

(Model.)

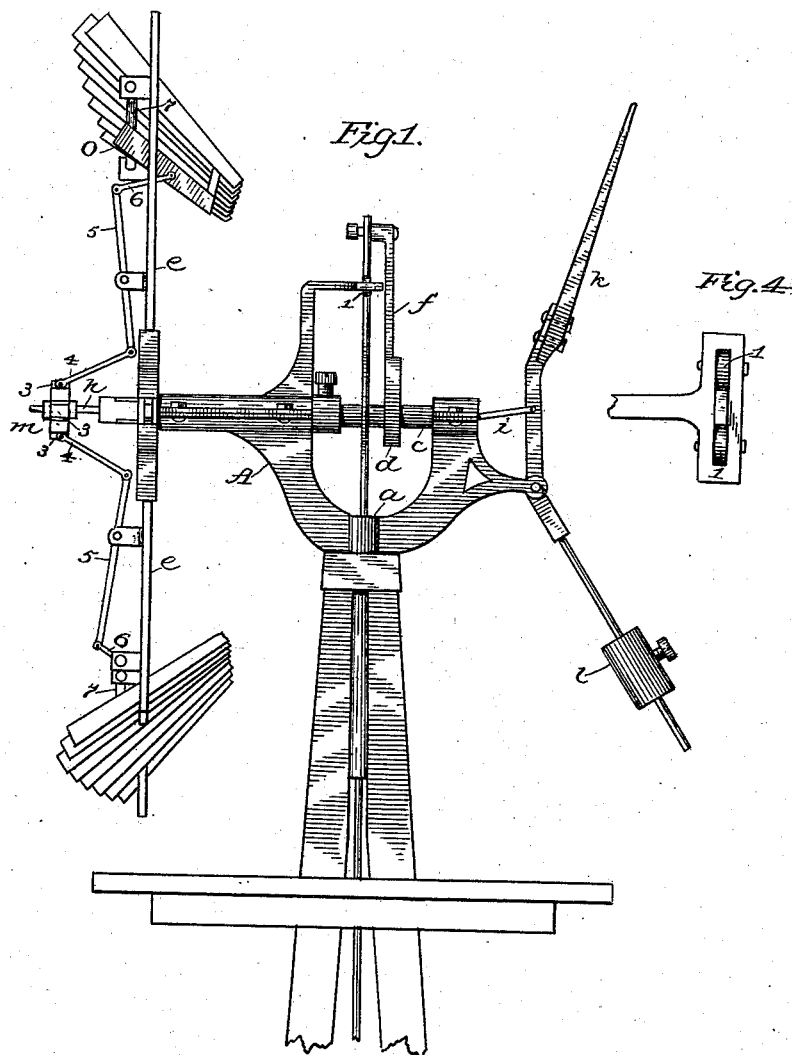
3 Sheets—Sheet 1.

F. G. CORNELL.

WIND ENGINE.

No. 261,686.

Patented July 25, 1882.



Witnesses:

Walter D. Alden
J. L. Middleton

Inventor:

Frank G. Cornell
by Ellis Spear
Atty.

(Model.)

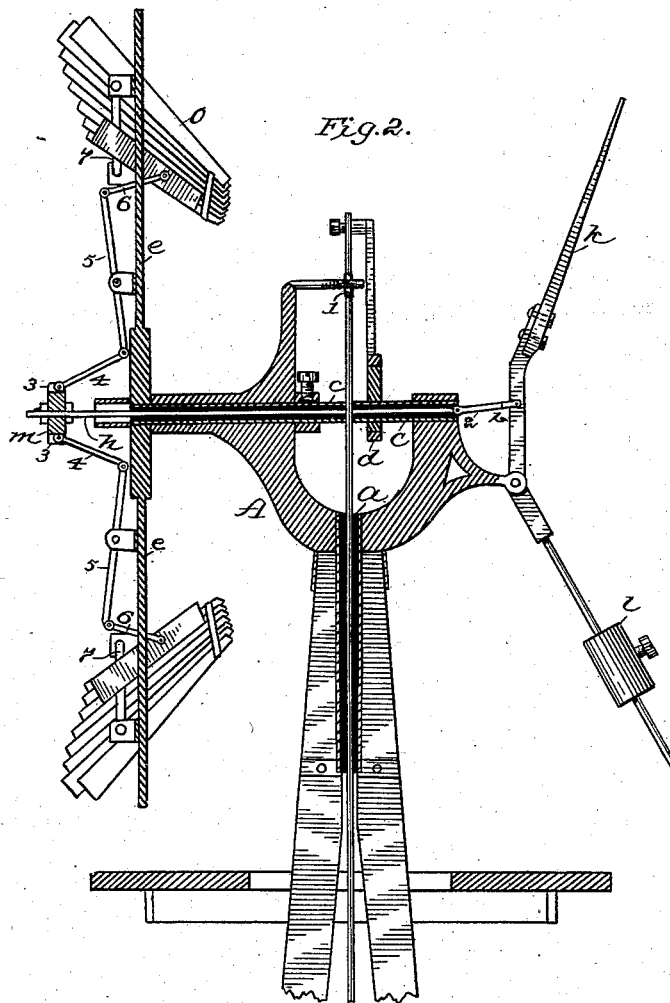
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F. G. CORNELL.

WIND ENGINE.

No. 261,686.

Patented July 25, 1882.



Witnesses:
Walter D. Muldon
F. L. Middleton

Inventor:
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(Model.)

3 Sheets—Sheet 3.

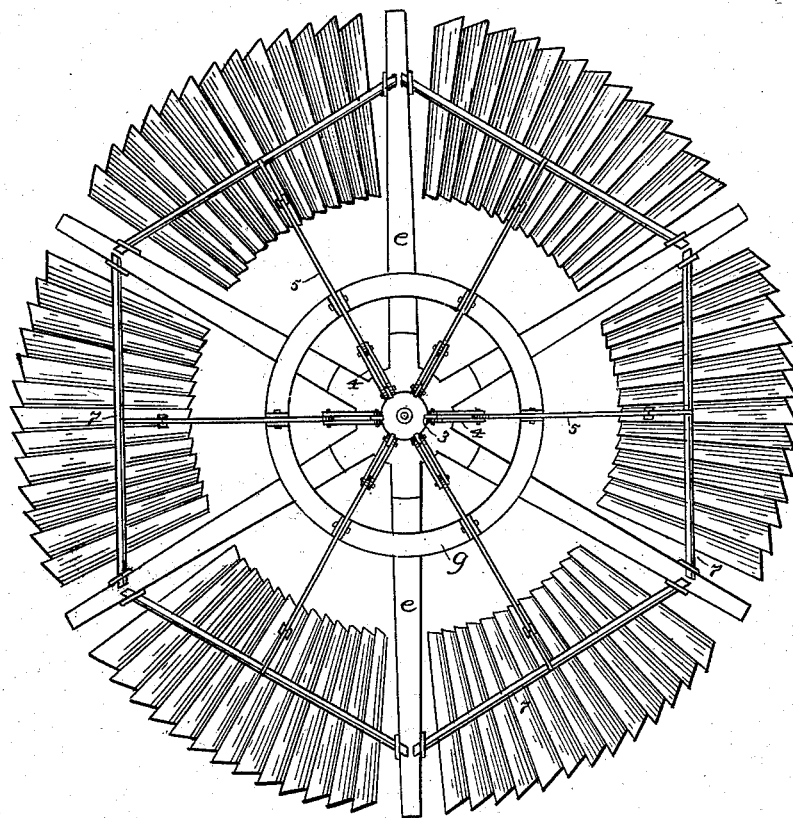
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Fig. 3.



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Frank G. Cornell
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Att'y.

UNITED STATES PATENT OFFICE.

FRANK G. CORNELL, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR TO THE
CORNELL MANUFACTURING COMPANY, OF MICHIGAN.

WIND-ENGINE.

SPECIFICATION forming part of Letters Patent No. 261,686, dated July 25, 1882.

Application filed January 27, 1882. (Model.)

To all whom it may concern:

Be it known that I, FRANK G. CORNELL, of Grand Rapids, in the county of Kent and State of Michigan, have invented a new and useful Improvement in Wind-Engines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to wind-engines of that class in which a sectional wheel is used in rear of the head, with an automatic regulating-governor in front of the head.

The object of my invention is to make a practical engine in which the sections of the vane shall be turned out of the wind by means of the fan in front of the wheel. There are well-known advantages arising from the use of the sectional wheel, or wheel in which the fans are arranged in sections over a solid wheel, the principal of which are that there is less strain both upon the wheel and upon the head and working parts, and the sections are more sensitive and respond more readily to the action of the regulating vane or governor.

Heretofore attempt has been made to connect the lever which carries the governor directly to the hinged sections of the wheel; but this plan required a long central rod projecting to the rear of the wheel and a large amount of movement in the governor-lever. The central rod, extending far to the rear and weighted by the connecting-rods, would necessarily sag and give unequal movement to the sections, thereby practically rendering the engine inoperative.

My invention consists essentially in connecting the central rod to the sections by means of a series of levers.

In the accompanying drawings, Figure 1 shows a side elevation of the engine. Fig. 2 shows a central vertical section through the head and wheel. Fig. 3 shows a side elevation of the rear face of the wheel. Fig. 4 is a detached view of a part of the arm, showing the small friction-rollers in plan.

The head A is formed of a single casting, having an ordinary hollow pivot, *a*, in which the pump-rod *b* works. This is provided with a hollow shaft, *c*, carrying an eccentric, *d*, having an arm, *f*, connected to the upper end of the pump-rod. The upper end of the pump-

rod works in the arm, with small friction-rollers 1 1 bearing against the edge of the pump-rod. A bend in the pump-rod carries it around the shaft of the wheel. The head of the wheel is solid and provided with ordinary radial arms, *e e*, braced by a ring, *g*. Through the hollow shaft passes a rod, *h*, which is connected to the governor-lever *i* by means of a link, as shown at 2.

The governor-vane is shown at *k* and the adjustable weight at *l*. The central rod passes through the head of the wheel and terminates in the rear in the head *m*, having ears (in this case six in number) marked 3. These ears are connected by links 4 to levers 5, pivoted upon the ring of the wheel, and the levers 5 are connected by links 6 to the sections *o* of the wheel. These fans are fixed rigidly upon transverse rods 7, the ends of which bear in eyes in the radial arms of the wheel. The link-connection is toward the inner end of the sections, and any desired amount of motion may be imparted to the sections by proper proportion given to the arms of the levers. The amount of motion permitted to the central rod is enough to throw the levers from a position parallel to the head sufficiently out of the wind. With this arrangement any sudden increase of force in the wind strikes the governor-vane first, which communicates motion to the rod and levers and throws the sections, to a greater or less extent, out of the wind. As the head to which the connecting-arms are attached that operate the levers is near the hub, there is no tendency whatever to sag, and the levers and their connecting-arms being properly adjusted their action is certain and uniform.

I am aware that systems of levers have been used in connection with sections of vanes for acting against the tendency of the vanes to move out of the wind, said levers being connected to a sliding collar, such being shown in patents of Little and Nichols, numbered respectively 125,821 and 187,297, and I do not broadly claim such lever-connections; but,

Having thus described my invention, what I claim is—

1. The combination, in a wind-engine, of the wheel mounted in rear of the head, a governor-vane in front of said head, and a rod connected

to the governor-vane, and sections of fans connected to said rod by means of levers and links, substantially as described.

5 2. The combination, in a wind-engine, of the wheel mounted in rear of the head, and a governor-vane in front, and a rod connected to the governor-lever, and sections of fans connected to said rod by means of the links 4 6 and the levers 5, substantially as described.

In testimony whereof I have signed my name 10 to this specification in the presence of two subscribing witnesses.

FRANK G. CORNELL.

Witnesses:

F. L. MIDDLETON,
E. A. DICK.