2 Sheets—Sheet 1.

H. WOODMANSE & S. LEBKICKER.

Windmills.

No. 220,514. Patented Oct. 14, 1879.

Fig. 1.

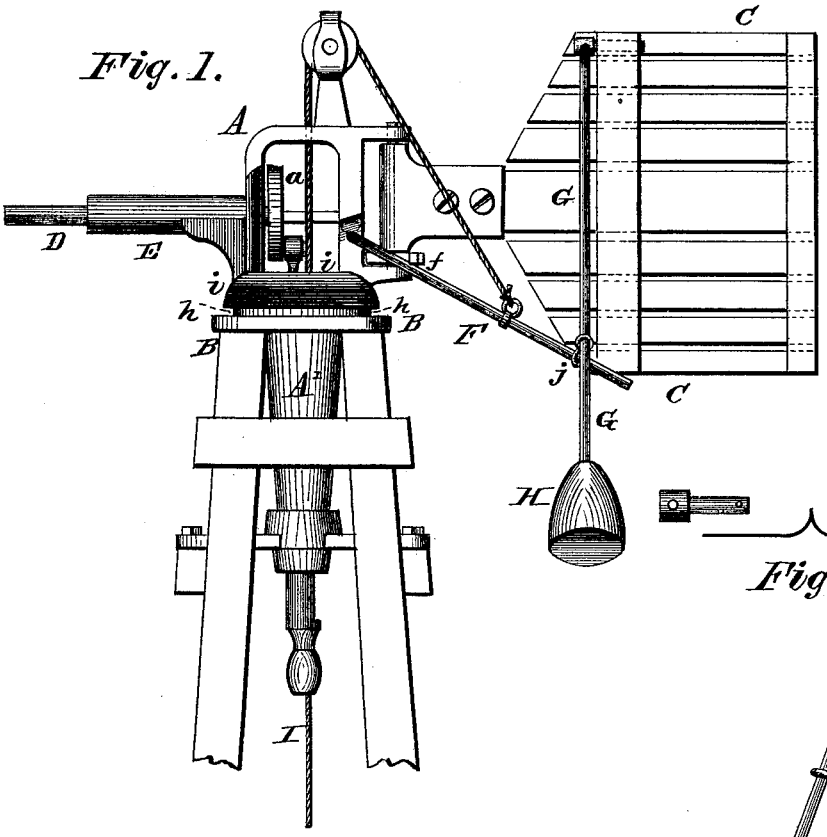


Fig. 3.

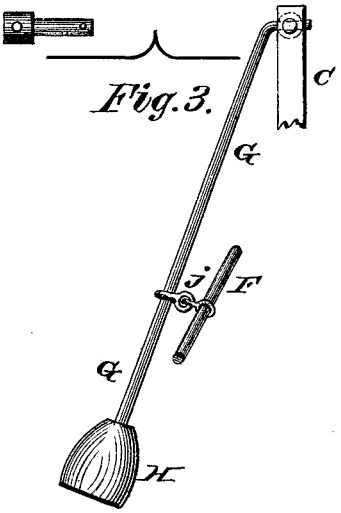
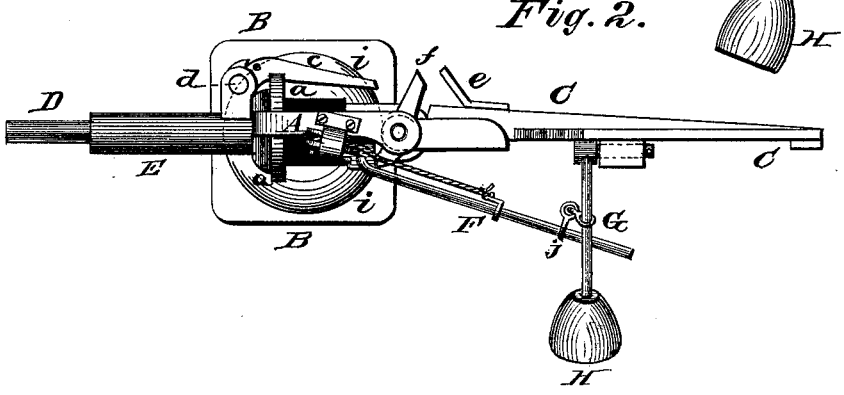


Fig. 2.



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2 Sheets—Sheet 2.

H. WOODMANSE & S. LEBKICKER.

Windmills.

No. 220,514. Patented Oct. 14, 1879.

Fig. 4.

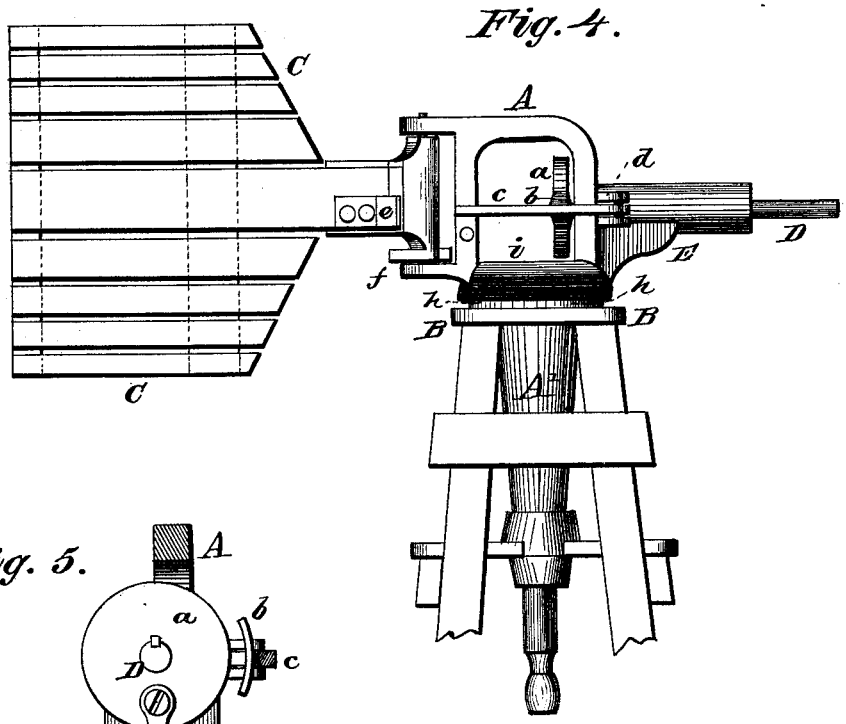


Fig. 5.

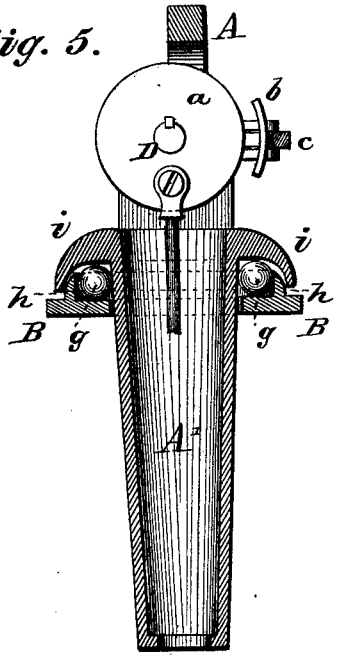
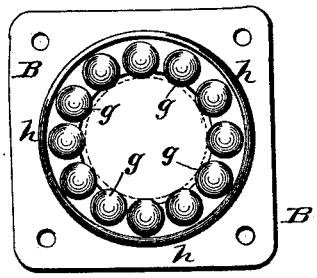


Fig. 6.



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UNITED STATES PATENT OFFICE.

HARRISON WOODMANSE AND SAMUEL LEBKICKER, OF FREEPORT, ILLINOIS; SAID LEBKICKER ASSIGNOR TO SAID WOODMANSE.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **220,514**, dated October 14, 1879; application filed August 13, 1878.

To all whom it may concern:

Be it known that we, HARRISON WOODMANSE and SAMUEL LEBKICKER, of Freeport, Stephenson county, State of Illinois, have invented new and useful Improvements in Windmills, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a top view; Fig. 3, a detail; Fig. 4, a side elevation, showing the side opposite to that represented in Fig. 1; Fig. 5, a vertical section of the parts shown; Fig. 6, a plan view of the parts represented.

This invention consists, first, in providing a lever in connection with a brake-wheel, so arranged as to be operated by a projection upon the inner end of the vane, for the purpose of rendering the brake more efficient; in the peculiar construction and arrangement of the main casting and bed-plate, supporting balls, so as to decrease the friction; and in the peculiar arrangement of the levers and weight, in connection with the vane and main frame, for the purpose of automatically adjusting the position of the wind-wheel as required by the varying force of the wind.

In the drawings, A represents the main casting, the lower end, A′, of which forms a shaft. B is the main plate, secured to the top of the frame, through an opening in which the shaft A′ passes. C is a hinged vane.

The wind-wheel is not shown, but is permanently secured to a shaft, D, which rotates in a bearing, E, connected with the main casting. On the inner end of this shaft D is a pitman-wheel, *a*.

b is a brake-shoe, arranged to engage with the wheel *a*. It is secured to a lever, *c*, which is pivoted at *d* to the main casting.

e is a projection upon the vane-head, arranged to engage with the free end of the lever *c* when the wheel is out of the wind. *f* is a stop to come in contact with some part of the main casting, to limit the movement of the same. *g* are balls, which rest upon the plate B, which is provided with a shoulder, *h*. *i* is a cap, connected with the main casting at the top of the shaft A′, and which rests upon the balls *g*.

The shaft A′ is somewhat smaller than the opening in the plate B, through which it passes, and the balls *g* are of such size that the shaft in its rotation comes in contact with them instead of with the surface of the opening in the plate B, so that the cap and the shaft A′ do not either of them come in contact with any fixed part, but both come in contact with the balls *g*. A number of these balls sufficient to nearly fill the entire space within the ledge *h* are used, as shown in Fig. 6. By this arrangement there will be less friction than when the construction is such that the cap *i* only rests upon the balls, the shaft coming in contact with the plate through which it passes.

F is a rod. It is pivoted at its upper end to the main casting. G is another rod, the upper end of which is pivoted to the vane, and upon its lower end is a weight, H. These two rods F G are loosely connected together at *j*. These two rods and the weight are arranged in the usual manner, except that it is customary to place the weight upon the rod F. By placing the weight upon the rod G, as shown, the effect produced is much better than with the old arrangement, as by attaching the weight to the extended arm G of the vane it acts with a leverage as well as by gravity, and moves in a longer arc, thus making its action quicker and more delicately uniform.

When the parts are in the position shown in the drawings the wind-wheel will be held facing the wind when it is light. As the force of the wind increases it will carry the wind-wheel out of the wind partly, at the same time raising the rod F, and with it the weighted rod G; and as this weighted rod rises the distance of the weight from the vane will constantly increase, requiring an increased force to carry the wheel out of the wind. As the force of the wind decreases, the weight will return the wheel to its former position. By means of the cord I the wheel can be thrown out of the wind, and held as usual.

We are aware that a brake has been applied to a windmill. Such a brake is shown in the patent to Anderson, issued to one of these applicants (WOODMANSE.) We therefore do not claim, broadly, a brake.

We are also aware that a weight of varying

resistance has been connected with the vane somewhat as shown in our device.

We are also aware that the main casting has been supported upon balls; but we are not aware that such balls have been heretofore arranged so that the shaft A′ will not come in contact with the opening in the plate B.

The lever *c* may be pivoted to the main casting at any convenient point, and the brake-shoe should be provided with a spring behind it, substantially as shown in said patent to Anderson.

What we claim as new, and desire to secure by Letters Patent, is—

1. The brake-shoe *b* and lever *c*, in combination with the wheel *a* and vane C, substantially as and for the purpose specified.

2. The arm or rod F, pivoted to the main casting, in combination with the weighted arm or rod G, pivoted to the vane, the two arms being loosely connected together at *j*, substantially as and for the purpose specified.

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