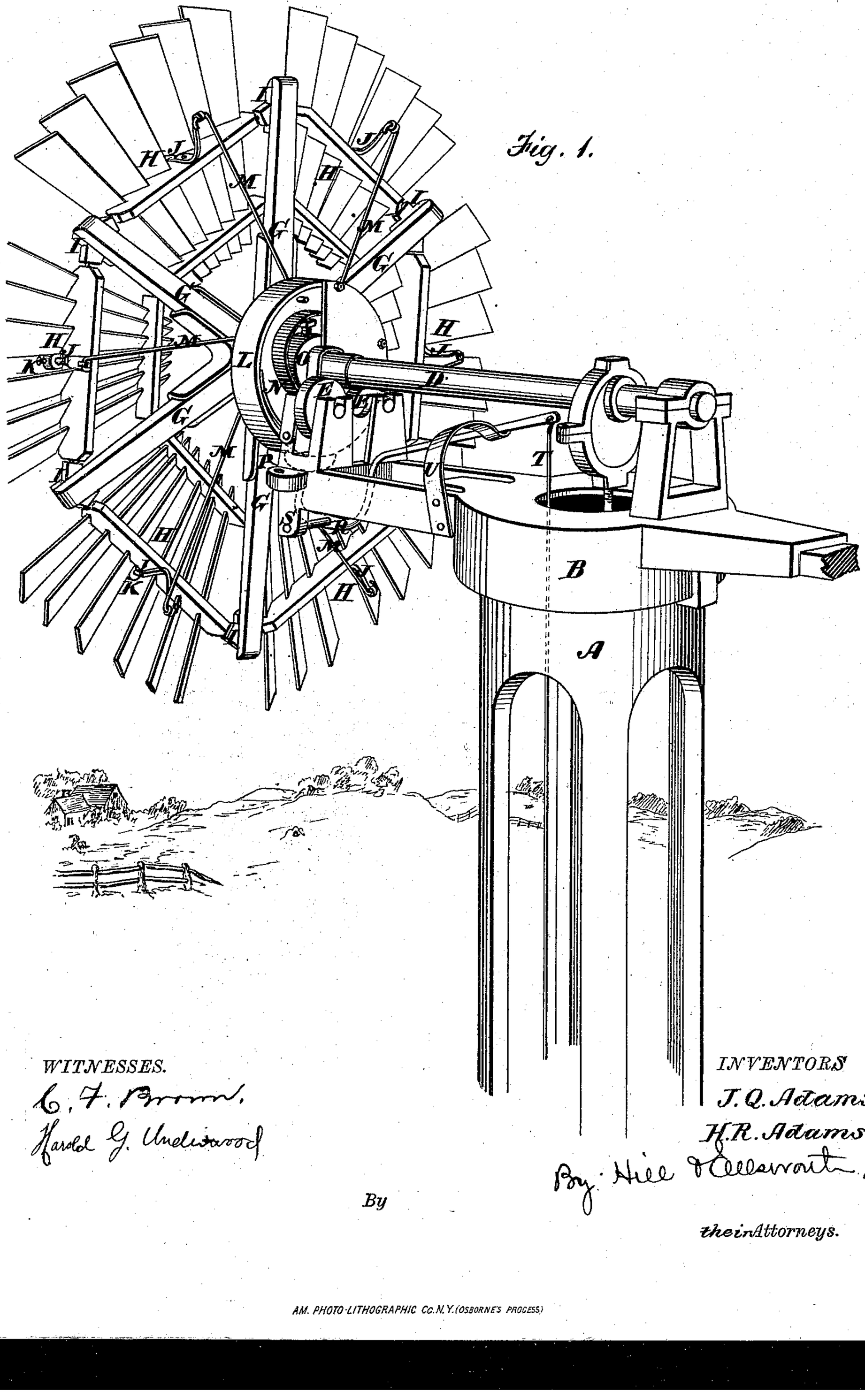
2 Sheets--Sheet 1.

J. Q. & H. R. ADAMS.

Wind-Mills.

No. 143,111. Patented September 23, 1873.

Fig. 1.



WITNESSES.

C. F. Brown.

Harold G. Underwood

By

INVENTORS

J. Q. Adams

H. R. Adams.

By Hill & Ellsworth,

their Attorneys.

2 Sheets--Sheet 2.

J. Q. & H. R. ADAMS.

Wind-Mills.

No. 143,111. Patented September 23, 1873.

Fig. 2.

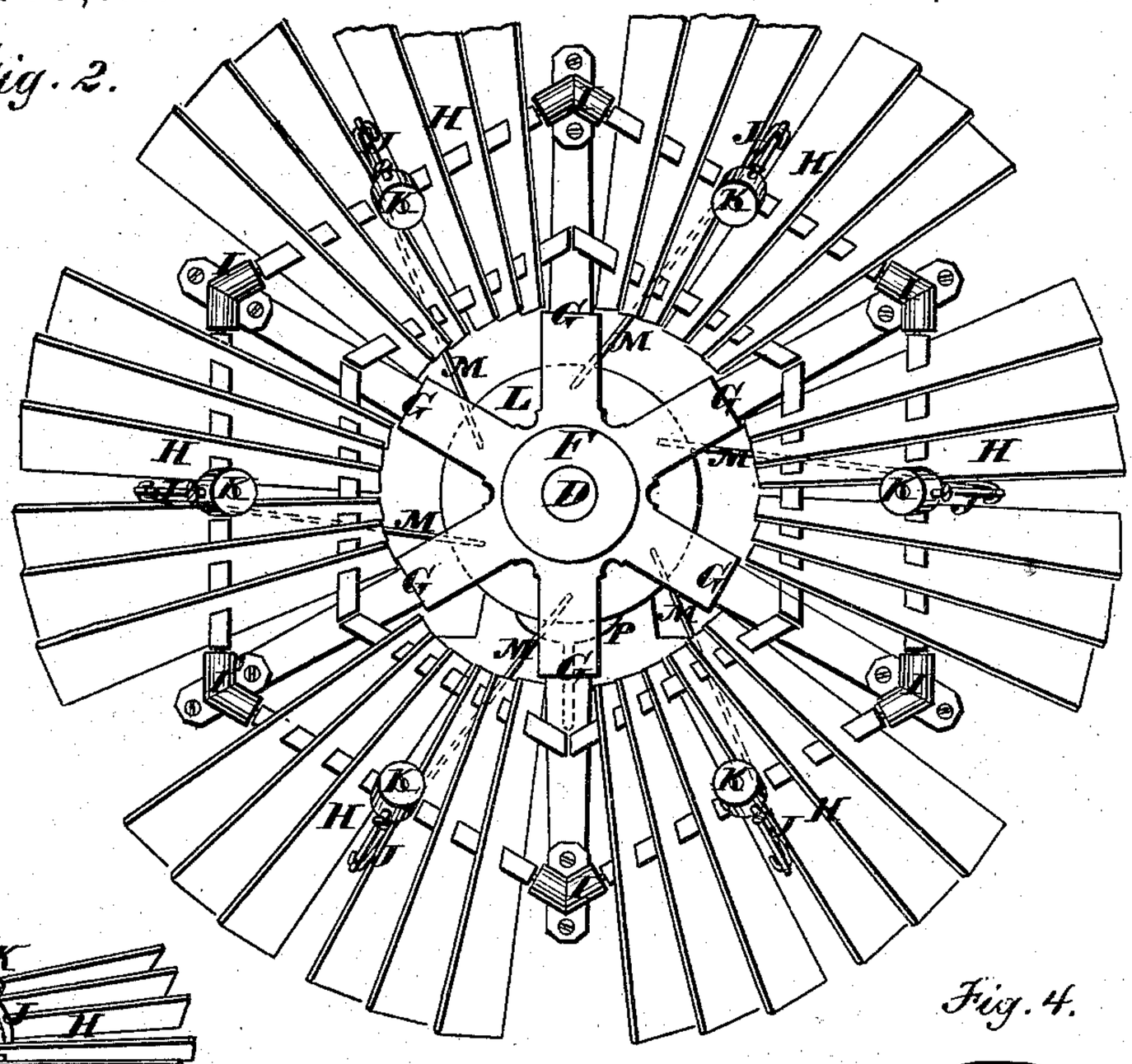


Fig. 3.

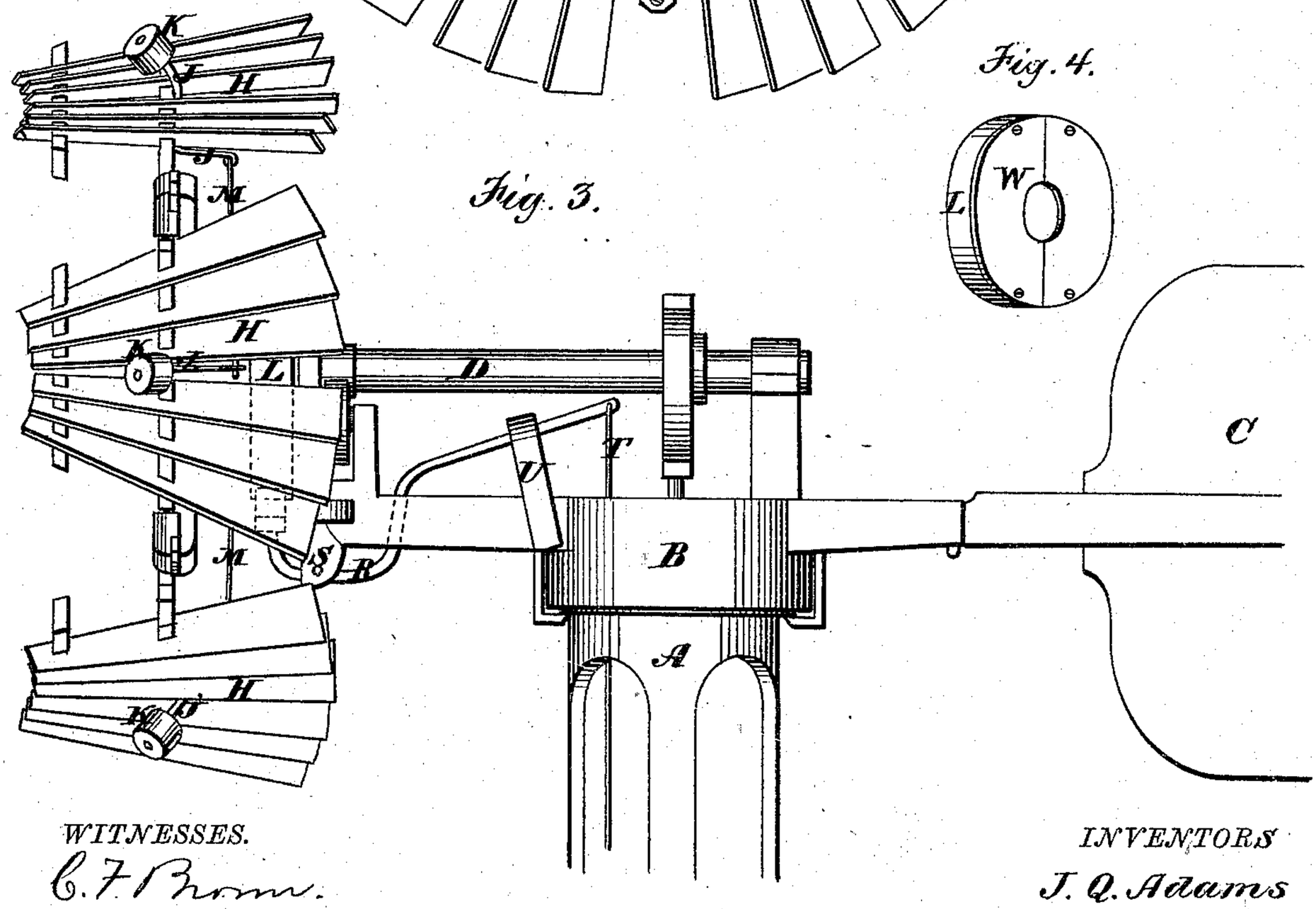


Fig. 4.

WITNESSES.

C. F. Brown.

Harold G. Underwood

By

INVENTORS

J. Q. Adams

H. R. Adams

By Hill & Ellsworth,

their Attorneys.

UNITED STATES PATENT OFFICE.

JOHN Q. ADAMS AND H. RAYMOND ADAMS, OF MARSEILLES, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **143,111**, dated September 23, 1873; application filed July 9, 1873.

To all whom it may concern:

Be it known that we, JOHN Q. ADAMS and H. RAYMOND ADAMS, both of Marseilles, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Windmills; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet 1, is a rear perspective view of a windmill constructed in accordance with our invention. Fig. 2, Sheet 2, is a front elevation of the same. Fig. 3, Sheet 2, a side elevation, showing the sections of the wind-wheel open; and Fig. 4, Sheet 2, is a perspective view of the flanged disk and its cover.

Similar letters of reference in the accompanying drawings denote the same parts.

Windmills as usually constructed for farm purposes are of two general classes. The first class embraces those mills using solid head-wheels, and depending upon some action of the vane or rudder to regulate the motion in unsteady winds, by bringing the edge of the head or wheel into the wind, or approximating that position if a slow motion is desired. The second class seeks the like effects by having the wind-wheel made in sections, each section being hung on pivots, and provided with some device for opening and closing it as the velocity of the wind increases or diminishes, thus presenting the faces of the sections at an angle to the wind when high, and coming back gradually to present a fuller face to the wind as it diminishes.

Our invention relates to this latter class of windmills; and has for its object to regulate the motion of the wind-wheel in a more prompt and efficient manner than heretofore. To this end the invention consists in the employment of a wind-wheel provided with pivoted sections, having transverse weighted arms connected by rods, or their equivalent, with a loose spring disk, as hereinafter more fully set forth. Our invention further consists in the employment of an adjustable collar or hub, in combination with a flanged disk and coiled spring, by means of which the tension of the spring may be varied.

In the accompanying drawings, A is the pedestal of the windmill; B, the turn-table, mounted thereon in any suitable manner, so that it shall turn freely, and provided with a vane or rudder, C, in the usual manner. D is the shaft of the wind-wheel, mounted in a horizontal position upon the turn-table, with its rear bearing in an upright of the latter, and its front bearing upon the friction-rollers E E, as shown. The wind-wheel is composed of the head F firmly keyed or otherwise secured to the shaft D, the arms G radiating from the head, and the wheel-sections H pivoted between the arms by pivots extending from the ends of the central cross-bar or axle of each section, so as to enter sockets I secured to the ends of radial arms. The sockets for each arm are cast upon a single base-plate, at an angle to each other, and the plate is secured to the arm by bolts or screws, as shown. J J are transverse arms, firmly secured to the axle of each section, so as to project somewhat in front and rear of the same; and K K are the weights, made adjustable upon their outer ends by set-screws, or other suitable means. L is the flanged disk, mounted loosely upon the wheel-shaft, immediately in rear of the head F, and connected to the rear ends of the transverse arms J by means of the radial rods M. The disk is formed with a wide flange, to the interior circumference of which is secured one end of the coiled spring N. The opposite end of this spring is secured to the periphery of a hub or collar, O, attached to the shaft D by a set-screw, so as to occupy a position within the flange of the disk, as shown. P is the brake-shoe, fastened to the end of the arm R, so as to occupy a position immediately beneath the flange of the disk. The brake-arm is pivoted to or hung in lugs S at the lower front corner of the turn-table, and from thence extends backward and upward through said turn-table to a point over the main opening of the latter, where it is attached to the operating-rod T. A spring, U, secured to the turn-table, bears upward against the arm to hold the brake-shoe out of contact with the disk.

The operation of the windmill is as follows: The wheel being in motion with the sections closed, so that the full face of the wheel is presented fairly to the wind, as the pressure of the latter increases the velocity of the

wheel will also be increased, until the centrifugal force throws out the weights and opens the sections gradually, so that their faces shall occupy an angle to the wind, and diminish the force of its pressure upon them. This expansion of the weights effects a partial revolution of the flanged disk through the medium of the connecting-rods M, its revolution being resisted by the spring, which, by bringing back the disk to its position as the centrifugal force decreases, tends to return the sections of the wheel with their faces to the wind. Thus, by the centrifugal force of the weights, and the reacting force of the spring equalizing and regulating each other, a steady equalized motion is obtained. The disk and spring being connected by the radial rods, serve to regulate the different sections of the wind-wheel, so that their movements shall be equal and uniform. To stop the rotation of the wind-wheel the brake is applied by pulling down upon the operating-rod, so that the brake-shoe shall bear against the flange of the disk. The pressure of the brake arrests the movement of the disk, while the wheel, continuing its rotation, causes the connecting-rods to throw open the sections and stop the wheel. In a working mill the friction of the parts, the pump being attached, will prevent the sections from returning to the wind until the brake is removed. By holding the brake firmly against the flange of the disk, the pressure of the wind upon the sections will cause them to open without revolving the wheel. By adjusting the collar O upon the shaft D, the tension of the spring N is adjusted to regulate the motion of the wind-wheel; and by adjusting the weights upon their arms the centrifugal force required for opening the wheel-sections is determined.

It will be seen, by reference to Fig. 4 of the drawings, that a cover, W, may be secured to the flanged disk by screws or other means, so as to cover the spring and completely protect it from snow, sleet, &c., that might otherwise interfere with its operation and adjustment. We prefer to make the cover in two parts, as shown, to embrace the main shaft, and thereby facilitate their application and removal.

Having thus described our invention, what we claim, is—

1. The pivoted sections provided with transverse weighted arms, in combination with the connecting-rods and spring-disk, loosely mounted on the wheel-shaft, substantially as described.

2. The pivoted sections provided with transverse weighted arms, in combination with the connecting-rods, loose spring-disk and brake, as and for the purpose set forth.

3. The adjustable collar or hub, in combination with the flanged disk and coiled spring, substantially as described.

JOHN Q. ADAMS.
H. RAYMOND ADAMS.

Witnesses:
W. A. MOREY,
O. R. ADAMS.