G. W. WORSTER.

WIND-MILL.

No. 178,576. Patented June 13, 1876.

FIG 1

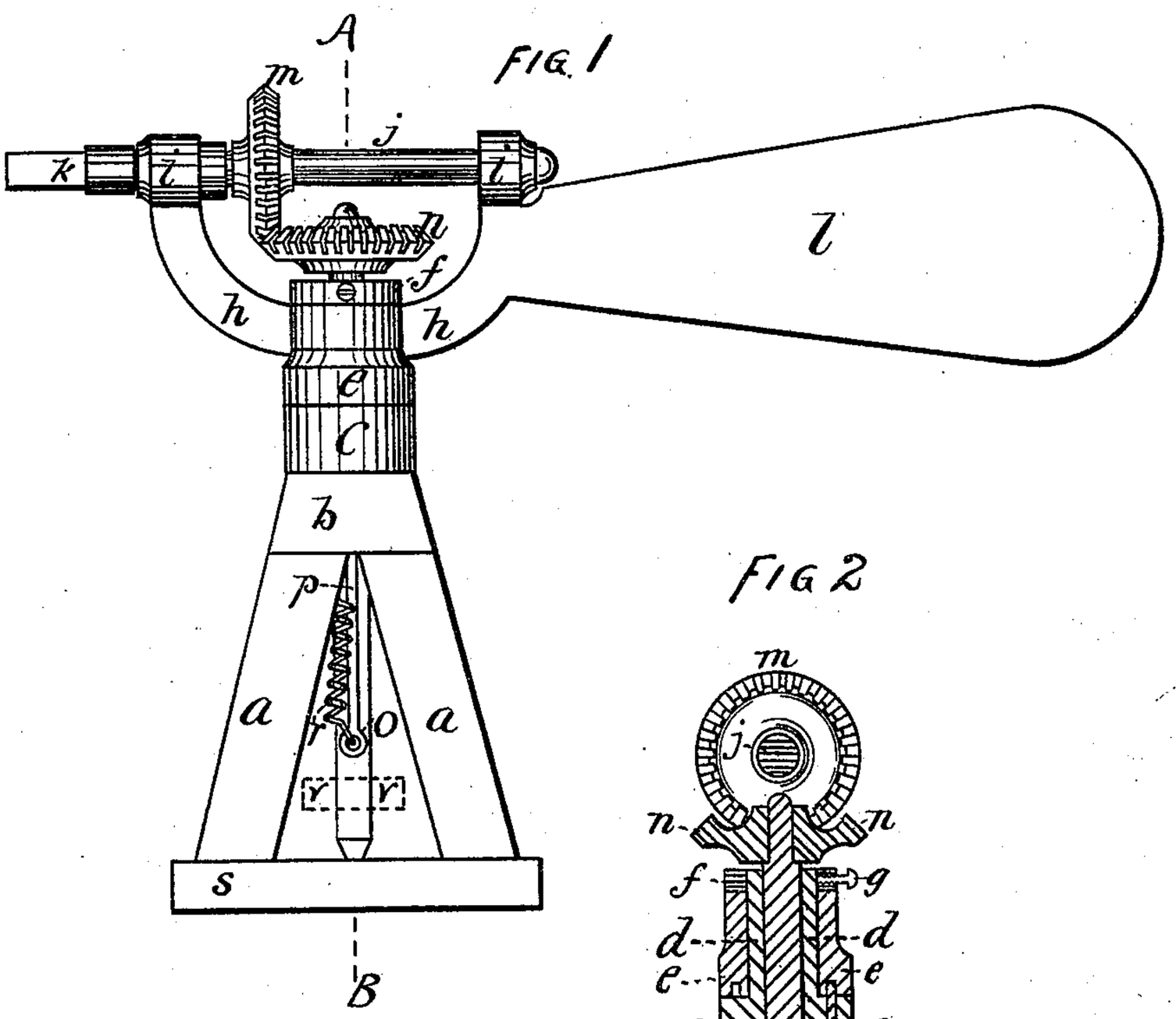


FIG 2

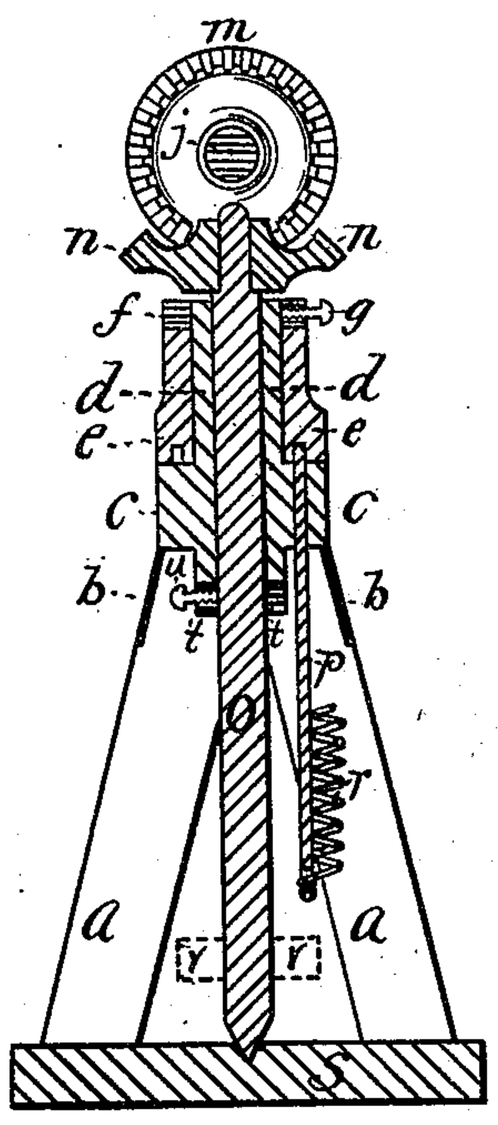
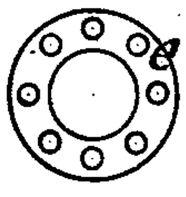


FIG 3.



WITNESSES.

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UNITED STATES PATENT OFFICE.

GEORGE W. WORSTER, OF BANGOR, MAINE.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **178,576**, dated June 13, 1876; application filed May 1, 1876.

To all whom it may concern:

Be it known that I, GEORGE W. WORSTER, of Bangor, State of Maine, have invented an Improvement in Windmills, of which the following is a specification:

The object of my invention is, by a peculiar construction and arrangement of parts, to relieve the vertical or transmitting shaft of all friction resulting from the rotation or other motions of the frame which supports the wind-wheel; and also to provide the means of locking or releasing the said frame, whereby the wind-wheel can be permitted to or prevented from changing its position relatively to the points of the compass, yet be allowed free rotation upon its axis, as the wind may impel it.

In the accompanying drawings, Figure 1 is a side elevation, showing my improvement, Fig. 2 is a vertical section, taken on line A B, Fig. 1. Fig. 3 is an under side view of the hub *e*.

In these drawings, *a a* represent the supporting-frame, of which there are four supports, connected by band *b*. *c* is a metallic cap, which is rigidly secured to the head of the supports *a*. This cap I form with a diminished cylindrical portion, which extends down into a corresponding cavity in the frame, as shown. A similar but more extended cylindrical part, *d*, extends upward, and the hub *e* is formed and fitted to revolve thereon. The set-collar *f*, which is rigidly secured by set-screw *g* to sleeve *d*, serves to retain hub *e* in position.

h h are the arms of the revolving frame, in the bearings *i i* whereof the wind-wheel shaft *j* revolves, it being secured on said shaft at *k*. *l* is the balancing-vane, by which the wheel is brought to the wind. *m* is a miter-gear, secured on shaft *j*, and as it is revolved by the wind-wheel it imparts motion to a similar gear, *n*, secured upon the vertical shaft *o*, which is thereby rotated. This vertical shaft is stepped in the bed *s*, as shown, and the set-collar *t* secured upon the shaft by the set-screw *u*, and bearing against cap *c*, prevents vertical movement of the shaft.

The motion imparted to shaft *o* may be taken off or economized by a pulley, *v*, secured on said shaft, or by a crank, gear-wheel, or any other mechanical means.

In the lower face or bearing of hub *e* is a series of holes, as shown in Fig. 3, into which holes the spring-bolt *p* fits. This bolt plays freely in a hole through cap *c*, as shown in Fig. 2, and is held alert, for an upward movement, by spring *r*, the ends of which are respectively secured to said bolt and the frame, as shown. Thus, when the bolt engages hub *e*, as shown in Fig. 2, the frame is prevented from rotating; and by attaching a cord or wire to this bolt, it may be actuated at a distance therefrom.

The object of this device is to prevent the constant and irregular motion of the frame and wind-wheel relatively to the points of the compass, and to lock the frame in position and so retain it until the wind may change its direction, when, by temporarily withdrawing the bolt, the wheel is brought to the wind, and the action of the bolt again locks it.

By the peculiar construction and arrangement of shaft *o*, cap *c*, and hub *e*, the shaft is exempt from any friction, strain, or wear, caused by the weight or movements of the frame, or the strain exerted thereon by the wind-wheel, all which is exerted upon sleeve *d* of cap *c*.

I claim as my invention—

1. In a windmill, the combination and arrangement of cap *c*, cylindrical sleeve *d*, shaft *o*, and the wind-wheel hub *e*, when the whole are so constructed and arranged as that the base of the sleeve serves as the cap of the frame, and the interior and exterior of the sleeve serves as the respective rotative bearings of the shaft and hub, substantially in the manner as described and shown.

2. In a windmill, a locking mechanism, constructed and arranged to be withdrawn at will to allow the wind-wheel to "come into the wind's eye," and to automatically lock the wind-wheel frame, substantially as and for the purposes specified.

GEORGE W. WORSTER.

Witnesses:

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