

(No Model.)

2 Sheets—Sheet 1.

J. H. THERIEN.  
Windmill.

No. 230,209.

Patented July 20, 1880.

Fig. 1.

Fig. 2.

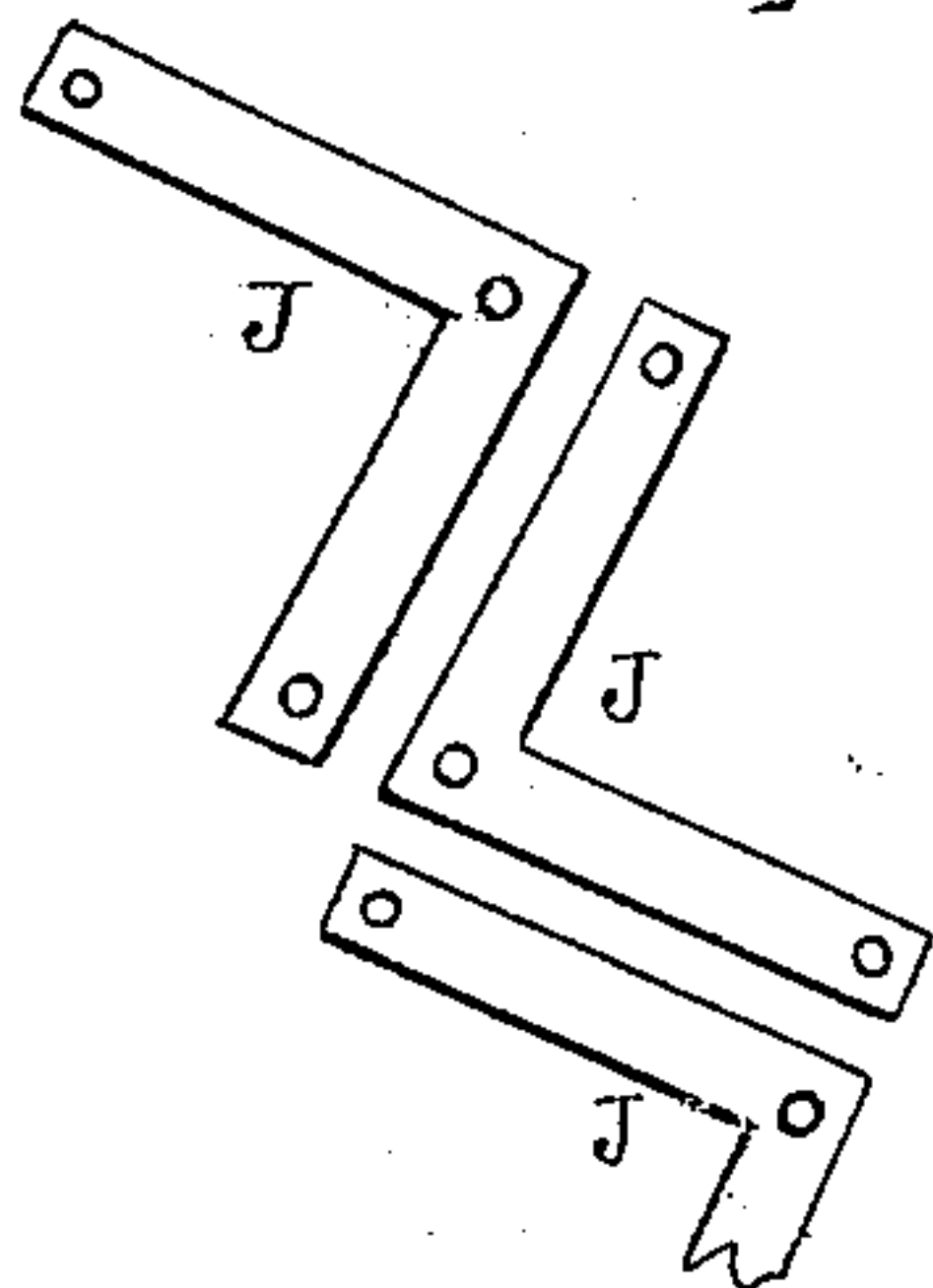


Fig. 3.

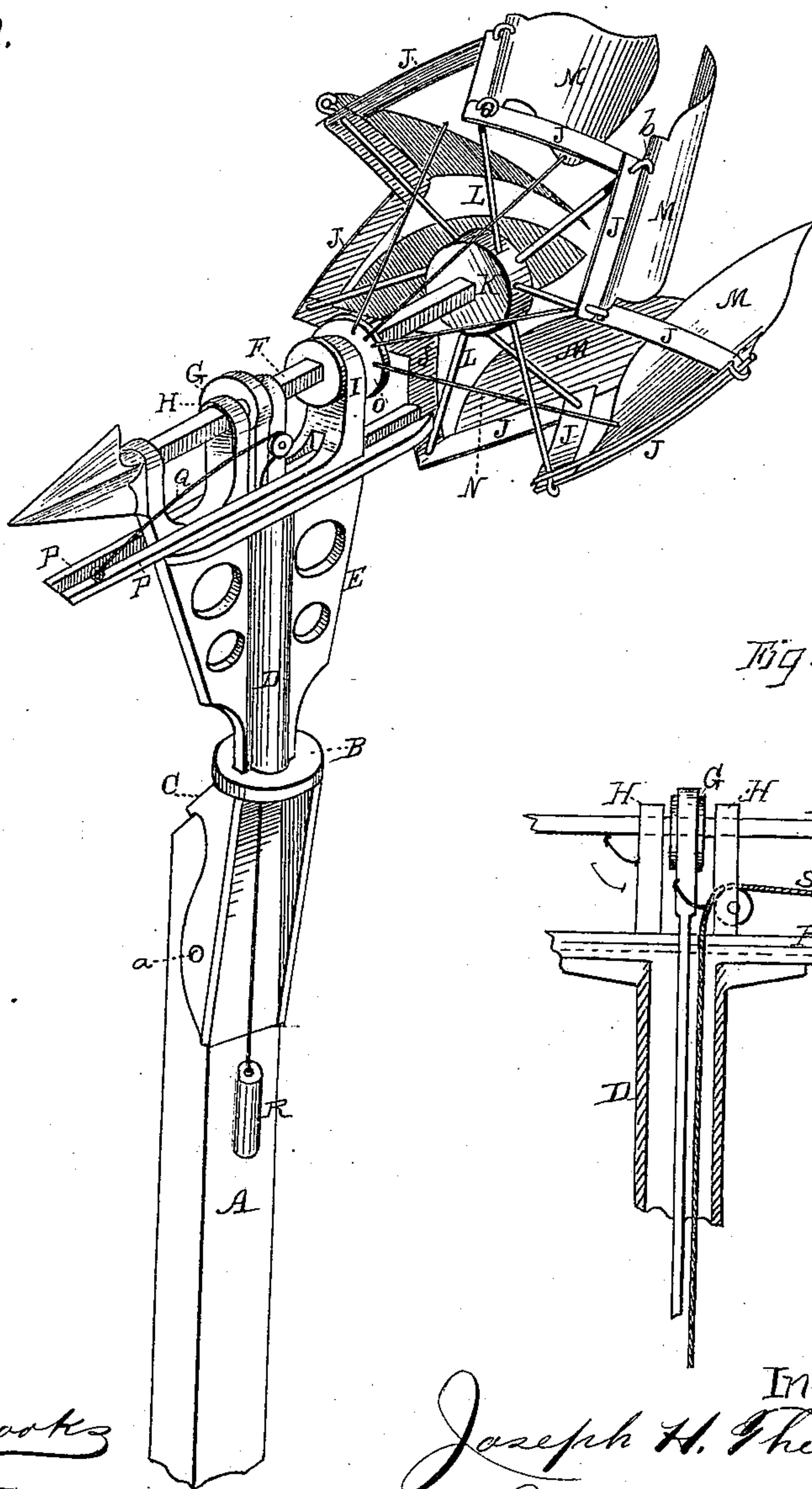
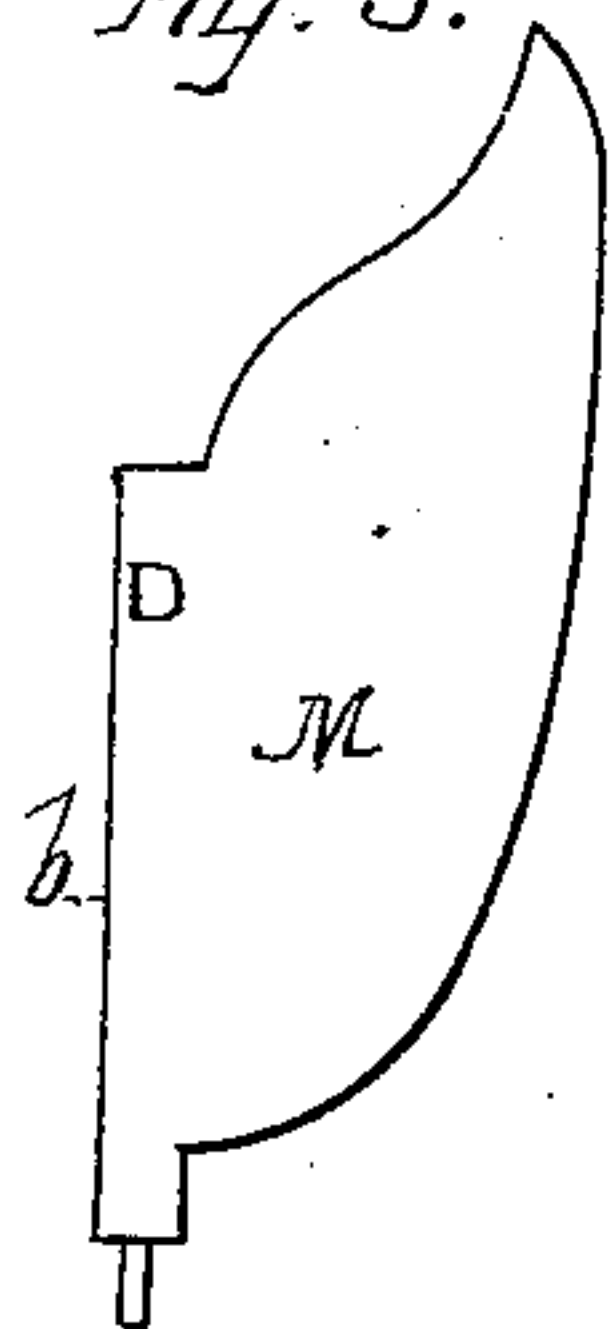
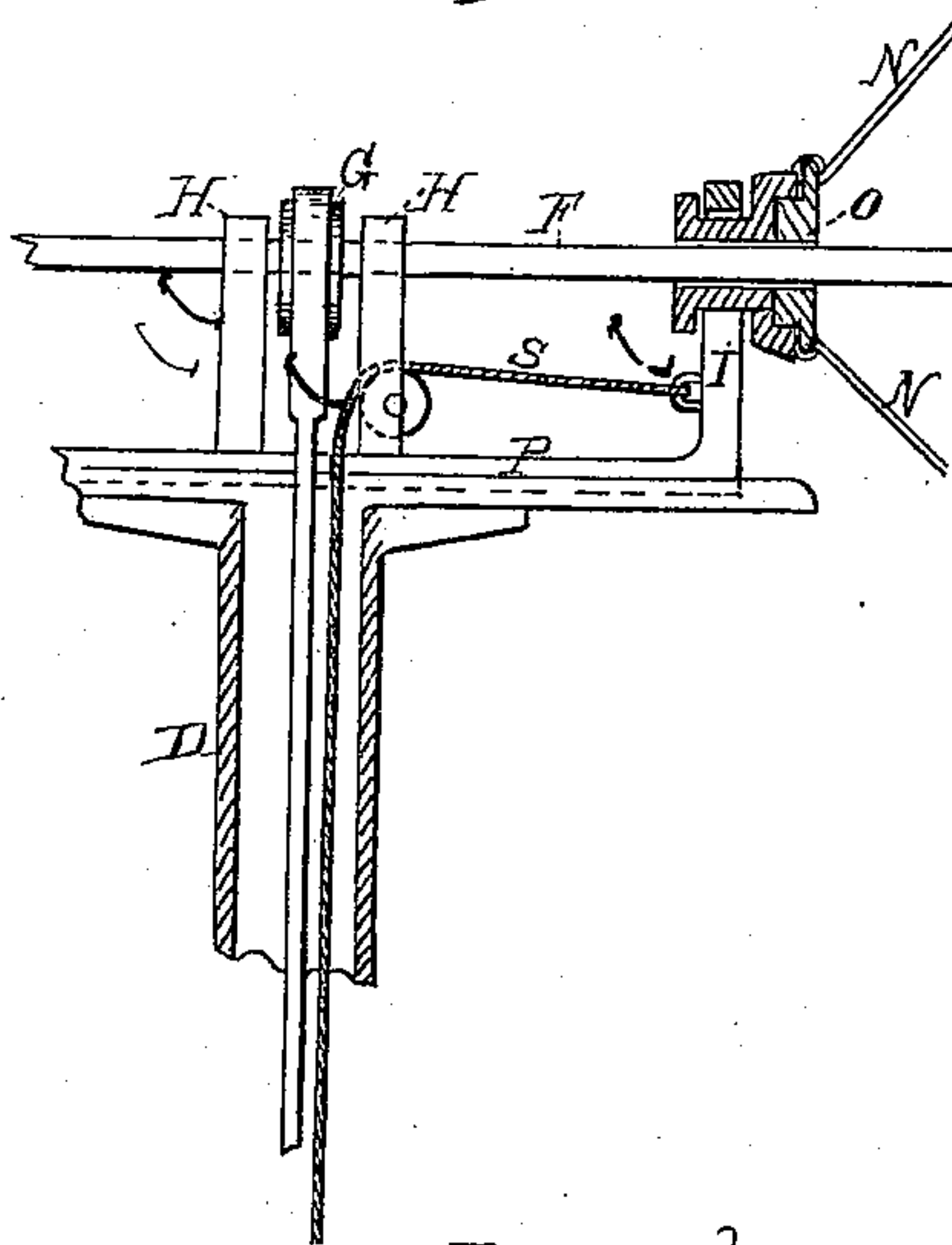


Fig. 4.



Witnesses

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By Dewey & Co.

Att'y

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2 Sheets—Sheet 2.

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Fig. 5.

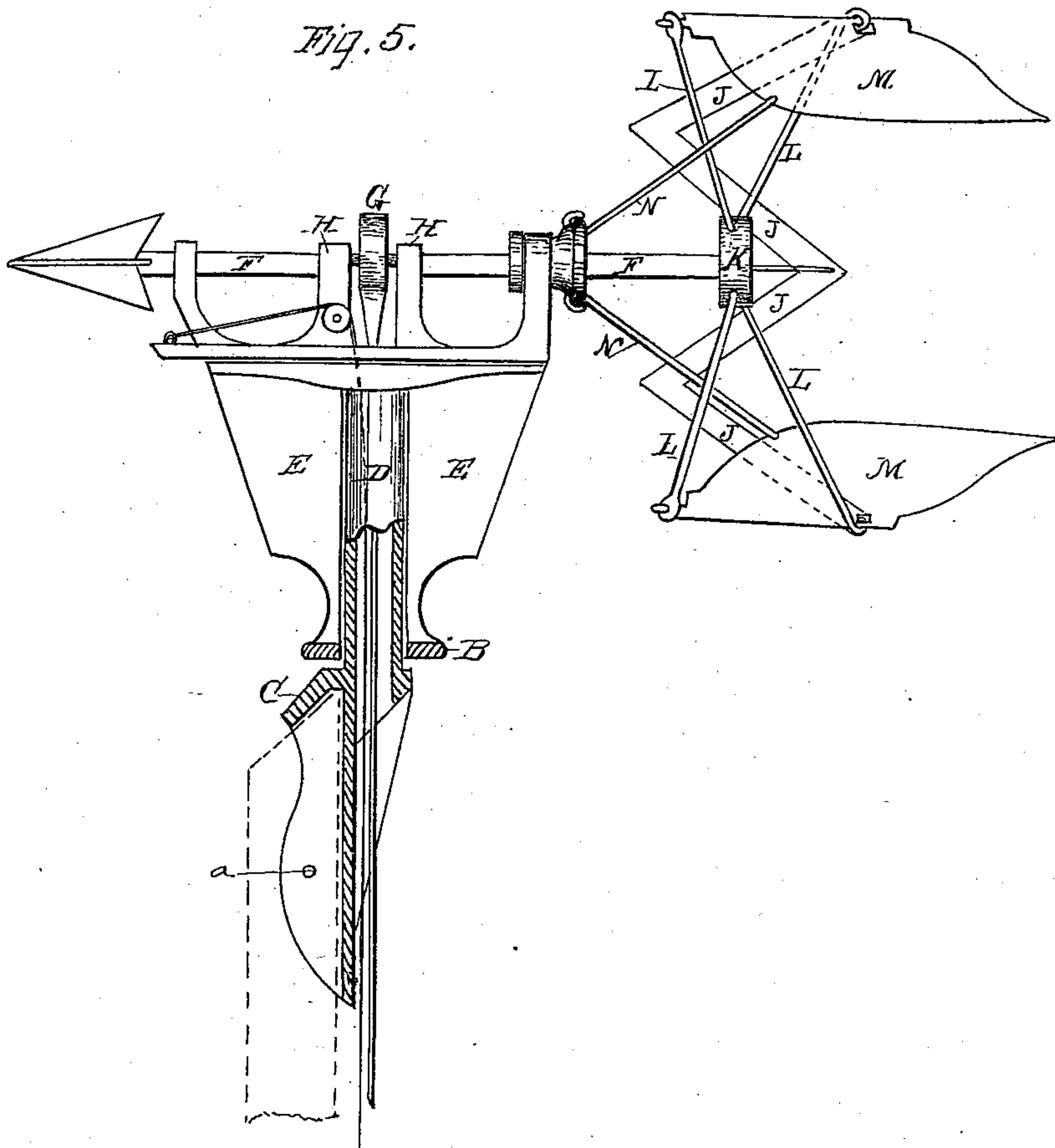
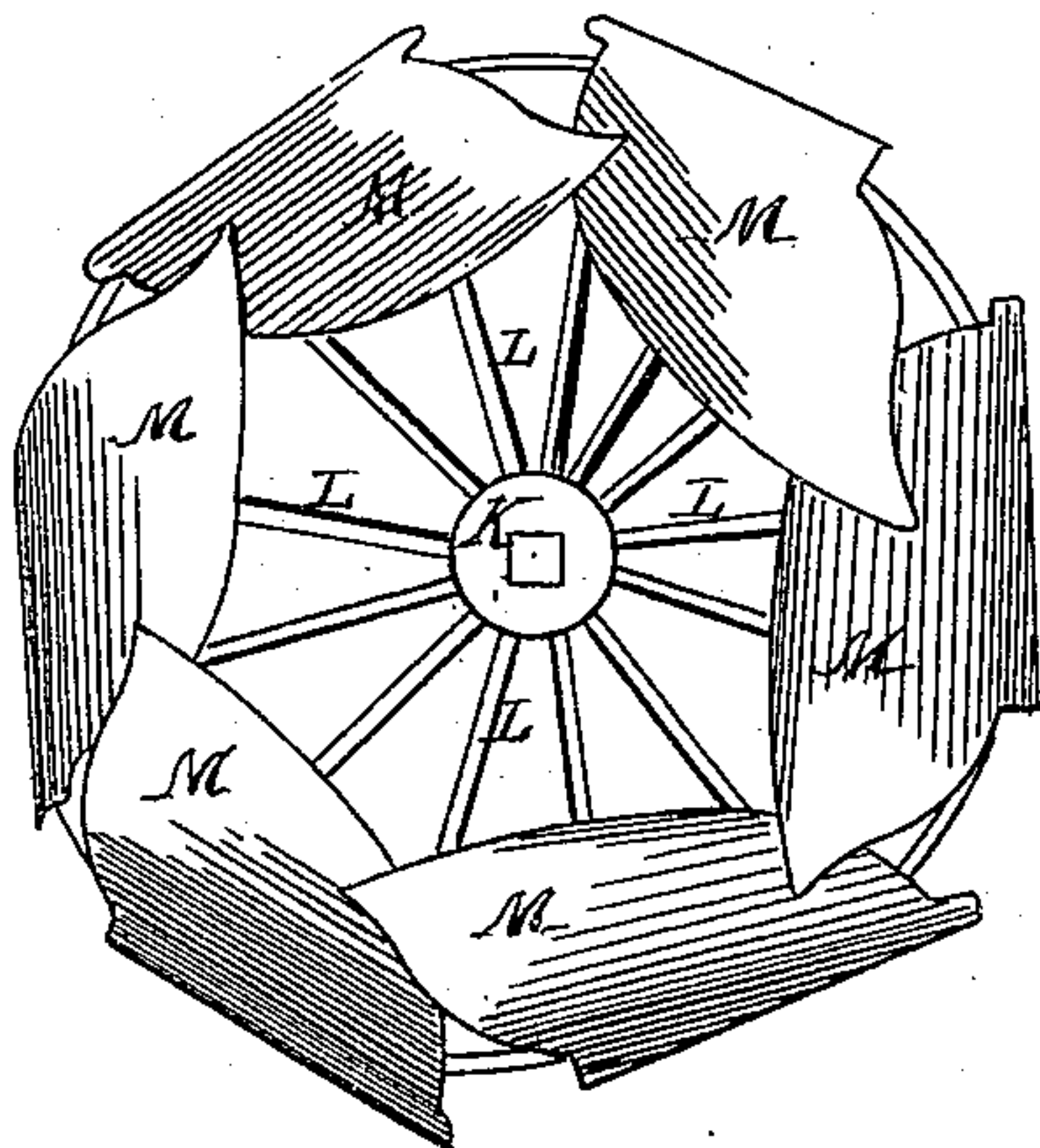


Fig. 6.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOSEPH H. THERIEN, OF ORLAND, CALIFORNIA.

## WINDMILL.

SPECIFICATION forming part of Letters Patent No. 230,209, dated July 20, 1880.

Application filed May 3, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. THERIEN, of Orland, county of Colusa, and State of California, have invented an Improved Windmill; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in windmills; and it consists of a novel exterior rim for the wheel to which the vanes are hinged, this rim being made in zigzag sections, and having the arms or spokes of the wheel extending from the hub to the angles of these sections, so that they stand alternately forward and backward from a plane, and thus brace the rim.

It also consists in a novel formation of the vanes, which are curved similar to a plowshare, and are hinged to the angular rim, so as to stand diagonally with the plane of the wheel, and they may be adjusted to the strength of the wind by means of arms connected with a ring or sleeve sliding upon the shaft.

My invention further consists of a peculiar socket, by which the mill may be mounted upon a single post, this socket having a vertical spindle, upon which the wheel, axle, and upper part of the mill may be mounted, to swivel about as the wind may make it necessary.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a view of the mill. Fig. 2 is a view of a section of the rim. Fig. 3 shows one of the vanes. Fig. 4 is a section.

A is a single vertical post, upon which my windmill may be supported by means of the socket B, which is formed so as to clasp the post upon three sides. An inclined flange, C, at the top projects down over the beveled top of the post, so that when the socket is set upon the post it will be held in place by its own weight, and any superincumbent weight will make it clasp the post more closely. A single bolt at *a*, with the flange *c*, will hold it securely in place.

From the top of the flange which projects beyond the side of the post a hollow spindle, D, arises, and the frame E, which supports the wheel-shaft, is fitted to turn upon this spindle, as shown.

The wheel-shaft F passes across directly above the hollow spindle, and the crank or

eccentric G to drive the pump is placed over it, so that the pump-rod will pass down through the spindle, and by the peculiar shape of the socket the rod will pass down at one side of the post A.

The wheel-shaft is supported in boxes H at the center and rear end of the frame, and its front end is supported by the sliding standard, I, through which the vanes are opened and closed.

The rim of the wheel is formed of sections J, which are each cut out with two arms like those of a carpenter's square. One arm of each of these sections overlaps one arm of the next preceding plate, and these plates are curved and continued arched until a rim of the desired size is formed. It will be seen that this method of overlapping the angular sections makes a zigzag rim of double thickness, the sections being bolted or otherwise secured together.

From the hub K of the wheel the spokes L project out to the rim, so that one spoke passes through each angle of the rim, and the wheel is thus strongly braced, and much stiffer than when the spokes are all in the same plane. The angular positions of the rim-sections provide for the attachment of the diagonally-placed vanes M. These vanes are shaped somewhat like a plowshare, with a curved outline and tapering to a point at the end opposite to the shaft and away from the wind.

The straight edge *b* of each of these vanes is journaled in a line with one side of one of the angular sections J, so that the vane may be turned about its journal and opened out or closed in toward the center. These vanes are also curved inward from their fixed edges toward their free edges, and the passage of a current of wind through the space inclosed by the vanes will cause the wheel to rotate with a force depending upon the amount of the contraction or expansion of the space, which is regulated by the position of the vanes.

The free edges of the vanes are moved inward or outward to regulate the speed of the wheel by means of rods N, which are attached to some point upon their free edges, and extend thence to the ring-sleeve O, which fits and turns with the wheel-shaft. This sleeve also moves longitudinally upon the shaft, and



thus turns the vanes inward or outward, as may be desired. This double movement, turning with the shaft, and also sliding upon it, is made possible by making the shaft polygonal, 5 or by a feather fitted into it, upon which the sleeve may slide. This sleeve has a groove turned in it, and the sliding standard I, before mentioned, has a collar or box upon its upper end, which clasps and supports the sleeve so that 10 the two shall move together when the sleeve slides upon the shaft. This standard is secured to the parallel slides P, and these slides move upon guides formed upon the frame E. A cord, Q, is attached to the slides or standards, and 15 passes over a directing-pulley, thence down through the hollow spindle to a weight, R. This weight tends to draw the slide toward the wind, and thus closes the vanes toward the center; but when the force of the wind 20 overcomes the power of the weight it forces the vanes outward and reduces the power and speed of the wheel. Another cord, S, leads from the opposite or front end of the slide over a pulley and down through the hollow spindle, and this cord, when pulled, forces the slide, 25 standard, and sleeve backward so as to force the vanes outward until the wind may pass freely through the wheel without acting upon the vanes or turning the wheel at all.

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

1. The wheel-rim of a windmill, consisting of the angular sections J, overlapping and 35 united, as shown, in combination with the

arms or spokes L, extending from the hub to the angles of the rim, substantially as herein described.

2. The vanes M, having one edge journaled upon the angular or zigzag rim-sections J, in 40 combination with the longitudinally-sliding ring or sleeve O and the connecting-rods N, whereby the free edges and points of the vanes may be moved to or from the center to regulate the action of the wind upon the wheel, 45 substantially as herein described.

3. The vanes M, having one edge journaled at an angle with the face of the wheel, and having their opposite edges connected by rods with the sliding ring or sleeve O, in combina- 50 tion with the standard I and slides P and the cords Q S and weight R, whereby the vanes are opened or closed by the action of the wind, substantially as herein described.

4. The socket B, adapted to clasp a single 55 supporting-post upon three sides, and having the inclined flange C, forming a lock upon the top of the post, in combination with the hollow spindle D, upon which the frame E of the mill turns, said spindle being attached to the socket, 60 so that the pump-rod and regulating-cords will pass down through its center and outside of the post and socket, substantially as herein described.

In witness whereof I have hereunto set my 65 hand.

JOSEPH HILAIRE THERIEN.

Witnesses:

GEO. H. STRONG,  
FRANK A. BROOKS.