

2 Sheets—Sheet 1.

No. 445,034.

Patented Jan. 20, 1891.



James F. Duhamel.
Horace A. Dodge.

Inventor:

Demoney Bird,
by Dodge Love,
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(No Model.)

2 Sheets—Sheet 2.

D. BIRD.
WINDMILL.

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Fig. 4.

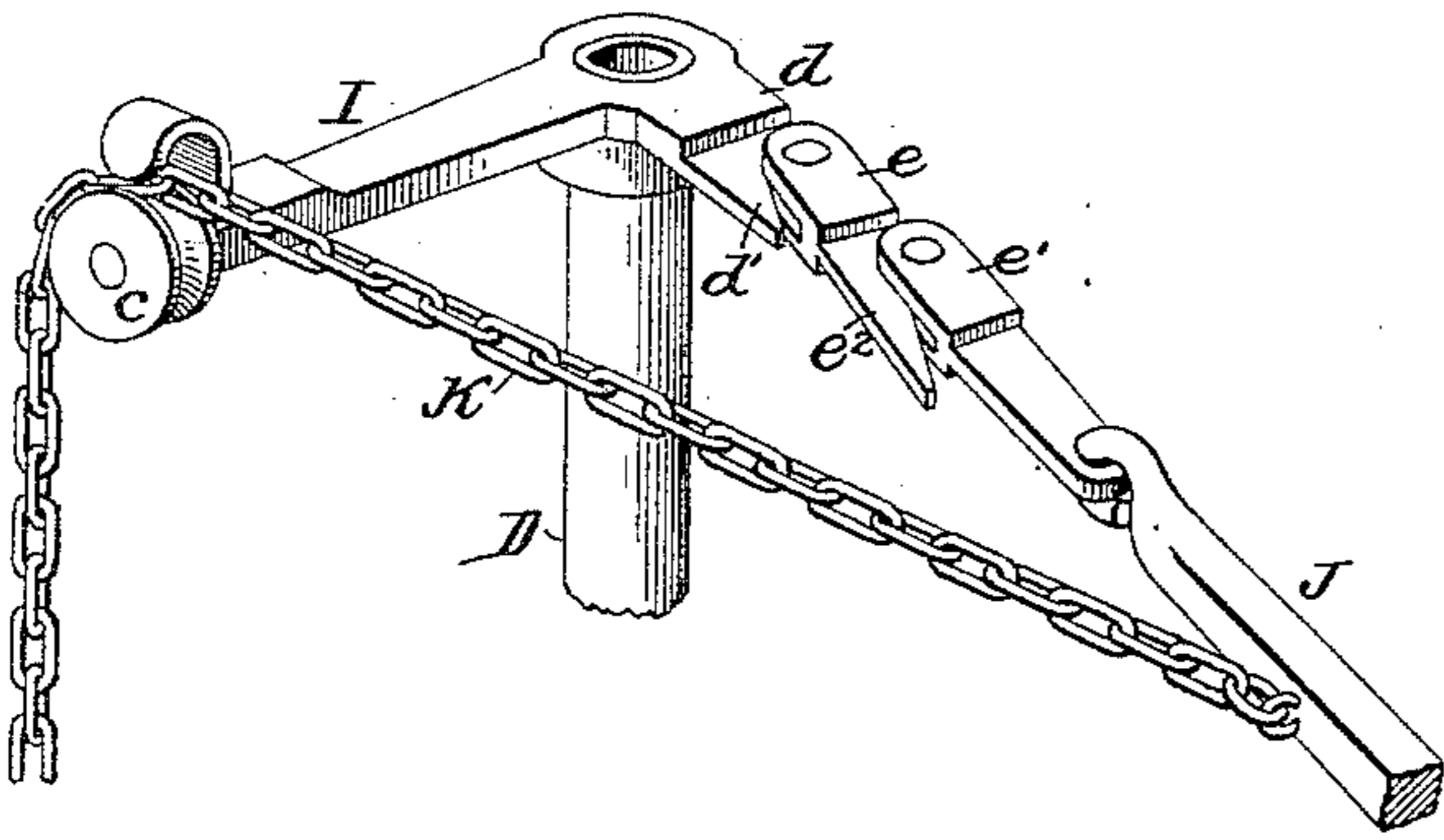
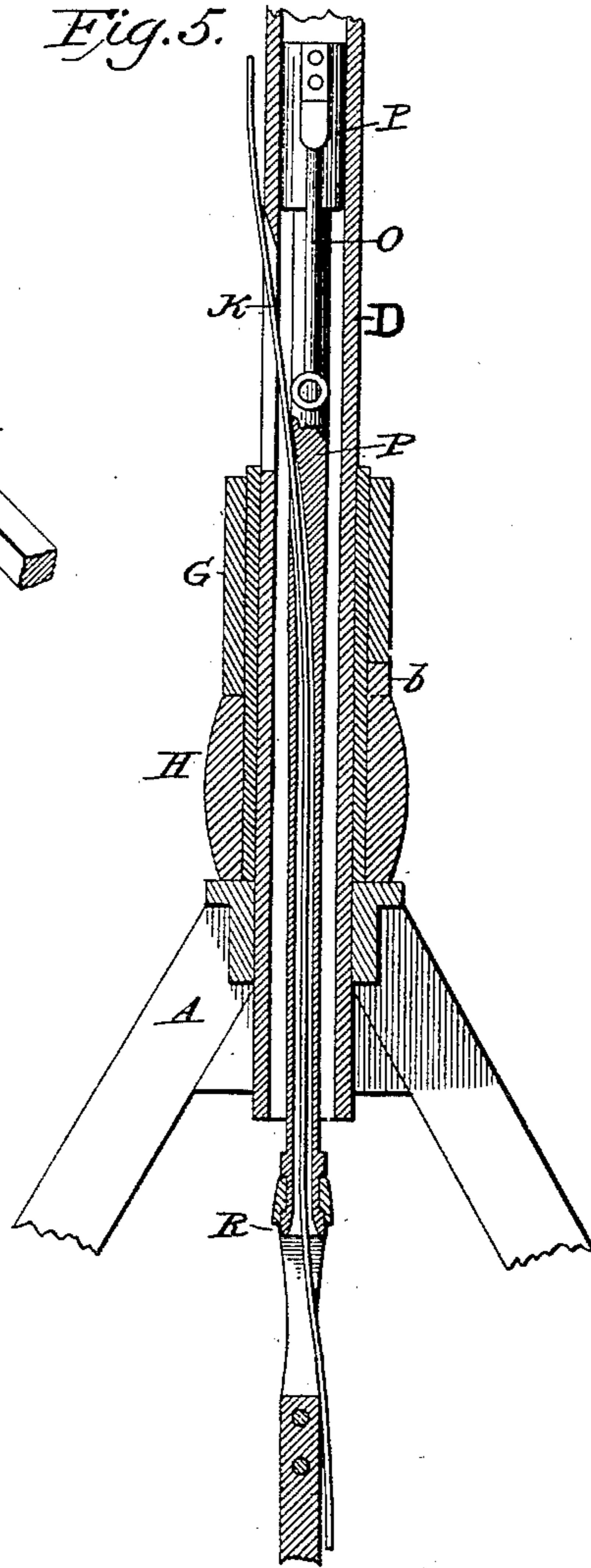


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

DEMONCEY BIRD, OF MADISON, WISCONSIN.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 445,034, dated January 20, 1891.

Application filed August 5, 1890. Serial No. 361,033. (No model.)

To all whom it may concern:

Be it known that I, DEMONCEY BIRD, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Windmills, of which the following is a specification.

My invention relates to windmills, and has reference more particularly to that class of mills in which the wheel occupies a vertical position, the invention consisting in various features and details hereinafter claimed.

In the drawings, Figure 1 is a side or edge view of so much of a windmill as is necessary to illustrate my invention; Fig. 2, a front face view of the same with a part of the wheel broken away; Fig. 3, a top plan view of a portion of the mill, and Figs. 4 and 5 views illustrating certain details of construction.

A indicates the tower, B the wheel as a whole, and C the vane.

D indicates a hollow post or standard, to which the arm E, carrying the wheel-shaft F, is attached, the said arm having at its point of attachment to the standard a hub G, which, as shown in Figs. 1 and 2, is cut away on its rear lower edge, as at *a*, to receive a lug or projection *b*, formed upon the upper edge of a collar H, encircling the post or standard.

The collar H is loose and free to turn upon the post D and pivotally supports the inner end of the vane.

Secured to the top of the post D is an arm I, carrying at its free end a wheel or pulley *c*, and also secured to the post is a short arm *d*, which extends off approximately at right angles to the arm I.

J indicates a bar or rod connecting the outer end of the vane with two or more peculiarly-formed blocks *e e'*, which are connected with each other and supported by the arm *d*, and K indicates a chain, cord, or other suitable connection secured to the rod J, and passing over the wheel or pulley *c*, down through an opening in the side of the hollow post, and down within reach of the attendant.

When the wheel is at work, of course the vane will be approximately in line with the axis or shaft F of the wheel; but as soon as the wind begins to blow too hard it is of course desirable that the wheel turn out of

the wind; but in thus turning out of the wind the wheel will carry the arm E and post or standard D around with it. As the standard thus turns, the arm *d* and the blocks *e e'*, attached thereto, will follow the standard, and inasmuch as the vane retains its position and does not swing the outer end of the vane will be raised, because the point of connection of the rod J with the blocks *e e'* is being moved farther away from said outer end. In order, therefore, to turn out of the wind the wheel must overcome the resistance offered by the weight of the vane, which latter thereby becomes an automatic regulator for the wheel.

To hold the wheel entirely out of the wind, the attendant may pull down upon the cord or connection K so as to bring the wheel into a plane parallel with that of the vane, and by hooking or otherwise securing the chain or connection the wheel may be readily fastened in this position.

In order that the power required at the wheel's command shall increase with the turning-out movement, I adopt the construction shown in Figs. 3 and 4, upon reference to which it will be observed that when the wheel, post, and arm *d* first begin to move or swing the point *d'* of the arm *d* will strike against the side face of the block *e*. This movement of the arm causes the pivoted or hinged block *e* to move with and form in effect a part of the arm; but as the movement is continued the arm or point *e'* of block *e* will be brought into contact with the side of block *e'*, and the latter block thereby made to act as a part of the arm *d*, so that at about the time the wheel is subjected to the greater force the greater will be the leverage at the command of the wheel to effect the raising of the vane.

Secured to two radial arms of the wheel is a narrow flat board or piece of sheet metal L, which has its flat face parallel with the face of the wheel, as shown in Figs. 1 and 2, the purpose of the board being to assist the wheel in turning out of the wind. When the wind carries this board to the right side of the wheel, it has a greater surface to act against, and as this is the direction in which the wheel swings in turning out this increased area or surface will aid materially in causing the turning out. If the wind carries the board to the left side of the wheel, the latter will not be turned out

of the wind, because the lug *b* on the collar *H*, engaging the end wall of the cut-away portion *a* of the hub *G*, prevents the wheel from swinging around in that direction independently of the vane. When the wind is light, the board aids the rotation of the wheel.

Secured to the inner end of the shaft *F* is a wheel *M*, carrying a crank-pin *N*, to which the lower end of the pitman *O* is connected, the upper end of the pitman being connected to the upper end of a pump-rod *P*, working freely within but guided by the post or standard *D*, and guided at its upper end by an arm.

The chain or other connection *L*, to which I have before referred, should be so placed within the post or standard as not to interfere with the pump-rod. One way to secure this result is to make the pump-rod hollow and form an opening through its side to receive the chain, wire, or other connection *L*, as shown in Fig. 4. When this plan is adopted, it will be found desirable to provide the main or upper section of the pump-rod with a swivel-connection *R* at its lower end, which will allow the said upper section to turn relatively

to the lower section, such an arrangement being shown in Fig. 4.

Having thus described my invention, what I claim is—

1. In a windmill, the combination of the rotatable post or standard, the wheel-frame and wheel, the vertically-movable vane, the hub to which the vane is pivoted, the arm *d*, secured to the upper end of the post, blocks *e e'*, secured to the arm, and a bar *J*, extending from the block *e'* to the vane.

2. In a windmill, the combination of the rotatable post, the wheel-frame and wheel, the vertically-movable vane and its hub, the arm *d*, provided with a point or extension *d'*, block *e*, pivoted to arm *d* and provided with an arm *e²*, a block *e'*, pivoted to block *e*, and a bar or rod *J*, connected at one end with the block *e'* and at the opposite end with the vane.

In witness whereof I hereunto set my hand in the presence of two witnesses.

DEMONCEY BIRD.

Witnesses:

GEO. W. BIRD,
CLAIRE B. BIRD.