(No Model.)

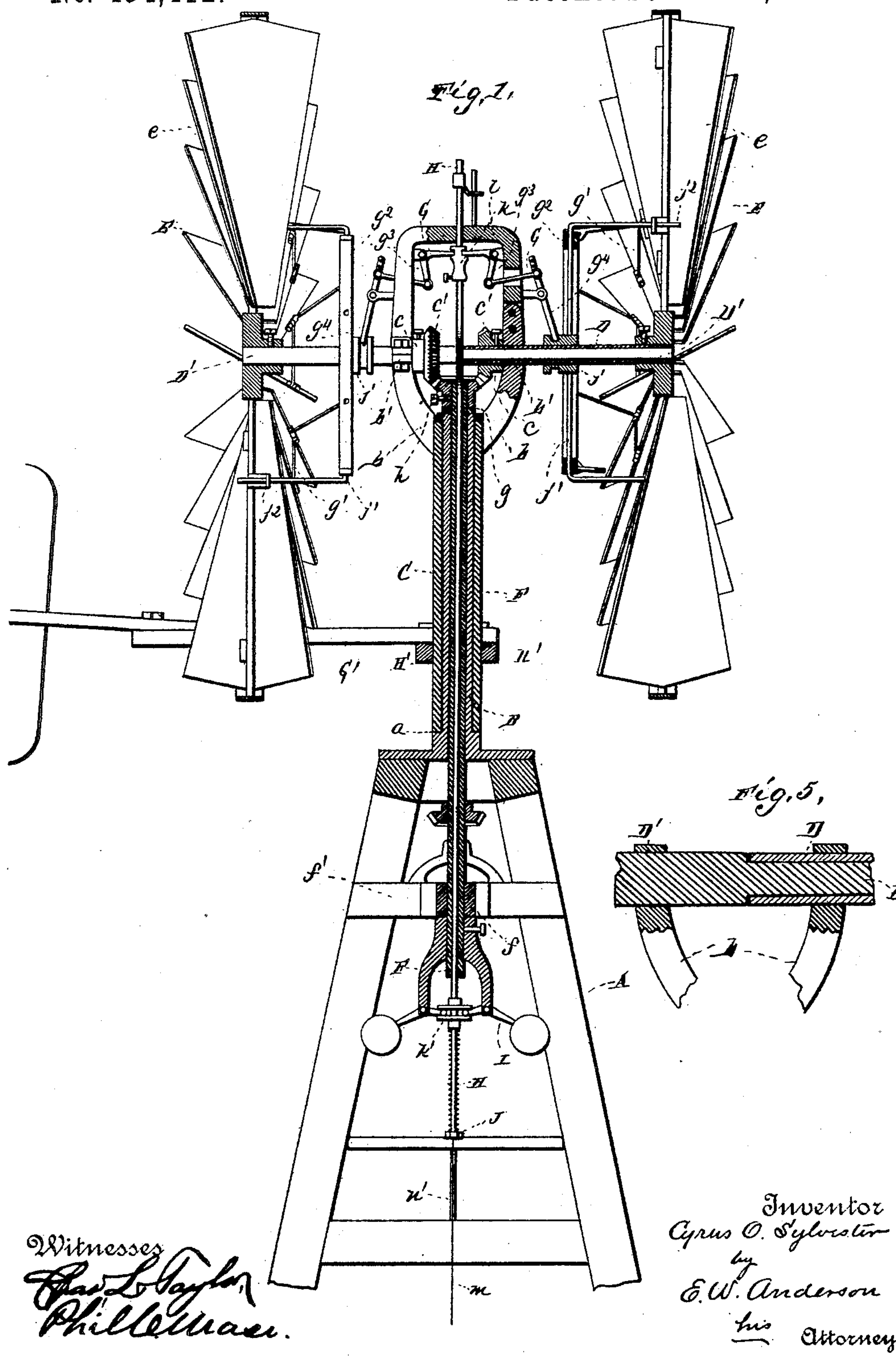
2 Sheets—Sheet 1.

C. O. SYLVESTER.

POWER WINDMILL.

No. 454,412.

Patented June 16, 1891.



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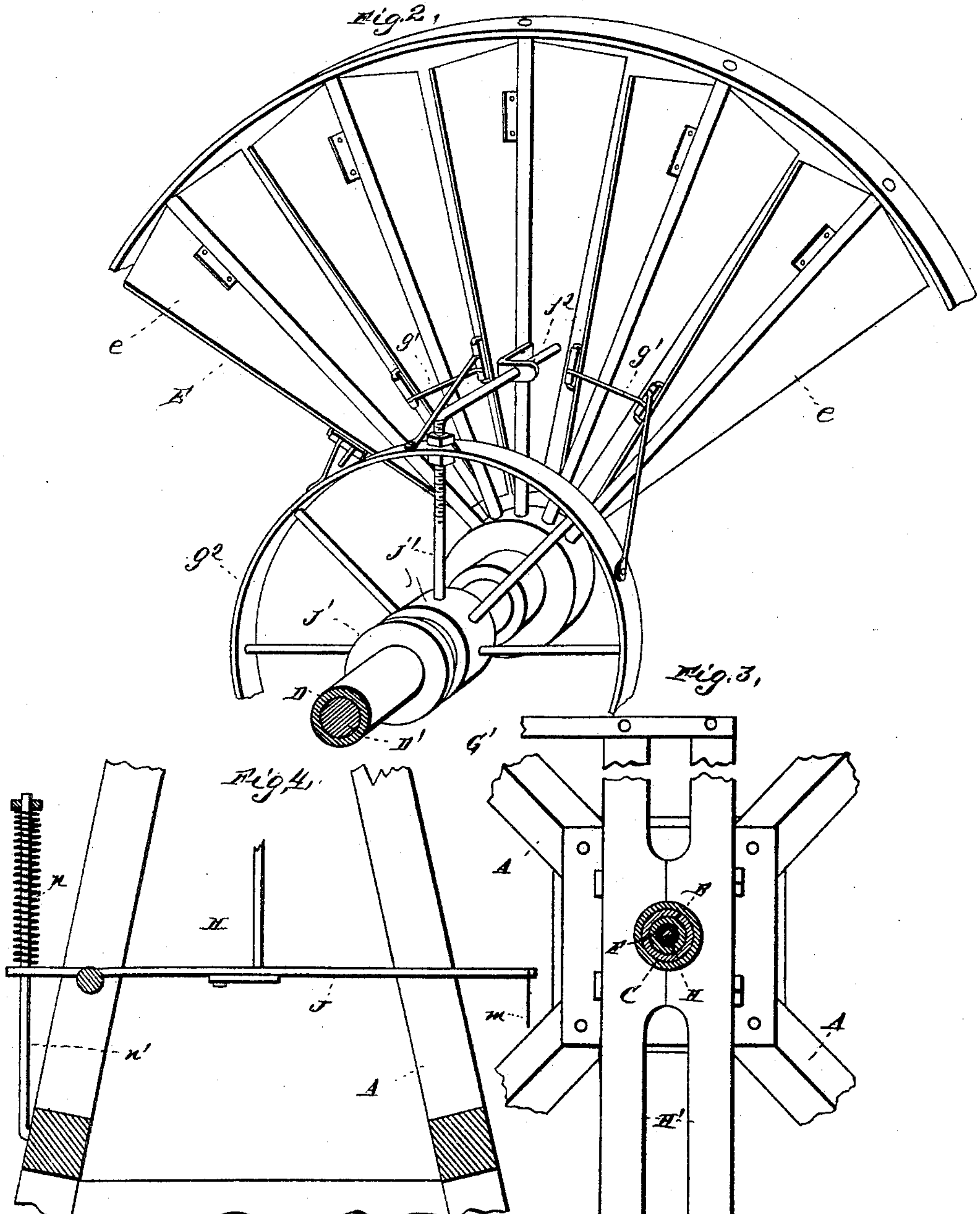

Witnesses
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Inventor
Cyrus O. Sylvester
by
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CYRUS O. SYLVESTER, OF OLATHE, KANSAS, ASSIGNOR OF ONE-HALF TO GEORGE H. BEACH AND S. G. McKEE, BOTH OF SAME PLACE.

POWER-WINDMILL.

SPECIFICATION forming part of Letters Patent No. 454,412, dated June 16, 1891.

Application filed August 2, 1890. Serial No. 360,809. (No model.)

To all whom it may concern:

Be it known that I, CYRUS O. SYLVESTER, a citizen of the United States, and a resident of Olathe, in the county of Johnson and State of Kansas, have invented certain new and useful Improvements in Power-Windmills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a vertical transverse central section. Fig. 2 is a sectional perspective view of part of one of the wind-wheels and shaft. Fig. 3 is a vertical sectional view, partly broken away, near the base. Fig. 4 is a horizontal section above the vanes. Fig. 5 is a detail view of a portion of the wheel-carrying shafts and their supports.

This invention relates to certain improvements in windmills; and it consists in the construction and combination of parts, as will hereinafter appear.

In the drawings, the letter A refers to an upright frame or tower, upon which is secured the lower end of a hollow column B, around which is placed a hollow or tubular upright C, resting or bearing at its lower end upon a shoulder *a* at the base of the column.

The upright C is provided with arms *b*, supporting in boxes *b'* at their upper ends a shaft D', carrying at one end a wind-wheel E, its opposite end being reduced in diameter from its central portion outward and having loosely sleeved thereon a hollow shaft D, which also carries a wind-wheel at its outer end. Each of these shafts D D' is provided with a collar *c*, which carries a beveled gear-wheel *c'*.

Through the column B extends a hollow shaft F, held near its lower end in a box *f*, fastened upon a cross-piece *f'* of the frame A, and having fitted to it above the top end of said column a collar *g*, affording a bearing therefor. The shaft F is suitably geared near its lower end to a shaft to provide the motive power, and carries at its upper portion a horizontal beveled gear-wheel *h*, gearing with the wheels *c' c'*, said shaft F thus being driven by both wheels revolving in opposite directions.

The wheels E are provided with blades or wings *e*, pivoted or hinged to the spokes thereof and connected in groups of two by links *g'* to rings g^2, connected by spokes to collars *j*, having a bell-crank and compound-lever connection G with a collar *k*, secured to a rod H, extending down through the hollow shaft F, and carrying below the latter a collar *k'*, engaged by the weighted arms of the governor I, carried by said shaft at its lower end. The rod H is curved outwardly a short distance above its center to clear the shafts D D'.

The bell-crank and lever connections G each comprises a bell-crank lever g^3, pivoted at its angle upon a suitable frame or support *l*, secured to the boxes *b'*, at the upper ends of the arms *b* of the upright C, the upper ends of said levers engaging the collar *k*. The lower end of each bell-crank lever is connected to one end of a link guided in a slot in the support *l*, the opposite end of said link connecting with a lever g^4, pivoted to an arm of the frame *l* and engaging its respective collar *j*. Opposite spokes *j'* of the rings g^2 are bent or extended at their outer ends laterally to engage eye-plates j^2, secured to spokes of the wheels E E.

The lower end of the rod H is connected to a lever J, suitably pivoted to an upright of the frame A, and from it depends a line *m* for its manipulation, in order to pull the blades of the wheels out of or edgewise to the wind when it is desired to stop their motion. A spring *n*, held upon a rod *n'*, secured to a cross-piece of the tower A and acting upon the lever J, holds the wings or blades normally at the angle represented in the drawings to the wind. G' G' are two duplicate parallel vanes or tails, having their arms secured to cross-trees H', centrally bolted or fastened to the upright C.

It is obvious that the use of two wheels greatly increases the working capacity of the mill, and that the governor I will regulate the speed of the wheel-shaft, as in event of the tendency of the wheels to increase in speed the balls of governor will, acting through the rod H and the connections between it and the blades or wings, serve to keep the latter at a mean angle of presentation to the wind, and thus preserve a uniform motion of said wheels and shaft.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. The windmill having the shafts provided with collars having gear-wheels, in combination with the wind-wheels, one secured upon each shaft and geared to a common shaft, the rod extending through the latter shaft and having a bell-crank and lever connection with collars on the wheel-shafts, the rings having spokes connected to said collars and connected by links to the blades or wings of said wheels, and the governor engaged by said rod and carried by said common shaft, substantially as set forth.

2. The windmill having shafts provided with collars, each bearing or carrying a wind-wheel provided with pivoted blades or wings, in combination with mechanism for operating said blades or wings from collars slid in on said shafts, the bell-crank and lever connection between said collars, and a collar on a rod engaged by a governor and carried by a common shaft geared to the aforesaid shafts and adapted to transmit the power of the wind-wheels, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CYRUS O. SYLVESTER.

Witnesses:

ART. HENRY,

W. B. HENRY.