

T. C. Vice,
Wind Wheel.

N^o 11,630.

Patented Aug. 29, 1854.

Fig. 1.

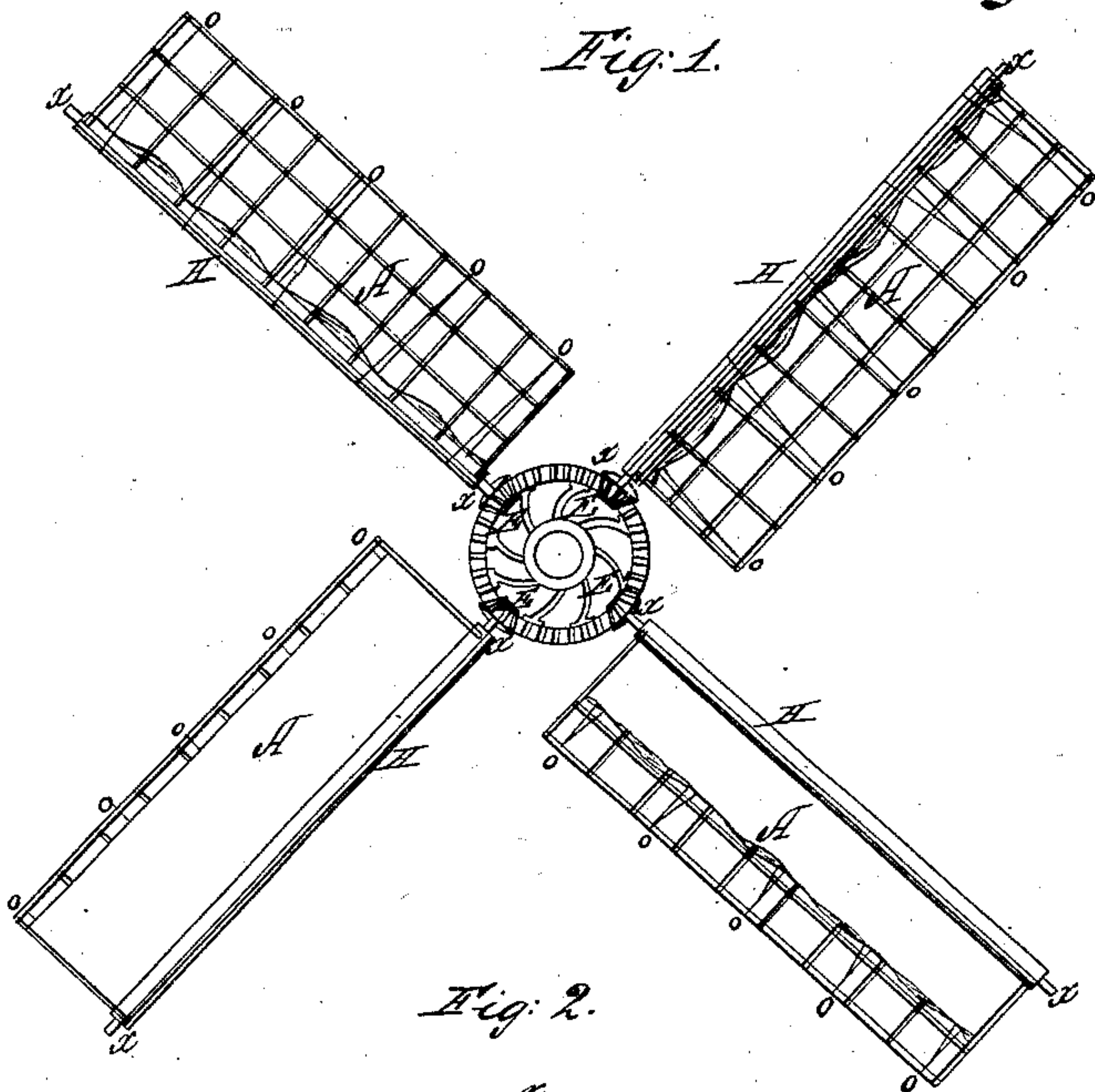
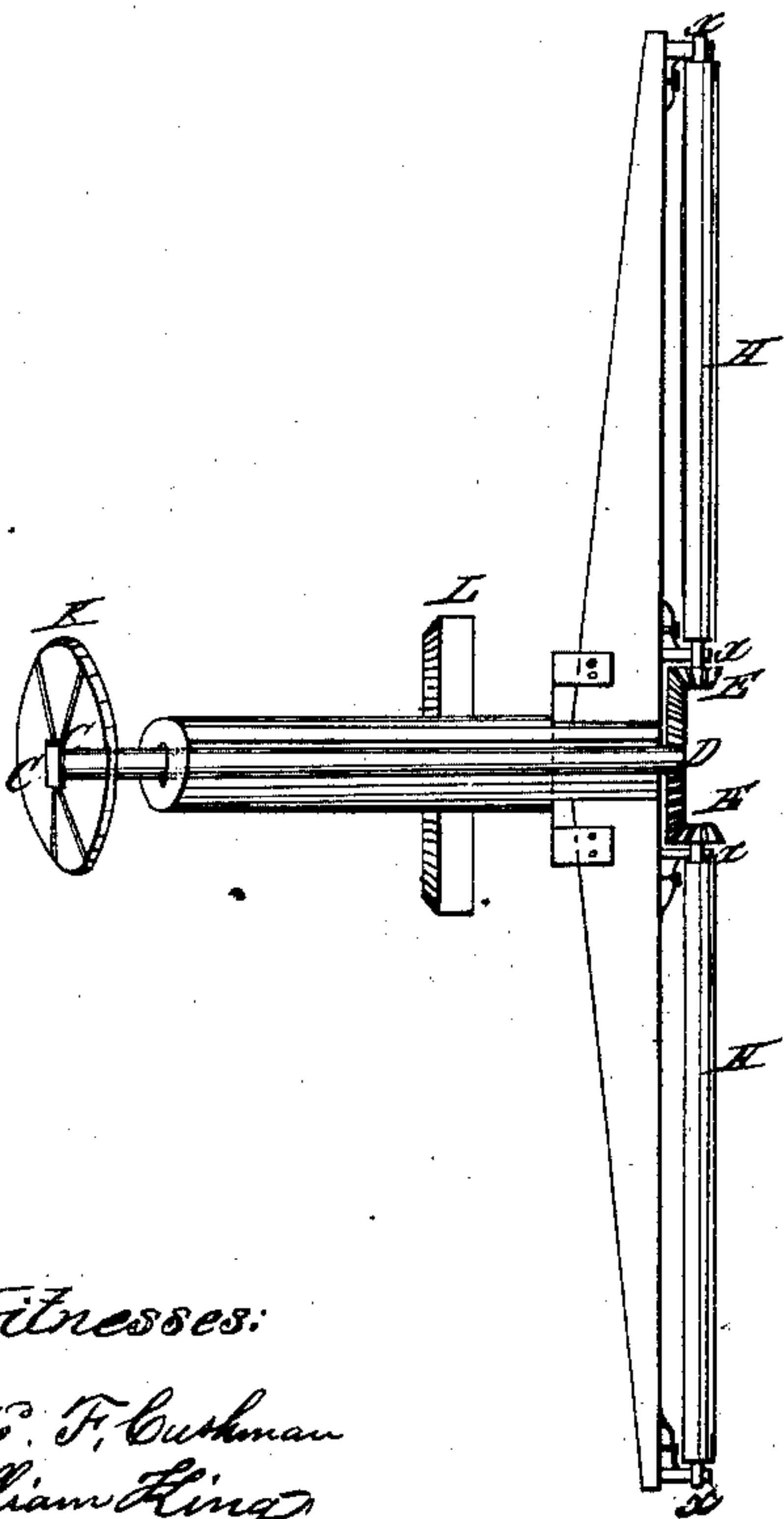


Fig. 2.



Witnesses:
Edw. F. Cushman
William King

Inventor.
T. C. Vice.

UNITED STATES PATENT OFFICE.

T. C. VICE, OF ROCHESTER, NEW YORK.

METHOD OF FURLING AND UNFURLING WINDMILL-SAILS.

Specification of Letters Patent No. 11,630, dated August 29, 1854.

To all whom it may concern:

Be it known that I, THOMAS C. VICE, of the city of Rochester, in the county of Monroe and State of New York, have invented
5 a new and useful Improvement in the Mode of Clothing and Unclothing the Sails of Windmills while in motion or at rest by which also the sails may be clothed in whole or in part in an easy and expeditious manner, leaving the surface even and regular
10 in breadth from top to bottom, and in like manner the cloth or any part of it may be folded or rolled up to the whip at pleasure by simple and durable machinery; and I do
15 hereby declare that the following is a full and exact description of my said improvement, reference being had to the annexed drawings, making part of this specification.

Figure 1, represents a front view of the
20 wind mill sails A, A, A, A—as unclothed, partly clothed and clothed. Fig. 2, represents a sectional view of two opposite vanes, in connection with a hollow main shaft B, to which all the vanes are securely fastened,
25 and also representing such other part of the machinery for adjusting the cloths on the vanes as can be readily shown in a drawing.

The vanes may be made of the usual shape, varying in size and number as shall
30 be preferred, said vanes being securely fastened by a cast iron flange or otherwise, to a main hollow shaft B, in Fig. 2, of wood or cast iron of suitable size. Through said hollow shaft passes an iron rod C, having
35 journals at either end thereof x, x, x, x .

D is a bevel gear securely fastened to the outer end of the rod C, so as just to clear the out edge of said flange. E, E, E, E, are
40 bevel pinions meshing into said bevel gear, said pinions being also securely fastened to the ends of iron rollers H, H, H, H extending from said bevel gear outward to the point of the vane stock or whip, and parallel thereto, and also fastened to said vane
45 stock by proper journals at or near the ends of said rollers.

K, is a wheel securely fastened to the tail end of the rod C, said wheel being turned either way on its axis, by hand or other-
50 wise, will cause said rollers H, H, H, H, to revolve on their journals. A pair of centrifugal balls like the governor of a steam engine may be arranged in connection with said rod C so as readily to adjust the sails of
55 the mill.

The width of the sails and the diameter of the roller H, H, H, H, must determine the size of the bevel gear and pinions respectively.

To fold the cloth from the whip stock
60 outwardly therefrom and unfold the same I make use of stationary iron rods at the extreme heel and outer edge of the vanes respectively, and also others at proper distances intermediate—said rods passing di-
65 rectly across the vanes from the vane stock to the outer shroud they being fastened at either end to the said shrouds and vane stock respectively. I also attach a con-
70 venient number of rings or loops to the back side of the sails at the heel edge and also extreme out edge thereof, as well also at intermediate points in rows across the back
75 of the sails, which rings or loops are so arranged as easily to traverse said stationary rods, the extreme end rods and rings or loops being intended to keep the sails prop-
80 erly stretched lengthwise, and the intermediate rods and rings or loops to secure the sails snug to the vanes. The inner edge of
85 the sail may be secured to the vanes stock or whip by means of rings, or loops or otherwise. Attach to said rollers H, H, H, H, any desired number of reefing lines pass-
90 ing the same thence across the outside of the sails through rings or loops attached to the opposite or out edge of said sails, thence
95 over the edge of the shroud, or over pulleys or through staples attached to said shroud at o, o, o, o , thence across the sails to the
100 aforesaid rollers H, H, H, H, said lines being coiled around and fastened to the same. When the cloth is drawn up in folds toward the whip so much of these lines will
105 be wound up on the rollers H H, H, H, one way, and off from it the other, as will be sufficient to let out the cloth again when the same roller turning the contrary way draws the cloth on the vane.

By having geared rollers attached to the
100 heel edge, or to the extreme out edge of the vane and at right angles to the vane stock, the cloth may be folded or unfolded at pleasure, from the extreme out point to the
105 heel edge or the reverse, by making use of a corresponding arrangement of reefing lines, rings, or loops, and stationary rods, as in the first case. Or by dispensing with the stationary rods and the sliding rings or
110 loops, the cloth may be made to roll up and

around the said rollers H, H, H, H, if preferred, or the reverse—or to roll up and around a roller arranged at the shroud and lengthwise the vane—or by having a
5 roller either at the heel edge or at the extreme out or point edge of the vane, the cloth may be rolled up and unrolled from point to heel of the vane or the reverse, as may be preferred.
10 L, is a brake wheel so called, by which the power of the mill is conveyed to the machinery to be propelled. A pair of centrifugal balls like the governor of a steam engine may be easily arranged in connection
15 with said rod C, so as readily to adjust the sails.

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

The clothing and unclothing of wind mills, while the vanes thereof are in motion 20 or at rest, by means of an iron rod passing through the main hollow vane shaft in connection with a bevel gear and pinions attached to their respective rollers to which rollers are fastened reefing lines connected 25 with the sails, in combination as herein substantially set forth.

T. C. VICE.

Witnesses:

E. F. CUSHMAN,
WM KING.