

(No Model.)

2 Sheets—Sheet 1.

P. T. COFFIELD.

WIND ENGINE.

No. 273,226.

Patented Feb. 27, 1883.

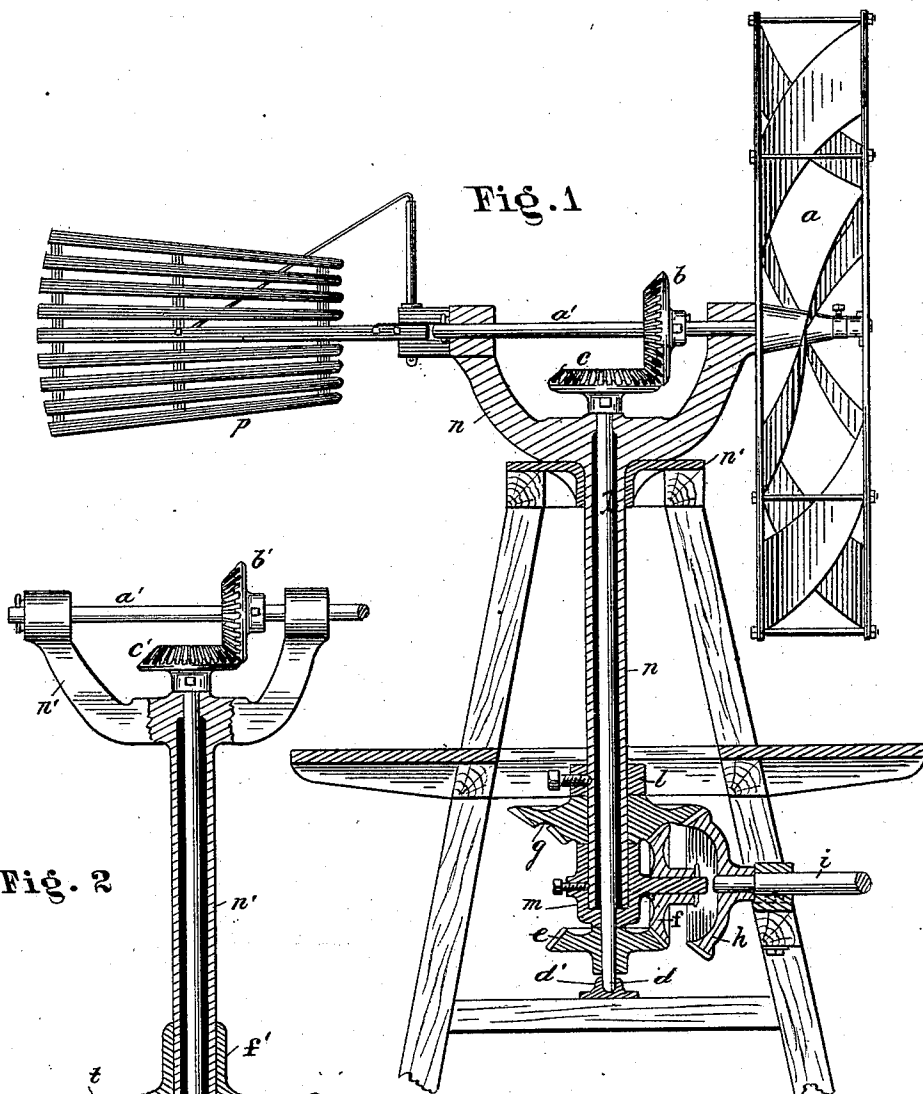


Fig. 2

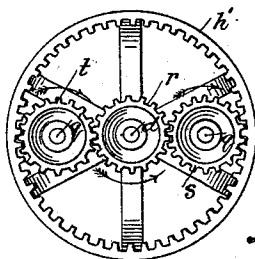
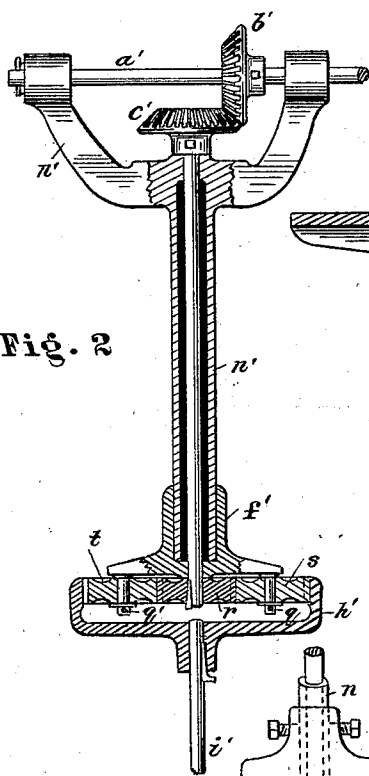


Fig. 3

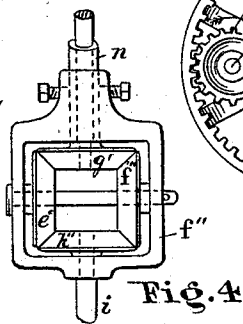


Fig. 4

Attest
R. J. Holiston.
S. J. Fairbank

Peter T. Coffield
Inventor
by
Henry Millward
his Attorney

(No Model.)

2 Sheets—Sheet 2.

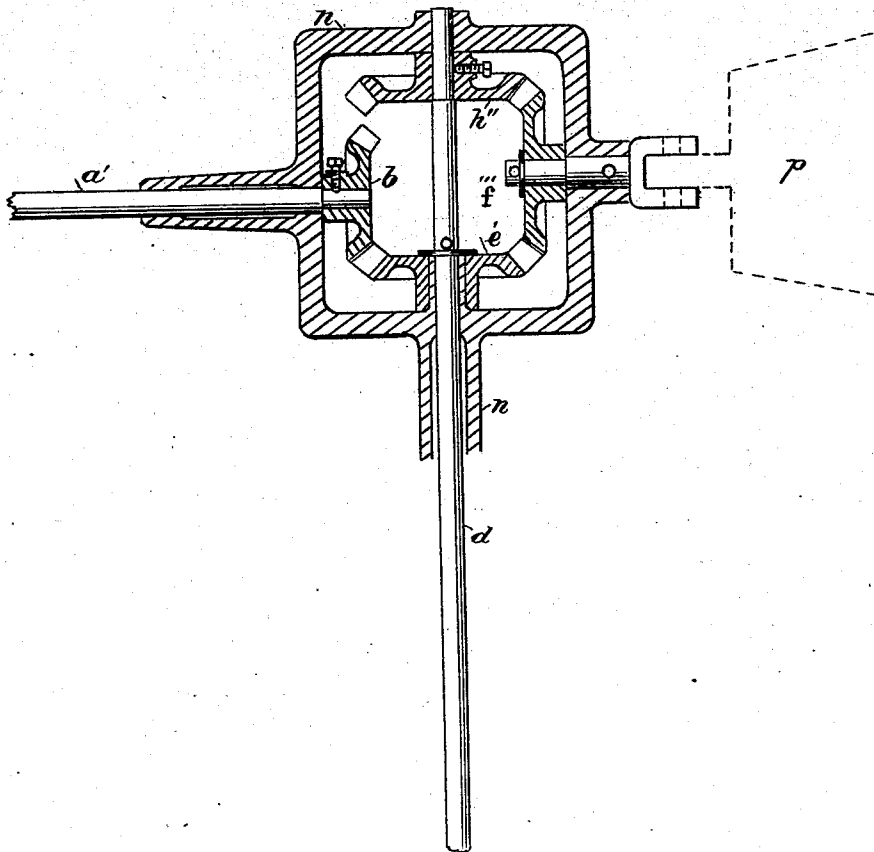
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Fig. 5



Attest

John H Johnson
H. H. Wolfe

Peter T. Coffield
Inventor

Henry Millward
his attorney

UNITED STATES PATENT OFFICE.

PETER T. COFFIELD, OF SPRINGFIELD, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO HIMSELF AND ALBERT L. WOLLEY, OF SAME PLACE.

WIND-ENGINE.

SPECIFICATION forming part of Letters Patent No. 273,226, dated February 27, 1883.

Application filed October 31, 1882. (No model.)

To all whom it may concern:

Be it known that I, PETER T. COFFIELD, of Springfield, county of Clarke, State of Ohio, have invented a new and useful Improvement in Wind-Engines, of which the following is a specification.

In the accompanying drawings, Figure 1 is a vertical sectional elevation, representing my improvements applied to a wind-engine. Fig. 2 is a partial sectional elevation of a modified construction of the same invention. Fig. 3 is a plan view of said modification, and Fig. 4 is a partial sectional elevation of second modification. Fig. 5 is a sectional view of still another modification, hereinafter described.

The present invention relates to windmills of the type known as "geared mills," and has for its object the obviating of difficulties arising from the shifting of the wind-wheel when opposed by the work to be performed. It is a common thing for the wind-wheel of a geared mill, when opposed by work to be done, to move around from a point that is suitable to the line of direction of the wind to a point that is not so suitable, and thereby lessen, if not completely destroy, its usefulness.

The invention consists in an extension forming part of and depending from the mill-cap, and carrying at or near its terminus a system of balanced gear-wheels that prevent the independent turning of the mill-cap.

To enable others skilled in the art to which my invention belongs to make and use the same, I will proceed to describe its construction and operation.

The wind-wheel *a* is mounted upon a shaft, *a'*, that runs in journals formed in the cap *n*. A bevel-gear wheel, *b*, secured to the shaft *a'*, meshes into a bevel-wheel, *c*, that is secured to the shaft *d*. The shaft *d* passes through the vertical extension of the cap *n* and rests in a cup, *d'*, although it is not essential for the aforesaid shaft to rest in a cup, *d'*, as it is obvious that the collar *l* may have radial arms extending to the derrick *u*, which would answer the same purpose.

To the shaft *d*, I attach a bevel-wheel, *e*, that meshes into a bevel-wheel, *f*, which runs loosely upon a stud that forms a part of a col-

lar, *m*, and the wheel *f* gears into a double bevel-wheel, *g*, that runs loosely on the extension of cap *n*. A collar, *l*, fast to the aforesaid extension, holds the gear to its work. The wheel *g* transmits motion to a bevel-wheel, *h*, fast upon the shaft *i*, from which power may be obtained for any purpose desired. The mill-cap *n* turns in a bearing, *n'*, that rests on the derrick *u*, and a vane, *p*, is attached to said cap for the purpose of turning the wind-wheel into the best position for work.

In Figs. 2 and 3, I have shown a modification, wherein the arrangement of the cap *n* and gears *e' b'* are identical with those above described, but in which I substitute spur-wheels *r s t* for bevel-gear *e f g*, and a collar, *f'*, for the collar *m*. I furnish this collar *f'* with studs *q q'*, upon which the gear-wheels *s t* revolve; but in place of the wheel *h* and shaft *i*, I use an internal gear-wheel, *h'*, and a shaft, *i'*.

In Fig. 4, I illustrate another modification of this invention, in which the bevel-wheels *e' g' f''' h''* take the place of the bevel-wheels *e f g h*, and the box *f''* takes the place of the collars *l m*, all of which will be easily understood from an examination of the drawings.

If the mill-cap *n* simply supported the wind-wheel *a* and vane *p*, and was otherwise free to rotate around the shaft *d* as a center, it is plain to see that the bevel-wheel *b*, when opposed by the work to be performed, could swing around the wheel *c* in place of turning it, which it cannot do with my improved construction.

In Fig. 5 the head-gear on the wind-wheel shaft engages a bevel-gear loose on the shaft *d*, and this engages a gear, *f'''*, which meshes with a third bevel-gear, *n'''*, fixed on shaft *d*. During the rotation of the shaft upon which the wind-wheel is mounted the shaft *d*, Fig. 1, is rotated through the medium of the bevel-gears *b* and *c*. The bevel-gear *e*, fixed upon shaft *d*, carries the loose gear *f* to turn the loose double bevel-gear *g*, and this in turn drives the gear *h* upon shaft *i*. If, now, the cap or turn-table *n*, with its lower extension, through which the shaft passes, is turned, its collar *m* will be turned with it, and the loose gear *f*, carried by said collar, will roll upon the bevel-gears *e* and *g*. By such means all twisting of

the shaft will be avoided. When the gears are arranged as in Figs. 2 and 3, the shaft carrying bevel-gear *c'* and driven by gear *b'* will, during its rotation, cause its fixed gear *r* to turn the loose gears *s* and *t*, which in turn cause the revolution of the internally-toothed wheel *h'*, which is fixed on shaft *i'*. Under such arrangement, when the cap or turn-table and its extension are turned, the gears *s* and *t*, loosely mounted on studs on collar *f'*, roll on the internal line of teeth of wheel *h'*.

In Fig. 4 the wheels *e'* and *e''* are loosely mounted on a spindle on the yoke or collar *f''*, which is fitted on the lower extension of the cap *n*, the gear *g'* turning with a shaft, *d*, driven, as in Fig. 1, and the gear *h''* turning with a shaft, *i*. Hence when the collar *f''* is turned the gears *e'* and *f''* roll on the gears *g'* and *h''*.

In Fig. 5 the gear *b*, fixed on shaft *a'*, rotates the loose gear *e'*, which in turn rotates a loose gear, *f'''*, and this latter gear causes the gear *h''*, fixed on shaft *d*, to revolve, thereby operating said shaft.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the wind-wheel and the shaft upon which it is mounted, provided with a fixed gear, of a second rotary shaft, which is driven by the wind-wheel shaft

through the medium of gear-wheels, substantially as described, and which is provided with a fixed gear meshing with a loose gear, which in turn meshes with another loose gear engaging a gear fixed on the shaft for operating the machine to be driven, substantially as described.

2. The combination, with the shaft *d*, carrying a fixed gear, *e*, of the collar *m*, carrying a loose gear and connected with the turn-table, the double bevel-gear *g*, and the gear *h*, mounted on shaft *i*, said members being combined and arranged substantially as described.

3. The combination, with the wind-wheel shaft supported in bearings on the turn-table, of the shaft *d*, passing through an extension of the turn-table and driven from the wind-wheel shaft by gears *b* and *c*, the bevel-gear *e*, fixed on shaft *d* and meshing with a gear, *f*, loosely mounted on a collar carried by said extension of the turn-table, and the loose gear *g*, meshing with gear *f* and with a gear fixed on shaft *i*, substantially as described.

In testimony whereof I have hereunto set my hand this 26th day of October, 1882.

PETER T. COFFIELD.

Witnesses:

E. S. WALLACE,
HENRY MILLWARD.