E. HOWLAND & J. B. SWEETLAND.

WIND-WHEEL.

No. 188,139. Patented March 6, 1877.

Fig. 1.

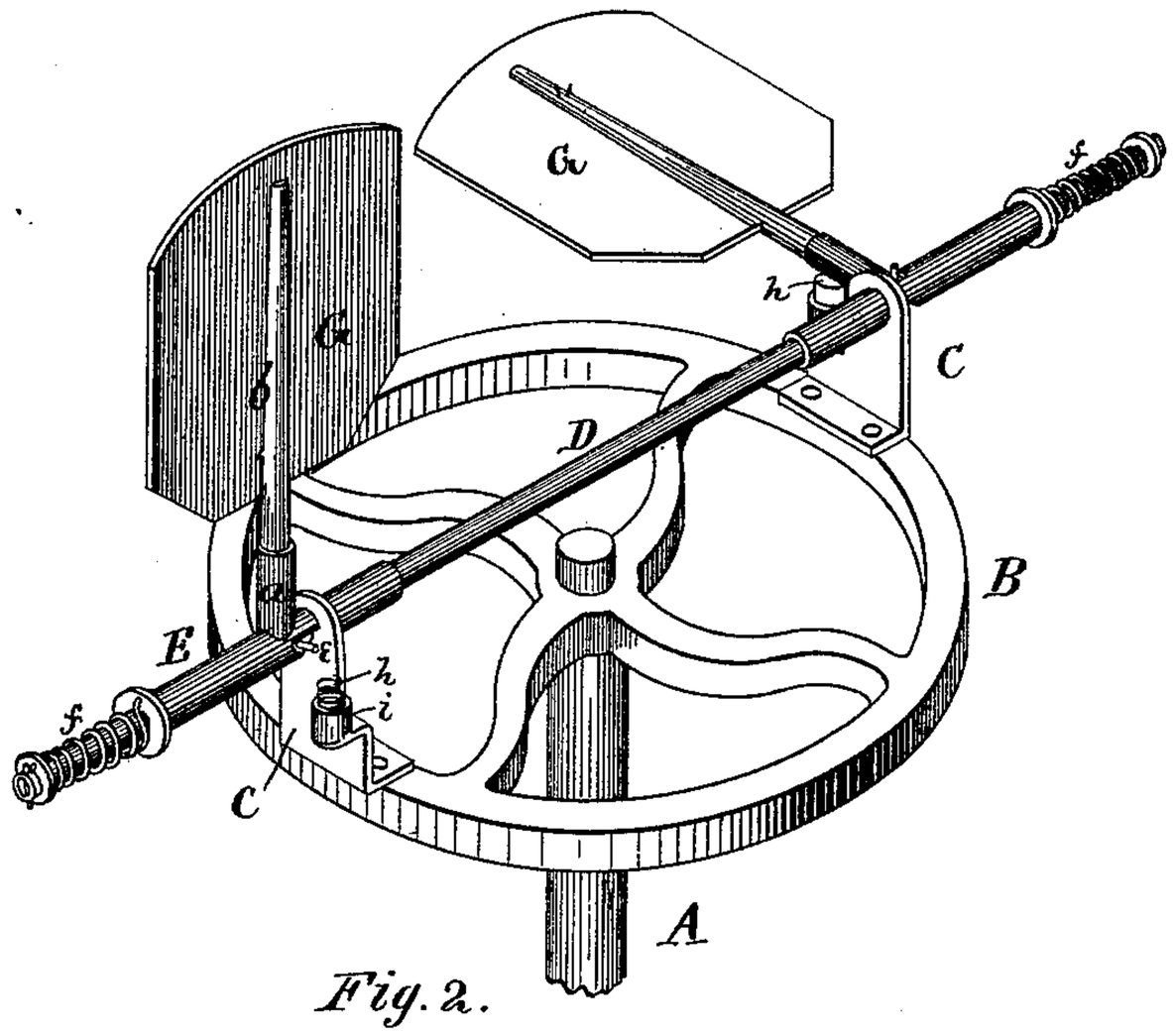
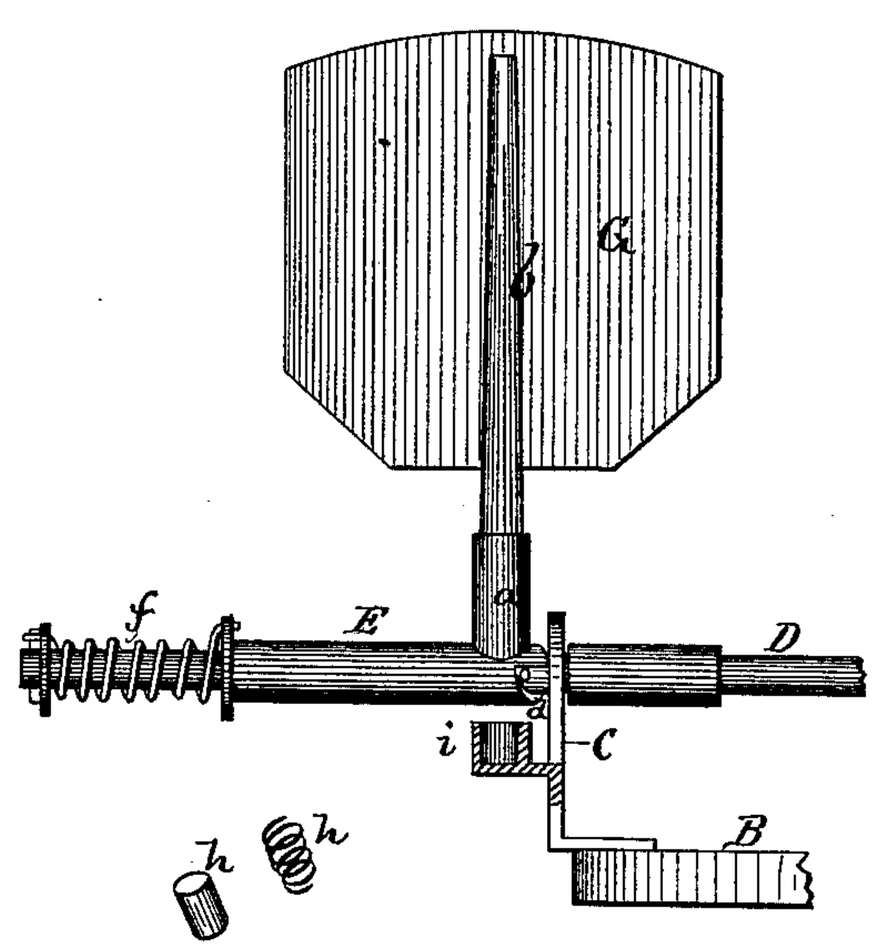


Fig. 2.



WITNESSES

Henry V. Miller

Joseph L. Wildman

INVENTOR

E. Howland and J. B. Sweetland.

Alexander Mason,

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EPHRAIM HOWLAND AND JEROME B. SWEETLAND, OF PONTIAC, MICHIGAN.

IMPROVEMENT IN WIND-WHEELS.

Specification forming part of Letters Patent No. **188,139**, dated March 6, 1877; application filed December 14, 1876.

To all whom it may concern:

Be it known that we, EPHRAIM HOWLAND and JEROME B. SWEETLAND, of Pontiac, in the county of Oakland, and in the State of Michigan, have invented certain new and useful Improvements in Wind-Engines; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, making a part of this specification.

Our invention relates to that class of windmills in which a horizontal wheel is provided with shafts, each of which has a sail at each end, said sails standing at right angles to each other; and the nature of our invention consists in spring-cushions arranged to let the sail ease down, and also in a self-adjusting joint, all as hereinafter more fully set forth.

In order to enable others skilled in the art to which our invention appertains to make and use the same, we will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a perspective view of a wind-wheel embodying our invention. Fig. 2 is a detailed view of parts thereof.

A represents the vertical post, on the upper end of which is the horizontal wheel B, said wheel being provided with suitable bearings C C for the shaft D. On each end of the shaft D is placed a loose sleeve, E, provided at its inner end with a hollow tube, *a*, extending at right angles therewith, and in said tube the sail-arm *b* is fastened, the sail G being attached to said arm. At the inner end of the sleeve E is formed an inclined notch, *d*, having one straight side, which is held against a pin, *e*, in the shaft by means of a spring, *f*, surrounding the end of the shaft, and having one end attached to the shaft and the other to the sleeve, the whole forming a self-adjusting joint between the sail and the shaft. The object of this joint is, that in a heavy wind the springs will give enough to allow the sail to tip over and blow right out straight, and when the wind slacks down the sail will straighten up. The springs are intended to be stiff enough to hold the sails up straight in any ordinary wind.

As the shaft turns in its bearings the tube *a*, which comes down horizontal, strikes a spring-cushion, *h*, held in a box, *i*, projecting from the bearing C.

These spring-cushions prevent any jarring of the windmill and let the sails down easy.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The spring-cushions *h h*, arranged in combination with the shaft D and its sails, for the purposes herein set forth.

2. The combination of the shaft D, loose sleeve E, carrying the sail G and having notch *d*, the pin *e*, and the spring *f*, all constructed substantially as and for the purposes herein set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 11th day of November, 1876.

EPHRAIM HOWLAND.
JEROME B. SWEETLAND.

Witnesses:
A. B. SIMPSON,
JAS. A. WEEKS.