

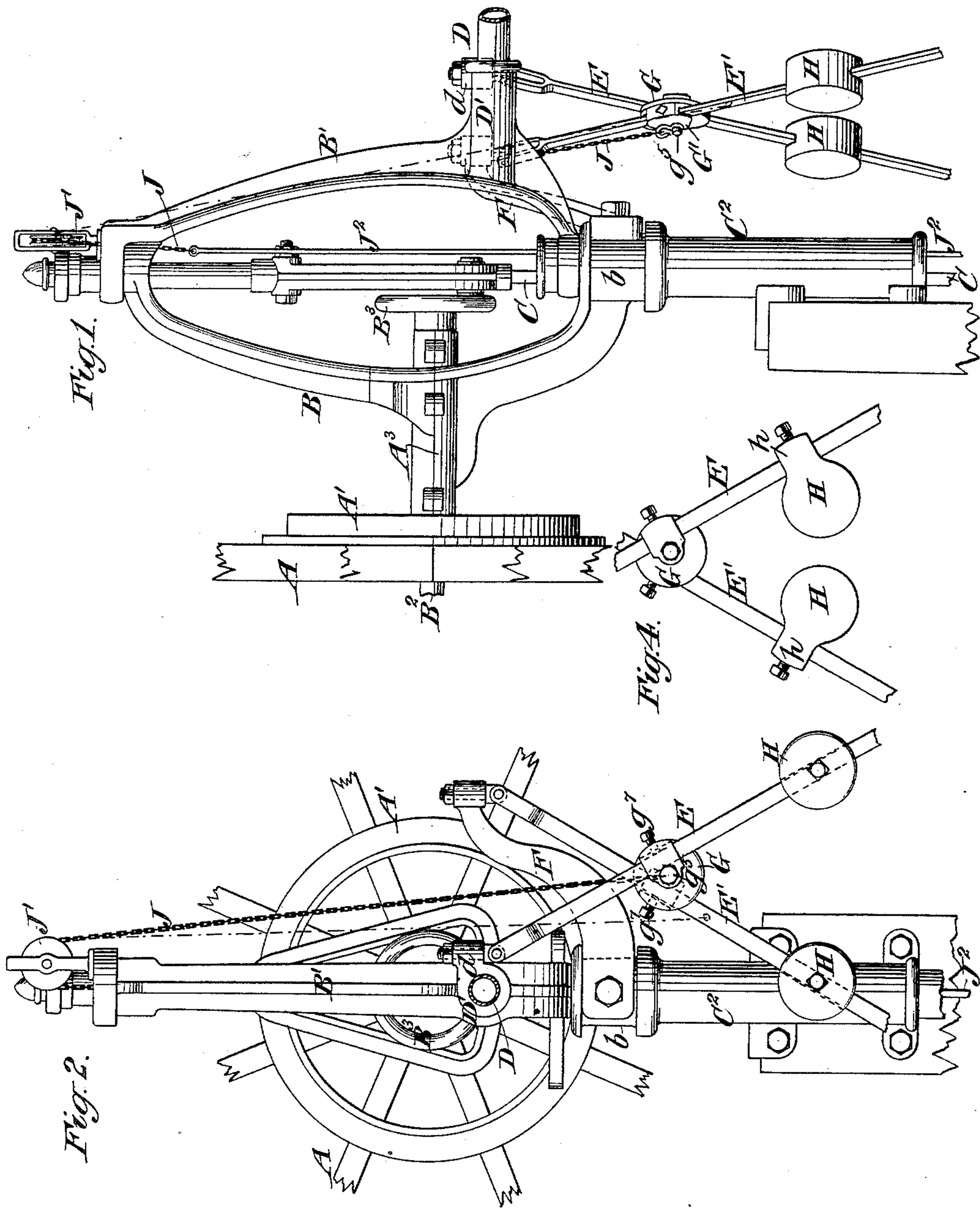
(No Model.)

2 Sheets—Sheet 1.

A. J. CORCORAN.
WINDMILL.

No. 450,736.

Patented Apr. 21, 1891.



Witnesses:

Edmund Agnew
John Bickel

Inventor:

Andrew J. Corcoran
by his attys
Brown & Greenwald

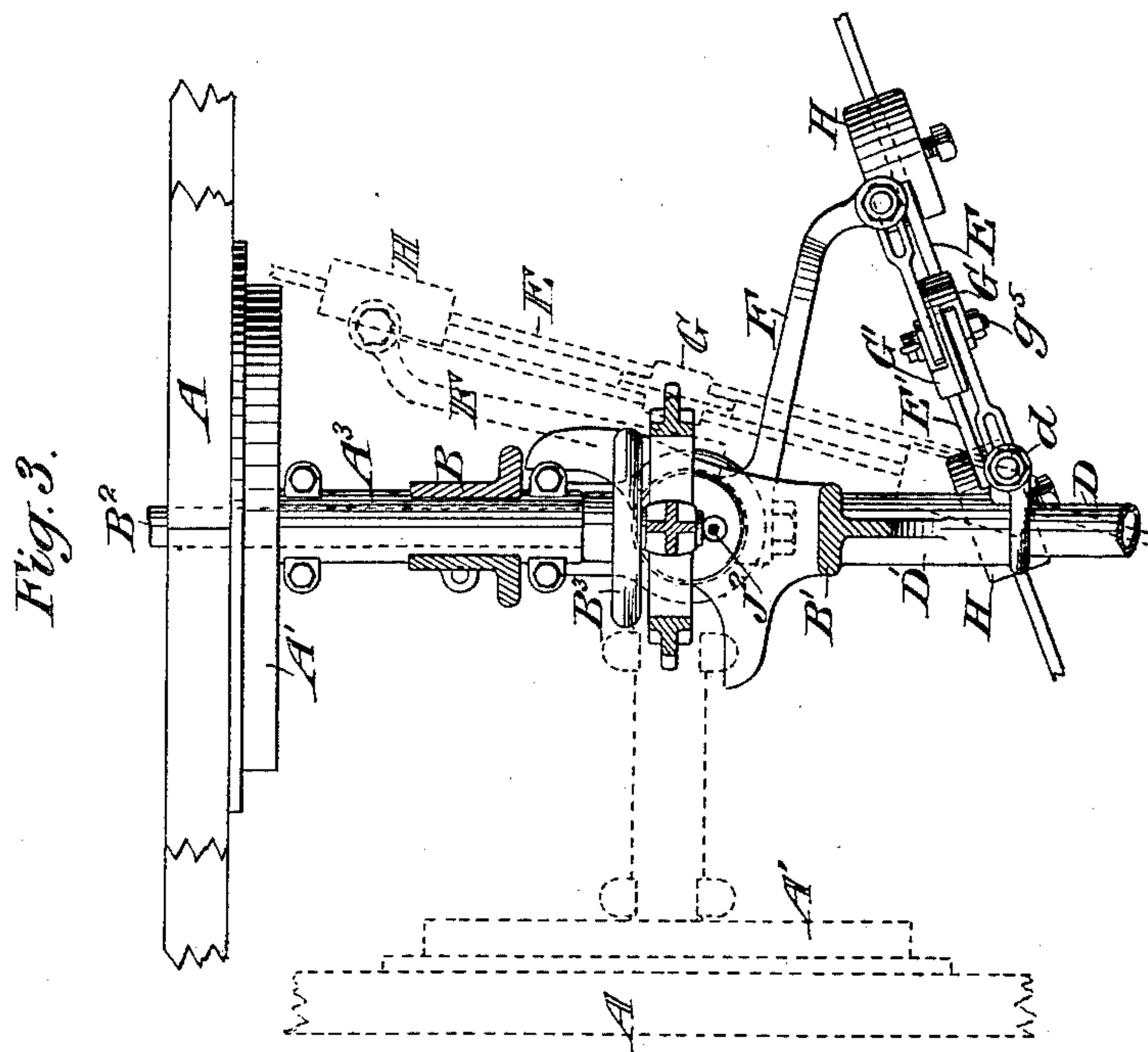
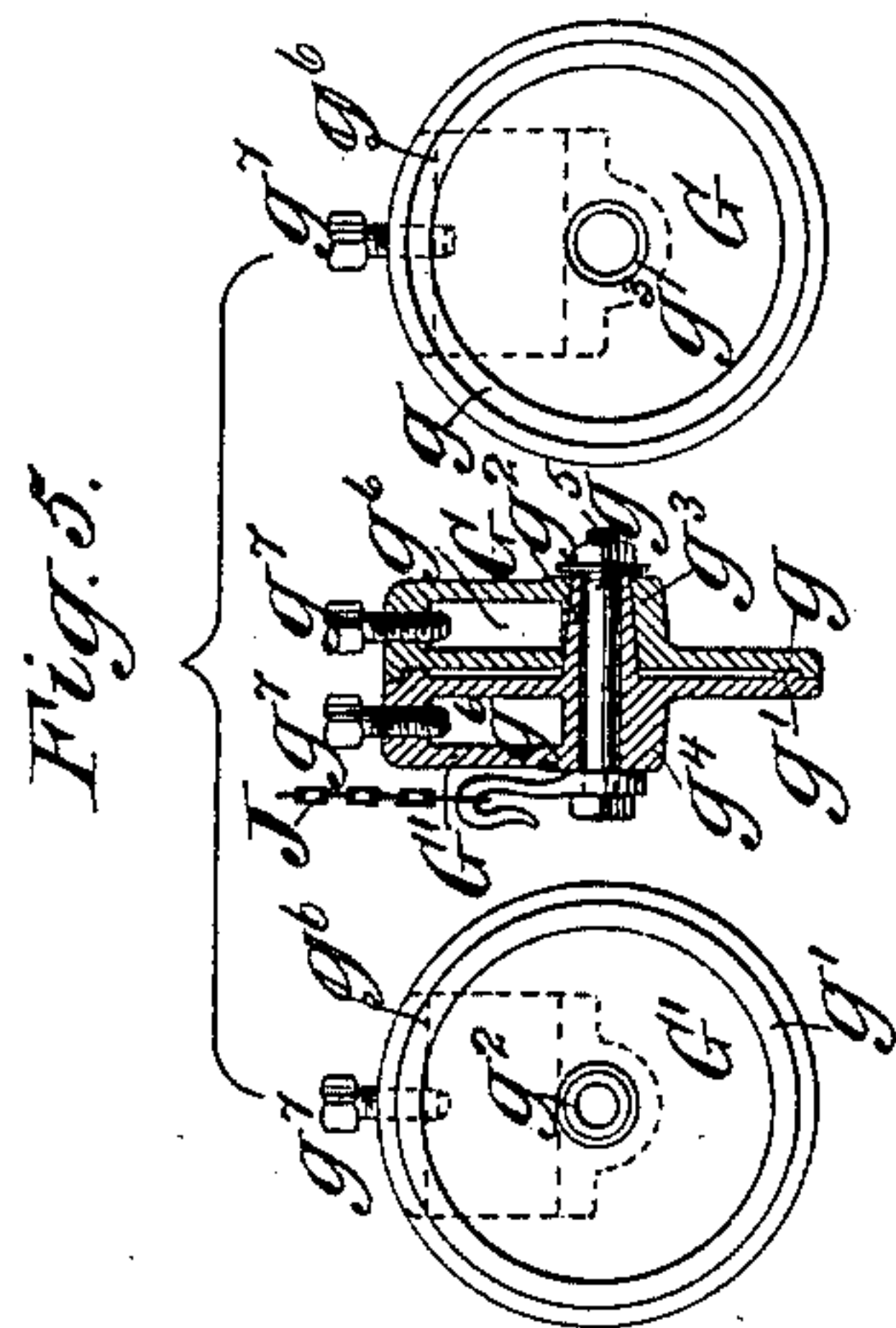
(No Model.)

2 Sheets—Sheet 2.

A. J. CORCORAN.
WINDMILL.

No. 450,736.

Patented Apr. 21, 1891.



Witnesses:

Old Sundgren
John Bicket

Inventor:

Inventor:
Andrew J. Corcoran
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UNITED STATES PATENT OFFICE.

ANDREW J. CORCORAN, OF JERSEY CITY, NEW JERSEY.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 450,736, dated April 21, 1891.

Application filed February 15, 1889. Serial No. 300,035. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. CORCORAN, of Jersey City, in the county of Hudson and State of New Jersey, have invented a certain new and useful Improvement in Windmills, of which the following is a specification.

It is desirable when a windmill is in use to maintain the tail-vane and wheel always in the eye of the wind and to maintain the tail-vane in a position at approximate right angles to the wheel.

It is the object of my improvement to accomplish this result.

I will describe in detail a windmill embodying my improvement, and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a windmill embodying my improvement. Fig. 2 is a rear view of the same. Fig. 3 is a plan or top view partly in section. Fig. 4 is a view with slight modification of certain parts. Fig. 5 is a detail view of a fulcrum-piece employed. In Figs. 1, 2, 3, and 4 certain of the parts have been broken away to save space.

Similar letters of reference designate corresponding parts in the several figures.

A designates the wind-wheel, and A' the hub thereof.

The journal-box A² of the wheel forms part of a portion B of the main frame.

B' designates the other portion of the frame.

B² designates the shaft of the wheel, upon which is mounted a crank B³, operating to raise and lower a rod C in the usual manner. The portions B B' are pivoted upon a fixed bearing C² of ordinary construction, and the upper end of the portion B' is pivoted upon the portion B, the latter being pivoted upon the upper portion of the rod C. They may be swung independently of each other. The swinging of the portion B of the main frame is produced by the swinging of the wheel A, while the swinging of the portion B' of the frame is occasioned by the tail-vane. I have not shown the vane; but the same is of ordinary construction and mounted upon a tail-vane bar D. The tail-vane bar extends into a socket D', formed upon the portion B' of the main frame. Upon the socket D' is formed a projection d, to which is pivotally secured a lever E. Upon the lower hub b of

the portion B of the main frame is secured a bracket F. The bracket F extends into such position that when the tail-vane is at approximate right angles with the wheel the bracket will be at approximate right angles to the tail-vane. Pivotally connected to the outer extremity of the bracket F is a lever E'.

G G' designate portions of a fulcrum-piece. Each of the portions G G' is, as shown, disk-shaped, and they are provided the one with a groove g and the other with a rim g', adapted to enter said groove, said groove and rim being near the periphery of the disks and upon the inner sides thereof. One of the portions, here shown as G', is provided with a hub g², which extends through a suitable bearing in a socket g³ upon the portion G. The portion G' is provided with a similar socket g⁴. Extending through the socket g⁴ and through the hub g² is a bolt g⁵, which bolt is employed to secure the two parts G G' together. The bolt, together with the hub g², acts as a pivot upon which the two parts G G' may turn relatively to each other.

In the sockets g³ g⁴ are apertures g⁶, through which the levers E E' pass. The levers after being passed through the apertures g⁶ may be secured therein by clamping-screws g⁷. The levers E E' cross each other, as shown more clearly in Figs. 1 and 2, and the fulcrum-piece may be adjusted so as to have the fulcrum of the levers at any desired point in their length. Beyond the fulcrum-piece, and also adjustably secured upon the levers, are weights H. In Figs. 1, 2, and 3 I have shown the weights H as consisting of cylindrical pieces of metal provided with axially-extending apertures, through which the levers pass, so that the weights will be equally distributed upon both sides of the levers. In Fig. 4 I have shown the weights as provided with hubs h, through which the levers extend. The greatest portion of the weights is thus thrown toward the central line or a line perpendicular to the fulcrum. When the wheel is turned to one side of the horizontal main axis of the windmill, the levers will be rocked upon their common fulcrum and the weights H will be moved farther from each other. The tendency of the weights when thus moved to return to their normal position will cause the wheel and vane to quickly assume proper positions rel-

atively to each other, it being understood that the resistance of the weight or weights will increase in a suitable ratio to the decreasing angle formed by the plane of the wind-wheel and the tail-vane.

In the arrangement of the weights shown in Fig. 4 the first effect of the weights, or, in other words, the effect which they produce when occupying a normal position, will be less than, and their ultimate effect, or the effect when moved apart, will be the same as, that in the example shown in Figs. 1 and 2. There is, therefore, a greater variation in the effect produced by the weights in Fig. 4.

Secured to the fulcrum-piece, as shown in bold outline, or to a suitable point of the lever, as shown by dotted line in Fig. 2, is a chain, or it may be a cable, J. This chain extends over a pulley J' at the top of the main frame, and thence downwardly and connects with a pull-rod J². When it is desired to render the wheel inoperative, or, in other words, to bring the tail-vane and wind-wheel parallel with each other, as shown in dotted outline in Fig. 3, the pull-rod J² is drawn downwardly. The levers are pulled apart near their upper ends, thus swinging the portions B B' of the frame relatively to each other until the wheel and vane have been brought into the position desired, in which position they may be secured by any suitable device for securing the rod J².

Although I have shown a fulcrum-piece G G', it is obvious that if it were deemed de-

sirable to vary the position of the fulcrum the fulcrum of the two levers E E' might be formed by merely passing a pivot-pin through the said levers, or by any other suitable device which would form a permanent fulcrum.

It will be seen that by my improvement I provide a very ready and effective means for maintaining the wind-wheel and tail-vane always in proper relation to each other.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a windmill, the combination, with a wheel and a tail-vane, of a main frame comprising two portions pivotally connected together, levers connected one to each of said portions of the frame, a fulcrum common to both said levers and in which they are longitudinally adjustable, and weights upon said levers, substantially as specified.

2. In a windmill, the combination, with a wheel and a tail-vane, of a main frame comprising two portions pivotally connected together, levers connected one to each portion of the frame, a fulcrum common to both said levers comprising two portions pivotally connected together and provided with sockets, one upon each portion, in which said levers are secured, and weights upon said levers, substantially as specified.

ANDREW J. CORCORAN.

Witnesses:

FREDK. HAYNES,
K. E. PEMBLETON.