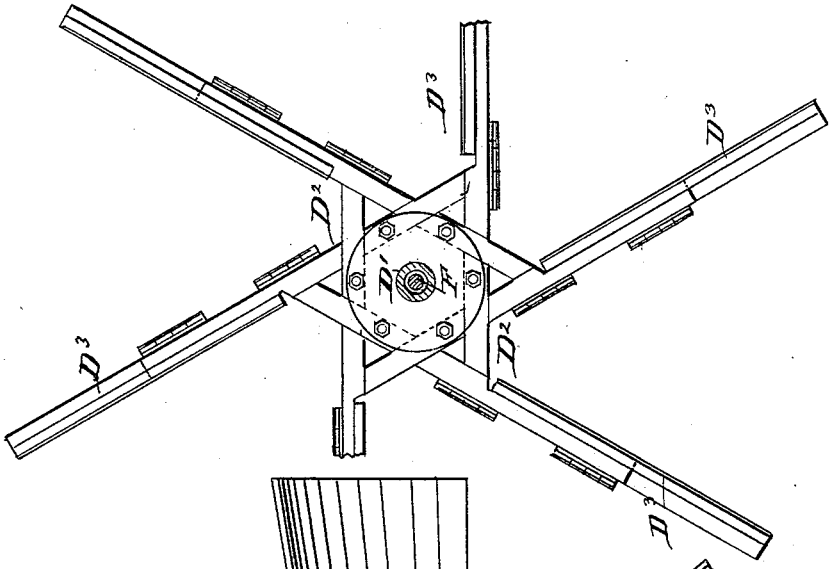
2 Sheets--Sheet 1.

E. DEWALD.

Wind-Mill.

No. 165,715. Patented July 20, 1875.

Fig. 2.



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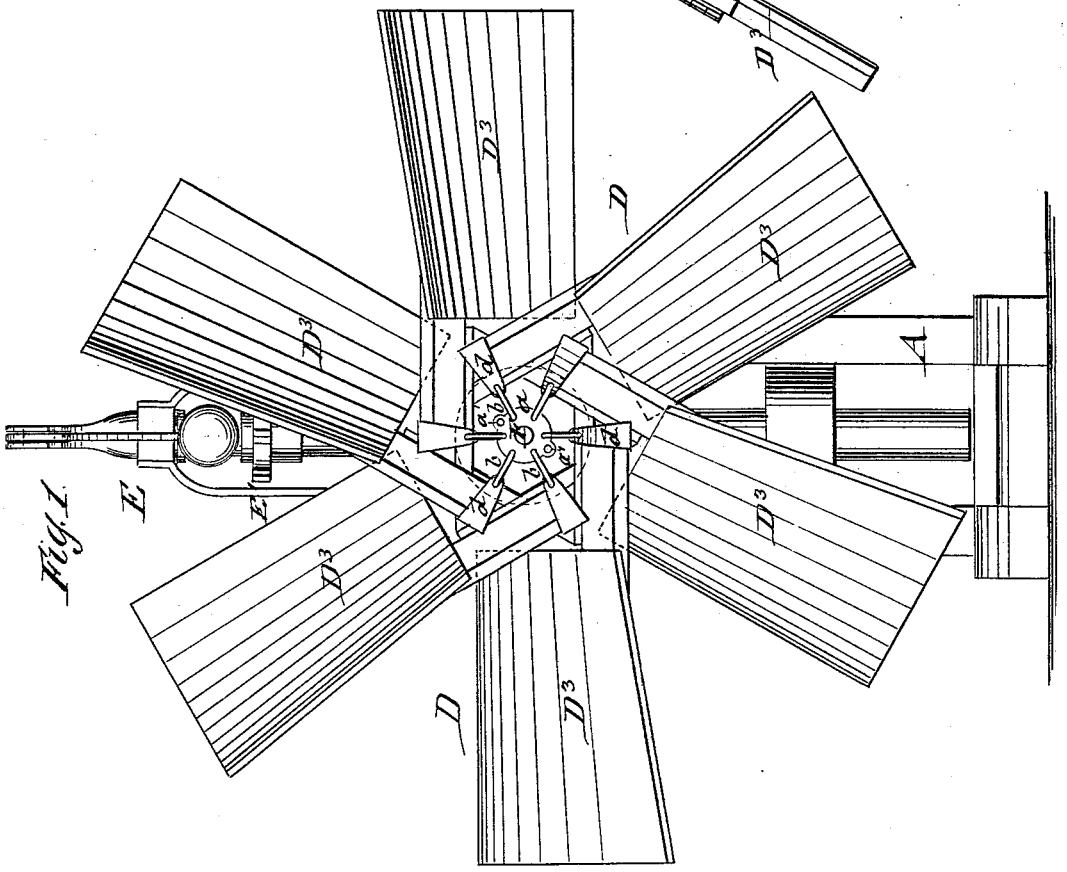

WITNESSES:

E. Wolff

A. F. Terry

INVENTOR:

E. Dewald

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ATTORNEYS.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets--Sheet 2.

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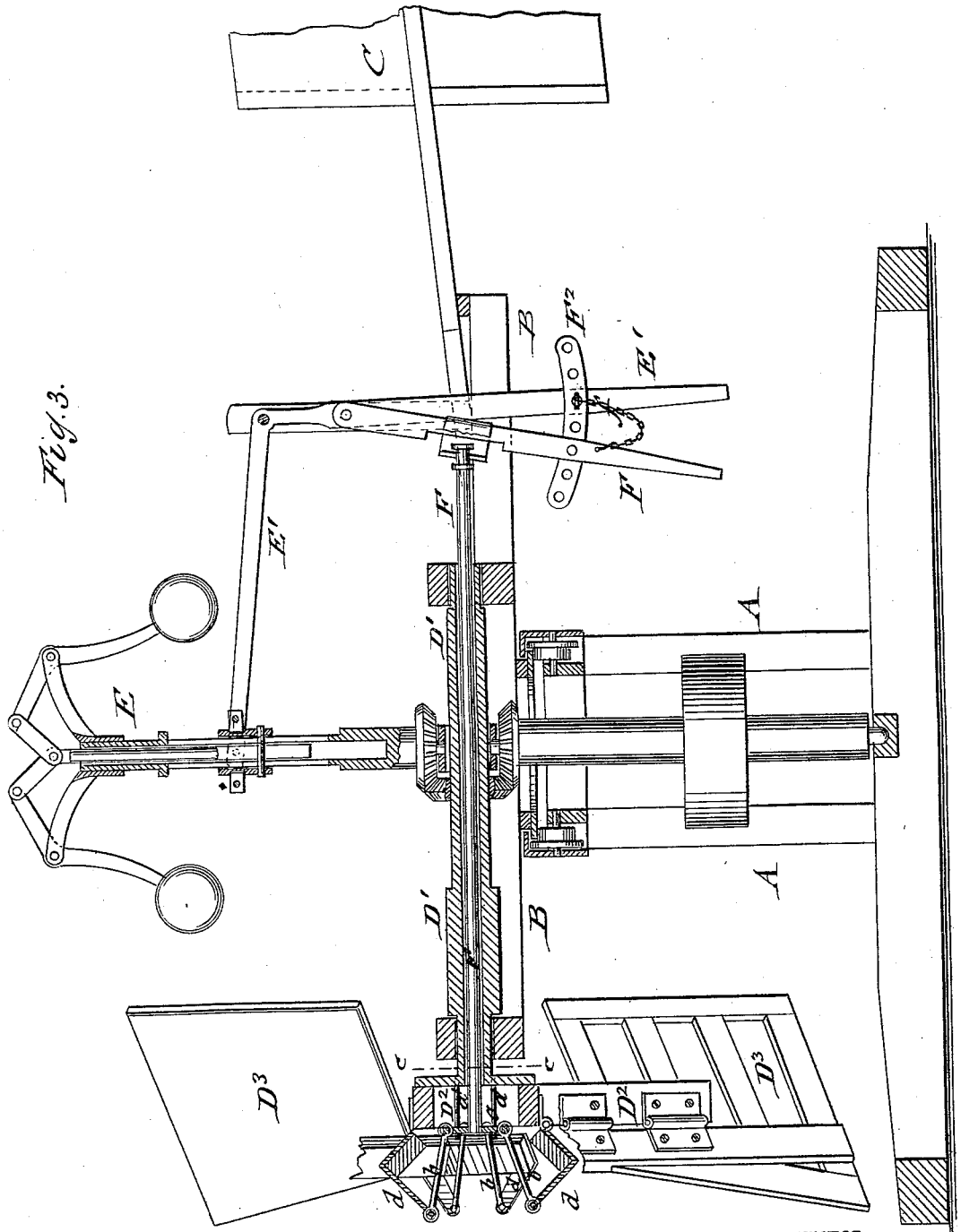
Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD DEWALD, OF COYVILLE, KANSAS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **165,715**, dated July 20, 1875; application filed April 17, 1875.

To all whom it may concern:

Be it known that I, EDWARD DEWALD, of Coyville, in the county of Wilson and State of Kansas, have invented a new and Improved Windmill, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a front view of my improved windmill; Fig. 2, a rear view of the spider-frame and wheel, with a transverse section on the line C C, Fig. 3, of the hollow wheel-shaft and governing-rod; and Fig. 3, a vertical longitudinal section of the windmill.

Similar letters of reference indicate corresponding parts.

The invention will first be described in connection with drawing, and then pointed out in the claim.

In the drawing, A represents a suitable supporting-frame, constructed in the customary manner. B is the horizontal wheel-supporting frame, that swings readily on a swivel-plate on the top of frame A, a rear-extending vane, C, of suitable size throwing the wheel D to face the wind. The hollow shaft D^1 of wheel D turns in suitable bearings of frame B, and transmits motion by means of bevel-gear wheels to the main driving-shaft and the machinery to be run thereby, and by a top shaft to a speed-regulating governor, E, that is constructed and applied in the nature of a governor of a steam-engine. The front end of the hollow wheel-shaft D^1 carries a spider-frame, D^2, with as many arms as fans or wings are to be employed. The wings D^3 are hinged to the arms of the spider-frame D^2, and swing into suitable angles toward the direction of the wind by means of a regulating-rod, F, that passes centrally through the hollow wheel-shaft, and connects, by a face-disk, *a*, pivoted intermediate rods *b*, and elbow-lever arms *d*, with the arms of the wings D^3. The face-disk *a* slides on guide-rods *a'*, of the spider-frame, for retaining a fixed and stable position, so as to control the wings without continually vibrating the same. The forward motion of the regulating-rod F throws the wings more or less toward the wind, while the backward motion carries the wings into position parallel to the direction of the wind, and discontinues the rotation of the wheel. The wings are constructed of suitable size, made of a light supporting-frame, with the cloth tacked to the lateral stiffening-pieces of the same, so that they are capable to resist even heavy storms, hail, &c. The governor E is connected by a sliding sleeve and swivel to a forked elbow-lever, E', that is fulcrumed to supporting-standards of frame B. To the downward-extending arm of fulcrumed lever E' is pivoted the lever F^1, that controls the regulating-rod F, and carries a perforated gage-piece, F^2, to which the governor-lever E' may be secured by a fastening-pin, *f*, according to the speed at which the mill is desired to run.

When the governing mechanism is attached to the wing-controlling lever and gage the wind revolves the wheel, governor, and driving-shaft. When the power of the wind increases the speed of the wheel is increased, the balls of the governor are spread, and the regulating rod is carried back, so that the angle of the wings toward the direction of the wind is decreased, and thereby the speed of the wheel diminished. When the velocity of the wind decreases, the speed of the governor is also decreased, and the regulating-rod and wings are carried forward toward the wind, the wings bearing with greater angle toward the same, so that a greater amount of the same is utilized.

The connection of the governor with the hinged wings produces a continuous adjusting of the same to the velocity of the wind, and keeps up a uniform speed of the wheel, forming a very sensitive self-regulating mechanism for windmills.

When the mill is to be stopped the fastening-pin is withdrawn, and the regulating-lever carried back till the wings are parallel to the direction of the wind, so that the same has no effect on the same.

In this manner a substantial, durable, and nicely-regulated windmill is obtained.

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

The series of hinged wings D^3, arranged on a hollow rotary shaft, and flexibly connected with a rod, F, sliding in said shaft, in combination with angle-lever E' and governor E, as and for the purpose specified.

EDWARD DEWALD.

Witnesses:
B. F. MCVAY,
J. A. CAIN.