

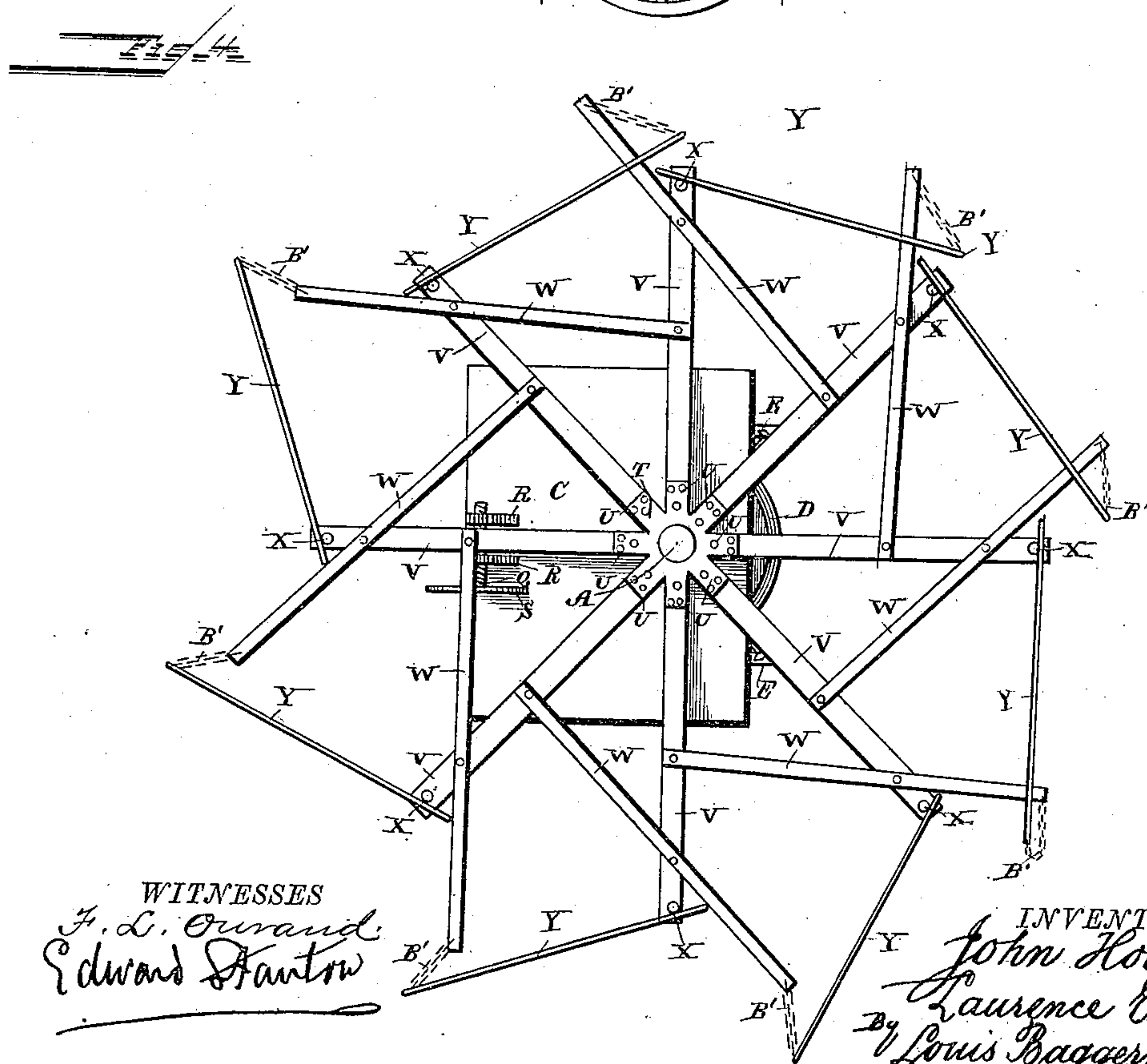
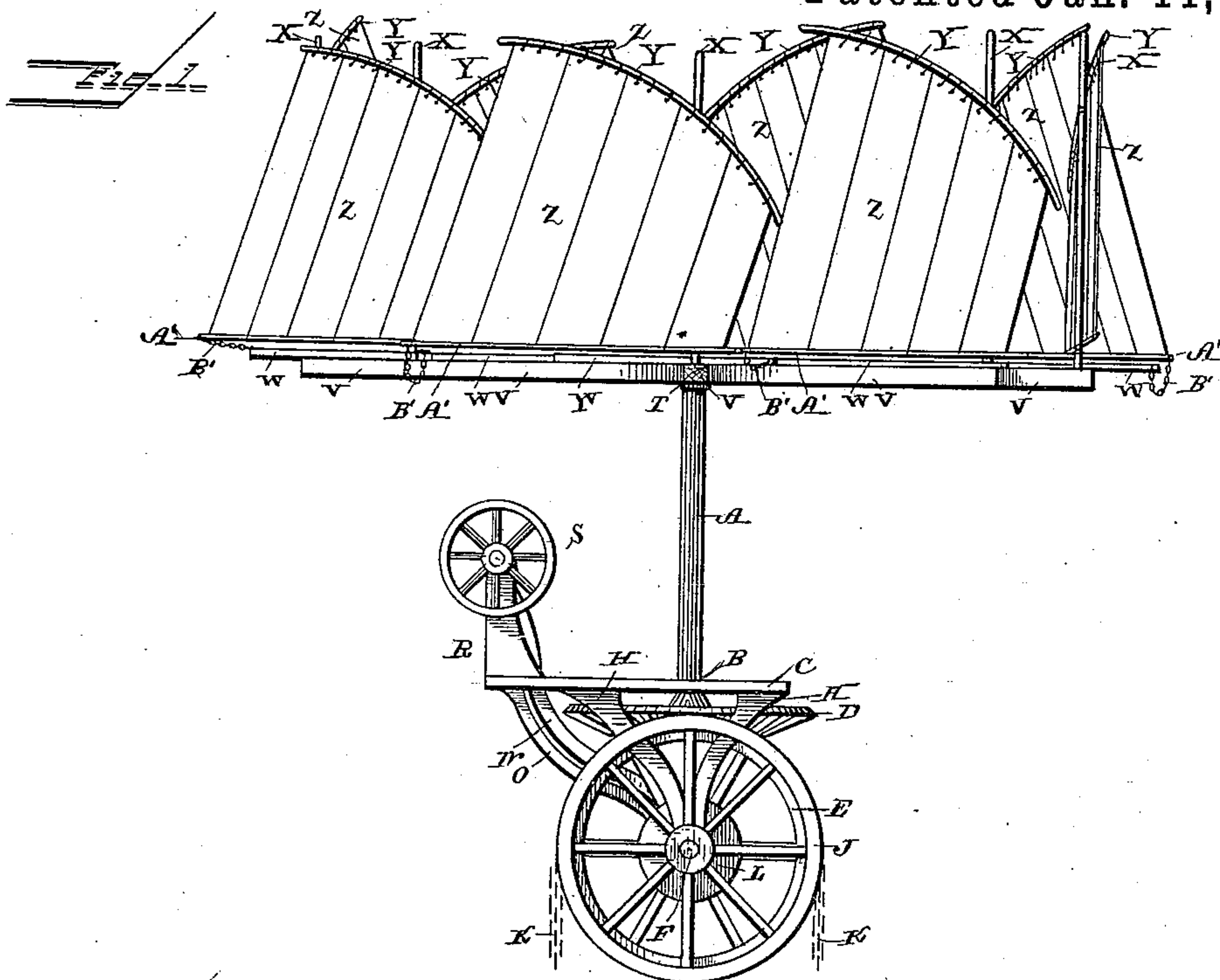
(No Model.)

2 Sheets—Sheet 1.

J. HOLM & L. ENGBERG.
WIND WHEEL.

No. 355,992.

Patented Jan. 11, 1887.



WITNESSES
J. L. Ourand
Edward Stanton

INVENTORS:
John Holm,
Laurence Engberg
By Louis Bagger & Co.
Attorneys

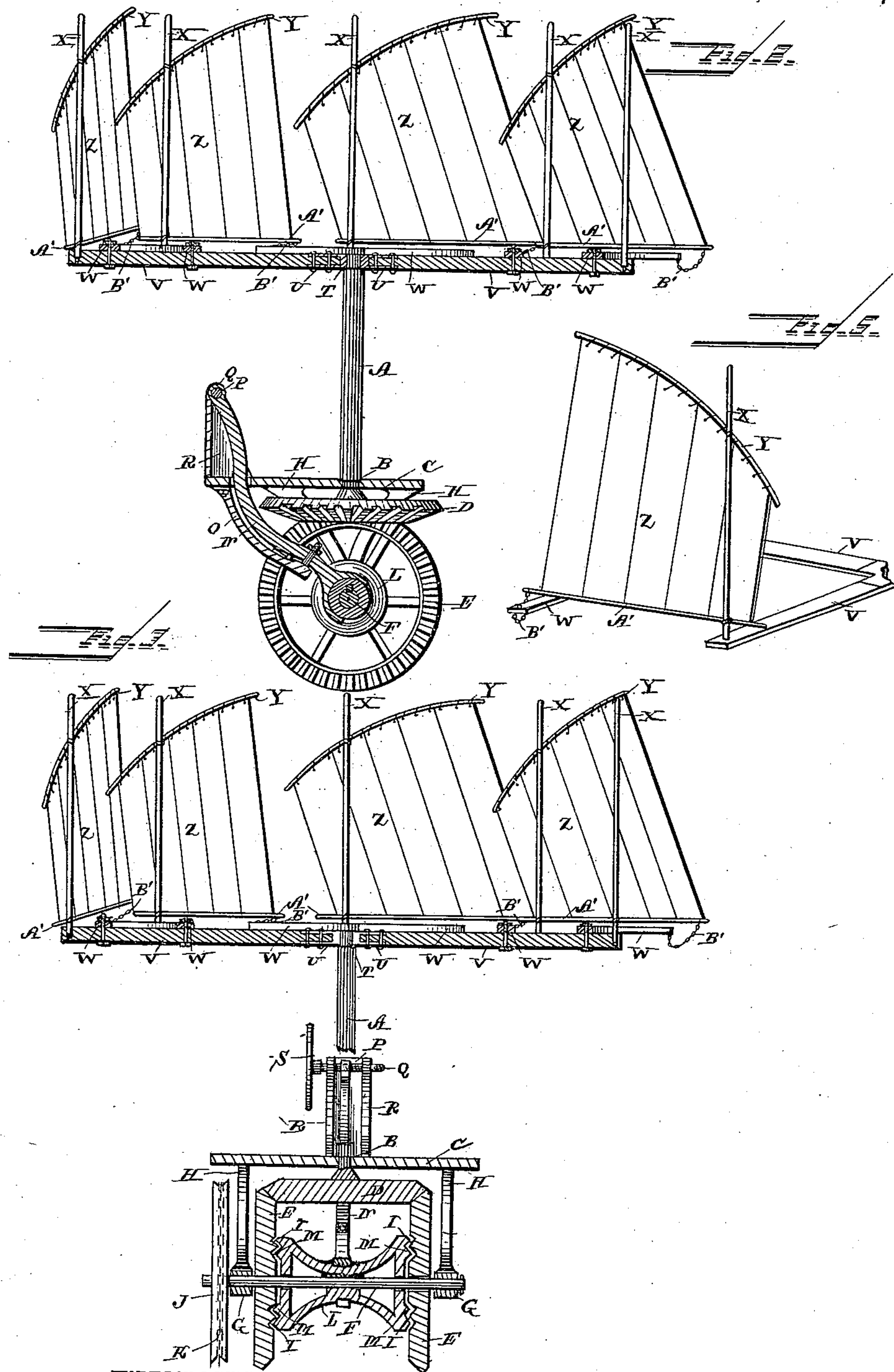
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UNITED STATES PATENT OFFICE.

JOHN HOLM AND LAURENCE ENGBERG, OF AINSWORTH, NEBRASKA.

WIND-WHEEL.

SPECIFICATION forming part of Letters Patent No. 355,992, dated January 11, 1887.

Application filed June 22, 1886. Serial No. 205,873. (No model.)

To all whom it may concern:

Be it known that we, JOHN HOLM and LAURENCE ENGBERG, both residents of Ainsworth, in the county of Brown and State of Nebraska, have invented certain new and useful Improvements in Wind-Wheels; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of our improved wind-wheel and its operating mechanism. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a similar view taken at right angles to the former view. Fig. 4 is a top view, and Fig. 5 is a perspective detail view, of one of the sails or wings and of portions of the arms to which it is secured.

Similar letters of reference indicate corresponding parts in all the figures.

Our invention has relation to that class of wind-wheels in which a number of sails or vanes are pivoted in a vertical plane upon a horizontal wheel; and it consists in the improved construction and combination of parts of the same, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates a vertical shaft, which is journaled in a suitable bearing, B, in a table or platform, C, and the lower end of this shaft is provided with a beveled cog-wheel, D, below the bearing. This beveled cog-wheel meshes with two similar cog-wheels, E E, journaled loosely upon a shaft, F, which is journaled in bearings G G at the lower ends of hangers H H, projecting downward from the platform, and the inner faces of these cog-wheels are provided with annular ribs I, V-shaped in section.

The outer end of the shaft is provided with a suitable wheel or pulley, J, from which the motion is conveyed, by means of a chain, K, or similar gearing, to the mechanism to be operated, and a clutch-sleeve, L, slides upon the middle of the shaft, having the faces of its enlarged ends formed with V-shaped annular grooves M, which may engage the ribs upon the cog-wheels, the said ribs and grooves form-

ing friction-surfaces, by means of which the end of the sleeve, which is forced against a cog-wheel, may be revolved with the said wheel, revolving the shaft with it, the sleeve sliding upon the shaft, but turning with it. The lower end of a lever, N, is pivoted to the middle of this sleeve, and is fulcrumed upon a downwardly-projecting bracket, O, projecting from the platform, and the upper end of this lever, which projects through a suitable slot or aperture in the platform, is formed with a transverse screw-threaded perforation, P, through which passes a screw, Q, the ends of which are journaled in bearings at the upper ends of brackets R R upon the platform, and one end of the screw is provided with a hand-wheel, S, or similar means for revolving it.

The upper end of the vertical shaft is provided with a casting, T, having radiating sockets U, in which the inner ends of radiating arms V are secured, and bars W are secured with their inner ends at about the middles of these arms, and are secured near their outer ends to near the outer ends of the adjoining arms, each of the said bars being parallel to the second arm from the arm to which its inner end is secured. The ends of the arms are provided with vertical masts or rods X, near the upper ends of which the curved yards Y of the sails Z are pivotally secured at about their middles, while the booms A' of the sails are pivotally secured near their forward ends at the lower ends of the rods or masts.

The sails are preferably of duck or canvas, although they may be made of any suitable material, and sheets B', of cord or chain, are detachably secured to the rear ends of the booms and at the outer ends of the bars.

It will be seen that the vanes or sails will have a free motion with their yards and booms upon the masts or rods, allowing them to stand at such an angle against the wind that they will be forced forward, the sail which will be passing directly against the wind only offering its forward edge to the wind, while the other sails will all stand at angles to the direction of the wind, which will force them forward, the sheets allowing the sails to shift or jibe as they change position and receive the wind from either side.

The vanes or sails may be provided with

suitable reefs and halyards, or suitable means for reefing and hauling them in, according to the strength of the wind, and a number of the sails may be hauled in, allowing the other
5 sails to perform the work in heavy winds.

The wheel will be revolved by the wind regardless of the direction in which the wind is blowing, as the sails or vanes will offer the same angles at all points of the wheel to the
10 direction of the wind, so that it is not necessary to shift the position of the wheel or of the sails when the wind shifts, the only points to be observed by the use of the wheel being the strength of the wind and the speed desired to
15 be obtained by the wheel.

Although we prefer to use sails made of textile material, similar to the sails of a vessel, vanes of wood or metal or other material may be used in different shapes; and it will be seen
20 that the revolution of the wheel may be transferred to the horizontal shaft in either direction by shifting the clutch-sleeve upon the shaft to bear against either of the beveled cog-wheels, the screw serving to operate the shifting-lever *n*, and forcing the sleeve with its
25 grooved face against the ribbed face of the cog-wheel with sufficient force to prevent it slipping upon the said face.

The mechanism herein shown and described
30 may be used for any desired purpose, the power from the wind-wheel being transferred to the desired mechanism from the gear-wheel upon the horizontal shaft by the chain or other suitable gearing mechanism.

35 Having thus described our invention, we claim and desire to secure by Letters Patent of the United States—

1. In a wind-wheel, the combination of a number of horizontally-radiating arms, bars
40 secured at their inner ends near the centers of

the arms and near their outer ends to near the outer ends of the adjoining arms, each bar being parallel to the second arm from the arm to which its inner end is secured, vertical rods or masts secured at the outer ends of the arms, 45 and vanes pivoted near their forward edges upon the rods or masts, having sheets secured to the rear ends of the lower edges and to the outer ends of the bars, as and for the purpose shown and set forth. 50

2. In a horizontal wind-wheel, the combination of a vertical revolving wheel shaft having a beveled cog-wheel upon its lower end, a horizontal shaft having a pulley-wheel at one end and journaled in bearings below the beveled cog-wheel, two beveled cog-wheels having annular ribs V-shaped in section upon their inner faces, and journaled upon the horizontal shaft meshing with the opposite edges of the horizontal wheel, a clutch-sleeve sliding 60 upon and turning with the horizontal shaft, and having the faces at its ends formed with annular V-shaped grooves corresponding to the annular V-shaped ribs, a lever having its lower end pivoted to the middle of the clutch-sleeve and having its fulcrum above the sleeve, 65 and formed with a transverse screw-threaded perforation in its upper end, and a screw fitting and turning in the perforation and having a hand-wheel at one end, being journaled 70 at its ends, as and for the purpose shown and set forth.

In testimony that we claim the foregoing as our own we have hereunto affixed our signatures in presence of two witnesses.

JOHN HOLM.

LAURENCE ENGBERG.

Witnesses:

J. H. ROGERS,

J. F. BURNS.