(No Model.) 2 Sheets—Sheet 1.

G. W. RUNDLETT.

WINDMILL.

No. 347,385. Patented Aug. 17, 1886.

Fig. 1.

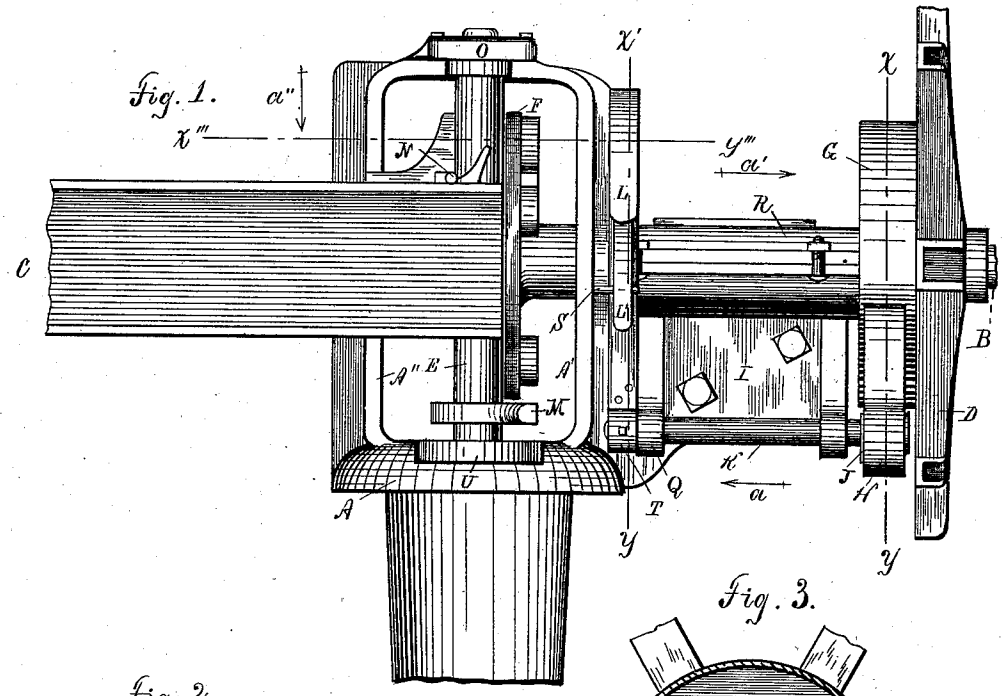


Fig. 3.

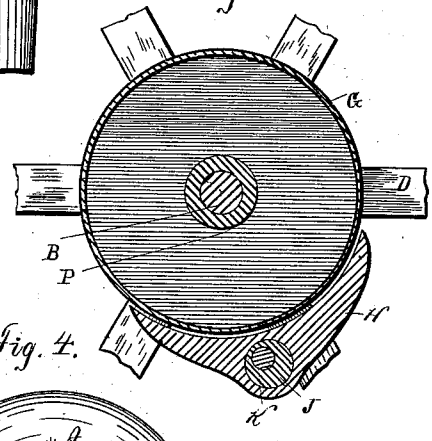


Fig. 2.

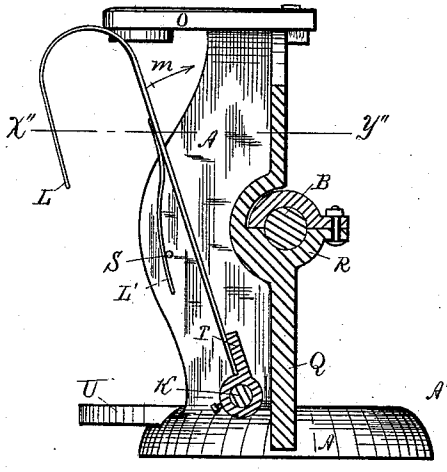
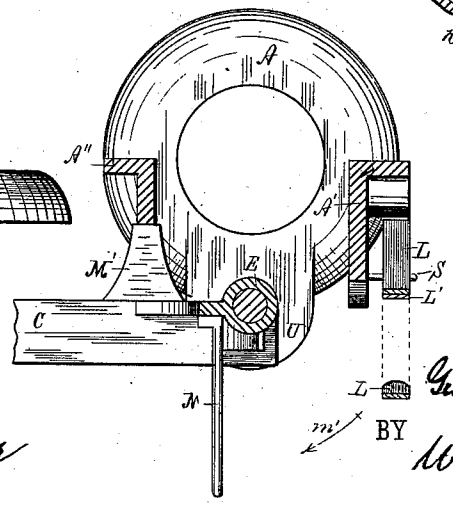


Fig. 4.



WITNESSES:

Jos. A. Ryan

H. Geesmitzer

INVENTOR

George W. Rundlett

BY

Wilkes & Greene

ATTORNEYS

(No Model.) 2 Sheets—Sheet 2.

G. W. RUNDLETT.

WINDMILL.

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Fig. 5.

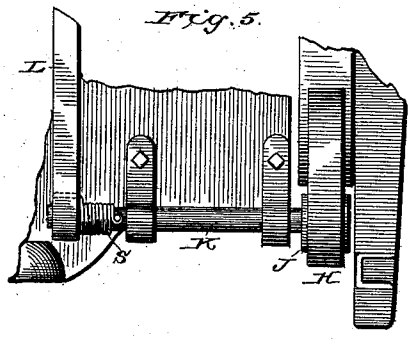


Fig. 6.

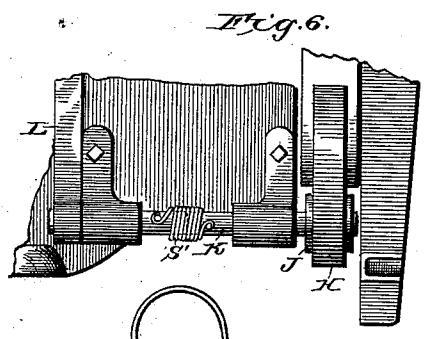


Fig. 7.

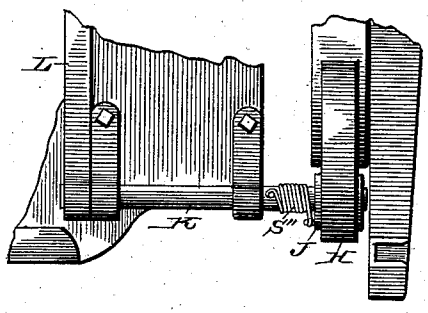


Fig. 8.

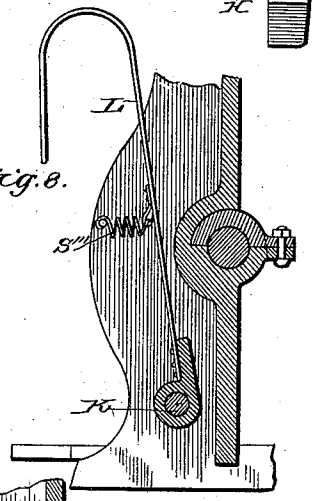


Fig. 9.

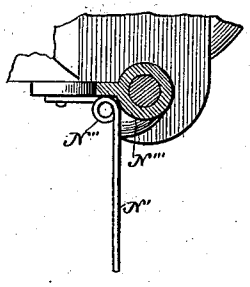
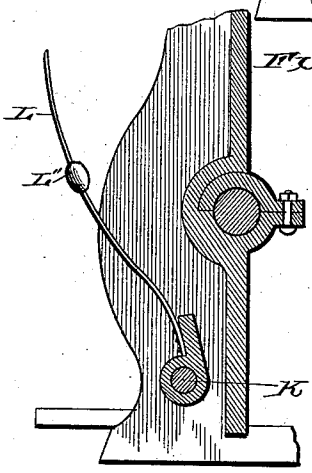


Fig. 10.



Witnesses

Jos. A. Ryan

Wm. F. Hintemann

Inventor

George W. Rundlett

By his Attorneys

Wiles & Greene

UNITED STATES PATENT OFFICE.

GEORGE W. RUNDLETT, OF FREEPORT, ILLINOIS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 347,385, dated August 17, 1886.

Application filed December 11, 1885. Serial No. 185,419. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. RUNDLETT, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Windmills; and I 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 pertains to make and use the same.

My invention relates to improvements in windmills, and particularly to improvements in brakes for retarding or stopping the revolution of the wind-wheel, and is fully described in this specification, and shown in the accompanying drawings, to which this specification refers, and in which—

Figure 1 is a side elevation of the central portion of a windmill, showing a portion of the vane-casting, and also of the wind-wheel shaft with the brake and its accessories in place. Fig. 2 is a view looking in the direction of the arrow *a*, Fig. 1, section being made on the line X′ Y′, and parts not essential to an understanding of my invention being omitted. Fig. 3 is a section on the line X Y, looking in the direction *a′*. Fig. 4 is a view in the direction *a″*, Fig. 1, section having been made on the line X‴ Y‴, which corresponds to X″ Y″ in Fig. 2; and Figs. 5, 6, 7, 8, 9, and 10 are detail views illustrating certain modifications of the forms shown in Figs. 1, 2, 3, 4.

In Fig. 1, A is the turn-table, and A′ A″ the casting supporting the principal parts of the mill. B is the wind-wheel shaft; C, the vane-supporting casting. D is the wind-wheel, or that portion of it to which the arms are attached; E, the pivot of the vane; F, the crank-plate; G, a cylindrical surface, against which a brake-shoe, H, may be made to press. J is a short cylinder closely fitting opening in the shoe H, and is placed eccentrically on the shaft K, which is supported in bearings in the casting I, bolted to the main casting A′. L is a spring-lever for rotating the shaft K, to which it is rigidly attached, and with it the eccentric J. L′ is a spring for returning the spring-lever L to its normal position, and N is a rod which actuates the spring-lever L when the wind-wheel goes out of the wind.

In Fig. 2 the lever L appears in its normal position. The wind-wheel shaft and vane are not in the same vertical plane, the latter being set "off the center," or at one side of the central vertical axis of the mill. It is supported in this position by the projections O and U upon the upper and lower parts, respectively, of the main casting A A′ A″. The spring L′ is attached to the lever L, and passes over a rigid projection, S, from the main casting, and the lever can rotate from its normal position in the direction of the arrow *m* only by overcoming the resistance of this spring.

Fig. 3 shows the relative position of the friction-cylinder G, which is formed integrally with the arm-supporting castings D of the wind-wheel, central shaft, B, shoe H, eccentric J, and eccentric-shaft K, when all are in their normal positions.

Fig. 4 shows the normal relation of the main casting, the vane-casting with its rod N, and the spring-lever L. Now, when the wind-wheel is carried out of the wind in the direction *m′*, Fig. 4, the spring-lever L is carried against the rod N upon the vane-casting, and as this is prevented from yielding by the directive force of the wind acting on the vane, the lever is forced backward in the direction *m*, Fig. 2, while the spring L′ slides upon the pin S, and this rotation is communicated to the eccentric J, Figs. 1 and 3, through the casting I and shaft K. The rotation of the eccentric in its bearing in the shoe H presses the latter against the surface G and stops the revolution of the wind-wheel upon its axis. Owing to the elasticity of the spring-lever L, the retarding force of the shoe is applied gradually, and its limit never exceeds the amount that may be applied without undue straining of the parts, but is dependent on the excess of the elastic force of the lever L over that of the spring L′. Whenever the pressure of the lever L against the rod N ceases, the elasticity of the spring L′, acting against the pin S, overcomes the friction of the eccentric and of the shaft K in their bearings, and restores both lever and shoe to their normal positions. Lugs M M′ upon the vane-casting are adapted to strike, respectively, the opposite sides, A′ A″, of the main casting, and thus limit the relative positions of the wind-wheel and vane.

It is evident that various modifications of form may be introduced into my invention without changing its essence or operation.

For instance, the lever L may be rigid, and, being loosely mounted on the shaft K, may be connected with it by a spring, as at S, Fig. 5; or the shaft K may be in two parts, and the parts be connected by a spring, S′, Fig. 6; or the eccentric J may be loosely mounted on the shaft K and connected therewith by a spring, S″, Fig. 7. The spring L′ may be replaced by a coiled spring, as S‴, Fig. 8, or by a weight, L″, attached to the lever L, as shown in Fig. 10; and on the other hand the elastic factor of the mechanism may be transferred to the vane-casting, any form of spring or weight being employed with the rod N, or equivalent part, which strikes the lever L. One form of the modification last suggested is illustrated in Fig. 9, in which the rigid rod N is replaced by a spring-rod, N′, having at its point of attachment a spring-coil, N″, a stop, N‴, on the vane-casting serving to limit the motion of the rod N′ with reference to the vane-casting.

It is evident that the position of the friction-surface G on the wind-wheel shaft is not material, but that it may be placed wherever desired for convenience of construction.

What I claim is—

1. The combination, with the pivoted main castings of a windmill, of a vane attached to one of said main castings and a wind-wheel shaft journaled in the other, a friction-surface rigidly fastened to and rotating with said wind-wheel shaft, a rock-shaft journaled in suitable bearings on the wind-wheel-supporting casting, an eccentric rigidly mounted on the rock-shaft, a brake-shoe mounted on said eccentric and adapted to be pressed against or withdrawn from said friction-surface by the rotation of the rock-shaft and eccentric, and a connection between the rock-shaft and the vane-casting, whereby a given variation of the angular position of the main castings may rotate the rock-shaft and press the brake-shoe against said friction-surface.

2. The combination, with the pivoted main castings of a windmill, a vane attached to one of said castings, and a wind-wheel shaft journaled in the other, of a friction-surface rigidly fastened to and rotating with said shaft, a rock-shaft journaled in bearings on the wind-wheel-supporting casting, an eccentric rigidly mounted on said rock-shaft, a brake-shoe mounted on said eccentric and adapted to be pressed against said friction-surface or withdrawn therefrom by the rotation of the eccentric, and a spring-connection between said rock-shaft and the vane-casting, whereby a given angular approach of one of said main castings to the other shall rotate said rock-shaft and press said brake-shoe with a yielding pressure against said friction-surface.

3. The combination, with the pivotally-connected main castings of a windmill, a vane fastened to one of said castings, and a wind-wheel shaft journaled in the other, of a friction-surface fastened to the wind-wheel shaft, a suitably-journaled rock-shaft, an eccentric fastened thereon, and a brake-shoe mounted on the eccentric, a lever fastened to the rock-shaft and adapted to be actuated by the vane-casting when the main castings reach a given angular position, and when so actuated to press the brake-shoe against the friction-surface, and a spring connecting said lever with the wind-wheel-supporting casting and adapted to return the lever to its normal position when the pressure of the vane-casting is removed.

4. The combination of the main casting A A′ A″, the vane-casting C, pivoted thereto, the wind-wheel shaft B, journaled in said main casting, the friction-surface G fastened to and rotating with the wind-wheel shaft, the journaled rock-shaft K, provided with the eccentric J, the brake-shoe H, mounted on said eccentric, the elastic lever L, fastened to the shaft K and adapted to be oscillated by the vane-casting, and the auxiliary spring L′, co-operating with a stop on the main casting, to return the lever to its normal position, substantially as and for the purpose set forth.

5. In a windmill, a head and a vane capable of angular approach, a brake-shoe suitably mounted upon said head and acting upon a surface rigidly connected with and rotating about the axis of the wind-wheel shaft, a spring adapted to be flexed by the angular approach of the head and vane and to transmit the flexing force to said brake-shoe, whereby said shoe is pressed against said surface, retarding the rotation of the wind-wheel shaft.

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

GEORGE W. RUNDLETT.

Witnesses:
M. V. B. ELSON,
JOSEPH B. SMITH.