W. A. ALDRICH.
Wind-Engines.

No. 207,701. Patented Sept. 3, 1878.

Fig. 1.

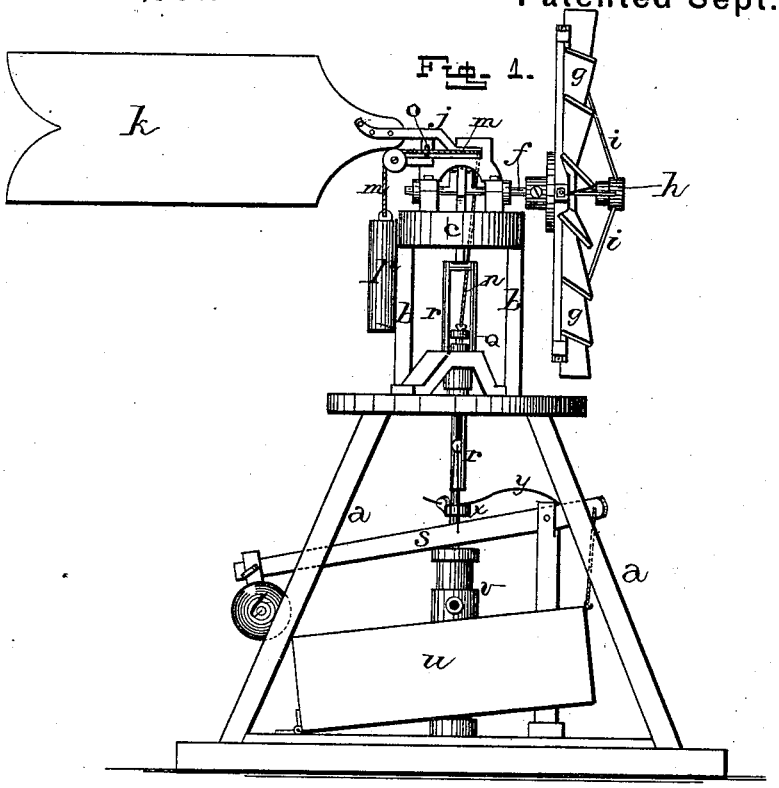


Fig. 5.

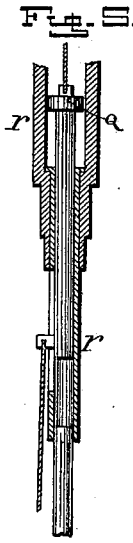


Fig. 4.

Fig. 2.

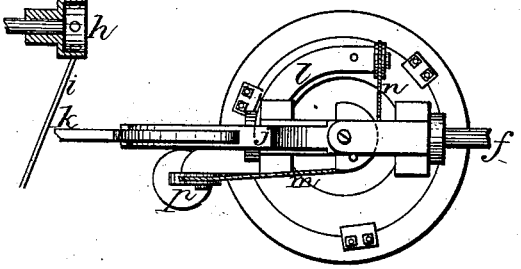
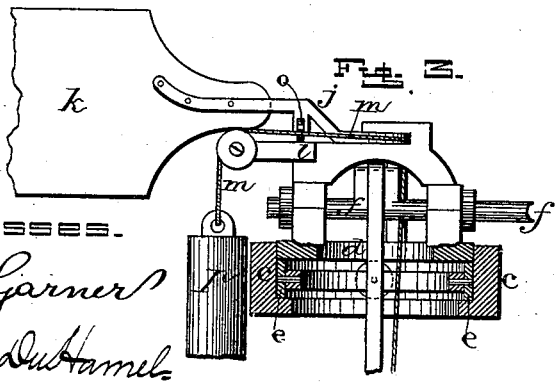


Fig. 3.



Witnesses.
J. W. Garner
Jno. F. DuHamel

Inventor.
W. A. Aldrich,
per
F. A. Lehmann,
Atty

UNITED STATES PATENT OFFICE.

WILLIAM A. ALDRICH, OF INGERSOLL, MICHIGAN.

IMPROVEMENT IN WIND-ENGINES.

Specification forming part of Letters Patent No. **207,701**, dated September 3, 1878; application filed April 17, 1878.

To all whom it may concern:

Be it known that I, WM. A. ALDRICH, of Ingersoll, in the county of Clinton and State of Michigan, have invented certain new and useful Improvements in Windmills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in windmills; and it consists in the arrangement and combination of devices that will be more fully described hereinafter.

The accompanying drawings represent my invention.

a represents a suitable derrick, upon the top of which is erected the open frame-work *b*. On top of this frame-work *b* is secured the iron ring *c*, and inside of this ring is placed the turn-table *d*, which revolves around upon the friction-rollers *e*, as shown. Journaled upon this turn-table is the wheel-shaft *f*, to which is secured the wheel *g*, and to the extreme outer end of which is fastened the collar *h*. The outer edge of this collar projects beyond the end of the shaft, so as to form a flange, and through this flange are passed the brace-rods *i*, which have their outer ends to pass diagonally through the ends of the radial timbers of the wheel, where they are secured by nuts. By means of these braces the wheel is made very strong and secure, and is always kept straight.

Should one side of the wheel warp or become become bent in any manner, by tightening the nuts the wheel can be trued up again and made as perfect as before. It will be noticed that these rods are perfectly straight, so that when the nuts are tightened the strain will come directly on the edge of the wheel and force it forward.

Pivoted just over the center of the turn-table is the arm *j*, to which the vane *k* is secured, and this arm is provided with a friction-roller, *o*, which supports the vane and travels back and forth over the track *l* formed for it on the table.

The inner end of the arm *j* forms a grooved semicircle, to which are fastened the two ropes or chains *m n*. The rope *m* extends backward from the wheel over a pulley, and has a weight, *p*, fastened to it, and which draws the vane back into position again after it has been turned, so as to throw the wheel into the wind. The rope *n* passes outward over a pulley, then downward, and is fastened to the upper end of the rod *q*, which moves vertically in the hollow part of the piston-rod *r*. To the lower end of this rod *q* is fastened the lever *s*, by means of a cord, and which has the weight *t* fastened to one end, and the tilting water-trough *u* to the other. This trough is fastened at one end, so as to hold it in its proper relation to the pump *v*, while its other end is free to rise and fall, being controlled by the weight *t* and the amount of water pumped into it.

As soon as a sufficient quantity of water has been pumped into the trough to overcome the weight *t* the free end of the trough sinks downward, thereby taking all of the weight *t* from the rod *q*, when the rod at once rises upward, and the weight *p* throws the vane around into line with the wheel, thereby turning the wheel out of the wind, when the pump ceases to work. As soon as the water in the trough has fallen so that its weight no longer overcomes the weight *t* the free end of the trough rises, when the long end of the lever sinks downward, and, through the rod *q*, draws the vane around at right angles to the wheel, thereby throwing the wheel into the wind again. Thus, whenever a sufficient quantity of water has been pumped, the wheels stops, and when the water sinks below a certain quantity the wheel is brought into position again. By making the upper end of the piston-rod hollow, and placing the rod *q* therein, the parts are made compact, and a guide is formed for the rod, so that it is impossible for it to get out of position.

To the piston-rod is fastened the collar *x*, to which the inner end of the spring *y* is attached. This spring serves to bear upward against the downstroke of the piston-rod, and thus cause the wheel to run more evenly, and not to exert its only power upon the upstroke.

I am aware that braces have been used for strengthening the wheel, and I do not therefore claim the use of them broadly.

Having thus described my invention, I claim—

1. The combination of the pivoted vane *k*,

having a weight, *p*, fastened to it on one side, and a rope or chain, *n*, rod *q*, weighted lever *s*, and hinged trough *u* on the other, substantially as shown.

2. The piston-rod *r*, made hollow, so as to receive the rod *q*, which rod is connected to the vane at its upper end, and the weighted lever at its lower end, substantially as set forth.

3. The collar *h*, projecting beyond the end of the shaft *f*, and having the rearwardly-inclined braces *i* passed outwardly through it and through the outer end of the radial arms of the wheel, and held and made adjustable by means of nuts on their outer ends, whereby the wheel is kept straight, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of April, 1878.

WILLIAM ADELLBERT ALDRICH.

Witnesses:

GEO. N. BERRY,

CHAS. MCALLISTER.