A. & G. RAYMOND.

Wind-Mill.

No. 160,060. Patented Feb. 23, 1875.

Fig. 1.

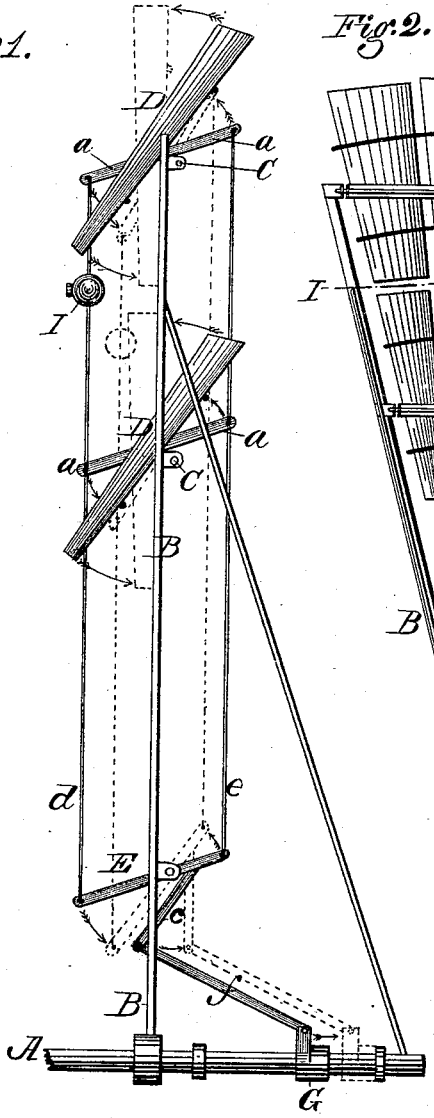
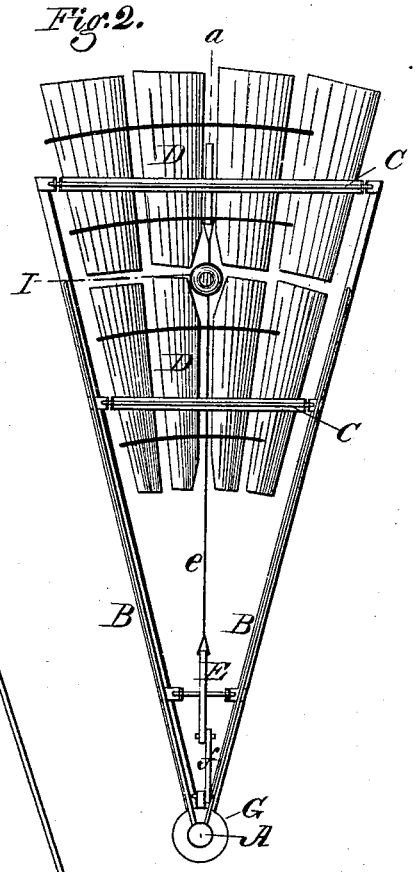



Fig. 2.




Witnesses;
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Will. F. Dodge

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By their attys
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# UNITED STATES PATENT OFFICE.

ALBERT RAYMOND AND GEORGE RAYMOND, OF WAUPUN, WISCONSIN, ASSIGNORS OF ONE-HALF THEIR RIGHT TO MILO J. ALTHOUSE, OF SAME PLACE.

## IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **160,060**, dated February 23, 1875; application filed December 24, 1874.

*To all whom it may concern:*

Be it known that we, GEORGE RAYMOND and 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:

Our invention relates to that class of automatic wheels which have two sets or series of wings, one around or outside of the other, arranged to tip over endwise in a plane parallel with the axis; and the improvements consist in a novel manner of connecting the two series of wings with each other and with the controlling mechanism, and in a peculiar arrangement of an adjustable weight controlling the movement of the wings, and thereby the speed of the wheel.

Figure 1 represents an edge view of a pair of the wings or sails of a wheel provided with our improvements, and Fig. 2 a face view of the same.

The wheel consists, as usual, of a shaft, A, provided with a series of radial arms, B, which are connected by two transverse rods, C, on which are mounted the sails or wings D, in such manner that when the wheel is in motion the centrifugal force will tend to tip them over edgewise to the wind.

While the drawing represents only one pair of the radial arms, and the two wings between them, it will, of course, be understood that the wheel is composed of a series of like arms and wings surrounding the shaft.

Through the middle of each wing we secure rigidly a bar, *a*, extending out in front and in rear of the wing, and between the inner ends of the arms B we pivot a corresponding bar, E, having an arm, *c*, as shown. The inner ends of the three bars *a a* E are connected by a radial wire or rod, *d*, and their outer ends connected in like manner by a rod, *e*. On the shaft there is mounted a sliding collar, G, connected by a bar, *f*, with the arm *c* of bar E, as shown.

Each pair of wings in the wheel is arranged in the above manner, and all connected with the single collar G.

As the inner and outer wings are connected in the above manner, and all connected to the collar, it will be seen that all the wings in the wheel must move together, and to the same extent, and that they are all controlled by the collar, which will be connected, as usual, with a weight to resist the tipping movement of the wings, and to bring them back to their normal positions.

By extending the bars *a* outward, both in front and rear, and connecting them at both ends, as shown, we are enabled to hold the wings under perfect control, to make the parts very light and cheap, and to draw the parts all up tight and snug in order to prevent them from rattling.

On the front wire or rod *d* we mount an adjustable weight, I, the centrifugal force of which, when the wheel is in motion, assists in tipping the wings backward.

By moving this weight on the wire to or from the center of the wheel, it may be caused to travel with more or less velocity in proportion to the speed of the wheel, and thus its centrifugal force varied, so that it will tip the wings when the speed reaches the limit fixed upon.

Thus, it will be seen the speed of the wheel may be limited with great nicety by simply changing the position of the weight, which may be made of any desired form, and secured in any suitable manner.

It is obvious that instead of having the weight assist the movement of the wing or sail, the latter may be arranged to tip readily and the weight employed to resist their movement.

Instead of using the bars *a*, the two wires may be otherwise connected to the wings, and instead of providing the bar E with the arm *c*, the bar *f* may be connected directly to the body of bar E.

What we claim as our invention is—

1. The combination of the inner and outer wings D, connected by two wires or rods, *d* and *e*, one in front and the other in rear of the wings, substantially as shown and described.

2. The combination of the inner and outer wings D, provided with the bars *a*, having their ends connected by the wires or rods *d* and *e*, substantially as shown.

3. The combination of the wings D, provided with the bars *a*, the bar E, the wires *d e*, the bar *f*, and the sliding collar G, as shown.

4. In combination with the wire *d*, arranged as shown, the adjustable weight I, as and for the purpose described.

ALBERT RAYMOND.
GEORGE RAYMOND.

Witnesses:
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