(No Model.)

G. GARSIDE.

WIND ENGINE.

No. 259,680. Patented June 20, 1882.

Fig. 1

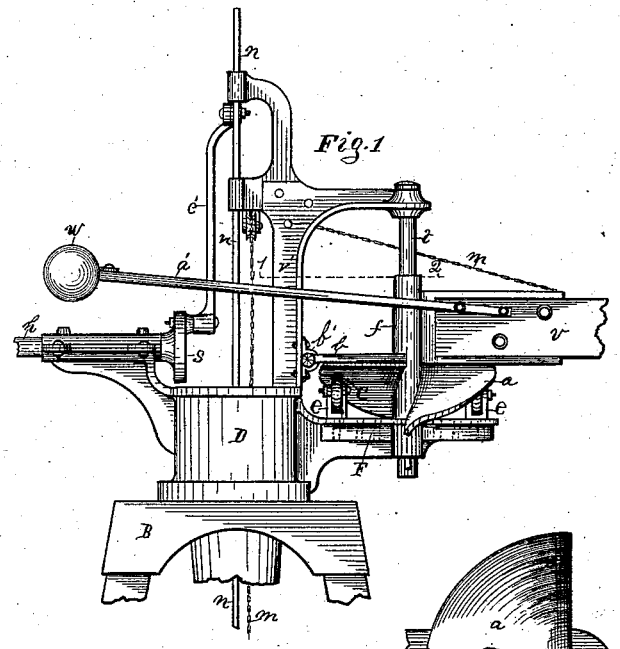


Fig. 2

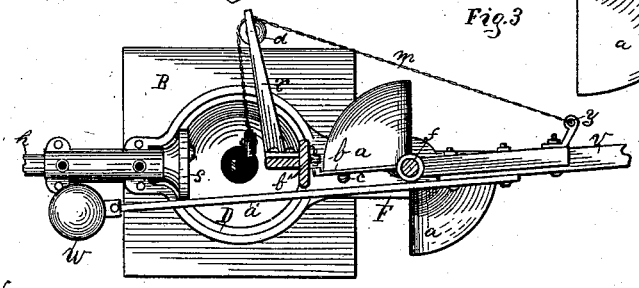


Fig. 3

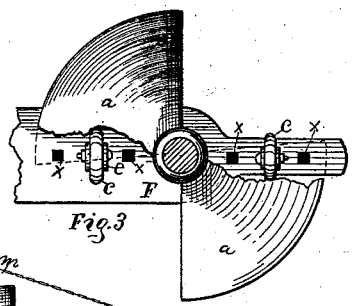
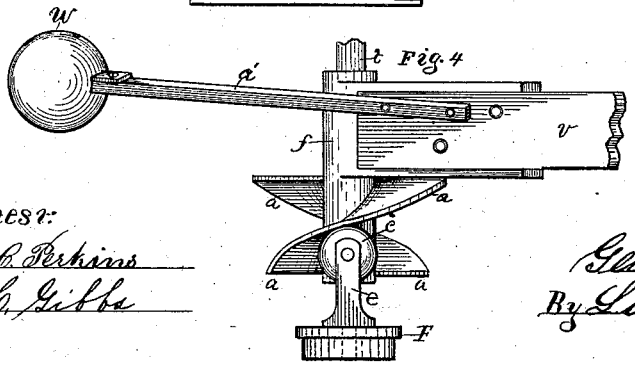


Fig. 4



Witnesses:
John C. Perkins
Frank C. Gibbs

Inventor:
George Garside
By Lucius C. West
Atty.

UNITED STATES PATENT OFFICE.

GEORGE GARSIDE, OF KALAMAZOO, MICHIGAN.

WIND-ENGINE.

SPECIFICATION forming part of Letters Patent No. 259,680, dated June 20, 1882.

Application filed March 20, 1882. (No model.)

To all whom it may concern:

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

My invention relates to wind-engines constructed with a vane which is adapted to swing laterally and play vertically on a hinging-rod.

It has for its object certain improvements, which are pointed out in the following description.

In the drawings forming a part of this specification, Figure 1 is a side elevation of the engine with the vane in the position it occupies when the wheel is in the wind; Fig. 2, a top view of same; Fig. 3, a detached portion of Fig. 2, enlarged; and Fig. 4, a detached part of Fig. 1, enlarged.

In the construction of the engine containing my improvements, D is the head, having bearings in the cap B of the derrick in the usual manner.

F is a rearwardly-extending arm for supporting the hinging device of the vane *v*. The vane is located at the oblique angle with the wheel-shaft as in other engines.

a' is an arm bearing a fixed weight, *w*, said arm being secured to the end of the vane near the hinge, and extended forward on a parallel plane with the vane, as in Fig. 2. The rear end of the vane is not here shown. The weight of the vane is so proportioned to the weight of the weighted arm, forming in this device a part of the vane, that said vane *a' v w* is equally balanced over a point at the hinging-rod *t*. Thus the whole weight is in effect centered at the hinging-point of the vane. The advantage thus far is that it obviates any undue friction of the hinging-eye *f* on the rod *t;* but by locating said vane at such a point at the rear of the center of the head D that the total weight in the rear of said center equals that in front, including the wheel (not here shown) connected with its shaft *h*, the engine is not only balanced in its bearings in cap B, when the wheel is in the wind, Fig. 2, but is equally balanced when the wheel is out of the wind, with the vane at right angles with the position shown in said figure. The reason of this is, as above stated, that the total weight of the vane device is centered at the hinging-eye at all positions of the vane.

In lieu of former devices for causing the vane to play up and down vertically on the hinging-eye, I have provided what I term a "screw-hinge." This hinge consists of a common hinging-eye, *f*, provided with two spiral leaves, *a a*, of peculiar form, secured to opposite sides of said hinging-eye, Fig. 4, and the whole secured to the vane at the location shown. It further consists of wheels *c c*, detachably located in mortises *x x* in the rear extension, F, Fig. 3, in a manner, in connection with leaves *a a*, that said wheels will traverse the under surface of said leaves during the rise and fall of the vane, substantially as illustrated in the several figures of the drawings. By changing the wheels into different mortises *x x* they are made to traverse different planes on the under surface of the leaves.

b is a projecting arm, secured to the hinge in a manner to conflict with the bumper *b'*, secured to the standard *v'*, which supports pump-shaft *n* and pulley-arm *r*, Fig. 2, said standard being here shown in section on line 1 2 in Fig. 1. This device limits the downward movement of the vane.

The varying resistance of the engine I effect by forming the leaves *a a* with a gradual increase in the pitch from the top downward. Thus the higher the vane rises the greater the power necessary to continue said rise. The function of this novel device to produce the usual varying resistance will obviously appear to those skilled in the art without a further explanation here.

An engine constructed with such an arrangement of vane and hinging device is very simply and cheaply made, and possesses an increased accuracy and promptness of action.

A further advantage over device having spiral inclines and wheels traversing the upper surface of the same is that the leaves of my hinge are themselves a covering to the wheels *c c* and the surface traversed by them.

The operation in swinging the vane laterally in throwing the wheel out of the wind is effected by pulling down on chain *m*, as in other engines.

Having thus described my invention, what I claim is—

1. A vane which is adapted to swing later-

ally and play vertically, provided with a screw-hinge consisting of the eye and the two spiral leaves or wings secured thereto, and having the downwardly-increasing pitch, in combination with the wheels adapted to traverse the under surface of said leaves, all substantially as set forth.

2. The engine-head provided with the rear arm, having the wheel-mortises and the wheels detachably located in said mortises, in combination with the vane provided with the screw-hinge consisting of the center eye and the integrally-connected spiral wings or leaves, all substantially as specified and shown.

GEORGE GARSIDE.

Witnesses:
CHAS. H. CARYL,
WILL CAMPBELL.