(No Model.)

H. J. RELYEA.

WIND ENGINE.

No. 264,757. Patented Sept. 19, 1882.

Fig. 1.

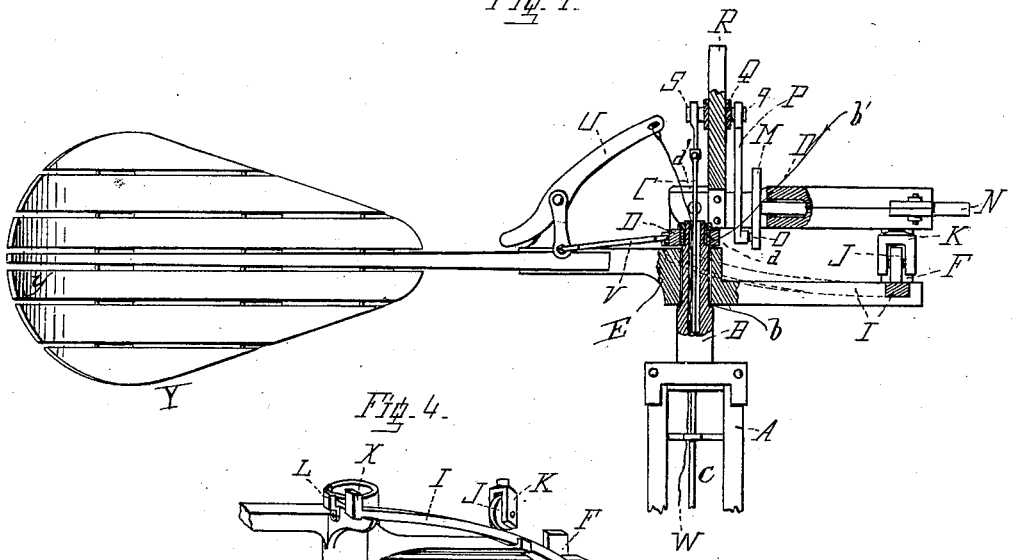


Fig. 4.

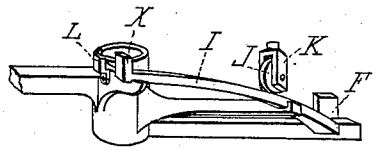


Fig. 2.

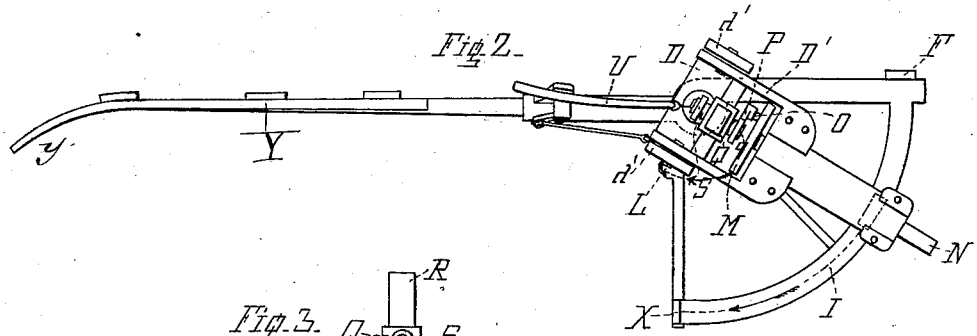


Fig. 3.

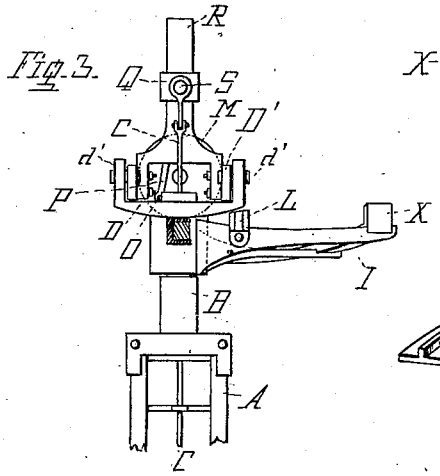
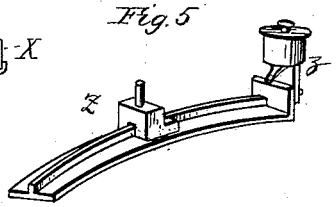


Fig. 5



Attest.
Carl Spengel
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Inventor.
Henry J. Relyea.
by Knight Bros.
Atty's.

UNITED STATES PATENT OFFICE.

HENRY J. RELYEA, OF RICHMOND, INDIANA, ASSIGNOR OF ONE-HALF TO WILLIAM H. STANLEY, OF SAME PLACE.

WIND-ENGINE.

SPECIFICATION forming part of Letters Patent No. 264,757, dated September 19, 1882.

Application filed July 31, 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 improvements in those so-called "solid-wheel" wind-engines whose wind-wheel and vane-frames are independently pivoted upon the tubular housing of the pump-rod; and it consists in a device for enabling the automatic edge-presentation or feathering of the wind-wheel, as hereinafter explained.

In the accompanying drawings, Figure 1 is a partly-sectional side elevation of the principal operative members of a wind-engine embodying my improvements, the wind-wheel being omitted. Fig. 2 is a top view of the same. Fig. 3 is a rear elevation with the vane-frame in section. Fig. 4 represents my spiral track and wind-wheel-frame-supporting wheel. Fig. 5 represents a modification of my spiral track with oiling device.

A may represent the upper part of a tower or trestle such as is commonly employed to support at the necessary elevation the operative members of a wind-engine. This tower is surmounted by customary hollow post, tube, or housing, B, for the pump-rod C, which tube also does duty as the pivot of the wind-wheel frame D D′ and vane-frame E. Shoulders *b b′* are formed upon the tube B for the independent support of the vane-frame and wheel-frame.

The wind-wheel frame in my arrangement consists essentially of two members—to wit, the member D, having the vertical orifice in boxing *d*, by which it revolves horizontally about the housing B, and having ears *d′*, to which the member D′ is hinged, so as to be capable of vibrating vertically.

The vane-frame extends forward beyond the pivot-tube B, so as for its forward extremity, X I F, to assist in supporting the wheel-frame, the parts being so proportioned as that the wheel-frame and the vane-frame extension on one side of the pivot-tube just balance the vane and that portion of its frame and appendages which are located in rear of the pivot-tube.

A stop, F, on vane-frame limits the relative horizontal sweep of the wind-wheel frame in one direction—say to the left, as it would appear to one looking down upon the mill—and the tail end *y* of the vane Y is bent sufficiently to the left of alignment with the axis of post B to give the entire vane and wheel frame a slight tendency to veer bodily to the right. This tendency disturbs the equilibrium just enough to enable the wind to fold the wind-wheel backward, (or to the right,) and thus to present its disk more or less edgewise to the wind.

In order to control or moderate this tendency and by the same means to support the wind-wheel frame, I provide on the vane-frame a spiral track, I, for a wheel, J, that is journaled in a downwardly-projecting bracket, K, from the wind-wheel frame. As the wheel is blown by a violent gust to the right the entire wheel-frame and wheel with their appendages are compelled to travel up the spiral track I, and are thus by their own gravity gradually checked in such folding movement, and are restored to the normal, or an approximately normal, condition at the least lull of the wind. This arrangement also discharges to some extent the functions of a brake to prevent the too violent collisions of the wheel-frame with the back-stop L. This back-stop L in turn is made to do duty both as a stop to the folding wheel-frame and as a brake to the pumping action by its impact with the wrist-wheel M at the head of the wind-wheel shaft N.

X shows an auxiliary back-stop on the tail end of the spiral track.

The dotted lines and arrows indicate the direction in which the wheels J and M travel when running toward the stops X and L, as shown in Fig. 2.

The wrist O on wheel M connects by pitman P with wrist *q* on head Q, which head is confined to a vertical path by vertical post or guide R, that rises from the wheel-frame. Said head has on its other side a wrist, S, to which the pump-rod C is jointed.

Owing to the frequent peculiar spiral oscillatory movements of my wind-wheel frame the jointed connections of the pump C and pitman P, with wrists S, *q*, and O, respectively, are necessarily of the ball-and-socket, gimbal, or other swivel description.

A lever, U, fulcrumed upon vane-frame and

connected by link V with wheel-frame, and by wire W with the ground or any other convenient location, permits the attendant to at any moment place the wind-wheel "out of wind," and, if desired, to retain it in such position for any length of time.

The above-described preferred form of my invention may be varied in non-essential particulars. For example, one or more sliding feet or shoes, Z, may be substituted for the supporting-wheel J, in association with a means, *z*, for keeping the spiral track or quadrant I lubricated.

I claim as new and of my invention—

1. In a wind-engine, the combination of vane-frame extension having inclined track I, stops F X L, and wheel-frame having wrist-wheel M and supporting device J, as set forth.

2. In a wind-engine, the wind-wheel frame D D′, consisting of a main member, D, which oscillates horizontally about the central tube, B, and a hinged section, D′, which vibrates vertically upon said member D while oscillating horizontally therewith, as and for the purpose set forth.

3. In a wind engine, the combination of member D, having boxing *d*, and revolving horizontally, housing B, member D′, hinged by ears *d′* to member D, supporting device J, and inclined track I, as set forth.

4. The combination of housing B, formed with shoulders *b b′*, vane-frame E, member D, having boxing *d* and ears *d′ d′*, and the member D′ hinged thereto, as set forth.

5. The combination of members D D′, wrist-wheel M O, pitman P, standard R, sliding head Q, having wrists *q* S, supporting device J, and spiral track I, as set forth.

6. The combination of vane-frame extension having track I, stops F X, wheel-frame D D′, supporting-shoe Z, and an oiling device, *z*, as set forth.

In testimony of which invention I hereunto set my hand.

HENRY J. RELYEA.

Attest:
GEO. H. KNIGHT,
SAML. S. CARPENTER.