

(No Model.)

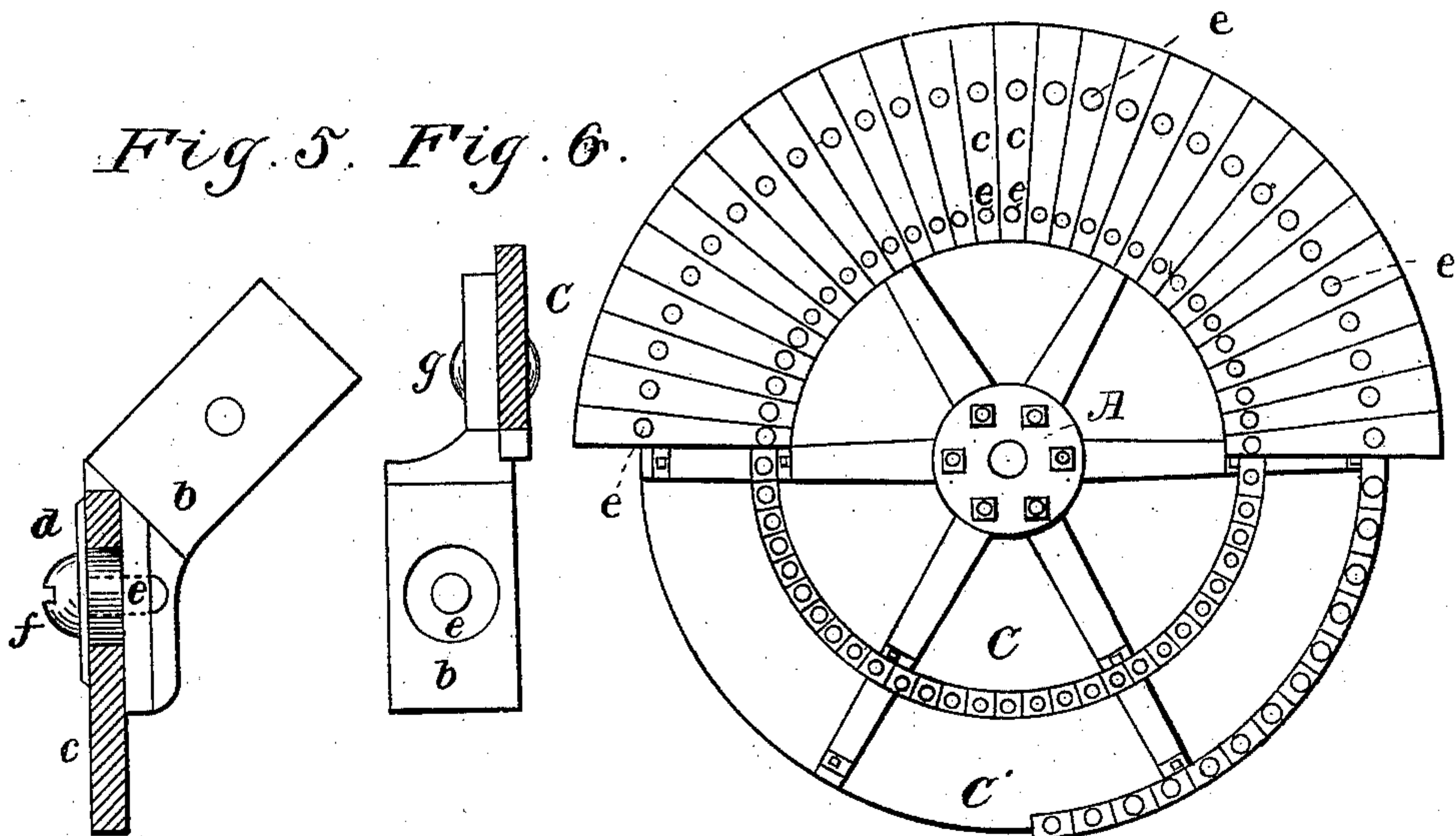
G. L. STEARNS.

WINDMILL.

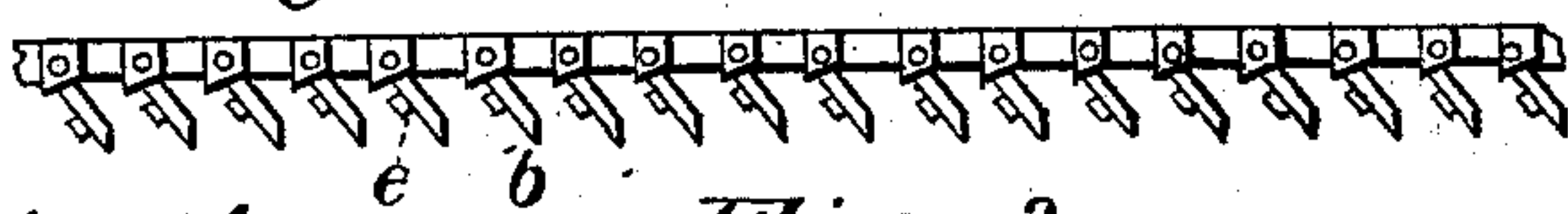
No. 273,183.

Patented Feb. 27, 1883.

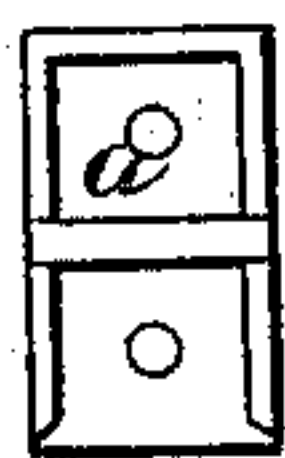
*Fig. 1.*



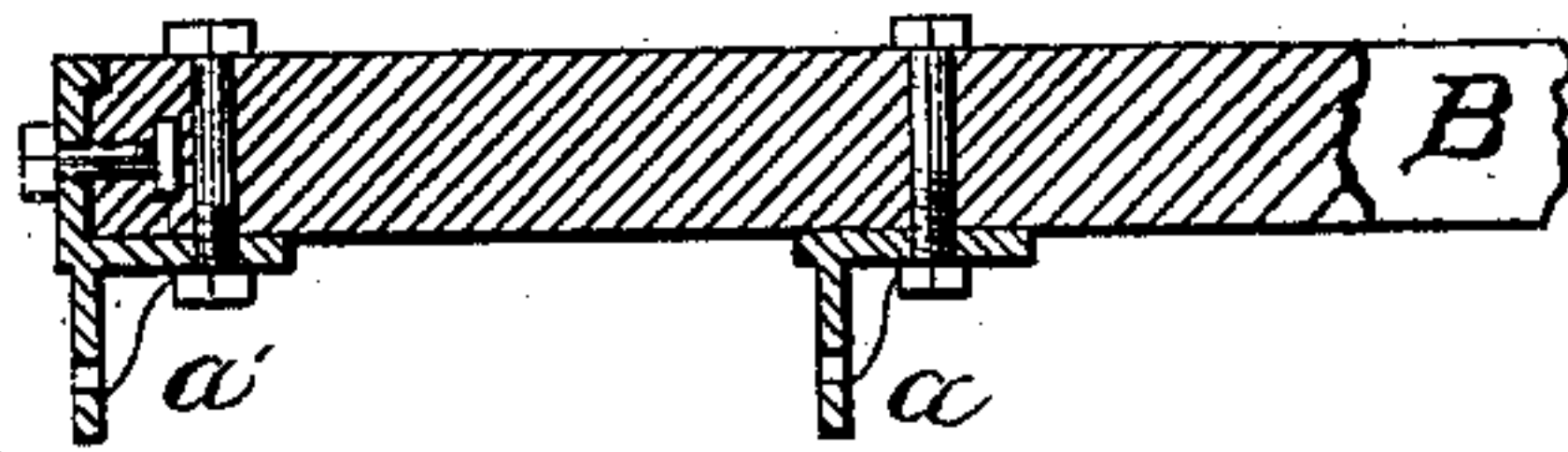
*Fig. 2.*



*Fig. 4.*



*Fig. 3.*



Witnesses:

E. L. Pound

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Inventor

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# UNITED STATES PATENT OFFICE.

GEORGE L. STEARNS, OF GRAND HAVEN, MICHIGAN.

## WINDMILL.

SPECIFICATION forming part of Letters Patent No. 273,183, dated February 27, 1883.

Application filed August 16, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE L. STEARNS, of the city of Grand Haven, in the county of Ottawa and State of Michigan, have invented a new and useful Improvement in Windmills, of which the following is such a full and clear description as will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, which, with the letters of reference marked thereon, are a part of this specification.

My invention has for its object, first, to combine strength with economy and lightness in construction; second, to present as little resisting-surface as possible to the free passage of the wind through the vanes or sails when working, and but little edge-surface when thrown out of the wind; third, economy in shipment by enabling me more easily, by shipping my mill in the "knockdown," to compress it into a small package, thereby reducing the cost of transportation to the minimum, while the parts are so constructed that they may be put together by any ordinary mechanic without liability of mistakes.

In the drawings, Figure 1 is a side elevation of my improved wheel with a part of the vanes and angular brackets left off, the better to show the position of the different parts. Fig. 2 is a part of one of the bands C, with angular brackets *b*, riveted on before being bent into shape. Fig. 3 is an enlarged view of one of the arms B, partly in section, for convenience of showing one method of fastening on the brackets *a* and *a'*. Fig. 4 is an inverted plan of the bracket *a*. Fig. 5 is an enlarged side elevation of the angular vane-bracket *b* with the vane *c* in section, showing the boss *e*, washer-plate *d*, and screw *f*; Fig. 6, a plan of same.

A is a flange bolted through the arms to a similar flange rigidly attached to the main shaft. C and C' are elastic metal bands, secured to the arms B by the brackets *a* and *a'*. To these bands are riveted the angular vane-brackets *b* a sufficient distance apart to give

the proper opening between the wheel-vanes. The vane-brackets are provided with a boss or hub, *e*, through which a hole is tapped for the screw *f*. The wind-vanes are made in the ordinary shape and holes bored in them at the proper distances from the end with a bit the size of the hub *e*, preferably about five-eighths of an inch. The bands C and C', after having the brackets *b* riveted on, are bent around in place and fastened to the brackets on the arms B of the wheel. The wind-vanes *c* may now be placed on the hubs *e* and fastened firmly by means of the screw *f* and washer-plate *d*. For shipping, the vanes may be taken off and bundled into a small package. The bands C and C' may be coiled into small compass and the arms B taken out. Thus it will be seen that the whole wheel may be placed in a box of very small dimensions, thereby effecting a considerable saving in the item of freight, while each vane being an exact duplicate of every other, and the vane-brackets all made from the same pattern, the wheel can be erected on the mast or tower piece after piece and the vanes put on one at a time with much greater ease than in the usual way, and in case of accidental breakage any one vane may be taken off and replaced by a new one without disturbing any of the others.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a windmill, the elastic bands C, in combination with the angular brackets *b*, substantially as described and shown.
2. The angular brackets *b*, provided with the boss or hub *e*, in combination with the wind sails or vanes *c*, when arranged substantially as shown.
3. In a windmill, the arms B, brackets *a* and *a'*, bands C and C', and wind sails or vanes *c*, when arranged substantially as and for the purpose described and set forth.

GEO. L. STEARNS.

Witnesses:

F. W. GRIFFIN,  
E. C. DICEY.