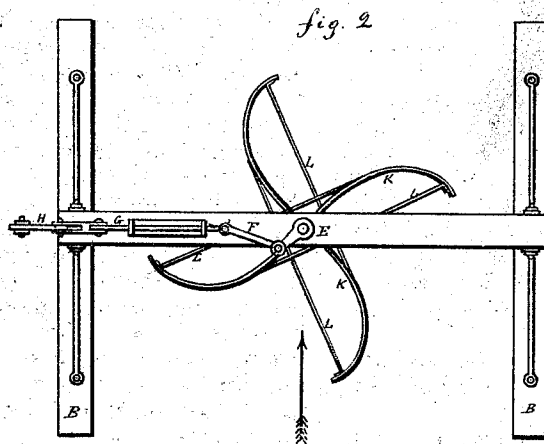
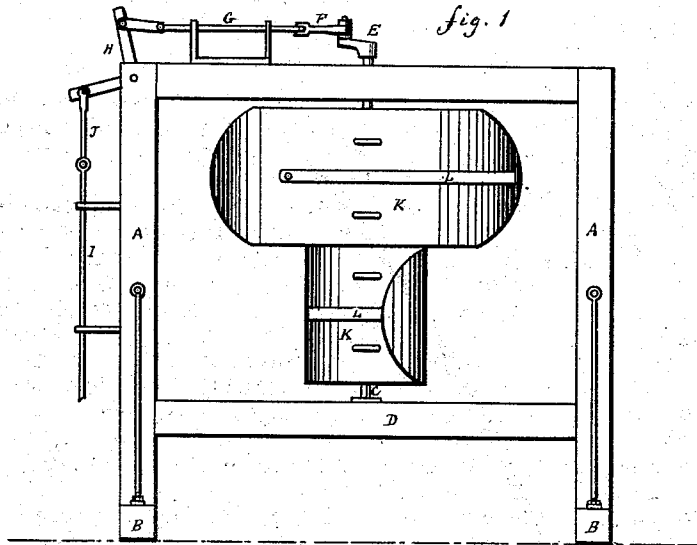


R. E. MASON.  
Wind-Mills.

No. 154,407.

Patented Aug. 25, 1874.



Witnesses:  
Edward Rose  
F. Rawling

Inventor:  
Robert E. Mason

# UNITED STATES PATENT OFFICE

ROBERT E. MASON, OF MILLINGTON, ILLINOIS.

## IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **154,407**, dated August 25, 1874; application filed March 14, 1874.

*To all whom it may concern:*

Be it known that I, ROBERT E. MASON, of Millington, in the county of Kendall and State of Illinois, have invented certain Improvements in Windmills, of which the following is a specification:

This invention relates to that class of windmills which revolve in a horizontal plane; and the object of the invention is to dispense with any kind of regulating or governing apparatus whatever, and still preserve a uniform speed in all kinds of winds. The great trouble and source of expense and annoyance is the mechanism necessary in all windmills for governing the speed, as it is important that the said speed shall not be too great, for fear of breaking the machinery or pumps connected with the windmill. It is also well known that such governors, although costly and complicated, are not at all reliable, but are very apt, from their complication, to get out of order, or, even in their best condition, do not prevent an increase of speed during storms and hurricanes, the result being that, after such occurrences, the pumps or other machinery connected with the mill are found broken down or damaged. In my invention all this is obviated in a very simple and inexpensive manner, the mill being constructed on a new principle, as will be hereafter described, which prevents increase of speed beyond a certain point, thus preventing any shaking or undue wear of machinery, while, at the same time, the mill is so simplified in its construction that it can be built at a great deal less cost than those provided with self-acting regulators.

Figure 1 in the drawing is a side elevation of a machine embodying my invention. Fig. 2 is a plan of the same.

I construct a frame, A, of timber, said frame having cross-timbers B B at the bottom. This can be set on the ground or on four posts at the desired elevation. The shaft C stands on a step in cross-bar D, and passes through a journal above. At the upper end of the shaft C is attached a crank, E, which is connected, by means of a pitman, F, and sliding rod G, to the square lever H, to which is attached the pump-rod I, either directly or through a pitman, J.

In case a rotary motion is desired to move machinery, the crank E is replaced by a bevel-wheel, which transmits motion to a horizontal shaft.

On the shaft C are attached the wings K K. They are shaped like a letter S, or a double curve similar to a letter S, and are placed one above the other, and at right angles to each other. The number, however, is not limited to two, but may be increased to any number desired, according to the power wanted, always placing one above the other and at right angles. The end of each wing is fastened by braces L L to the other side, to prevent the wind from changing the shape of the curves.

The size of wings required to work an ordinary pump, or in any other way to do the work of one man, is seven feet from end to end of each pair of wings, after they are bent in the shape described, and having a width of three and a half feet. Two pairs of wings only, of this size, will be required to perform the said work.

The reason for forming the wings in pairs, and giving them the said shape of a letter S, is as follows: When a current of wind blows in the direction shown by the arrow, it will at first, in striking a pair of wings, produce no effect on them; their surfaces being the same, their equilibrium is, therefore, not disturbed. At this point, however, the current is deflected toward the curve on the right side, and, a moment afterward the deflected current, having reached the curved end, strikes against it, and in this, its secondary effect only, is the power produced. That moment of time intervening between the first and direct impact of the wind and its second or deflected impact is taken advantage of to regulate the speed of the machine, for, by giving the wings the length and the shape above described, the proper speed for a pumping-machine is obtained; nor can it go any faster, for the reason that, should any considerable increase of speed take place, the deflected current would come too late to strike against the curved end of the wing, and, therefore, communicate no power to it, and, as this is the only available power, it follows that such an increase of speed cannot take place, but only a very small increase,

which will not be perceived in practice. Each wing receives the impulse of the wind during one-quarter of the circumference; therefore, the pairs must be at right angles. The pairs of wings must, necessarily, be placed over each other, and not into each other, as the latter arrangement would prevent the above-described deflection of wind.

What I claim as my invention is—

The wings K K, made in pairs, each pair

of one single sheet of metal, with the ends curved in opposite directions, so as to resemble a letter S, and the pairs of wings placed one above the other, and at right angles to each other, substantially as and for the purpose described.

ROBERT E. MASON.

Witnesses:

EDWARD ROSE,  
F. RAWLING.