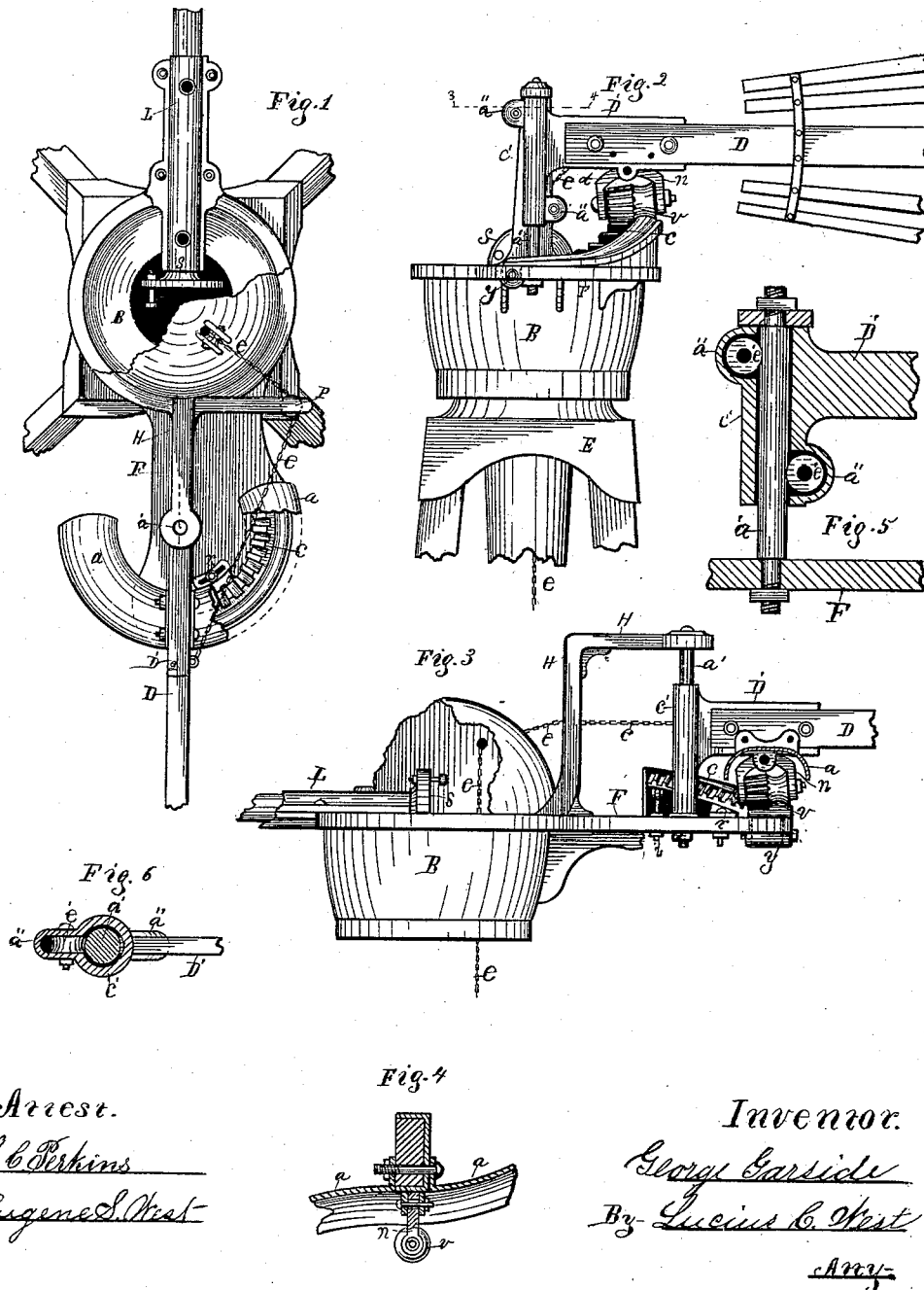


G. GARSIDE.
WIND ENGINE.

Patented Sept. 12, 1882.



UNITED STATES PATENT OFFICE.

GEORGE GARSIDE, OF KALAMAZOO, MICHIGAN.

WIND-ENGINE.

SPECIFICATION forming part of Letters Patent No. 264,274, dated September 12, 1882.

Application filed January 14, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE GARSIDE, a citizen of Canada, residing at Kalamazoo, county of Kalamazoo, State of Michigan, United States of America, have invented a new and useful Wind-Engine, of which the following is a specification.

My invention relates to wind-engines which have a hinged rudder or vane with no weighted chains or lever for governing them.

It has for its object certain improvements to add to the utility and greatly facilitate the operation of such engines.

The features of improvement and their relation to old parts are set forth in the detailed description.

In the drawings forming a part of this specification, Figure 1 is a top view of an engine containing my improvements; Fig. 2, a rear elevation; Fig. 3, a side elevation; Fig. 4, a cross-section on a line near D' y in Fig. 3; Fig. 5, a longitudinal section on line 1 2 in Fig. 1; and Fig. 6 a cross-section on line 3 4 in Fig. 2.

B illustrates the head of a wind-engine, pivotally supported by cap E in the usual manner. F is a rear extension connecting with the head.

H H is a shouldered arm.

D is the rudder or vane, having eye *c'* and connecting portion D'. The rudder D is hinged to extension D and arm H H by means of hinging-bolt *a'* in its usual relationship with the head B, and *e e* is the common arrangement of chain for pulling on the vane in throwing the wheel out of the wind.

It will of course be understood that the wheel (not here shown) is connected with its shaft at the left of I in Fig. 3 at right angles with the rudder.

To the extension-support F, I connect an inclined circular way or track, *c*, the traversed surface of which is spirally formed to a degree that any given portion thereof shall be on nearly a horizontal plane with the remainder, the plane of said portions being considered crosswise of the way. The object of this formation of surface is that roller *v*, located horizontally in its transit, may be equally throughout its length upon said surface. The roller *v* is revolvably connected with the vane D. The eye *c'* of the vane is shorter than the hinging-

bolt *a'*, to allow said eye to play vertically thereon. In such a construction the vane is always kept in its true upright position vertically, less strain is brought to bear on the hinging-bolt, and the way and roller assist in supporting the weight of the vane, and in the operation a very prompt and free action is effected.

In the operation, by pulling down on chain *e* the head B turns in its bearing in the cap, the wheel and vane approach each other, and the roller *v* traverses up the inclined way *c*, Fig. 2. In this figure the wheel is out of the wind and the rudder is still cutting the wind, as in all engines having such rudders. By slackening chain *e* to throw the wheel in the wind again the rudder-eye *c'* plays down the hinging-bolt *a'*, and roller *v*, bearing the rudder, traverses down the incline by the turning of the head to the position shown in Fig. 3.

In addition to other results effected by my improved construction my engine will adapt itself in the relation of its wheel to varying degrees of a current of wind from a given point of the compass with greater nicety than engines provided with governing-weights having the function described as "varying resistance."

In my construction thus far considered the roller *v* and way *c* may be made with plane conflicting surfaces or otherwise.

In connection with my main invention I have made provision for contingent uses and dangers, as follows: To obviate danger of the roller *v* slipping on its track, and to insure a steady and positive movement of the vane, the roller and way may be corrugated or serrated, as illustrated in the drawings, or otherwise deemed most practical. The support *n* of the wheel or roller *v* may be rigidly secured to vane D, or pivoted, Fig. 4, so that the roller may adapt itself to any inaccuracies of the surface of the way. The way may be integral with or firmly secured to the support provided for it; or it may be adjustably located, as shown, the lower end being hinged in pocket *y*, and the whole supported by means for raising and lowering it and supporting it in a manner to prevent its canting. The means shown are the adjustable wedge-support *r* and adjusting-bolt *i*, hinged to the way and provided at its lower end with movable nuts, Fig. 3.

In Figs. 5 and 6 a construction is shown to obviate danger of the eye c' cramping on bolt a' , caused by the greater weight of a vane being in the rear of roller v . Wheels $e e$ are pivoted in recesses $a'' a''$ of the eye on opposite sides of the hinging-bolt at the top and bottom of said eye, as shown.

$a a$ in Figs. 1, 3, and 4 show the construction of a roof, circular in form and about twice the length of way c , for protecting the roller and said way from rain and snow. I make the roof in two sections, flanging the end of each, and bolt them detachably to the rudder. (Distinctly shown in Figs. 1 and 4.) The roof thus arranged covers the way, playing back and forth beneath it at all locations.

What I claim, and desire to secure by Letters Patent, is—

1. The mill-head and rudder, the spiral incline way having the serrated surface, and the roller having corresponding serrations, said roller having the stirrup-support pivoted to the rudder in a manner that any inaccuracy in

the spiral formation or location of the way will not cause a disconnection of the meshing parts, all in combination, substantially as set forth.

2. The mill-head, rudder, and incline way, in combination with a roller supported by a stirrup pivoted to the rudder, for the objects stated, substantially as described.

3. In a wind-engine consisting of the head provided with the incline way and a hinged rudder provided with the roller, the combination, with said parts, of the circular extended cover secured to the rudder in a manner to cover the roller and the way beneath at all its changeable locations.

4. The combination of the head and rudder with the serrated incline way and the serrated roller, to effect the improvements set forth, substantially as described.

GEORGE GARSIDE.

Attest:

EUGENE S. WEST,

I. L. WEST.