L. BAKER.

Wind-Mills.

No. 154,631. Patented Sept. 1, 1874.

Fig. 1

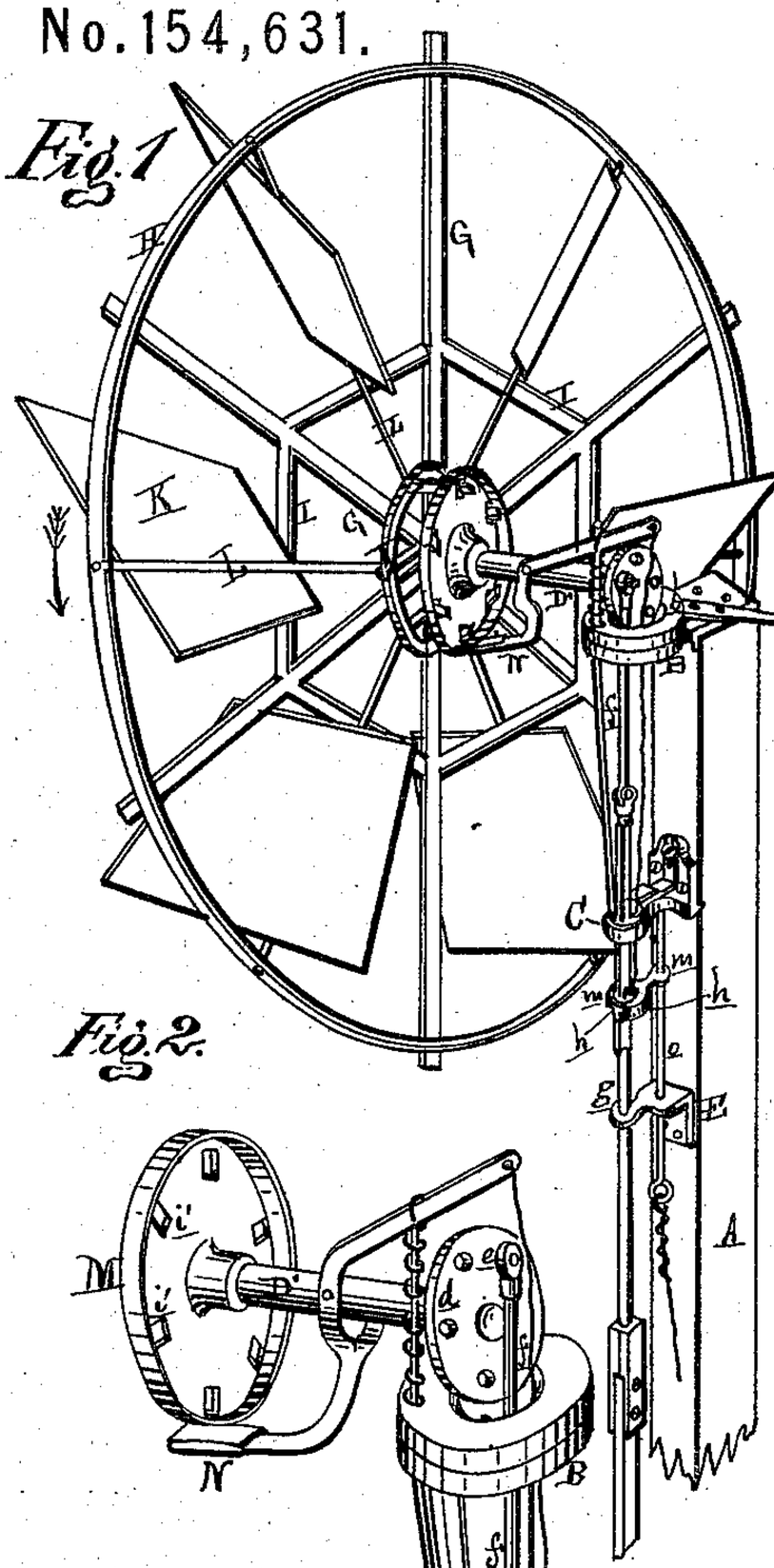


Fig. 2.

Fig. 3.

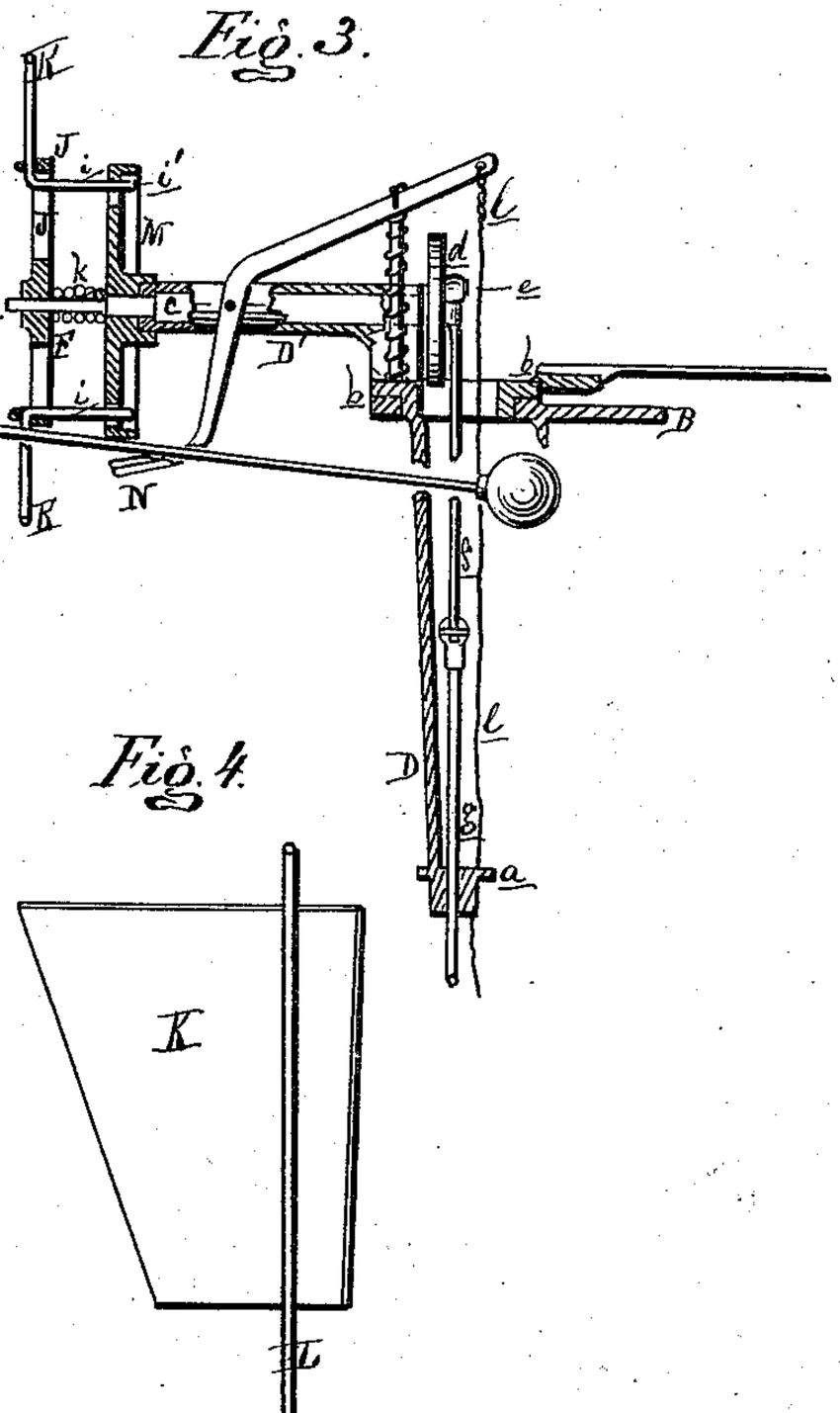


Fig. 4.

Fig. 5.

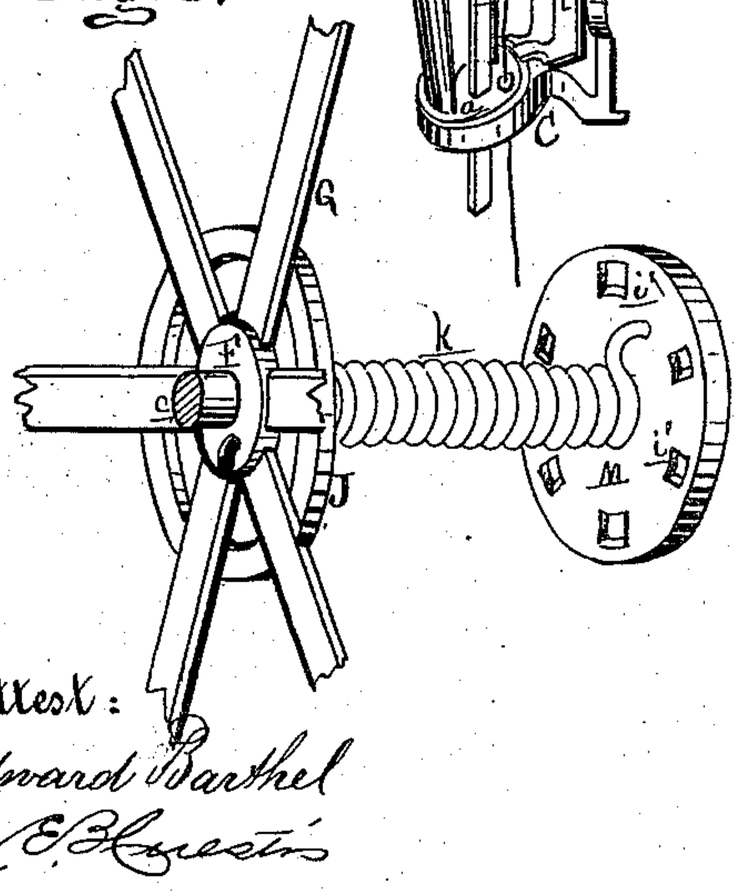
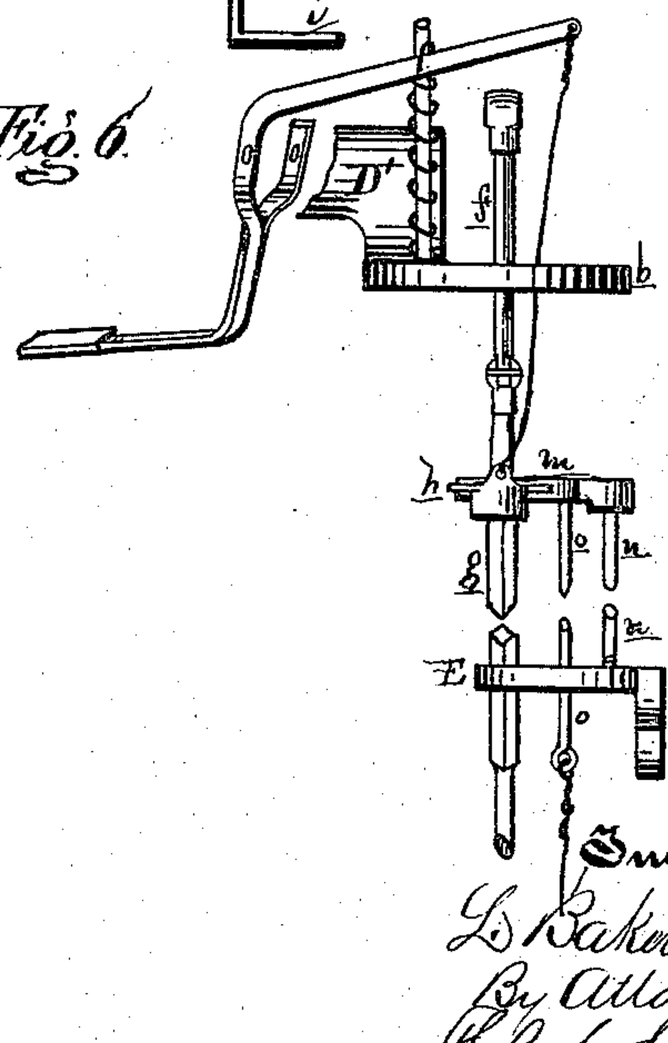


Fig. 6.



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UNITED STATES PATENT OFFICE.

LEANDER BAKER, OF MORENCI, MICHIGAN.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **154,631**, dated September 1, 1874; application filed June 17, 1874.

To all whom it may concern:

Be it known that I, LEANDER BAKER, of Morenci, in the county of Lenawee and State of Michigan, have invented an Improvement in Windmills, of which the following is a specification:

This invention has for its object to so construct a windmill as that the wheel will always present itself to the wind without using a tail or vane for that purpose, and to so hang the sails that when the wind increases in velocity, so as to drive the wheel faster than the rate to which it is adjusted, the sails will automatically turn partially out of the wind, and thus govern the speed; also, to provide a means for turning the sails entirely out of the wind when it is desired to stop the wheel, as more fully hereinafter set forth.

Figure 1 is a partial perspective view. Fig. 2 is a perspective view of the lever-disk, face-plate, pitman, and sleeve. Fig. 3 is a vertical section of the sleeve and standard. Fig. 4 is a detached perspective view of one sail and its shaft and lever. Fig. 5 is a rear perspective view of the spider and lever-disk, with their connecting-spring. Fig. 6 is a detail elevation of the brake and its connections.

In the drawing, A represents the post which carries the wheel, on top of which is a cast-iron ring-bracket, B, and lower down another bracket-ring, C, upon which rests the circular base *a* of a standard, D, having an annular bearing, *b*, at its top, which rests upon the bracket B. With the bearing *b* is cast a horizontal sleeve, D′, in which is journaled the wind-wheel shaft *c*, carrying at its inner end a face-plate, *d*, having a wrist-pin, *e*, on which is strapped a connecting-rod, *f*, whose lower end engages with a square plunger-rod, *g*, which passes down through a square opening in the base *a*, also through a sliding collar, *h*, below which it is rounded, and passes through the lower guide-bracket E to engage with the pump-plunger. F is the spider of the wind-wheel, secured on the projecting end of the shaft *c*, carrying the arms G, to whose outer ends is secured a wood or metal hoop, H. A hexagonal frame is made by the introduction of the braces I between the arms, and nearer the center of the wheel a metallic ring, J, is bolted to the arms. K are the sails, trapezoidal in outline, each mounted on a shaft, L, passing through it, so as to divide it in two unequal areas. The wheel is always to leeward of the post, and not to windward of it, as are ordinary wheels which are provided with a tail or guide vane. The wider parts of the sails stand to leeward of their axes, and thus keep the wheel-axis in the plane of the direction of the wind. Each sail-shaft L is journaled at its outer end to the hoop midway between the arms. It also has a bearing in a socket formed in the front edge of the brace I, while its inner end passes through the eye of a staple in the back edge of the ring J, inside of which it is bent toward the post to form a lever, *i*. The lever *i* of each shaft projects into a notch, *i′*, in a metal disk, M, sleeved on the shaft *c* against the end of the sleeve D′. Between the hub and disk a strong spring, *k*, is spirally coiled on the shaft *c*, one end being hooked into the disk and the other into the hub, the slot in which is of such width, and the lever bent to such an angle, that the tension of the spring will normally hold the sail to the proper angle to have the full effect of the wind, while in the other direction the play of the lever is limited to so rotating the shaft L as to bring the sail edgewise to the wind, to which it will then offer no resistance; the wheel then will not revolve. The spring is placed under such torsion that, with a moderate breeze, it will resist any tendency of the disk to rotate under the leverage of the sail-arms while the wheel is doing its work, pumping or otherwise, at a proper rate or speed. When the wind increases in velocity or force, it tends to increase the speed of the wheel; the spring will then yield and allow the disk to rotate a little, and the sails to turn partially out of the wind, and thus reduce the speed of the wheel to the required motion. To stop the wheel, the sails are thrown out of the wind by a friction-brake, N, acting on the periphery of the disk, actuated by a wire, *l*, connected to the arm or lever of the brake, which is pivoted to the sleeve D′. The wire passes down through the bracket-bearings B C, and is secured to an eye on the collar *h*, which revolves with the operative parts, so that the wire cannot twist. *m* is a grooved

segment, embracing the flange of the collar, and also has vertical sliding movement on a guide-rod, *n*, erected between the brackets D E. A rod, *o*, is attached to the segment, by means of which the latter may be pulled down, to force the brake against the disk M, to resist its rotation with the wheel, and thus throw the sails out of the wind.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The slotted disk M, spring *k*, sails K, shafts L, and their arms *i*, arranged with relation to the shaft *c* and ring J, substantially as and for the purpose set forth.

2. The combination of the brake N, wire *l*, collar *h*, segment *m*, and rod *o* with the sleeve D′, disk M, bearing *a*, and plunger-rod *g*, substantially as and for the purpose set forth.

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