

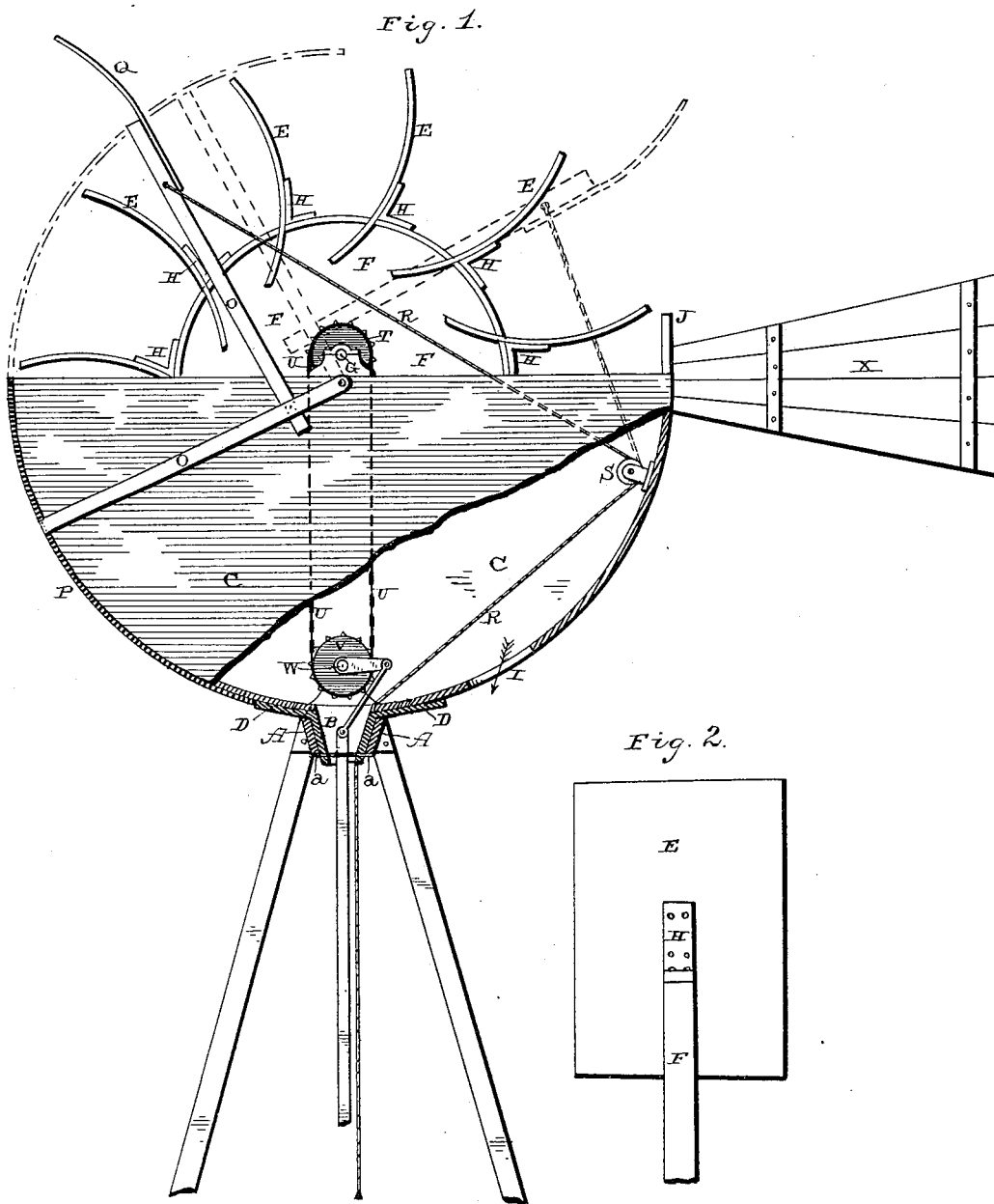
(No Model.)

A. R. BOWMAN.

WINDMILL.

No. 386,684.

Patented July 24, 1888.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

ALFRED RILEY BOWMAN, OF LA DUE, MISSOURI.

## WINDMILL.

SPECIFICATION forming part of Letters Patent No. 386,684, dated July 24, 1888.

Application filed April 3, 1888. Serial No. 269,451. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED RILEY BOWMAN, of La Due, in the county of Henry and State of Missouri, have invented certain new and useful Improvements in Windmills or Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in windmills or engines; and it consists in the combination of the wheel with a suitable casing or frame in which the wheel is placed and which has its rear end extended upward a suitable distance above its front one and provided with an opening through its bottom for the escape of the wind which passes down inside of the casing.

The object of my invention is to inclose the lower part of the wheel in a frame-work, so that only the upper portion of the wheel will be exposed to the action of the wind; to form an opening through the bottom of the casing, so that the wind which is caught by its raised rear end will make its escape after having acted upon the wheel while passing down through the frame, and to regulate the power of the wind upon the wheel by having a fender rise up in front of the wheel, so as to prevent the wind from striking against it.

Figure 1 is a side elevation of a windmill, partly in section, which embodies my invention. Fig. 2 is a detail view.

A represents a suitable metallic casting, which is provided with suitable sockets upon its outer sides to receive the upper ends of the timbers of the derrick. Fitting in and revolving in this casting A is the conical casting B, upon the top of which the frame C is secured. The lower end of the casting B projects down through the casting A, and is prevented from having any upward movement by a suitable pin, *a*, which is passed through the lower end of the casting, as shown. Projecting from opposite sides of the casting B are suitable braces, D, which extend along the bottom of the frame C and brace it rigidly in position. This frame C is preferably made of the shape

here shown and of a width in proportion to the sails E of the wheel F. The shaft G, upon which the wheel is secured, is journaled in suitable bearings upon the top of the frame C, and the wheel is composed of a metallic disk, of any desired thickness, to which the sails E are secured. The inner ends of the sails are slotted, so as to fit over the edges of the disk or wheel F, and each sail is braced upon its rear side by means of an L-shaped brace, H. The sails are made curved and present their concaved sides to the wind, so as to receive its full power. The center of the wheel is raised by the boxes in which the shaft G is journaled slightly above the top edge of the frame C. Through the rear bottom portion of the frame C is made a suitable opening, I, and the rear upper corner, J, of the frame is extended upward in the rear of the wheel any suitable distance above the edges of the frame, so as to catch the wind and deflect it downward through the frame C toward the opening I. The wind being caught by the extension J passes downward into the frame and continues to act upon the sails, and thus assists in forcing the wheel around. When the wind reaches the opening I, it escapes through it.

Pivoted at any suitable point upon opposite sides of the frame are the angular levers O, which have the fender P secured to one end and the operating-sail Q secured to their opposite ends. The fender Q is curved, so as to correspond to the shape of the frame C, and is made of sheet-iron or any other suitable substance. When the wind strikes against the sail Q, it causes the levers O to turn upon their pivots and to raise the fender P upward in front of the wheel, so as to prevent the wind from acting upon the sails E. In proportion to the force of the wind the sail Q is blown backward and the fender P rises in front of the wheel, and then as the force of the wind diminishes, the weight of the fender causes it to sink downward, so as to again expose the sails E to the wind. Fastened to the upper end of one of the levers O is the operating-cord R, which passes around a suitable guiding-pulley, S, and then down through the derrick to any convenient point, so that the fender can be raised in front of the sails E and the wheel thus thrown out of operation.

Secured to the shaft G is a wheel, T, over which passes the driving-chain U, down around a second wheel, V, placed upon the end of a crank-shaft, W, to which the upper end of the pump-rod is connected. As the wind-wheel is made to revolve, the wheels T V, placed upon the shafts G W, are caused to revolve, and thus operate the pump.

The front end of the frame C is kept toward the wind by the vane X in the usual manner.

Having thus described my invention, I claim—

The combination of the swiveled frame provided with an extension at its rear end and having an opening through its bottom, with the wind-wheel, which is mounted upon the frame and is partially inclosed thereby, substantially as shown. 15

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED RILEY BOWMAN.

Witnesses:

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