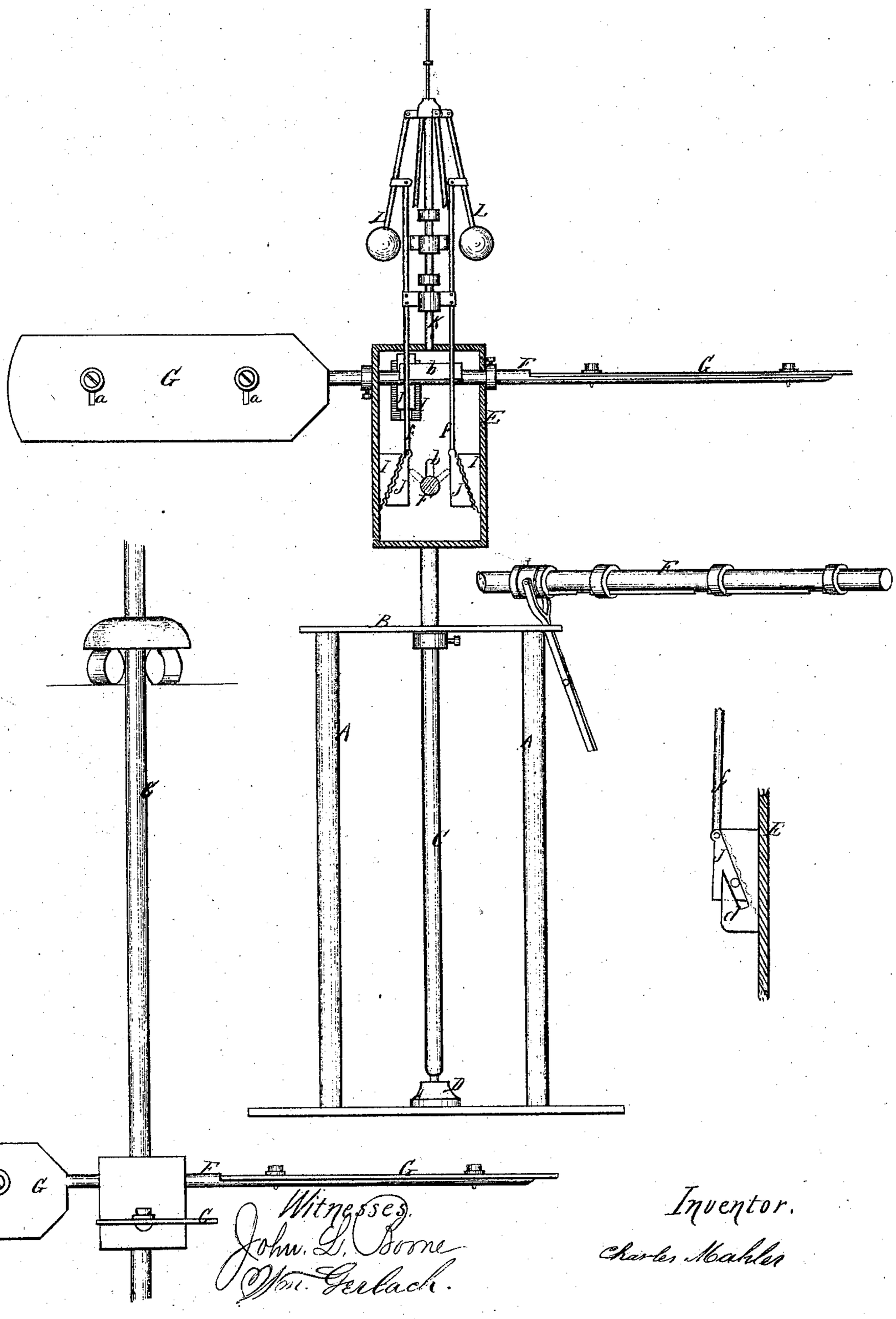
C. Mahler,

Wind Wheel.

No. 100,538. Patented Mar. 8. 1870



Witnesses.
John. L. Boone
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CHARLES MAHLER, OF SAN FRANCISCO, CALIFORNIA.

Letters Patent No. 100,538, *dated March* 8, 1870.

IMPROVEMENT IN WIND-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES MAHLER, of the city and county of San Francisco, State of California, have invented an Improved Wind-Wheel; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvements, without further invention or experiment.

My invention relates to an improved wind-mill, which may also, when divested of a portion of its regulating parts, be employed as a water-wheel for driving machinery, or as a propeller-wheel for vessels floating in the water; and

It consists in providing transverse slots in the vanes for securing them upon the arms that carry them, whereby the relative widths of the ports on opposite sides of the arm may be varied as desired.

It also consists of a governor or regulator, which is mounted above the mill-frame, so as to operate the devices for controlling the speed of the wheel.

In order to more fully illustrate and explain my invention, reference is had to the accompanying drawings, forming a part of this specification, in which—

A A represent two vertical posts, having the plate B extending across and secured to the top of each, or any other suitable frame can be used.

C is the vertical shaft which supports the mill, and with which it revolves, stepping in a suitable block, D, between the two posts A A, and passing through the cross-plate B.

Secured upon the upper end of the upright shaft C is a box, E, which may have its sides entirely closed or a portion left open, as shown, for adjusting any parts of the machinery which may become disarranged.

Passing through the sides of this box, at right angles to each other, are two shafts, F. These shafts extend a considerable distance from the sides of the box on each side, and have secured upon their opposite ends the vanes or sails G, the two opposite vanes on each shaft being placed at right angles to each other, and firmly secured in this position to the shaft.

The vanes are secured upon the opposite ends of the shafts or spindles in such a manner that the greatest width of vane will be below the spindles, the upper sides being weighted so as to balance them upon the shaft. This gives the wind a chance, when it strikes the vanes squarely, of causing them to turn by acting upon the lower part, where there is the greatest leverage, thus feathering the opposite vanes, so as to cause them to turn as soon as one side is relieved of the force of the wind and the other meets it.

Transverse slots, *a*, serve to render the vanes adjustable in order to vary the weight.

Inside the box the spindles have an elongated lug or projection, *b*, formed on them, which serves to stop the revolution of the shaft when it turns to the proper position in feathering the vanes.

Secured to the sides of the box on each side of the spindles, and with their widest end uppermost, are wedge-shaped blocks, I, having their inclined sides facing the spindles.

A block, J, similar in form, is placed with its narrow end uppermost, so that both inclined surfaces will lie in contact, the two blocks forming a square.

The inclined surfaces of these blocks are corrugated, as shown, in order that when the lug *b* on the spindle strikes the block J, the corrugations will lock the two together, and prevent the block I from slipping.

A suitable guard, *d*, is arranged beneath the sliding block I, so as to prevent it from being displaced.

Extending upward from the top of the box is a spindle, K, to the upper end of which are attached four arms of a governor, L, each pair being connected with the movable block J of each vane-shaft by means of the rods *f*.

These governors prevent the wheel from running at too high a rate of speed, should the wind blow very strong, by raising the blocks J, and thus preventing the vane-shafts from turning sufficiently to allow the wind to strike the full face of the vane.

When in operation, the vanes as they come around against the wind lie horizontally, so as to present no surface for it to act against, while the one on the opposite end of the shaft stands vertically, receiving the full force of the wind until the former comes to a position where it catches the wind, when, on account of the weight being on the under side of the shaft, it will turn until the projection *b* strikes the block J on the opposite side, changing the position of the two opposite vanes.

This operation is continued as long as the wind is steady; but should it increase to a gale, the arms of the governors will fly out and raise the block J, thus causing the vanes to stand at an angle to the wind, in which position it has less power against them, and consequently the speed is regulated.

The wheel above described can also be mounted vertically, in which case the governors would be dispensed with, the vanes feathering automatically, owing to their peculiar construction.

When used as a water-wheel or propeller for vessels, the wheel will be entirely submerged, the same action taking place in the water as previously described in the case of a wind-mill.

Having thus described my invention,

What I claim, and desire to secure by Letters Patent, is—

1. Regulating the speed of the wheel by means of the two inclined blocks I and J, whose inclosed surfaces are corrugated, as described, and the lug or projection *b* on the shaft F, in combination with the governor L, substantially as herein specified.

2. The slots *a* in the vanes G, whereby the relative widths of the parts on opposite sides of the arms are made variable, substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand and seal.

CHARLES MAHLER. [L. S.]

Witnesses:

JOHN L. BOONE,

WM. GERLACH.