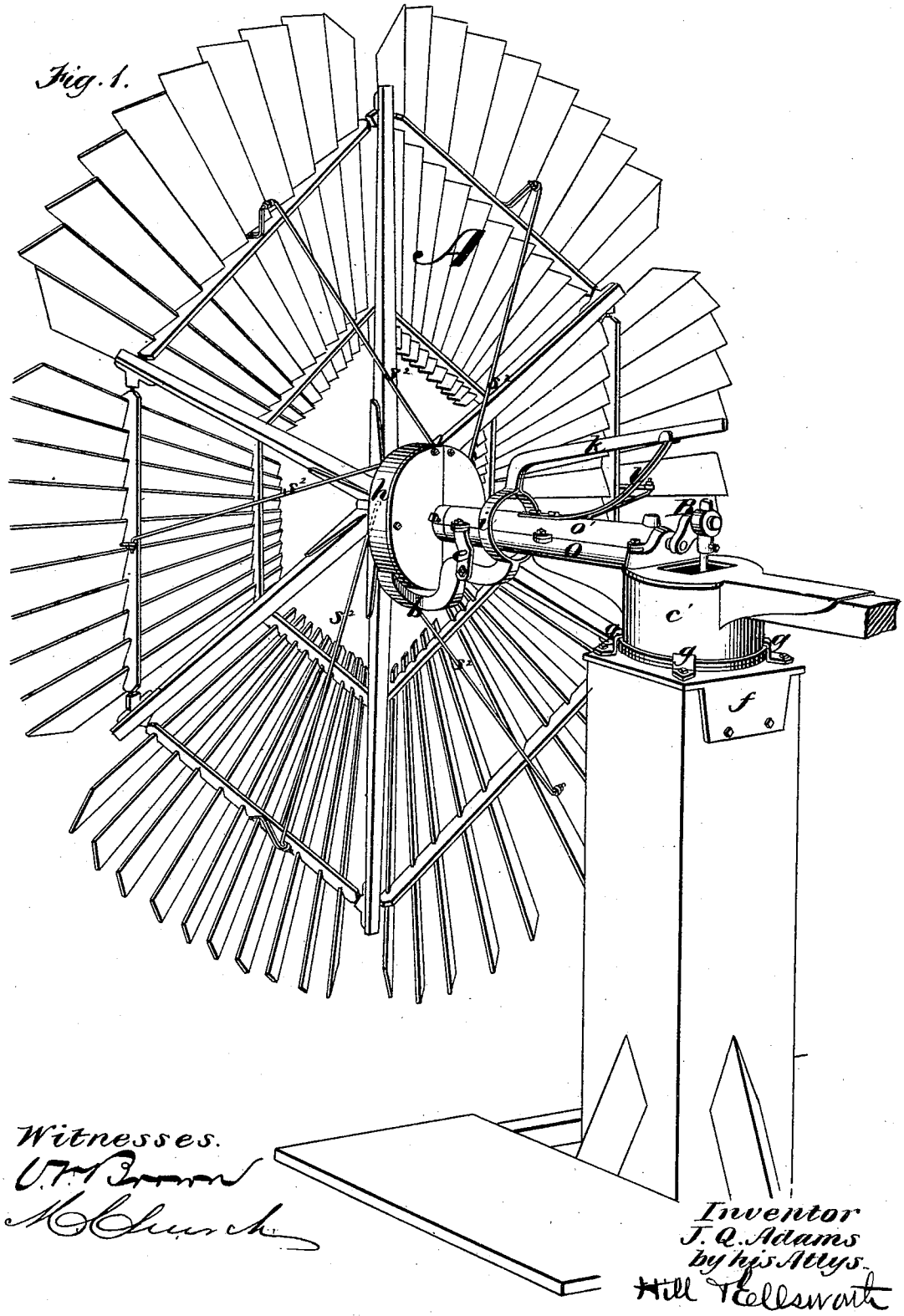
2 Sheets--Sheet 1.

J. Q. ADAMS.
Wind-Mill.

No. 167,050. Patented Aug. 24, 1875.

Fig. 1.



Witnesses.
O. M. Brown
M. Church

Inventor
J. Q. Adams
by his Attys.
Hill & Ellsworth

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets--Sheet 2.

J. Q. ADAMS.

Wind-Mill.

No. 167,050. Patented Aug. 24, 1875.

Fig. 2.

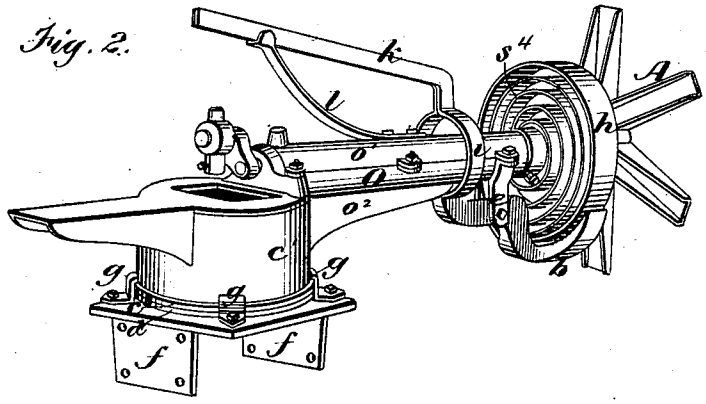


Fig. 3.

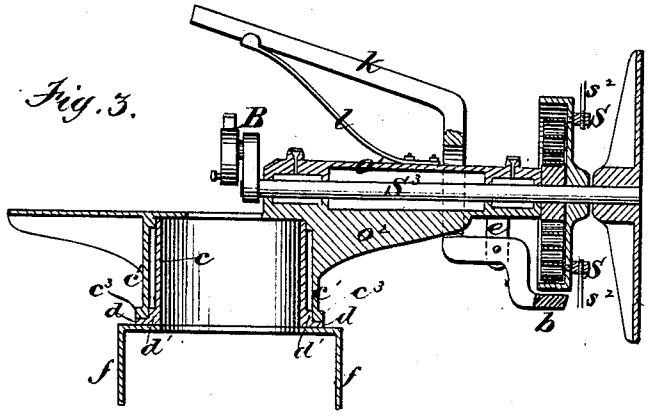


Fig. 4.

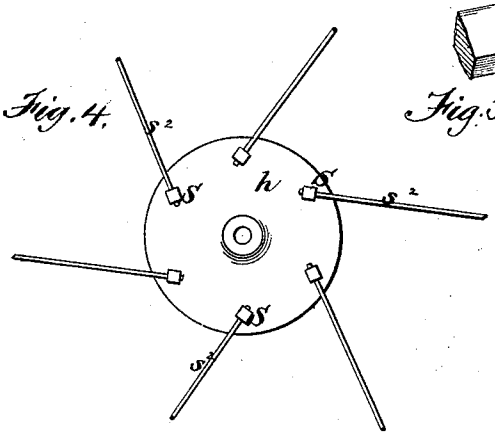
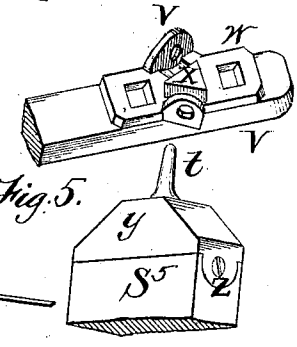


Fig. 5.



Witnesses.

C. F. Brown.

M. C. Church

Inventor.
J. Q. Adams.
by his Attys.
Hill & Ellsworth

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN Q. ADAMS, OF MARSEILLES, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **167,050**, dated August 24, 1875; application filed January 4, 1875.

To all whom it may concern:

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

Figure 1 is a perspective view of my improved windmill. Fig. 2 is a perspective view, showing my improved turn-table, with governing-wheel, brake, and wheel-head. Fig. 3 is a sectional view of the same. Fig. 4 is a front view of the governing-wheel, and Fig. 5 is a perspective view of the joint by which the sections of the wind-wheel are swiveled to the radial arms.

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

My invention relates to improvements in windmills; and consists, first, in the employment of an improved turn-table for such mills, in which an inner stationary hollow cylinder is used, provided at its base with two circular bands or steps, on the outer one of which the outer movable cylinder rests and turns, the outer movable cylinder being also provided at its top with an inner circular band bearing against the stationary cylinder near its top, by which construction an annular space is left between the cylinders, thus avoiding much of the friction between the surfaces of the cylinders, which would otherwise occur. My invention further consists in the employment of an outer cylindrical casing surrounding the wind-wheel shaft, and having a removable top for the purpose of removing or gaining access to the shaft. My invention also consists in the employment of a stud, attached to the governing-wheel of a windmill, said stud rotating on its axis and provided with a screw-threaded perforation in its head, in combination with adjustable rods connecting the governing with the wind wheel, as hereinafter more fully set forth.

In the accompanying drawings, A represents the wind-wheel supported on a horizontal shaft, S^3, provided with a crank, B, on its inner end, for the attachment of the ordinary connecting-rod, not seen in the drawings. *c* is the inner stationary cylindrical portion of the turn-table which supports the operating mechanism, provided with flanges *f f*, by means of which it is secured to the tower. *d d'* are circular bands or steps at the base of the stationary cylinder *c*, the outer circular band *d* supporting the outer movable cylinder c^1, which is provided with an outer circular band, c^3, at its base, resting in the step *d*, and an inner circular ring at its top abutting against the outer surface of the stationary cylinder *c*. Both cylinders are made hollow, for the passage of the connecting-rod and the working of the crank B, by means of which the cylinders may be made of greater height, to bring them as near as possible to the horizontal plane of the shaft. By this construction it will be seen that the movable cylinder can readily be turned on the circular band *d* of the stationary cylinder, and that an open annular space is left between the cylinders, thus allowing very little frictional contact between them, and enabling me to dispense entirely with the use of friction rollers and balls at the bases of the cylinders, which are expensive and objectionable, because of the unequal wear of the parts. The cylinders *c* c^1 are preferably made of as small diameter as is consistent with the proper operations of the crank. The wind-wheel shaft S^3 has its bearings in a casing, O, the boxes preferably being filled with Babbitt metal. The top *o'* of the casing is made removable, being provided with ears, and fastened to the casing by bolts and nuts or their equivalents. By this construction, all ingress of foreign matter to the shaft is prevented, and at the same time, by removing the top, the shaft S^3 can readily be removed, or access had to it for any desired purpose whatever. o^2 is a flange or brace connecting the outer casing O with the outer movable cylinder c^1, and preferably cast with it. This construction materially strengthens the parts. *g g* are gibs or hooks bolted to the base plate of the stationary cylinder, their upper ends projecting up and over the circular band c^3 of the movable cylinder c^1, thus allowing the latter to rotate freely, and at the same time preventing it from being uncapped. *h* is the governing-wheel, carrying the coiled spring S^4, one end of which is attached to the

inner face of the wheel, the opposite end being attached to an adjustable collar surrounding the wheel-shaft S^3, as described in Letters Patent granted to me September 23, 1873. *b* is a brake for controlling the governing-wheel, fulcrumed in ears *e e*, attached to the casing O, and projecting below it, the brake being applied to the lower face of the governing-wheel. The upper end of the brake is bowed, as seen at *i*, and terminates in a lever, *k*, which can readily be operated by a cord or otherwise. *l* is a spring, the function of which is to free the brake from the surface of the governing-wheel. By the application of the brake to the lower face of the governing-wheel, the construction of the parts is made much more simple and fewer than if the brake were applied elsewhere to the surface of the governing-wheel. S (see Fig. 4) are studs inserted in orifices in the front plate of the governing-wheel. The shanks of the studs are preferably headed on their ends, the back face of the front plate of the governing-wheel being countersunk to receive said inner heads, or they may be otherwise attached, the object being to so attach them that they will readily rotate on their axis. The heads of the studs S are perforated and screw-threaded, to receive the screw-threaded ends of the rods S^2, which connect the governing-wheel with the sections of the wind-wheel, for the purpose of presenting such sections equally to the wind at whatever angle they may occupy. For the purpose of causing the sections of the wind-wheel to turn freely, and with as little friction as possible, I provide the cross-bars S^5 with a cast-iron pivot, *t*, at each end, adapted to enter the ear V of a metal plate, W, secured to the radial arms of the wheel. The plate W is cast with a central beveled projection, X, against which the ends of the pins rest when inserted in the ears, to prevent the longitudinal play of the cross-bars, and, to reduce the friction of the parts, the beveled faces of the projections are parallel, or nearly so, to the inner face of the ears. The pivots *t* are each cast upon the center of a socket, Y, recessed to receive the ends of the cross-bars S^5, and formed with ears Z at opposite ends, through which the screws or pins pass to hold the socket in place, as shown in Fig. 5.

I claim as my invention—

1. The inner stationary cylinder *c*, provided at its base with the circular bands or steps *d* d^1, in combination with the outer cylinder c^1, having an inner circular band, c^2, at its top and an outer circular band, c^3, at its base, whereby an open annular space is left between the cylinders, substantially as described, and for the purposes set forth.

2. The outer cylindrical casing O, surrounding and supporting the wind-wheel shaft, the top o^1 of which is removable, substantially as described, and for the purposes set forth.

3. The stud S, rotating on its axis, attached to the outer face-plate of the governing-wheel *h*, and provided with the screw-threaded perforation in its head, in combination with the adjustable connecting-rod S^2, having its inner end screw-threaded, substantially as described, and for the purpose set forth.

4. The combination of the plates W and pivots *t*, with the radial arms and independent sections of the wind-wheel, substantially as described, for the purpose specified.

JOHN Q. ADAMS.

Witnesses:
N. K. ELLSWORTH,
MELVILLE CHURCH.