comprising the pump-rod tube,

a sleeve loosely mounted thereon, a pump-rod reciprocating in said tube, a wind-wheel frame, substantially as shown and described, detachably secured to the tube above the sleeve, journal-boxes detachably secured to the said frame, a wheel-shaft journaled in said boxes, a crank and pitman connection between said shaft and pump-rod, and the vane, said vane provided with forwardly-projecting arms, one of said arms (the upper) pivoted upon the wheel-frame and the other connected to the sleeve, said connections being in the same vertical plane, substantially as and for the purpose set forth.

2. In a windmill, the combination of the wind-wheel frame, the pump-rod tube detachably secured thereto, the detachable boxes secured to wheel-frame, as shown, a sleeve loosely mounted on said tube below the wheel-frame and the wind-wheel shaft, the vane 28, disposed to one side of the tube, provided with forwardly-extending arms 28^a, pivoted, one (the upper) to the wheel-frame, the other to the sleeve, said connections being in the same vertical plane, and a stop-bar 31, secured to one side of the ends of the arms 28^a, said bar projected laterally from said arms, whereby the said vane may be turned in direct line with the shaft when the mill is in operation, said parts all arranged substantially as and for the purpose described.

3. The combination, with the wind-wheel frame, the piston-rod tube secured thereto, a sleeve 19, loosely mounted on said tube, and the wheel-shaft journaled in bearing-boxes secured to the wheel-frame, provided with a brake-pulley 34, of the vane 28, disposed to one side of the tube, provided with forwardly-extending arms 28^a, one of which (the upper) is pivoted upon the wheel-frame, as at 29 30, the other connected to the sleeve 19, cross-bars 31 32, secured to the arms 28^a, one at each side of their pivotal points, and a brake-shoe 33, attached to the inner bar, the bar 31 limiting the outward movement of the vane when it is turned to the wind, said brake-shoe engaging the brake-pulley 34 when the vane is turned out of the wind, substantially as shown and described.

JOHN WELLS CURRIE.

Witnesses:

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GEORGE E. DEWAR.