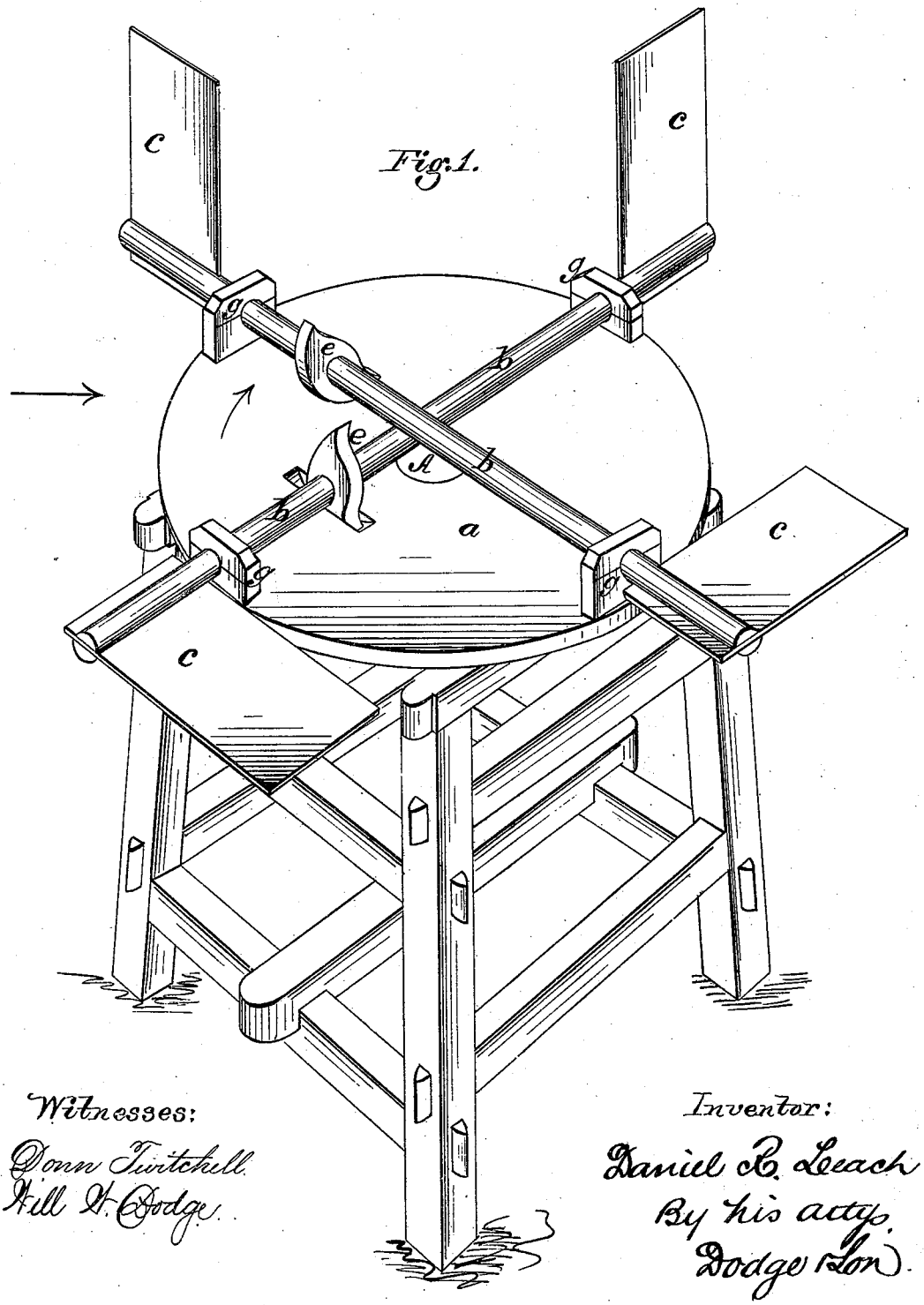
2 Sheets—Sheet 1.

D. R. LEACH.

WIND MILL.

No. 180,603. Patented Aug. 1, 1876.

Fig. 1.



Witnesses:

Donn Twitchell.
Hill H. Dodge.

Inventor:

Daniel R. Leach
By his atty.
Dodge Bros.

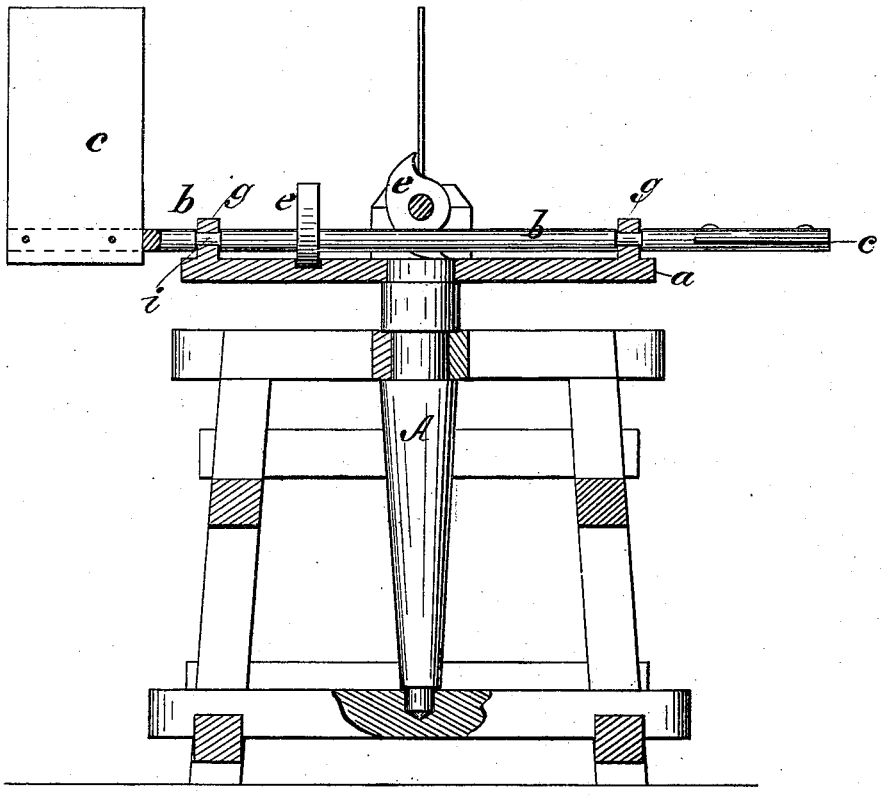
2 Sheets—Sheet 2.

D. R. LEACH.

WIND MILL.

No. 180,603. Patented Aug. 1, 1876.

Fig. 2.



Witnesses:
Will H. Dodge
Donn Twitchell

Inventor:
Daniel R. Leach
By his attys.
Dodge & Son.

UNITED STATES PATENT OFFICE.

DANIEL R. LEACH, OF PIKE, NEW YORK, ASSIGNOR OF ONE-THIRD HIS RIGHT TO CONRAD WEGEFARTH, OF MEADVILLE, PENNSYLVANIA.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **180,603**, dated August 1, 1876; application filed July 14, 1875.

To all whom it may concern:

Be it known that I, DANIEL R. LEACH, of Pike, in the county of Wyoming and State of New York, have invented certain Improvements in Wind-Wheels, of which the following is a specification:

My invention relates to that class of feathering-wheels which rotate edgewise to the wind; and consists in a peculiar manner of constructing the same, a circular disk being provided on its face with boxes, in which are mounted transverse-journaled rock-shafts, each of which is provided with a block to limit its movement, and with two blades or sails secured near one end at right angles to each other.

Figure 1 represents a perspective view of my wheel arranged with its main shaft in a vertical position. Fig. 2 represents a vertical central section of the wheel.

A represents the main shaft, having attached to its end a flat disk, *a*, across the center of which there are mounted transverse rock-shafts *b*, the ends of which are extended beyond the disks, and provided with rigid sails or blades *c*. It will be observed that each shaft is supported at its two ends in boxes *g* secured to the face of the disk, and that at the points where the shafts bear in the boxes they are reduced in size to form journals or wrists *i*, and prevent the shafts from playing endwise. Each shaft is provided, it will be seen, with two of the sails, one on each end, at right angles to each other, each sail being secured near its end to the shaft, with its face in line with the axis thereof, so that a smaller portion of the sail projects from one side of the shaft than from the other. On each shaft there is secured a block, *e*, to limit the motion of the shaft in its bearings to a quarter of a revolution, and to support the sails when they are turned up facing the wind.

When the wheel is placed in such position that the wind acts edgewise thereon, the sails on one side will be turned up, so as to offer a resistance, while those on the other side will be turned down edgewise in such manner as to offer little or no resistance, the turning of the blade up and down being caused by the action of the wind against them as they change their positions in pasing around with the wheel. As the sails on the opposite sides of the wheel are united by the shafts, it is impossible for the blades to be either up or down on both sides at once. Each blade passing behind the center and starting forward receives the full force of the wind to turn it down, and in turning down it rotates the shaft, and turns the corresponding blade on the opposite end of the wheel up, the turning up of the front blade being also assisted by the direct action of the wind upon it.

In order to render the feathering motion of the blades smooth and easy, the blades are attached a short distance from one end to the shaft, so that the wind acting against the short ends will prevent the sharp, violent movement which would otherwise occur in a heavy wind.

Although the wheel may be arranged vertically, the best position is the horizontal one, for the reason that it will work equally well with the wind from any quarter without the employment of a vane or turn-table, as would be required with the vertical wheel.

I am aware that feathering-wheels having rock-shafts provided with blades are not new, and I therefore make no broad claim thereto; but,

Having described my wheel, what I do claim is—

The wind-wheel consisting of the circular disk *a*, provided with the boxes *g*, and the rock-shafts *b*, provided with the wrists *i* and stops *e*, and having the blades *c* attached thereto, so as to project from both sides thereof, substantially as shown and described, and for the purposes set forth.

DANIEL R. LEACH.

Witnesses:

EDWIN F. NEWCOMB,

ALLEN CLARK.