No. 671,354. Patented Apr. 2, 1901.

W. SMYTH.

WIND MOTOR.

(Application filed Sept. 13, 1900.)

(No Model.) 2 Sheets—Sheet 1.

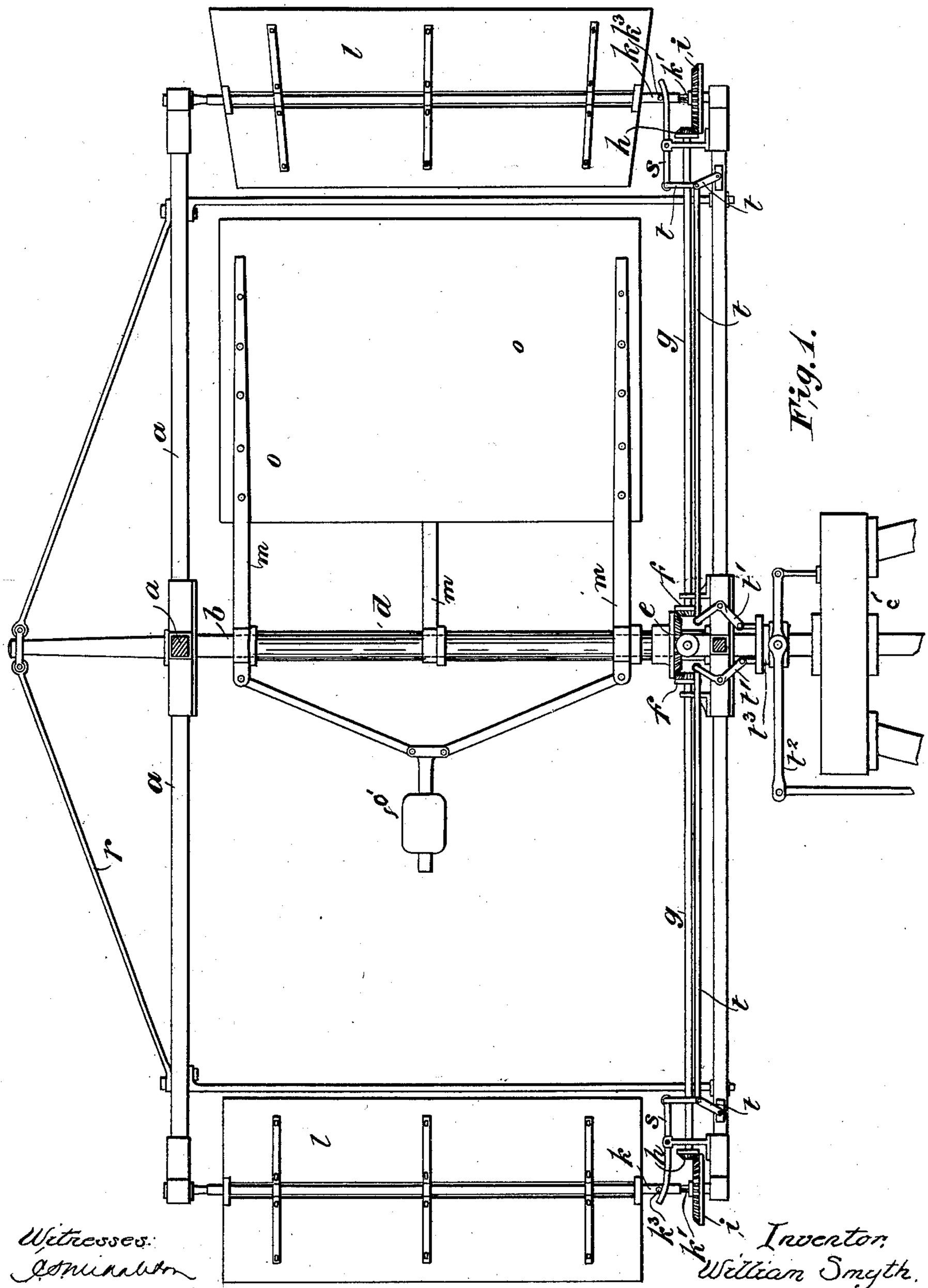

Fig. 1.

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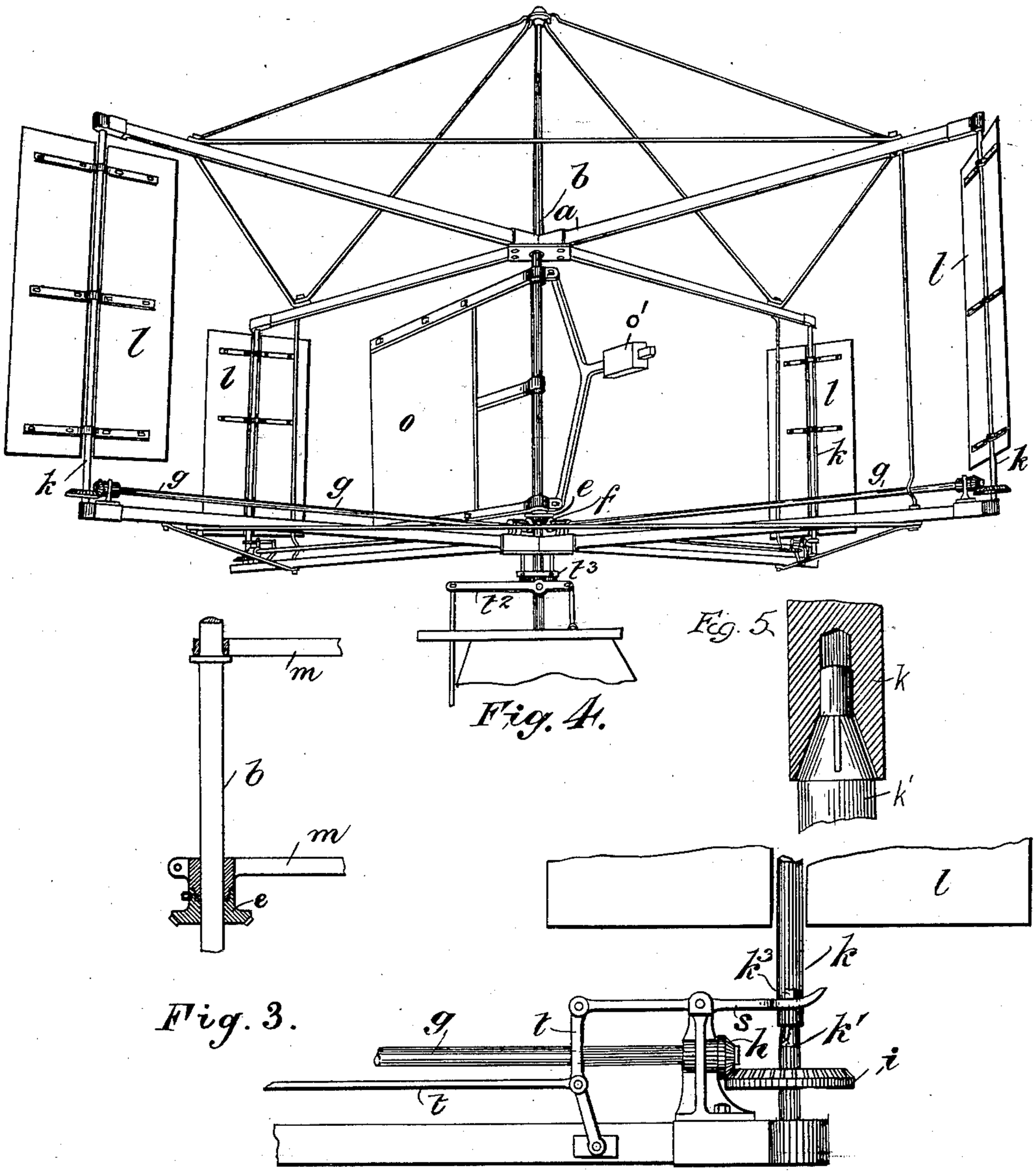

Fig. 4.

Fig. 3.

Fig. 5.

Fig. 2.

Witnesses:
A. S. Middleton
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UNITED STATES PATENT OFFICE.

WILLIAM SMYTH, OF ST. AUSTELL, ENGLAND.

WIND-MOTOR.

SPECIFICATION forming part of Letters Patent No. 671,354, dated April 2, 1901.

Application filed September 13, 1900. Serial No. 29,942. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SMYTH, a subject of the Queen of Great Britain and Ireland, and a resident of St. Austell, in the county of Cornwall, England, have invented certain new and useful Improvements in Wind-Motors, (for which I have made application for Letters Patent in Great Britain, No. 3,199, bearing date February 17, 1900,) of which the following is a specification.

This invention relates to improvements in the construction and arrangement of wind-motors, the object being to provide automatic feathering arrangement of the vanes which shall admit of an easy distribution of the power to suit the direction of the current which is acting upon the vanes.

In the three sheets of accompanying drawings, Figure 1 is a part-sectional elevation of one form of my improved windmill. Fig. 2 is a detail view of one form of vane disengaging or releasing mechanism. Fig. 3 is a detail view of an alternative method of mounting the controlling-vane upon the main spindle. Fig. 4 is a perspective view of my improved wind-motor. Fig. 5 is a detail showing the ends of the spindles provided, respectively, with a conical projection and seat.

In carrying my invention into effect when constructing a wind mill or motor I mount a number of arms *a* upon a vertical shaft *b* in any ordinary manner, carrying the shaft in standards or supports *c*, with the usual bearings and fittings for the same.

I mount upon a sleeve *d*, carried upon the main shaft, a bevel or driving gear-wheel *e*, which gears into a wheel *f*, attached to a spindle *g*, running along each of the vane-arms. On the outer end of this spindle I mount another bevel or gear wheel *h* to drive a similar wheel *i*, carried upon the paddle or vane-spindle *k*. I proportion the gearing so that the vanes *l* may be caused to move one-half circle on their own axis *k* for every revolution of the main arms, so that the vanes may present their full surface to the current of the wind in one direction and gradually move that surface to an angle until it stands at right angles to the arms at the opposite position of the wheel.

I secure onto the sleeve *d*, carried upon the main axle, a frame *m*, onto which I arrange a regulating-vane *o*, having a balance-weight *o'*, the movement of this regulating-vane causing corresponding movement in the position of the wind-vane *l* by reason of the gearing hereinbefore described. I make the vanes plain or lattice, and one or more sets of arms or wheels may be employed. The action of the regulating-vane *o* is such that whatever direction the current takes the vane of the main or operating vanes will hold the same relative position.

I mount disengaging-clutches or liberating-gear for throwing either of the vane-spindles out of contact with the driving member of the bevel-wheel, so as to enable the vanes *l* to be turned at will independently of the position of the regulating-vane *o*, as shown in Fig. 1 and in enlarged detail in Fig. 2, wherein the end of the spindle *k* is formed with a bottom conical bed to fit or engage with a conical end formed upon the driving-spindle *k'*, placing either a feather thereon or making it rectangular or of other engaging surface. To throw the upper member or vane proper out of gear in one manner, I mount a forked arm *s* and stops or lugs k^3 in connection with controlling-levers *t* to operate from the central bell-crank and other levers *t t' t²*, provided with a connecting-collar at t^3, which while revolving admits of the levers being operated when t^2 is manipulated.

Instead of employing a sleeve upon the main shaft I may carry the regulating-vane on strips or bars which bear upon or encircle the main shaft and attach the driving-wheel *e* to a continuation or boss formed upon the lower bar, as shown in Fig. 3.

I employ any ordinary system of bracing and staying rods *r* for securing my arms to the spindle and for stiffening the structure generally.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination with a wind-motor of the means for disengaging some of the vanes consisting of vane-spindles *k* formed with conical ends to fit correspondingly-shaped ends on the driving-spindle *k'* and feathers thereon, and disengaging-levers *s t t'* and *t²* substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

WILLIAM SMYTH.

Witnesses:
CHARLES HENRY WHETTER,
ALFRED REED.