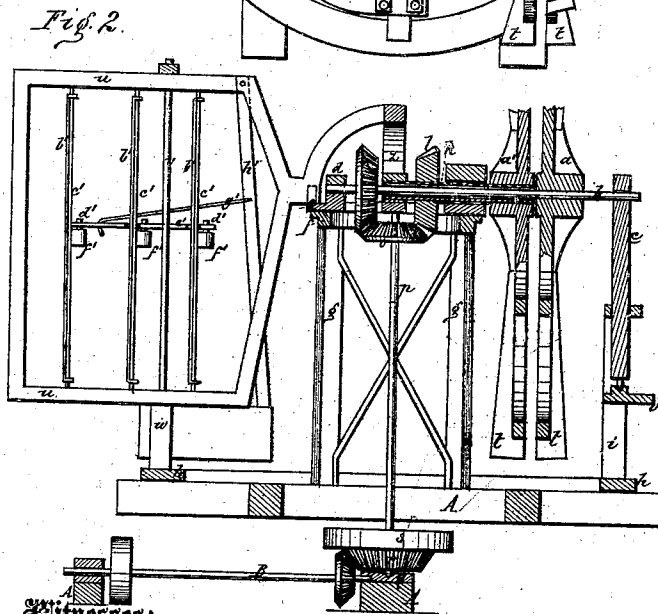
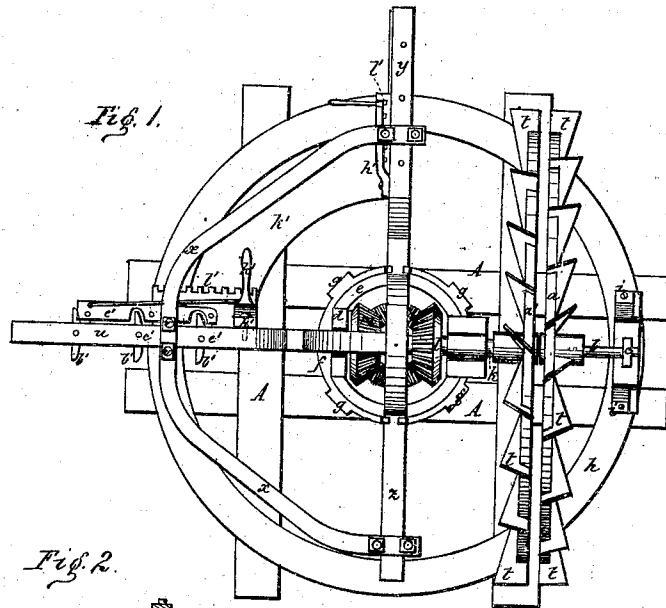


P. Bailey,

Wind Mill.

No. 113243.

Patented Apr. 4. 1871.



Witnesses:

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UNITED STATES PATENT OFFICE.

PETER BAILEY, OF SMYRNA, IOWA.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. 113,243, dated April 4, 1871.

To all whom it may concern:

Be it known that I, PETER BAILEY, of Smyrna, in the county of Clarke and State of Iowa, have invented a new and Improved Windmill; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part of this specification, in which—

Figure 1 is a top view, and Fig. 2 is a sectional elevation.

This invention relates to a windmill constructed with a double wind-wheel, the two parts of which are mounted side by side on the same shaft, one part being affixed firmly thereto, and the other part being placed loosely thereon, said parts being connected with separate bevel-gears that engage with the same cog-wheel, the latter being fixed upon a shaft that communicates motion to any train of machinery, the two parts of the wind-wheel revolving in opposite directions, and the apparatus being supplied with rudders that have adjustable wings, by regulating which the wind-wheels may be kept side to the wind, or inclined to the wind, or edge to the wind, at pleasure, the wheels, when in this last-mentioned position, being stopped.

Referring to the drawing, *a a'* are the two parts of the double wind-wheel, the part *a* being fixed upon a horizontal shaft, *b*, one end of which is mounted in a vertical standard, *c*, and the other end of which is mounted in a box, *d*, that is secured upon a ring, *e*, which rests upon a ring, *f*, that is fastened upon the tops of four vertical standards, *g*, which are stepped in the frame *A*, that sustains the whole mechanism, and, among other things, sustains a horizontal rotary ring, *h*, which travels upon friction-rollers suitably set in the frame *A*.

To the upper surface of the ring *h* are secured the legs *i*, that sustain the standard *c*, the latter being stepped in a cross-bar, *j*, which is cast with the legs *i*.

The wheel *a'* is fixed upon a tubular shaft, *k*, that incloses the solid shaft *b*. A bevel-gear, *l*, is also fixed upon said tubular shaft, and upon the main shaft a bevel-gear, *m*, is fixed, said gears connecting with opposite sides of a cog-wheel, *o*, mounted at the top of a vertical shaft, *p*, stationed between the standards *g*.

The shaft *p* is stopped in a block, *q*, that

forms part of the frame-work *A*. Near the lower end of the shaft *p* may be mounted a bevel-gear, *r*, and a belt-wheel, *s*. *B* is a shaft driven by the gear *r*.

The wheels *a a'* revolve in opposite directions, and exert double the force upon the mechanism which they drive that either alone could exert. The wheels are provided with radial wings *t*, which are set at an inclination upward and outward to the sides of the wheels, the wings of one wheel slanting in an opposite direction from those of the other, as shown in Fig. 1. The wheels, therefore, only revolve when the wind strikes their sides, and are stationary as long as the wind blows against their rims.

In Fig. 2, *u* is a metal frame placed between a pair of vertical stay-rods, *v*, that are stepped in a block, *w*, which is secured to the ring *h*, said stay-rods being at their tops secured in a brace, *x*, that is fastened at one extremity to the top of a frame, *y*, similar in all respects to the frame *u*, and placed at a quadrant's interval therefrom, the other extremity of the brace *x* being fastened to a rod, *z*, that forms a continuation of the frame *y*, projecting to the opposite side of the ring *e* therefrom.

The frame *y* and rod *z* are secured in any suitable manner to the ring *e*. The frame *u* is likewise secured at one point to the frame *e*, and at another point to the bowed portion of the rod *z*. The whole mechanism that is mounted on the ring *e* is rotated with the latter by the force of wind.

The frames *u* and *y* are provided with vertical wings *b'*, that are secured upon pivot-rods *c'*.

The wings *b'* are all provided with transverse lugs *f'*, extending horizontally from their central parts, which lugs are furnished with vertical pins *d'*. The wings of each frame are connected by rods *e'*, which rest on the lugs *f'*, and are entered by the pins *d'*. These connecting-rods are notched, as shown in Fig. 1, so as to permit the free vibration of the wings.

Connecting-rods *g'* join the rods *e'* to levers *h'*, that are pivoted at their upper ends, one to the frame *u*, and the other to the frame *y*.

By means of the levers *h'* the wings *b'* can be conveniently opened or closed, all the wings of each set moving together.

A plate, *k'*, secured to the ring *h*, between

the two frames, and turned upward a suitable distance at each end, is provided with racks l' at each extremity, for fastening the levers h' in any desired position.

The frames $u y$, when thus provided with wings, operate as rudders, in this wise: Suppose the wings of the frame u to be closed and the wind to strike them fairly on the side. The consequence will be that the frame and wind-wheels will be whirled around until the outer sides of the wheels are presented full to the wind. If the wings of the frame y be meanwhile open, the wind will pass between them, and the wheels remain side to the wind, and rotating in opposite directions as long as the wind holds in that direction. If the wings of the frame y be closed, then the wind will act upon them with the effect to prevent the wheels from being whirled so far as to present their sides square to the wind, and the wheels will stand inclined to the direction of the wind, or "quartering."

To stop the wheels, the wings of the frame u must be opened, and those of the frame y closed, when the wheels will whirl round till they present their rims to the wind, and then they will stop.

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

1. In a windmill, two oppositely-revolving wind-wheels, $a a'$, mounted upon one shaft and connected with independent gears, which engage with one and the same mechanism, as and for the purpose specified.

2. The combination of the wheel or wheels of a windmill with the rudders $u y$, one placed in line with the shaft of the wheels, and the other at right angles thereto, both rudders being furnished with adjustable wings t , as specified.

3. The combination of frame u , wings b' , connecting-rods $e' g'$, lever h' , and rack l' , as described.

4. The combination of the wheels $a a'$, rudders $u y$, rings $e f h$, and standards g , as set forth.

5. The combination of the frames $u y$, brace x , and bar z , as explained.

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Witnesses:

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