

(No Model.)

J. M. BOYD.
WIND WHEEL.

No. 285,960.

Patented Oct. 2, 1883.

FIG. 6.

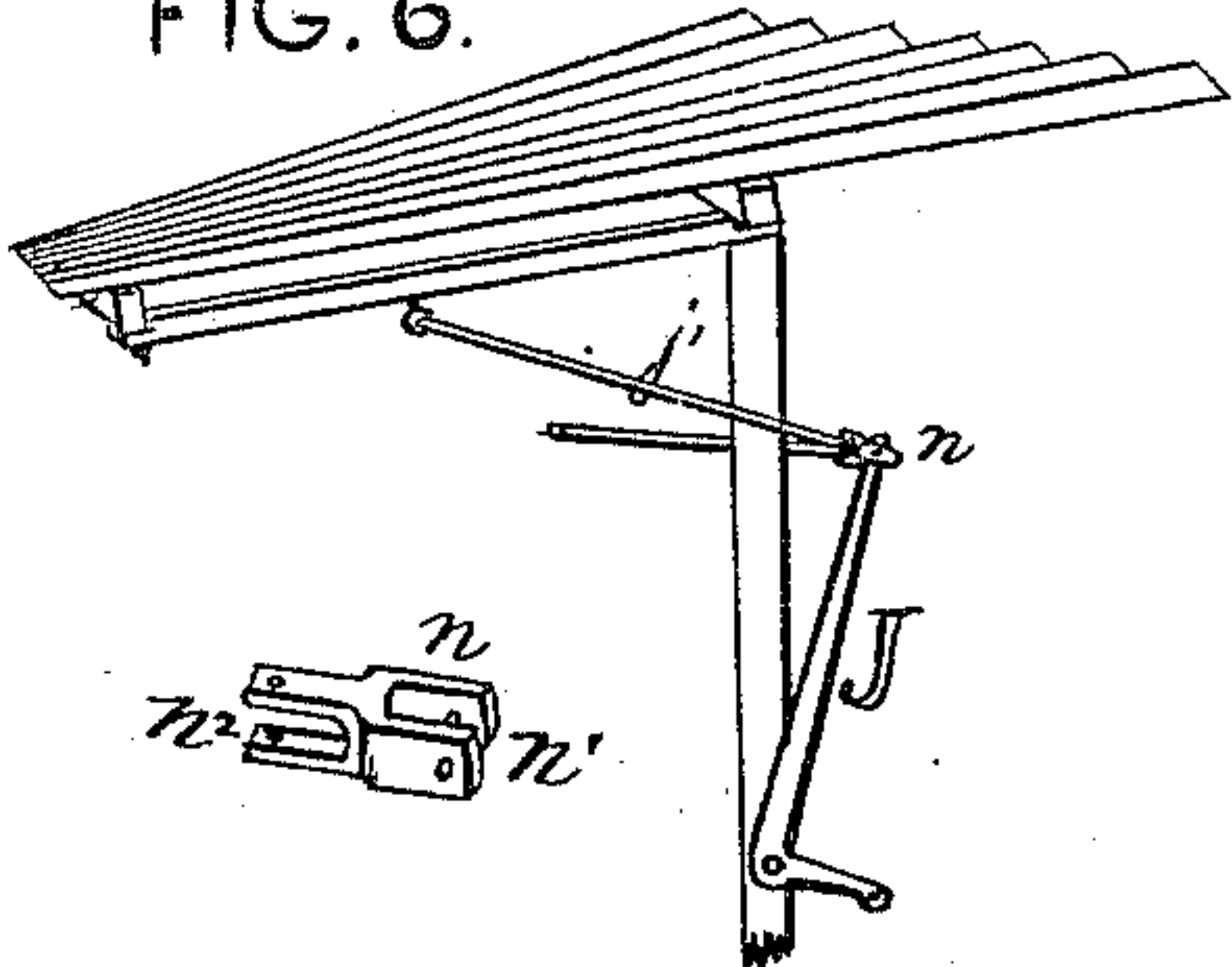


FIG. 1.

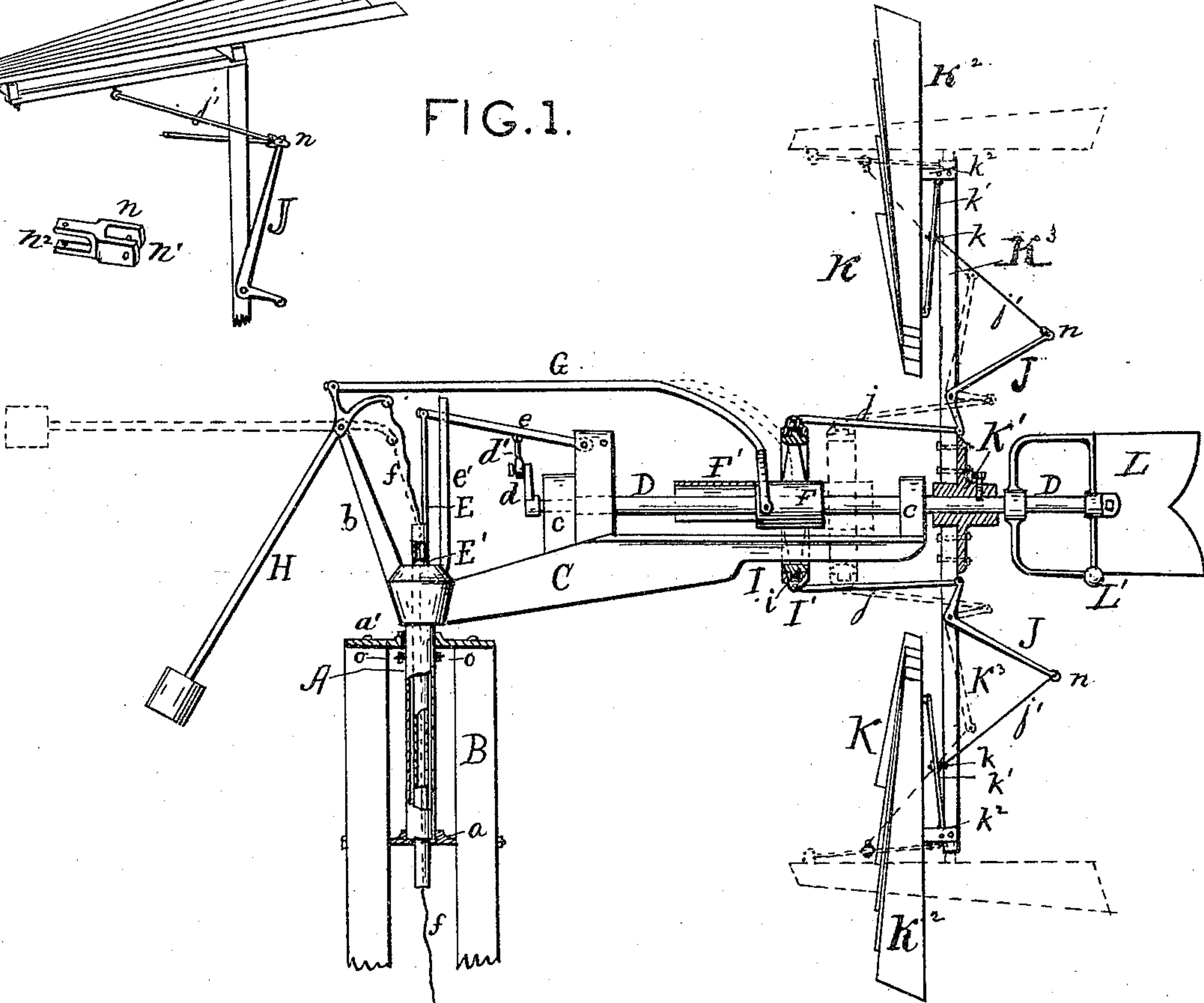


FIG. 2.

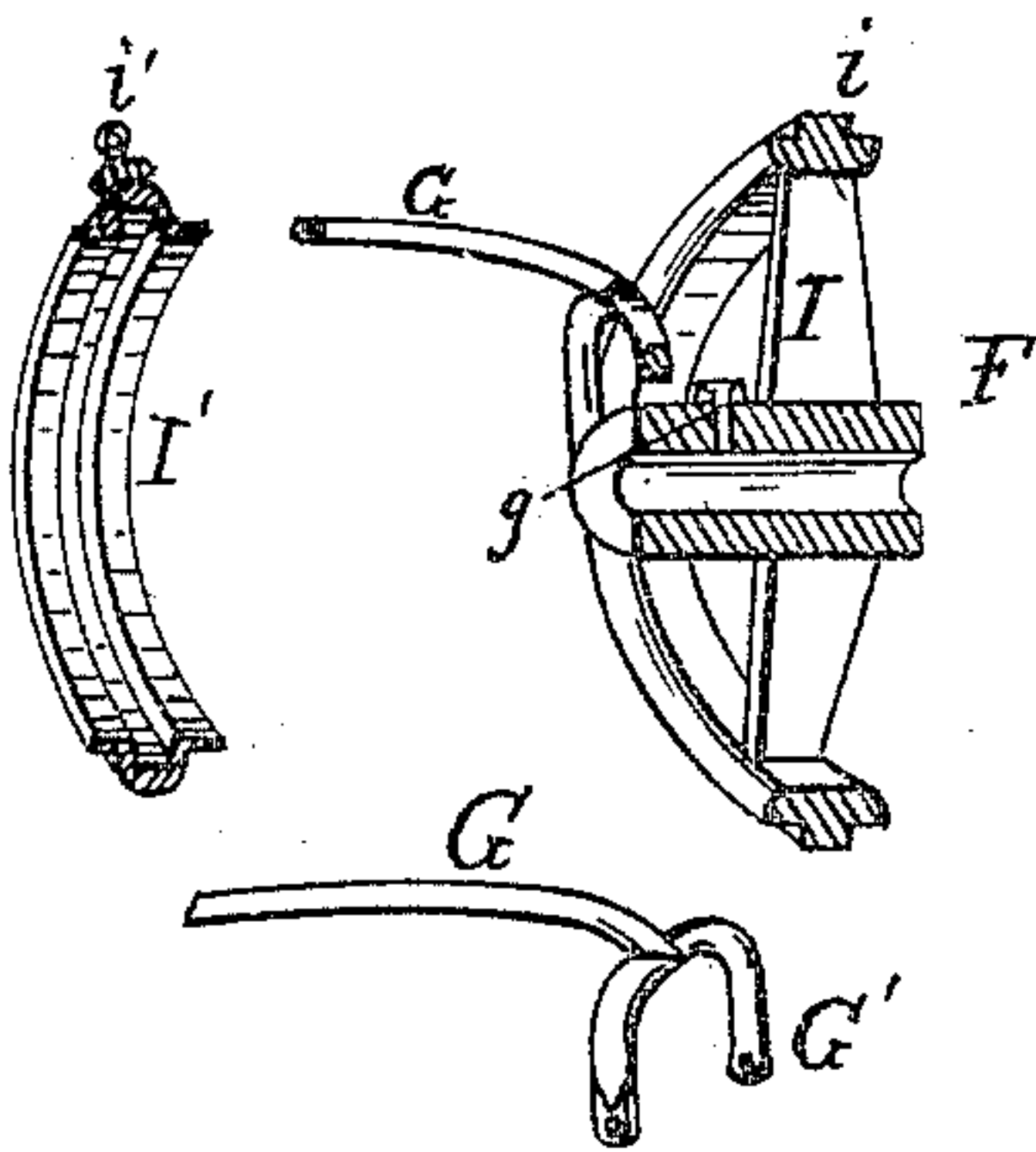


FIG. 3.

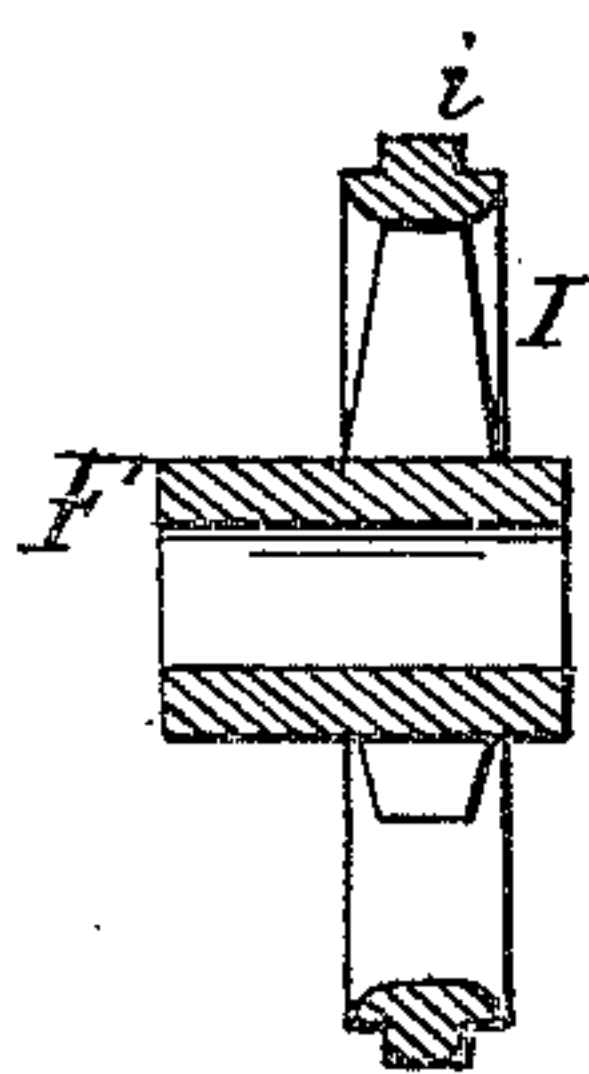


FIG. 4.

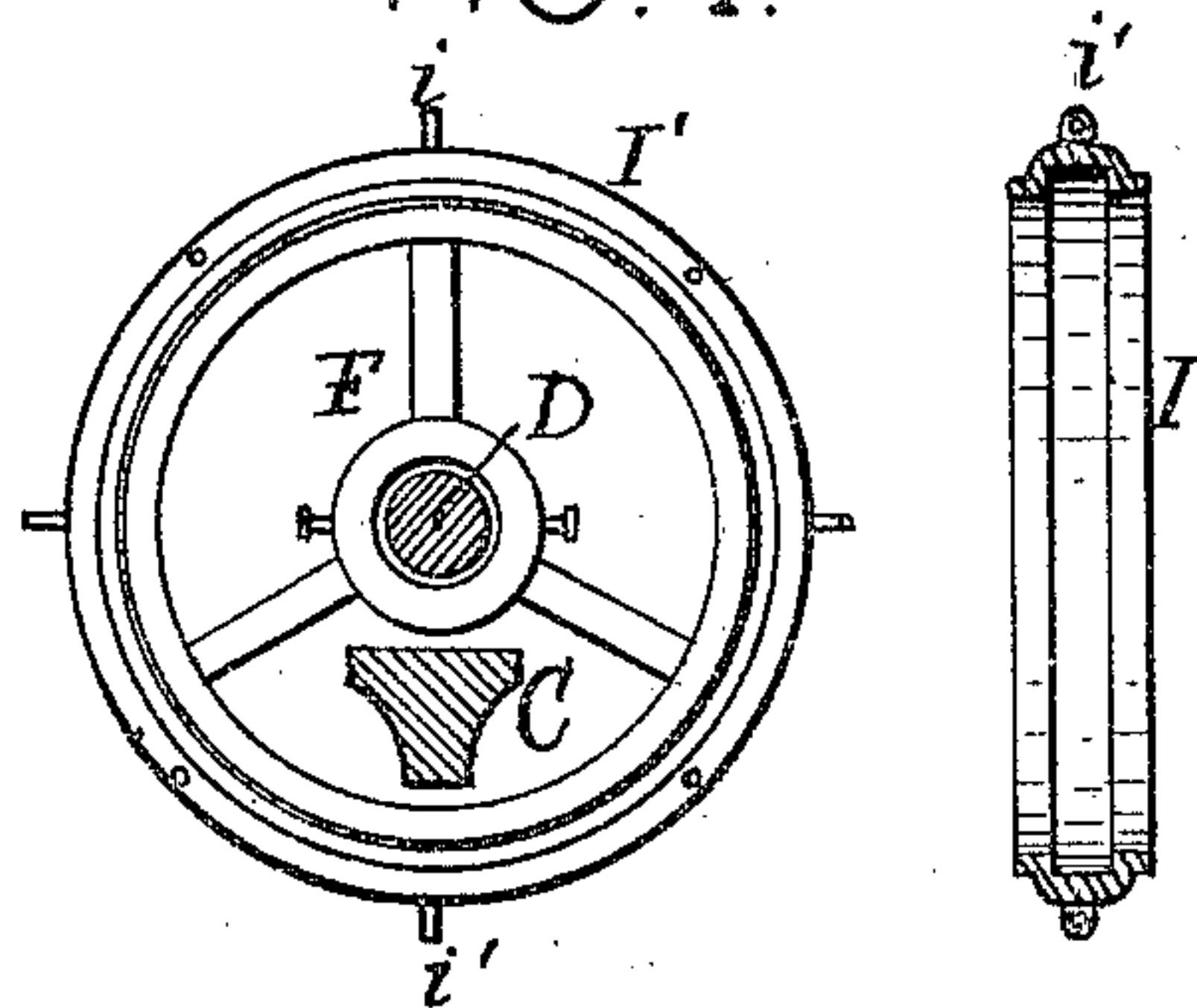
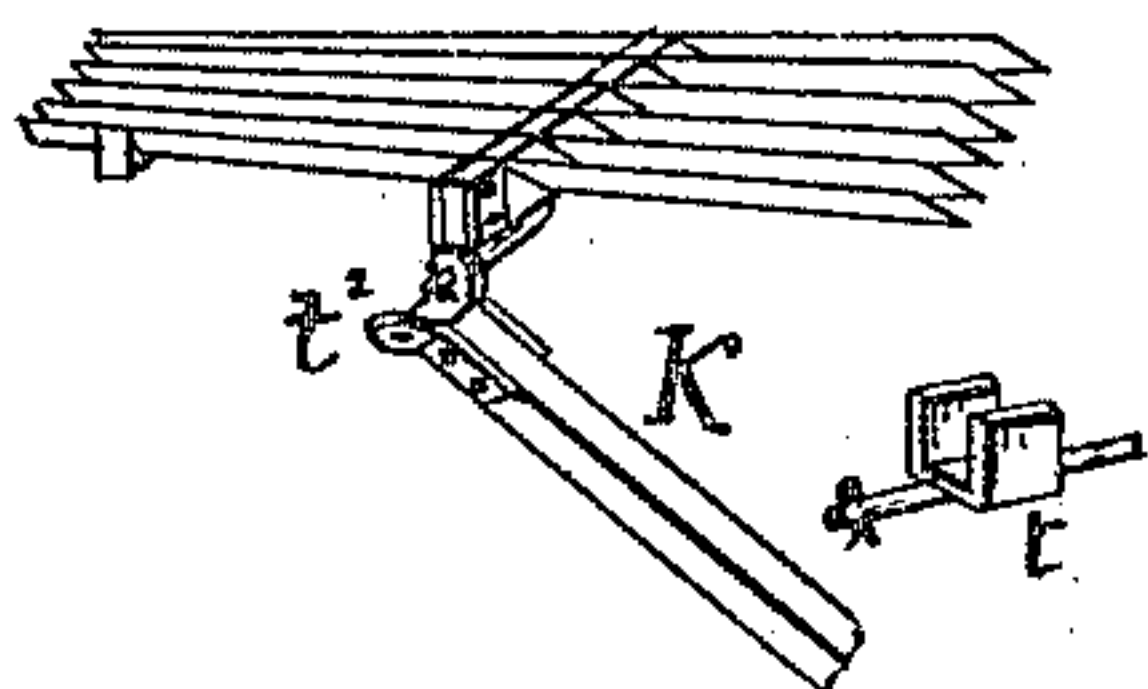


FIG. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN M. BOYD, OF OAKFIELD, WISCONSIN.

WIND-WHEEL.

SPECIFICATION forming part of Letters Patent No. 285,960, dated October 2, 1883.

Application filed November 12, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. BOYD, a citizen of the United States, residing at Oakfield, in the county of Fond du Lac and State of Wisconsin, have invented certain new and useful Improvements in Wind-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention has for its object to furnish a wind-wheel which will possess superior advantages over ordinary wheels; and it consists in the peculiar construction and arrangement of the several parts hereinafter fully explained, and pointed out in the claims.

In the drawings, Figure 1 is a side elevation of my wind-wheel partly in section. Figs. 2 and 3 are sectional views of the sliding collar. Fig. 4 is a side elevation of the sliding collar and its attached rim or frame. Figs. 5 and 6 are detached segments of the wheel, showing their construction more in detail than is shown in the wheel in Fig. 1.

A is a tubular shaft supported in bearings *a a*, fastened to the upright frame B. To this shaft are secured a lateral arm or support, C, and an upright arm, *b*, the arm C having shaft-bearings *c c*.

D is the wheel-shaft hung in the bearings *c*, with one end connected, by a crank pin or arm, *d*, and other suitable means, to a lever, *e*. The lever *e* is pivoted at one end to a suitable support upon the arm C, while its other end is connected to the upper end of a rod, E, which is connected to a tubular extension, E', extending down into and through the shaft A, and swiveled to the piston-rod.

e' is a guide for the lever *e*.

F is a sleeve adapted to slide on the shaft D, with an extension, F', overhanging to prevent the accumulation on the shaft of snow and ice, which would interfere with the operation of the sleeve.

When the wheel is at rest and a driving rain which freezes as it falls, or a driving snow-storm, prevails, water or snow may be

driven under the shield F' and frozen on the shaft D. The moment the wheel would be set in motion the revolution of the shaft and the to-and-fro movement of the sleeve would tend to remove instantly the accumulated ice. The extension or shield F' does not fit snugly against the shaft D, but is formed with an enlarged opening and stands out from it, so as to provide an air-space between it and the shaft, as shown. The object of this is to prevent ice from forming on the shaft immediately against the end of the metal sleeve. If the shield were simply an extension of the sleeve F' and fitted close against the shaft, its end would present the same abutting face as the end of the said sleeve. If ice form under the shield, it will be in a very thin layer as it extends toward the end of the sleeve, and will be easily broken by the movement of the latter. The extension or shield is also slotted longitudinally on its under side, so that any water or snow that may be blown under it will readily drop out.

To the sleeve F is pivoted, at its forked end, a lever, G, with its other end connected to one arm of a weight-lever, H, hung or pivoted upon the arm *b*. A wire or rope, *f*, is connected to a second arm of the lever H and passed down through the tubular extension of rod E, and is provided with a swivel, and connected to a handle within convenient reach of the operator or attendant. This arrangement, by pulling upon the wire or rope *f*, permits of the elevating of the lever H and drawing upon and sliding rearwardly the sleeve F, which, as will be more readily understood hereinafter, adjusts the sails or sections of the wheel out of the wind. A vice-versa movement of the sleeve has a contrary effect. The sleeve F is provided with a circular rim, I, connected thereto by radial arms or spokes, two of which point outward and downward from the sleeve F, one on each side of the support C. This arrangement allows the rim I to pass outside and underneath the support C.

The rim I has a peripheral flange or rib, *i*, upon which is fitted, so as to move with the wheel, an internally-grooved annulus or ring, I', with eyes *i'*. J J are elbows or bell-crank levers pivoted at their angles to the spokes or radial arms of the wheel K, with its hub K' fast upon the shaft D. These levers are con-

nected by rods j , entering the eyes i' on the
 rings I' , and by means of a small casting, n , to
 rods j' , passing through eyebolts k of bars k' ,
 which connect the two cross-bars k^2 of each
 5 sail or section, thus connecting two sails or
 sections with each of the levers J . Each sail
 or section is pivoted between two of the arms
 or spokes of the wheel K by means of a bracket,
 t , having a journal formed upon it. There are
 10 only two of these brackets fastened one on
 each end of the longer cross-bar k^2 of each sail
 or section. The journal of the bracket is on
 the under side of the cross-bar and works in a
 bearing formed in an ear, t^2 , attached to the
 15 end of the arm or spoke K^3 of the wheel, thus
 allowing each sail or section to be thrown out
 of the wind by the centrifugal force as the
 speed of the wheel increases, and also forming
 a tie between the arms or spokes of the wheel.
 20 This completes the description of the sail-op-
 erating mechanism.

The dotted lines in Fig. 1 indicate the po-
 sition given the sails when it is desired to ad-
 just them out of the wind, the full lines indi-
 25 cating the reverse.

L is a vane hung upon the shaft D , and
 weighted at its lower edge, as at L' , to prevent
 its revolving with the shaft. The vane is
 used for the purpose of making the mill shift
 30 easily and to prevent the wind-wheel from
 getting edgewise to the wind when running in
 a light breeze. The small casting or connect-
 ing-piece n is formed with a mortise or cross-
 slot, n' , on one of its ends and on its opposite
 35 end with the slot or mortise n^2 at right angles
 to the slot n' . By means of this casting, thus
 constructed, I am enabled to give a perfectly
 free play to the levers J and rods j' as the
 sails are thrown in or out of the wind. There
 40 is no binding between the said levers and rods,
 and consequently no lost power.

r is a rod passing from the arm b around
 under the support C and back on the opposite
 side. It helps support the mill.

45 O is a roller, of which there are two at-
 tached on opposite sides of the tubular shaft
 A , underneath the collar a , to prevent the
 mill from being lifted out of its bearings in a
 gale.

It will be seen that one roller placed upon 50
 the tubular shaft A , underneath the collar a
 and directly under the support c , would an-
 swer the same purpose.

It will be readily understood that this mill
 is simple in construction and not liable to get 55
 out of order, shifts easily, governs automati-
 cally, and cannot be easily clogged with snow
 or ice.

Having thus described my invention, what I
 claim, and desire to secure by Letters Patent, 60
 is—

1. In a wind-wheel, the combination, with
 the shaft D and arm or support C , of the sleeve
 or collar F , sliding upon the shaft and provided
 with radial supports, and the rim I , fixed on 65
 the radial supports, and passing outside and
 underneath the support C , as shown, substan-
 tially as and for the purposes set forth.

2. In combination with a sliding collar or
 sleeve, F , carrying a rim, I , provided with a 70
 peripheral flange or rib, i , an internally-grooved
 annulus or ring, I' , provided with ears, sub-
 stantially as set forth.

3. The combination, with the rod j' and
 bell-crank lever J , pivoted to the arms K , 75
 which support the fan-sections k^2 , of the cast-
 ing n , having slots n' n^2 formed in its opposite
 ends, at right angles to each other, and pivoted
 to the ends of the said lever and rod, substan-
 tially as set forth. 80

4. In combination with the shaft D , the vane
 L , hung upon said shaft in rear of wind-wheel,
 and weighted at its lower edge to prevent re-
 volving with said shaft.

5. The combination, with the shaft D and 85
 sleeve F , of a shield or extension, F' , sur-
 rounding or partially surrounding the shaft
 and standing out so as to provide an open
 space or chamber between it and the shaft,
 substantially as set forth. 90

In testimony whereof I affix my signature in
 presence of two witnesses.

JOHN M. BOYD.

Witnesses:

WM. T. BOYD,
F. R. SHEPARD.