

No. 610,735.

**Patented Sept. 13, 1898.**

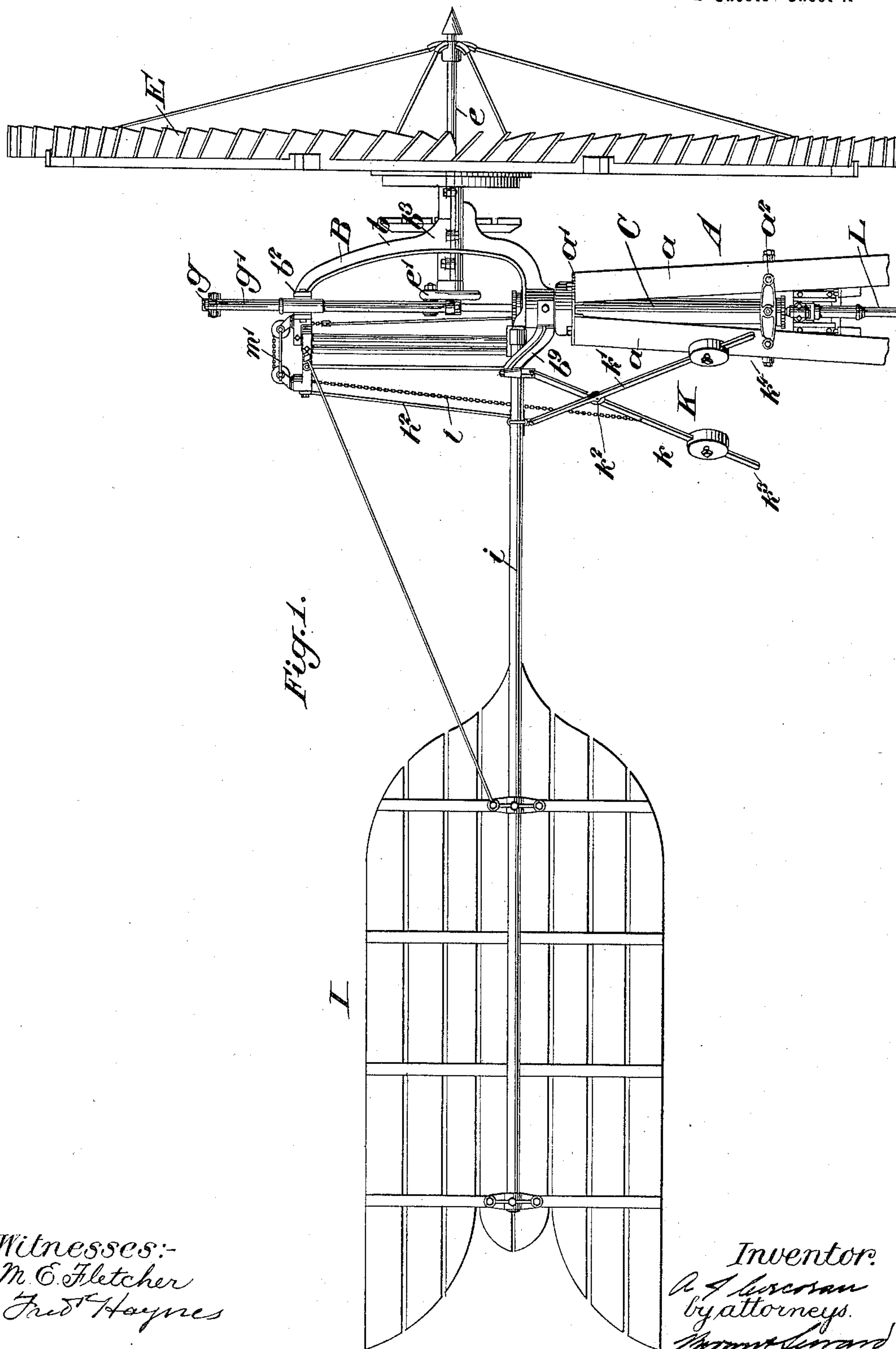
**A. J. CORCORAN.**

## WINDMILL.

(Application filed Oct. 28, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:-  
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Fred Haynes

Inventor:  
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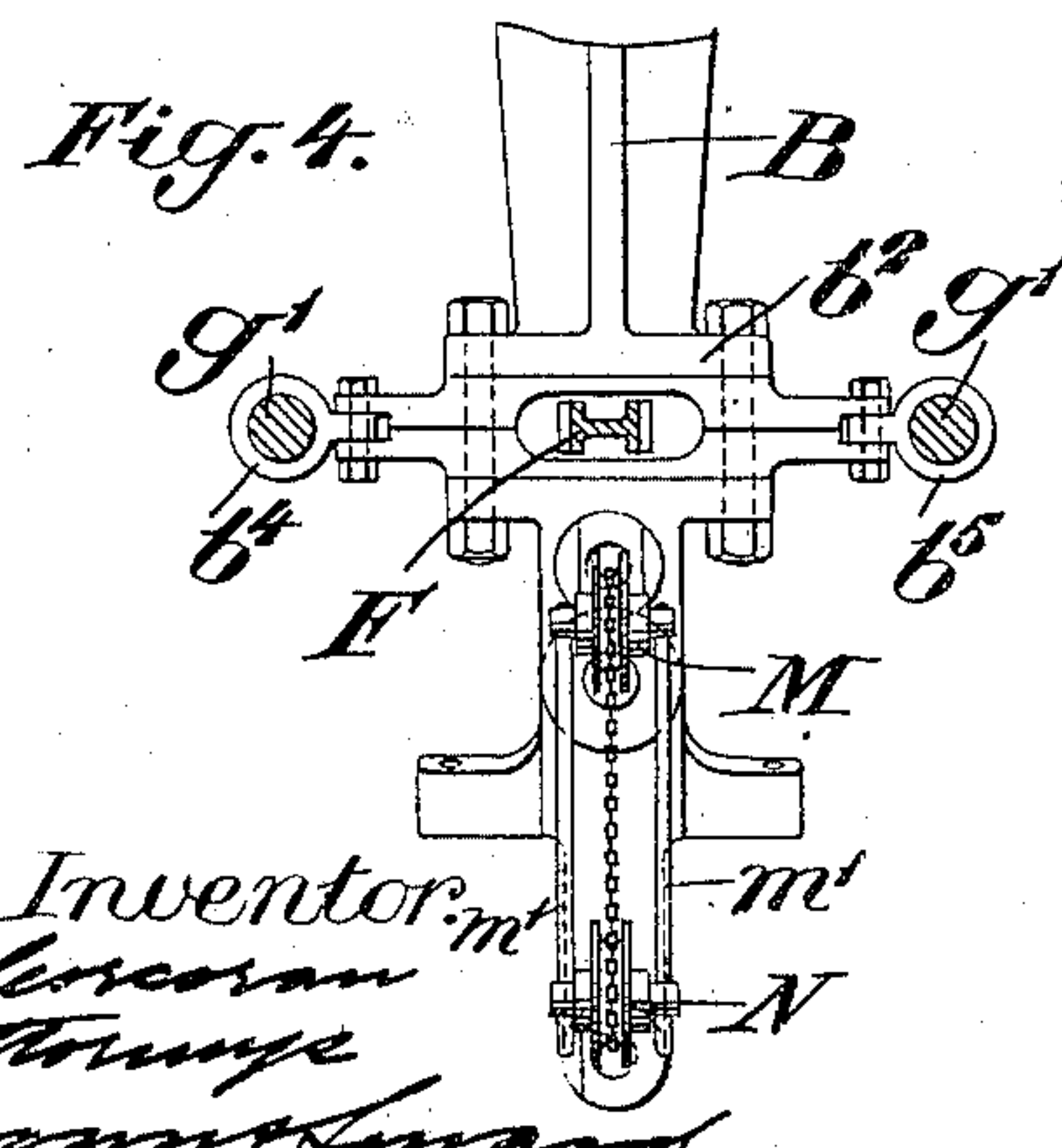
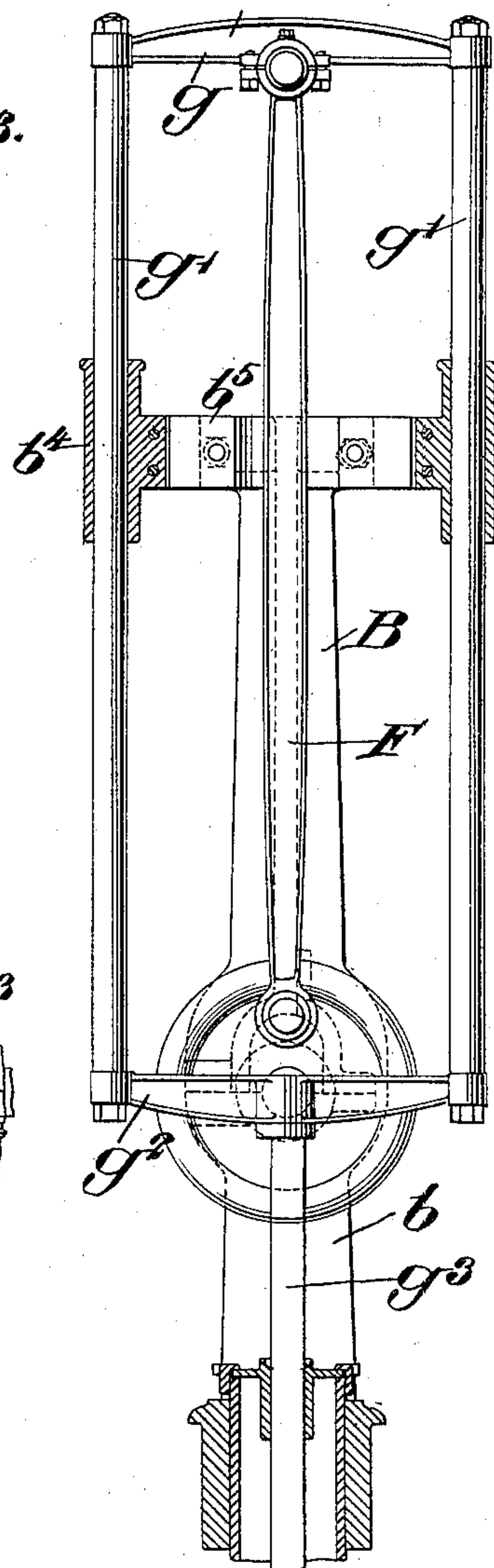
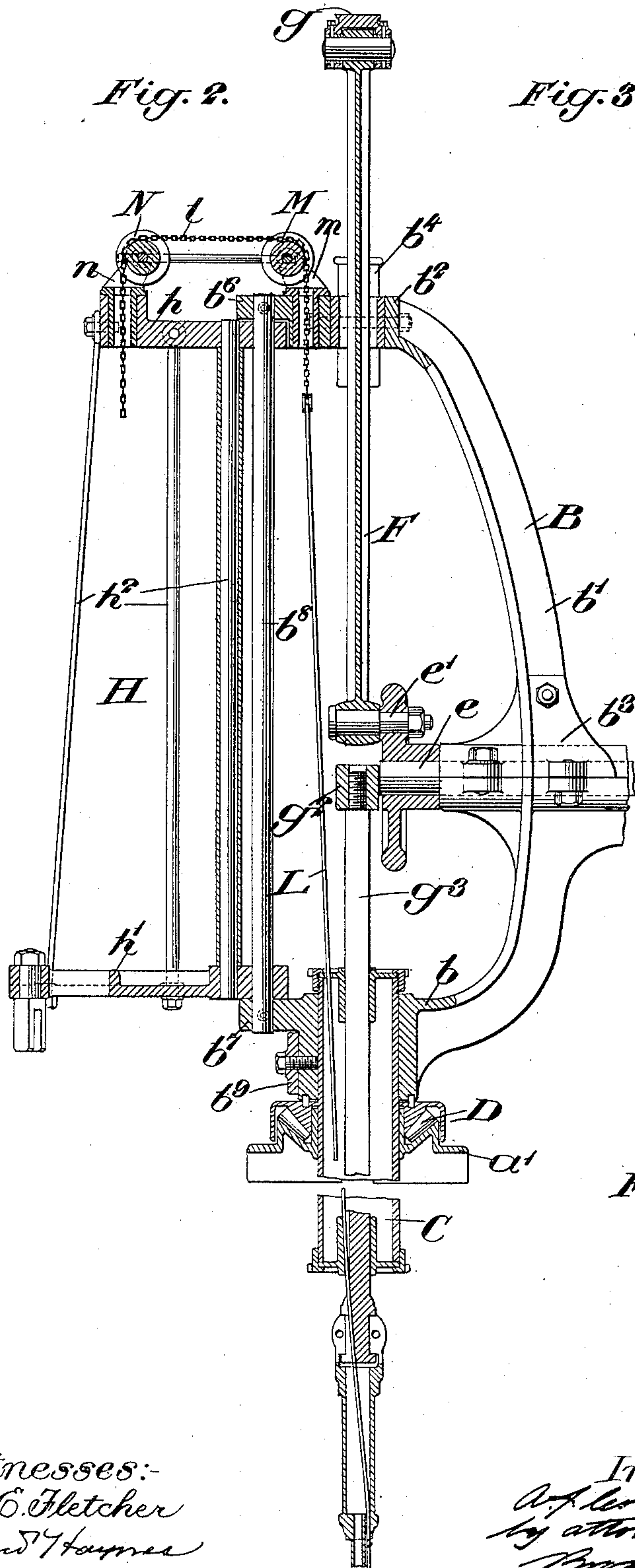
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

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

## WINDMILL.

SPECIFICATION forming part of Letters Patent No. 610,735, dated September 13, 1898.

Application filed October 28, 1897. Serial No. 656,640. (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 new and useful Improvement in Windmills, of which the following is a specification.

This invention relates to certain improvements in windmills, in which the parts are so assembled as to insure the perfect operation of the mill at all times, the parts at the same time being so counterbalanced as to permit the wind-wheel-supporting frame to readily and easily swing around to cause the wheel to face the wind at all times except when the wind is too strong.

My invention contemplates the hinging of the vane-supporting frame to the side of the pivot for the wheel-supporting frame, and further contemplates the arrangement of the governor-rod and chain which operates the weighted levers so as to prevent the twisting of the said chain and rod by the shifting positions of the wheel-supporting frame.

My invention still further contemplates a new arrangement of guiding the pitman-yoke in its upward and downward movements to insure an even and positive operation of the reciprocating pump-rod.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents a side view of the upper portion of a windmill embodying my improvements. Fig. 2 is an enlarged vertical central section from front to rear through the wheel and vane supporting frames and their adjacent parts. Fig. 3 is a vertical central view in a plane at right angles to the section shown in Fig. 2, the said section being taken through the pivot of the wheel-supporting frame; and Fig. 4 is a top plan view of the vane-supporting frame and a portion of the wheel-supporting frame.

A suitable structure A, upon which the wind-wheel-supporting frame is pivotally mounted, may consist of a plurality of upright posts  $a$ , having their tops suitably bound together, as shown at  $a'$ , and being spaced rigidly apart at a distance below their tops, as shown at  $a^2$ . The wind-wheel-supporting frame is denoted by B, the said frame having its base  $b$  provided with a suitable tu-

bular pivot or shaft C, which extends downwardly through the top of the structure A for a considerable distance. The frame B is mounted upon the top of the structure A by means of antifriction roller-bearings D. The portion  $b'$  of the yoke which extends upwardly from its base  $b$  to its top  $b^2$  is located to the side of the tubular pivot C.

The wind-wheel is denoted by E, and its rotary shaft  $e$  is mounted in suitable bearings  $b^3$  in the frame B. Its crank is denoted by  $e'$ , to which is connected the lower end of a pitman-rod F, the upper end of the said rod being connected to the top cross-brace  $g$  of a yoke G.

The side bars  $g'$  of the yoke G extend downwardly through suitable guides  $b^4$  to a point below the lower end of the pitman-rod F, where the said bars are connected by a lower cross-brace  $g^2$ , to which cross-brace is secured the upper end of a reciprocating pump-rod  $g^3$ , which extends downwardly through the tubular pivot C and from thence to the ground.

The guides  $b^4$  are located at the ends of suitable arms  $b^5$ , which extend laterally from the top  $b^2$  of the wheel-supporting frame B. As the wheel E is rotated it thereby rotates its shaft  $e$ , which in turn through the pitman-rod F causes the yoke and its pump-rod to reciprocate vertically.

The top of the frame B is provided with a rearward extension or arm  $b^6$ , and the base of the said frame is provided with a corresponding rearwardly-extended arm  $b^7$ , to which arms is hinged the vane-supporting frame H. This frame H consists of a top plate  $h$  and a bottom plate  $h'$ , which are rigidly spaced apart by suitable braces  $h^2$ . The frame H is hinged to the frame B by means of a bar  $b^8$ , which passes through the arms  $b^6$   $b^7$  and plates  $h$   $h'$ , the said bar being rigidly secured in position in any suitable manner.

The vane is denoted by I and its shank by  $i$ , which shank is rigidly secured to the lower plate  $h'$  of the vane-supporting frame H.

A side vane J projects laterally from the frame B in a plane parallel to the wheel E, as is usual, for causing the wheel to swing around edgewise to the wind and parallel with the vane when the wind is too strong.

A weighted lever K is provided for causing the wheel E to swing back into a position



facing the wind when it is not too strong, which lever consists in the present instance of a pair of crossed arms  $k k'$ , hinged together at  $k^2$  and having their upper ends the one  
 5 hinged to an arm  $b^9$ , projecting from the base  $b$  of the frame B, and the other hinged to the free end of the lower plate  $h'$  of the swinging vane-supporting frame H. The lower ends of these arms are provided with weights  $k^3 k^4$ .  
 10 The tendency of this lever K is to hold the wheel and vane normally at right angles to each other.

The means for positively swinging the wheel E around into a plane parallel with the vane from the ground consists of a rod L, which  
 15 passes upwardly through the tubular pivot C to a point near the top  $b^2$  of the frame B, where it is provided with a chain or other flexible connection which passes over a pair  
 20 of pulleys M N and from thence down into engagement with the arm  $k$  of the lever K at a point a short distance below the hinge connection  $k^2$  of the two arms of the said lever. The support  $m$  for the guide-pulley M is  
 25 swiveled in the arm  $b^6$  of the frame B, the said support having a hollow stem through which the flexible connection  $l$  passes. The support  $n$  for the guide-pulley N is similarly swiveled in the free end of the top plate  $h$  of  
 30 the vane-supporting frame, the stem of the said support being hollow for the passage therethrough of the said flexible connection.

The two guide-pulleys M N are kept in alinement and are permitted to approach and  
 35 recede from each other as the wheel swings around relative to the vane by means of a pair of guide-rods  $m'$ , which project from the support  $m$  at each side of the pulley M rear-

wardly and pass through the support  $n$  upon each side of the pulley N. These bars or rods  $m'$  are secured to one of the supports and are permitted to slide through the other support as the said supports approach and recede from each other.

What I claim is—

1. The combination with a wind-wheel-supporting frame, a vane-supporting frame hinged thereto, a weighted lever for normally keeping the vane and wheel at right angles to each other, means for positively swinging  
 50 the vane and wheel around into substantially parallel planes comprising a governor-rod and a flexible connection between the same and the lever, a pair of pulleys, the one pivoted on the wheel-supporting frame and the other  
 55 upon the vane-supporting frame and means for keeping the pulleys in line as the vane-supporting frame is swung relatively to the wheel-supporting frame, substantially as set forth.

2. In combination a wind-wheel-supporting frame, a guide-pulley pivoted thereon, a vane-supporting frame hinged to the wheel-supporting frame, a guide-pulley pivoted  
 60 upon the said vane-supporting frame and means for keeping the two pulleys in line as the vane-supporting frame is swung relatively to the wheel-supporting frame, said means comprising a guide-rod carried by one of the guide-pulley supports and having a sliding  
 70 connection with the other pulley-support, substantially as set forth.

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