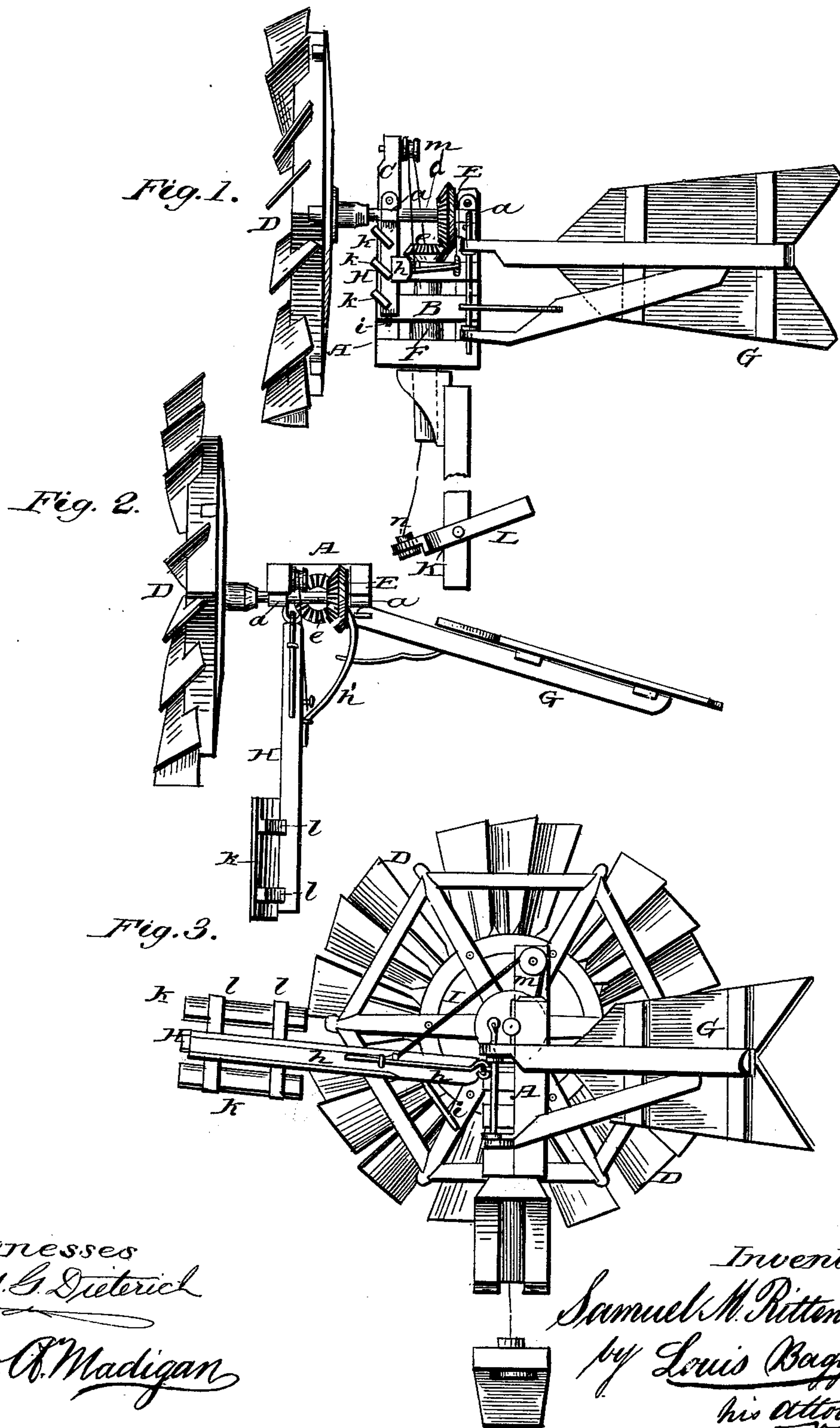


S. M. RITTENHOUSE.
Windmill.

No. 222,308.

Patented Dec. 2, 1879.



Witnesses
Fred. G. Dieterich
Jno. A. Madigan

Inventor
Samuel M. Rittenhouse
by Louis Baggett
his attorney.

UNITED STATES PATENT OFFICE.

SAMUEL M. RITTENHOUSE, OF PIONEER, OHIO.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **222,308**, dated December 2, 1879; application filed April 16, 1879.

To all whom it may concern:

Be it known that I, SAMUEL M. RITTENHOUSE, of Pioneer, in the county of Williams and State of Ohio, have invented certain new and useful Improvements in Windmills; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation. Fig. 2 is a top view, and Fig. 3 is a rear elevation.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to an improvement upon the windmill for which Letters Patent of the United States, No. 193,728, were granted to me on the 31st day of July, 1877; and it consists in so constructing a windmill of the class and constructed upon the general principles described in the said Letters Patent, that it shall be adapted not only to the pumping of water, but to all other mechanical functions for which this class of motors are adapted—such as operating saw-mills, grinding-mills, &c.

In the drawings, A is the wheel-supporting frame, which is swiveled upon a tubular shaft or sleeve, B, bracketed upon one side of a standard or derrick, C.

D is the wind-wheel, which may be of any preferred construction, and *d* is its shaft, which is journaled horizontally in boxes *a a* in frame A, and has secured upon it the bevel-wheel E, which gears with a pinion, *e*, keyed upon the upper end of a tubular shaft, F, inserted vertically through the frame-supporting sleeve B.

G is the main vane, which is hinged to frame A in the usual manner, and H is the auxiliary vane, the beam *h* of which is hinged upon frame A at right angles to G, and is provided with an arm or fork, *h'*, which is hinged upon frame A in a line with the hinge or pivot of beam *h*, so that the auxiliary vane H will have a vertical up-and-down motion in the arc of a circle, but is prevented from moving laterally; hence it will be seen that vane H, whatever its elevation, will always operate

in a plane parallel to that of the wheel D. To prevent the vane H from descending too low, its beam *h* is provided with a bracket or rod, *i*, which, when the vane is in its lowermost position, will impinge upon the side piece of frame A nearest to it.

The auxiliary vane H consists of slats *k k k*, set parallel to each other, facing downwardly at an angle of about forty-five degrees, in cross-pieces *l l* upon the beam *h*. By this construction and by the gravity of the vane the wind facing wheel D will not affect or operate the vane H unless it is of unusual power or blowing a gale.

Affixed upon beam *h* is a cord or chain, I, which passes over a sheave, *m*, upon the upper end of frame A, and down through the tubular shaft F of pinion *e*. At the lower end of the derrick or frame which supports the mill and its operating parts this cord or chain is secured in a tubular swivel-block, *n*, working in a bracket, K, which is secured upon the inner end of a lever, L, having its fulcrum in the derrick-frame.

If the mill is to be used for pumping water, then the outer end of lever L is hinged to a board, which is placed in the trough to contain the water, so as to automatically operate the auxiliary vane H, substantially in the manner and for the purpose described in my Letters Patent of July 31, 1877; but if, through suitable intervening mechanism, the lower end of the vertical rotary shaft F is geared with a circular saw or grinding mill, the free end of lever L is connected with a governor, so as to operate in like manner, as with the board and water-trough, for the purpose of checking the speed of the wind-wheel by turning it edgewise more or less to the wind.

Having thus described my improvement, I claim and desire to secure by Letters Patent of the United States—

1. In a windmill, the combination of the swiveled frame A, having sheave or pulley *m*, horizontally-projecting auxiliary vane H, hinged upon frame A in a plane parallel to that of the wind-wheel D, and provided with the curved arm *h'*, cord or chain I, tubular shaft F, having pinion *e* and swivel-block *n*, for preventing the operating cord or chain I

from twisting within the rotary shaft F, substantially as and for the purpose set forth.

2. In a windmill, the combination, with the wind-wheel, of the supplemental parallel vane having its slats or blades arranged obliquely facing downwardly, and provided on its beam with the curved arm *h'*, substantially as and for the purpose set forth.

3. In a windmill, the combination of the wheel and its shaft having a beveled gear-wheel, the vertical tubular shaft having a beveled pinion intermeshing with the gear-wheel, the main and auxiliary vanes, operating as de-

scribed, and a regulating-lever attachment connected with the auxiliary vane by a cord or chain passing through the tubular shaft, all arranged and operating substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

SAMUEL M. RITTENHOUSE.

Witnesses:

MARTIN PERKY,
O. P. GAY.