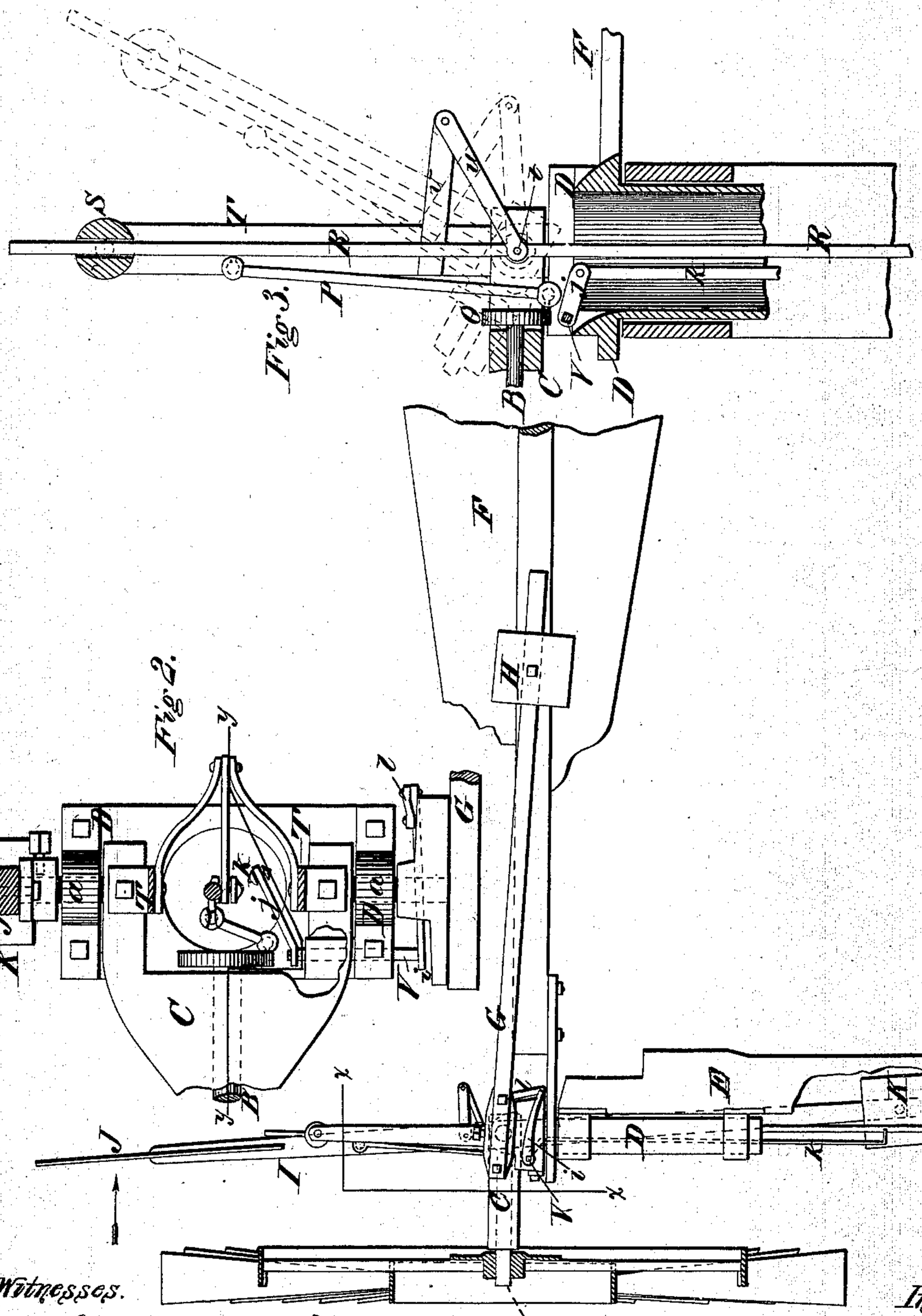
A. RAYMOND.

Wind-Wheels.

No. 139,189. Patented May 20, 1873.



Witnesses.

Harry King.

Harry Coleman.

Inventor.

Albert Raymond

By his Attys

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UNITED STATES PATENT OFFICE.

ALBERT RAYMOND, OF WAUPUN, WISCONSIN.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **139,189**, dated May 20, 1873; application filed April 5, 1873.

To all whom it may concern:

Be it known that I, ALBERT RAYMOND, of Waupun, in the county of Fond du Lac and State of Wisconsin, have invented certain Improvements in Wind-Wheels, of which the following is a specification:

My invention consists in mounting the wheel on a pivoted frame, which is provided with a sail or blade and with a weighted arm, so arranged that when the wind increases it tips the wheel over back by means of the sail or blade, and that as the wind decreases the weight brings the wheel back again to its vertical position; and the invention also further consists in a novel arrangement of parts by which a uniform stroke is communicated to the pump-rod, notwithstanding the tipping motion of the wheel.

Figure 1 is a side or edge view of the wheel; Fig. 2, a horizontal section of the same on the line *x x*; Fig. 3, a vertical section on the line *y y*.

A represents the wheel, constructed in an ordinary manner, and secured rigidly to the front end of a horizontal shaft, B, which is mounted in a head-block or frame, C. The head-block is provided at its rear end with horizontal trunnions or journals, *a*, which lie at right angles to the shaft, and are mounted in ears on the upper end of a vertical tubular journal or pivot, D, as shown, so that the head-block can be turned upward on its trunnions; and the wheel thereby tipped backward until it reaches a horizontal position. As the wheel tips back its face is of course presented with increasing obliquity to the wind, until, finally, when it reaches a horizontal position, the wind acts directly against its edge, and it consequently stands still. The tubular pivot or journal D which supports the head-block is mounted so as to turn freely in bearings on a post or support, E, and it has secured to it a vane, F, which serves to keep the wheel faced toward the wind, as usual. One of the journals *a* of the head-block C is provided with a horizontal arm, G, which extends backward and has mounted upon it an adjustable weight, H, which serves to counterbalance the wheel so that it may be tipped easily. The other journal has secured rigidly to it a vertical bar or arm, I, which is provided at its upper end with a sail or blade, J, and at its lower end with an adjustable weight, K, as shown. During an ordinary breeze, when the wheel is running within the speed to which it is limited, it stands in a vertical position. When, however, the wind increases, so that it would drive the wheel in a vertical position too fast, it forces the sail or blade I back, and thereby tips the wheel over back in an inclined position, so that the wind will act upon it obliquely and at a disadvantage. Consequently the increase in the force of the wind will not increase the speed of the wheel. As the wind decreases the weight K throws the wheel forward again, so that it will receive the full effect of the wind and maintain the required speed. The proportion and arrangement of the parts is such that the wheel tips backward and forward so as to receive a regular and uniform speed, notwithstanding the fluctuations of the wind.

By changing the position of the weights, and thereby changing the resistance to the backward movement of the wheel, the latter may be limited to any particular speed required.

In order that the crank of the main shaft may communicate a uniform length of stroke to the pump-rod, notwithstanding the tipping movement of the wheel, the arrangement shown in the drawing is adopted. The shaft is provided with a crank, O, to which there is connected a pitman, P, which latter has its upper end connected to the pump-rod R, which passes down through the tubular pivot or bearing D, as usual. The rod is supported at its upper end in a bar, S, mounted in the upper ends of two standards, T, which are secured to the head-block, as shown. The rod is jointed just above the tubular journal-pivot D, as shown at *t*, and, in order to prevent it from bending out against the sides of the pivot, a link, *u*, is pivoted at one end in the joint *t*, and at the other end to arms *v*, extending backward from the standards T, as shown.

The above arrangement of parts enables the crank to give the required movement to the pump-rod, and at the same time permits the wheel to tip backward without interfering with their operation.

The wheel, shaft, crank, pitman, standards, and the upper end of the rod, all move

together, so that they retain their relative positions, and consequently the stroke of the pump-rod is unchanged and unaffected when the wheel tips. In order that the wheel may be tipped back by hand, a horizontal rock-shaft, V, is mounted in the hollow journal D, and provided on one end with an arm, *i*, connected by a link, *l*, to the lever G, and provided on the other end with an arm, *j*, to which there is attached a rod, *k*, passing down through the hollow journal D. When the rod *k* is drawn down it turns the rock-shaft V, the arm *i* of which draws the lever G down and tips the wheel back.

Having thus described my invention, what I claim is—

1. In combination with the pivoted head-block or frame C, having the wind-wheel mounted thereon, the blade or sail J and the weight K, when arranged to operate as described.

2. In combination with the wheel, mounted on the pivoted head-block C, and arranged to tip or turn backward, as described, the standards T, jointed rod R, link *u*, and pitman P, arranged substantially as described.

3. In combination with the pivoted head-block C, having the wheel mounted thereon, the rock-shaft V, provided with the arms *i* and *j*, the rod *k*, and the link *l*, when arranged as described, for the purpose of tipping the head-block up.

ALBERT RAYMOND.

Witnesses:

GEORGE RAYMOND,

E. M. BEACH.