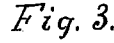
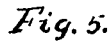
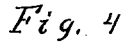
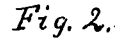
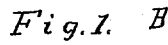


L. B. DENTON.
WINDMILL.

Patented Mar. 7, 1893.



George H. White.
J. F. Tucker

LEMMI B. DENTON
 BY *Isidore J. Kelley*
 ATTORNEY.

UNITED STATES PATENT OFFICE.

LEMI B. DENTON, OF GRAND RAPIDS, MICHIGAN.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 492,916, dated March 7, 1893.

Application filed March 24, 1892. Serial No. 426,286. (No model.)

To all whom it may concern:

Be it known that I, LEMI B. DENTON, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

My invention relates to improvements in wind mills used for pumping water from wells &c.; and its objects are: first, to dispense with the use of a crank for transmitting motion to the pitman of the pump; second, to provide a wind mill upon which all working shafts will have a bearing at each side of the working parts; and, third, to provide a wind mill with which the leverage of the wheel may be increased, or the motion of the crank shaft diminished without diminishing the number of strokes of the pump. I attain these results by the mechanism illustrated in the accompanying drawings in which

Figure 1 is a side elevation of the upper portion of my device. Fig. 2. is a front elevation of the same. Fig. 3. is a top plan of the same. Fig. 4. is a side, and Fig. 5. an end plan of my lever.

Similar letters refer to similar parts throughout the several views.

The wind wheel Q, the tube B, the frame A the shaft L, the gear wheels D and D' and the vane I and its connections K and K' are old in wind mills, and as I claim nothing upon the derrick I will not describe or show any portion of the mill except the head or upper frame to which my improvements are attached.

My improvements consist of the lever E which is pivoted to the arm or support R. at P by means of a bolt passing through the hole e' and into said support in such a manner that the opposite end of the lever is left free to oscillate vertically, as indicated by the dotted lines E' in Fig. 1., for the purpose of operating the pitman F, of the pump. The side of this lever next to the wheel D is provided with a groove or passage way E^2 of a proper size and form to receive, and allow the free passage, therethrough, of the anti-friction rollers, d , two of which are secured to, and project out from the face of the wheel in the relative position of d . and the dotted lines 1 in Fig. 1. and are made to turn freely upon pins passing through them and into the wheel.

These rollers travel with the wheel and are so arranged that one will engage with, or pass into the groove E^2 of the lever when the lever is in the position indicated by the dotted lines E' and in its course through 1. 2 &c. will carry the lever to the position indicated by the solid lines E in Fig. 1., and when it passes down, and out of the groove in the lever, as at 3, the lever will be thrown to position in time to receive the second roller thus making two complete strokes of the pump with every revolution of the wheel D. By this means I dispense with the use of a crank for driving the pitman F, of the pump, and the peculiar form of the lever renders it possible for me to attach an arm A to the standard A' for the support of the box O' and to extend the shaft S that supports the wheel D beyond the lever E so that it is supported at both ends in the boxes O O' and the wheel D is supported between two bearings thus averting the danger of pounding, and wearing, incident upon the use of a single box, and an overhanging shaft necessary when using an ordinary crank connection upon wind mills.

The free, or oscillating end of my lever is provided with an offset e^2 upon one side, of a proper width and size to allow of the free passage of the pitman F between the end of the lever and the wheel D; and the end of the lever is connected with the pitman by means of a link G attached at one end to the lever, and at the other end to the pitman as indicated in Figs. 1 and 2. Dispensing with the use of the crank also enables me to throw the wheel D far enough to one side of the line of the pitman to allow of the use of the box M' for the support of the end of the main shaft L, opposite to that which supports the wind wheel, thus supporting the working gear D' between two bearings, and dispensing with the overhanging gear and unsupported shaft in common use upon crank mills.

The upper end of my pitman F is supported above the point of connection with the lever, by means of a box or bearing f , in the end of the plate F', through which it is adjusted to work freely, and hold the pitman always in perfect alignment.

The vane I is supported upon the upright rod K which in turn is actuated by the spiral spring K' and is manipulated by means of the

rope, cable, or chain J J' secured at one end to the ring upon the arm *i*; the bight of the rope passing, first, through the loop *h*² in the end of the brake arm H, thence through the anchor loop *j* on the standard A' and thence down through the tube B to a convenient position below, within easy reach of the operator.

The brake consists of a lever or rod H fulcrumed, or pivoted to the box arm N, with the upper end *h* thrown over against, and fitted to act upon the prepared surface *m* upon the hub M and the opposite end prepared with a loop *h*² for the reception of the rope or chain J J' in such a manner that when the operator draws upon the end J', thereof, to throw the vane in position to throw the wind wheel out of the wind and stop it the brake is at the same time, and by the same action applied; the action of said rope being from the arm *i* on the vane, through the loop *h*² on the brake lever and to the anchor loop *j* thus acting directly from the loops *i* and *j* upon the brake lever H.

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

1. The combination with a wind mill, of a lever pivoted to one end to the frame, and connected at the other end with the pitman, and anti-friction rollers for operating the same, substantially as specified.

2. The combination with a back-gear wind-mill of a lever provided with an open groove on one surface and pivoted at one end to the mill frame, the other end connected with the pitman of the mill, and anti-friction rollers for operating the same, substantially as, and for the purpose set forth.

3. The combination with a wind mill of a lever for operating the pitman, anti-friction rollers for operating the lever and a brake arranged to act upon the hub of the wind wheel simultaneously with the manipulation of the vane by the rope J; with bearings for both ends of all shafts, substantially as, and for the purpose set forth.

Signed at Grand Rapids, Michigan, this 21st day of March, A. D. 1892.

LEMI B. DENTON.

In presence of—

IRETT F. TUCKER,
ITHIEL J. CILLEY.