

(No Model.)

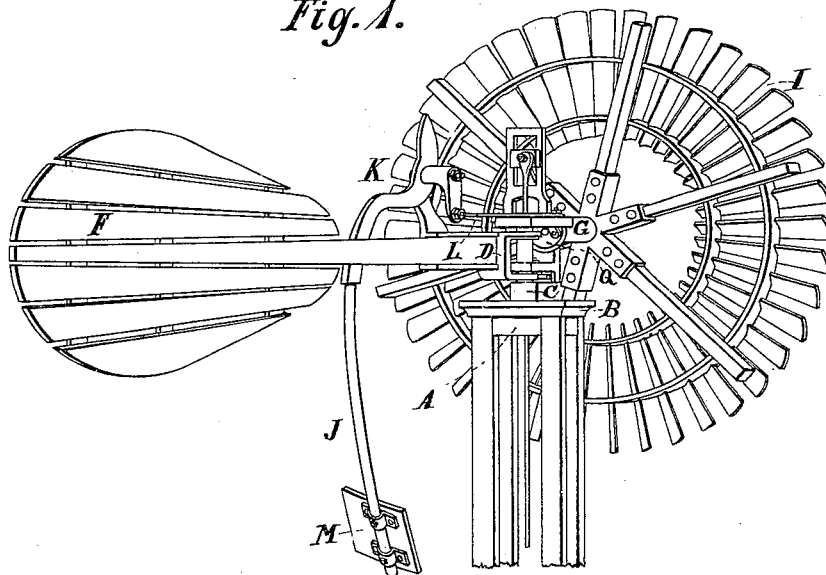
H. J. RELYEA.

## WIND ENGINE.

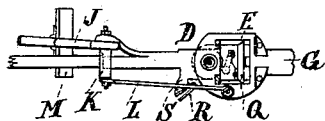
No. 262,117.

Patented Aug. 1, 1882.

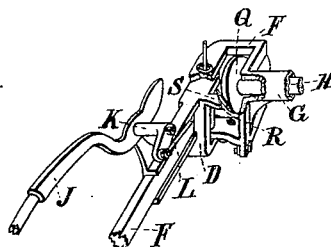
*Fig. 1.*



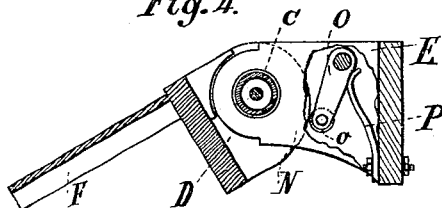
*Fig. 2.*



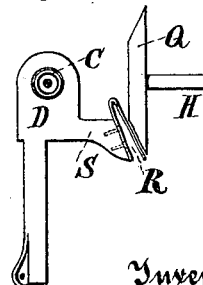
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

HENRY J. RELYEA, OF RICHMOND, INDIANA, ASSIGNOR TO HENRY C. FOX,  
OF SAME PLACE.

## WIND-ENGINE.

SPECIFICATION forming part of Letters Patent No. 262,117, dated August 1, 1882.

Application filed June 21, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY J. RELYEA, of Richmond, Wayne county, Indiana, have invented a new and useful Improvement in Wind-Engines, of which the following is a specification.

My invention relates to the class of wind mills or engines whose wind-wheel shaft and vane or rudder are capable of simultaneous veer or swing about a vertical pivot common to both, and also capable, under the influence of a sudden gust, of a relative change in position, in which the wind-wheel assumes a position parallel or approximately parallel to the rudder, so as to "feather" said wheel, and thus both prevent its destruction and that of the machinery driven by it.

My improvements are directed to devices for moderating or checking both excessive velocity of rotation of the wind-wheel and a too violent or concussive folding of the wind-wheel frame against the rudder or vane frame, and for facilitating the return of the parts to their normal positions.

In the accompanying drawings, Figure 1 is a rear elevation of a wind-engine embodying my invention, the same being shown in its normal condition. Fig. 2 is a top view of the adjacent portions of the rudder and wind-wheel frames, also in the normal condition. Fig. 3 is a perspective view of the same in the folded condition. Fig. 4 is a horizontal section of the same, on a larger scale, in a partly-folded condition. Fig. 5 is a top view of my wind-wheel brake mechanism in its effective condition.

A may represent the top portion of a column or trestle, from whose metallic cap B rises a vertical stud or post, C, which serves as the pintle or pivot of two horizontally-swinging frames, D E, of which frames the frame D extends rearward to form the vane or rudder F, and frame E contains the journal-bearings G of shaft H of my wind-wheel I. These parts are held to normal position by customary wing or governor, J, connected by crank K and rod L with wind-wheel frame. A blade, M, upon the extremity of the governor, in case of any sudden or violent gust of wind, elevates said gov-

ernor, and, through crank K and rod L aforesaid, draws the wind-wheel into a greater or less approach to parallelism with the vane according to the stress of the wind. All of the above features are old and well known.

In order to moderate the violence of folding action of the wind-wheel frame upon the tail-vane, and to prevent destructive concussion of the parts, and to facilitate their return to the normal condition, I give to a portion, N, of my vane-frame a cam-formed or eccentric contour and pivot on the wheel-frame an arm, O, having a roller, d, which is caused to bear forcibly on the said cam-periphery by a strong spring, P. This arrangement of parts operates cushion-like in opposing a gradually-increasing resistance to the folding together of the vane and wind-wheel frames, and thus averts the destructive collisions to which these important members are ordinarily subject.

In order to avoid the almost equally objectionable excessive velocity of rotation of the wind-wheel in high winds, I give the wheel Q at the heel of the wind-wheel shaft the bevel form shown, and I provide a spring, R, upon a bracket or projection, S, upon the vane-frame, whose impingement against the chamfered periphery of the wheel Q operates as a brake to retard and modify the rotation of the wind-wheel, and also operates as an auxiliary to the members N O P in softening the shock of the folding frames.

The above-described preferred form of my invention may be modified in non-essential particulars. For example the roller d may be omitted from the pressure-arm O, and the end of said arm may press directly against the cam-surface. The pressure-arm may be located on the vane-frame and coact with a cam-surface upon the wind-wheel frame. A simple disk may replace the bevel-wheel Q.

I do not claim a cushion or spring bumper or brake to avert concussion in a wind-engine, such devices being old and well known.

I claim herein as new and of my invention—

1. In a wind-engine having simultaneously and independently veering vane and wind-wheel frames and governor-wing, the cam N

upon the vane-frame, in the described combination with arm O, and spring P upon the wind-wheel frame, for the purpose set forth.

2. In a wind-engine whose vane and wind-  
5 wheel are on jointed frames controlled by gravitating governor-wing, the combination, with brake mechanism consisting of wheel Q, spring R, and projection S, of the cam or eccentric N, constituting a rigid projection from the vane-

frame, and the pivoted arm O and spring P 10 upon the wheel-frame, substantially as and for the purpose set forth.

In testimony of which invention I hereunto set my hand.

HENRY J. RELYEA.

Attest:

GEO. H. KNIGHT,  
N. ROCKHOLD, Jr.