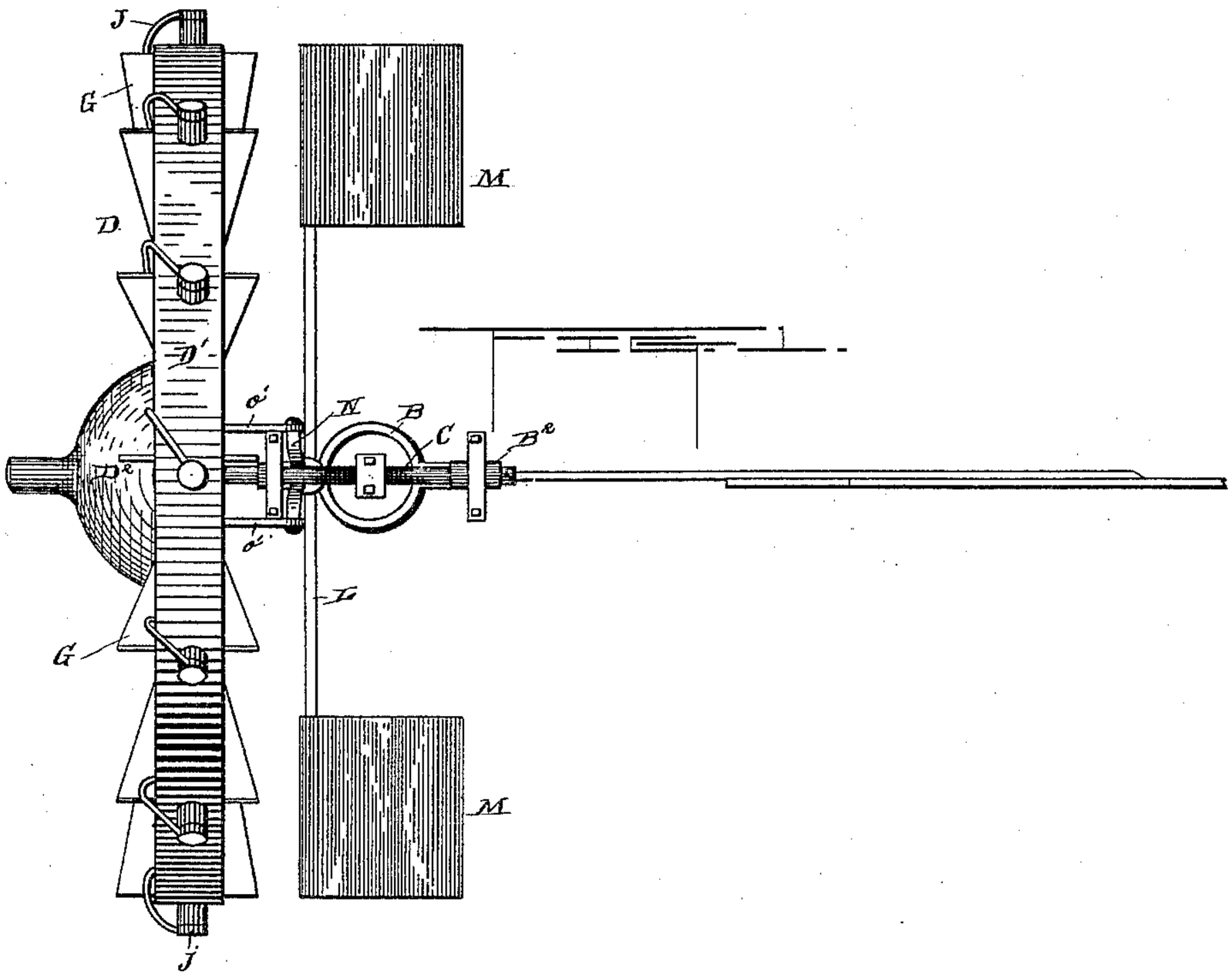
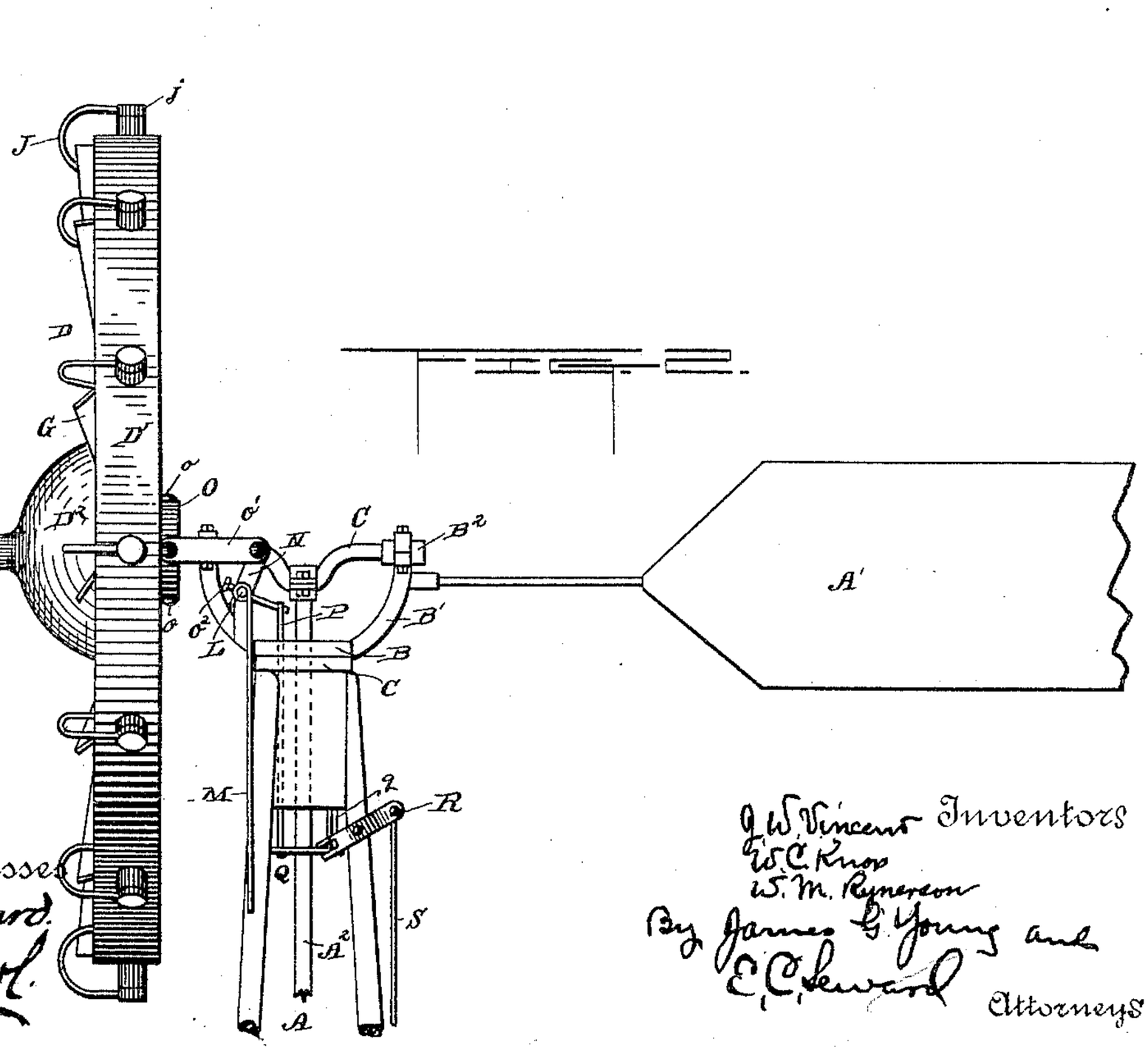
(No Model.) 2 Sheets—Sheet 1.

J. W. VINCENT, W. C. KNOX & W. M. RYNERSON.

WIND WHEEL.

No. 440,669. Patented Nov. 18, 1890.





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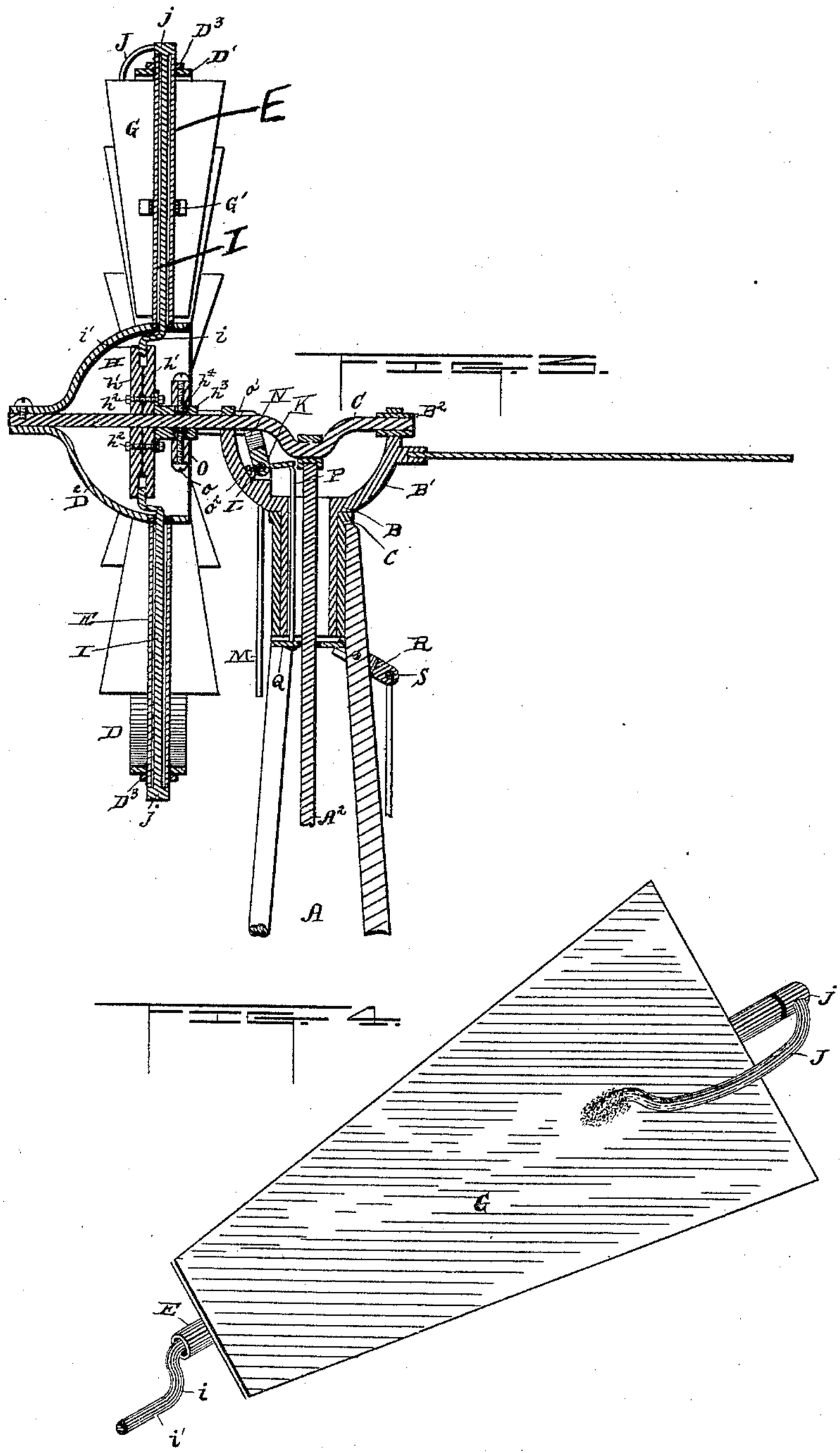

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UNITED STATES PATENT OFFICE.

JOHN W. VINCENT, WILLIAM C. KNOX, AND WALLACE M. RYNERSON, OF TOPEKA, KANSAS.

WIND-WHEEL.

SPECIFICATION forming part of Letters Patent No. 440,669, dated November 18, 1890.

Application filed February 17, 1890. Serial No. 340,741. (No model.)

To all whom it may concern:

Be it known that we, JOHN W. VINCENT, WILLIAM C. KNOX, and W. M. RYNERSON, citizens of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented certain new and useful Improvements in Wind-Wheels; and we 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 appertains to make and use the same.

Our invention relates to wind-wheels, and more particularly to wind-wheels of that character which automatically regulate their speed.

The object is to provide a wind-wheel simple and strong in construction and comparatively inexpensive.

With these objects in view the invention consists in certain features of construction and combinations of parts, as will be hereinafter set forth.

In the accompanying drawings, Figure 1 is a top plan view, showing the wheel thrown out of the wind. Fig. 2 is a side view of the same, showing the wheel presented to the wind. Fig. 3 is a vertical sectional view; and Fig. 4 is a detail view, hereinafter explained.

A represents the tower.

B denotes the wheel-supporting frame, having the curved upwardly-extending bearing-arms B′, and C denotes the turn-table.

All of the above-described parts may be of any well-known or improved construction.

Journaled in bearings B^2 of the wheel-supporting frame is the crank-shaft C, to which is fixed the wheel D. This wheel consists of the ring D′ and a hollow hub D^2. Clamped between this ring and hub are tubes E, the outer ends of which are screw-threaded and pass through holes in the ring, where they are held in place by nuts D^3, while the inner ends have a screw-threaded engagement with said hub. Upon these tubes are journaled or mounted the blades G by means of clips G′.

Although we have specifically described the preferred means for securing the tubes to the ring and hub of the wheel, we would have it understood that the same may be secured in any other well-known manner without in the least affecting the scope of our invention. A peripherally-grooved plate H, shown in this instance as circular in outline and consisting of sections h' h', united by screw-bolts h^2, is mounted upon the crank-shaft within the hub and has a projecting sleeve h^3, formed with an annular groove h^4.

Extending through the tubes E are a series of rods I, having their ends formed with cranks i, from which project wrist-pins i', which are located in the groove of the plate H. The upper ends of these crank-rods project through the ends of the tubes and are connected to the blades of the wheel by U-shaped loops J, which are secured to the blades at a plane oblique thereto and have their outer ends provided with a cap j, fixed to the crank-rods.

Journaled in bearings K of the wheel-supporting frame is the governor-shaft L, having its ends projecting laterally beyond the face of the wheel, to which are secured the fans M. A bell-crank lever N, the upper limb of which is bifurcated, is fixed to the governor-shaft between its bearings.

A collar O is mounted upon the sleeve h^3 of the plate H and has a screw o, projecting with its inner end in the groove of said sleeve, so that the sleeve may turn independently of said collar. The bifurcated end of the bell-crank lever is connected to this collar by straps o'. Thus it will be seen that should a storm arise or the wind blow so hard that the wheel is in danger therefrom the fan-governors will, being exposed to the wind, rock their shaft, which, through the intermediate mechanism just described, slides the grooved plate H outwardly upon the crank-rods to partially rotate and thus ease the blades of the wheel to the wind or throw them entirely out of the wind.

The governor-shaft may be adjustably secured to the bell-crank lever, as by means of a set-screw o^2, thereby changing the position of the governor-fans, so that the speed of the wheel may be determined.

To stop the rotation of the wheel from the ground, we provide the following mechanism: A rod P is secured to the lower limb of the bell-crank lever and projects downwardly into

the lower section or sleeve of the turn-table and there is attached to a ring Q, having upwardly-projecting guiding-pins *q*. A lever R is pivoted to the tower and has its inner end grooved to receive the periphery of the said ring, so as to permit it to turn with rod secured to the bell-crank. A cord or rod S is connected to this last-named lever and projects within convenient reach of the ground. Thus it will be seen that the rod may be operated to either stop the motion of the wheel entirely or to set the speed of the wheel. A′ denotes the vane or tail, and A^2 denotes the power-transmitting rod secured to the crank of the crank-shaft. By securing the U-shaped loops obliquely to the blades it will be seen that when the blades are turned with their edges to the wind the loops will contact with the outer ring and prevent further rotation of the blades in that direction.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

In combination, a wheel consisting of ring and hub tubes connecting them together, blades pivoted to said tubes, rods extending through said tubes, loops J, connecting the outer ends of said rods to said blades, said rods provided each at its inner end with a crank and wrist-pin, a grooved sliding plate for actuating said rods, and fan-governors connected to said sliding plate, substantially as set forth.

In testimony whereof we have affixed our signatures in presence of two witnesses.

JNO. W. VINCENT.
WILLIAM C. KNOX.
WALLACE M. RYNERSON.

Witnesses:
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