

(No Model.)

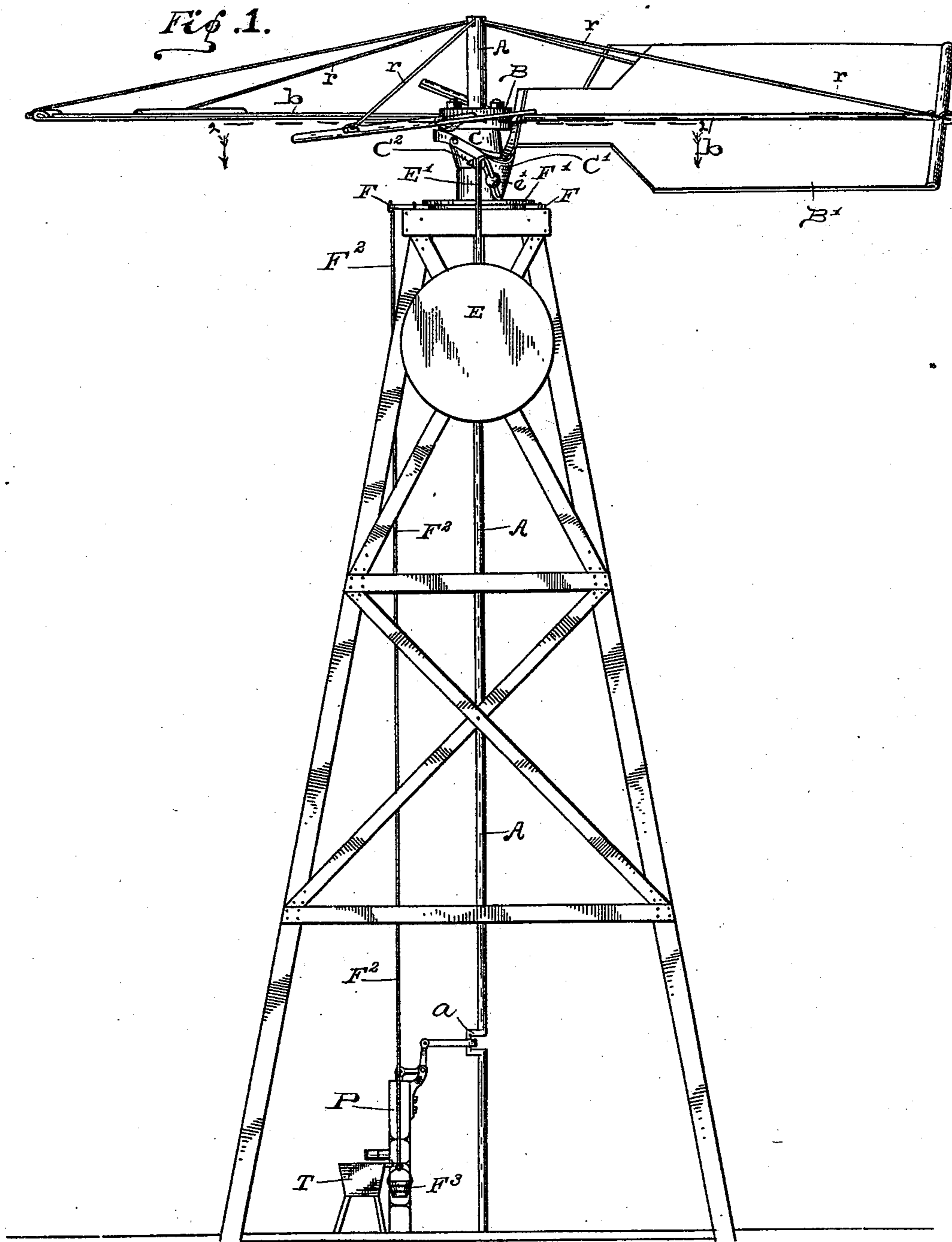
2 Sheets—Sheet 1.

J. P. KELSO.

WIND OR CURRENT OPERATED WHEEL.

No. 512,712.

Patented Jan. 16, 1894.



WITNESSES:

F. W. Warner.
J. A. Walsh.

per

INVENTOR

James P. Kelso,

Chester Bradford.
ATTORNEY.

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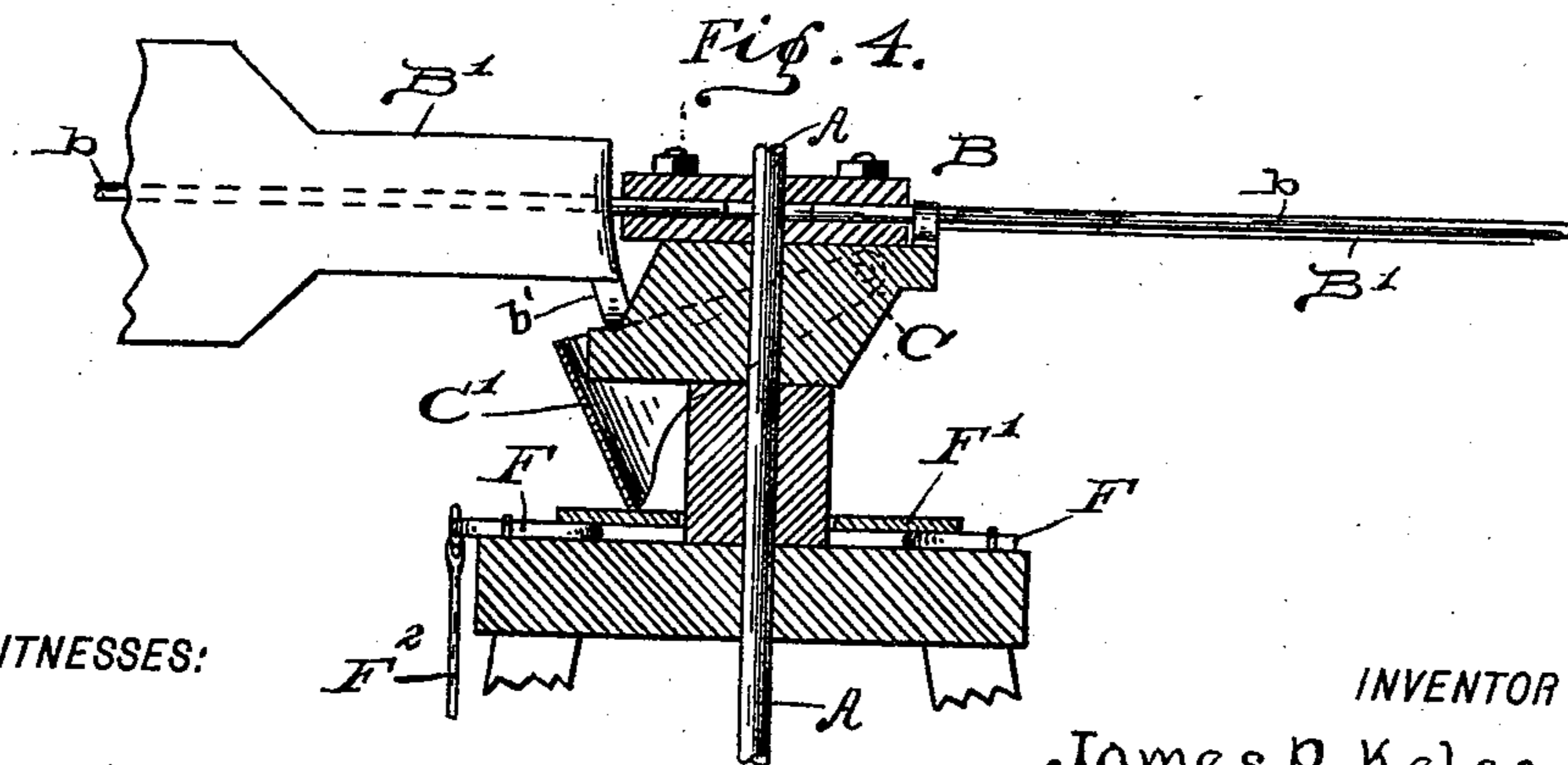
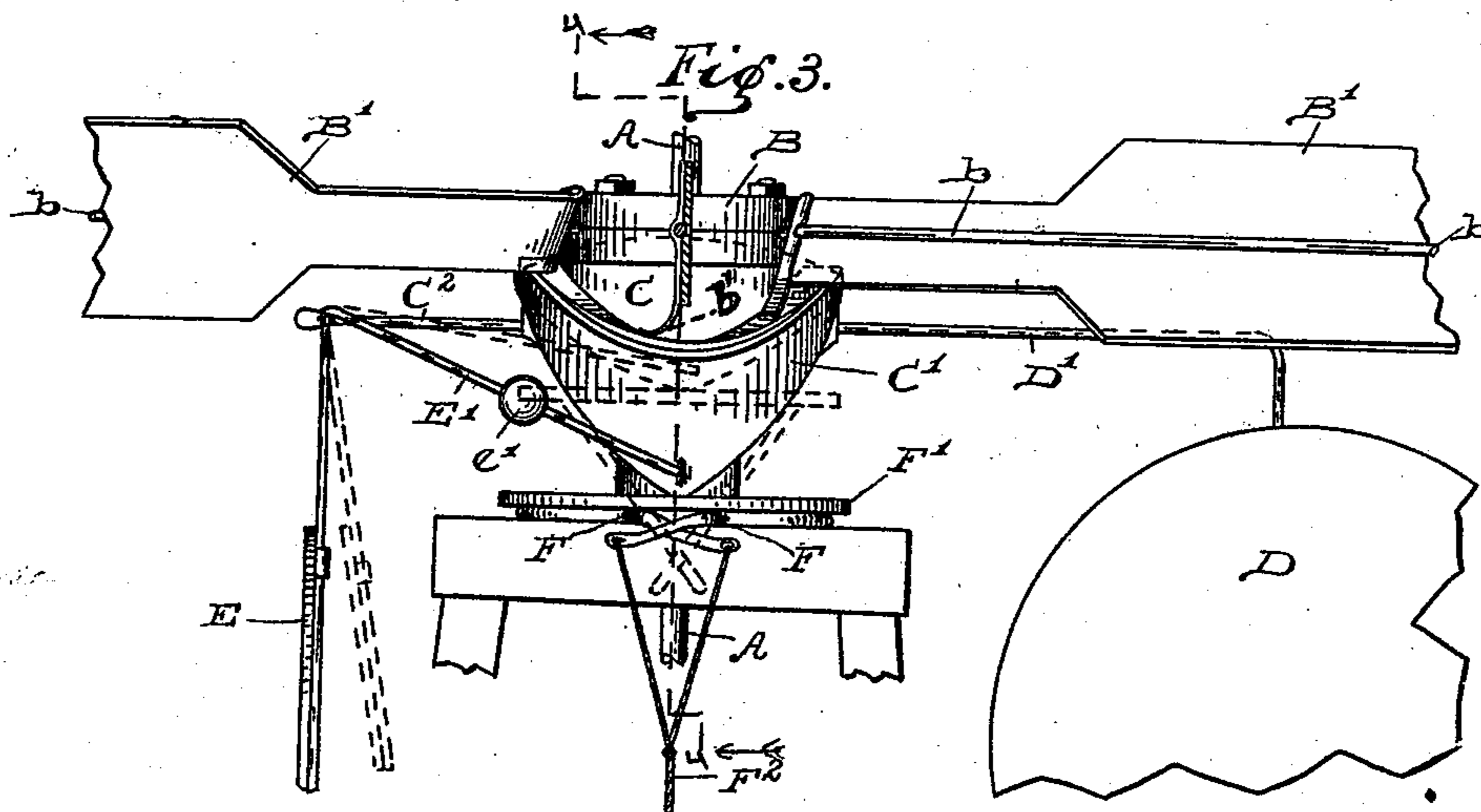
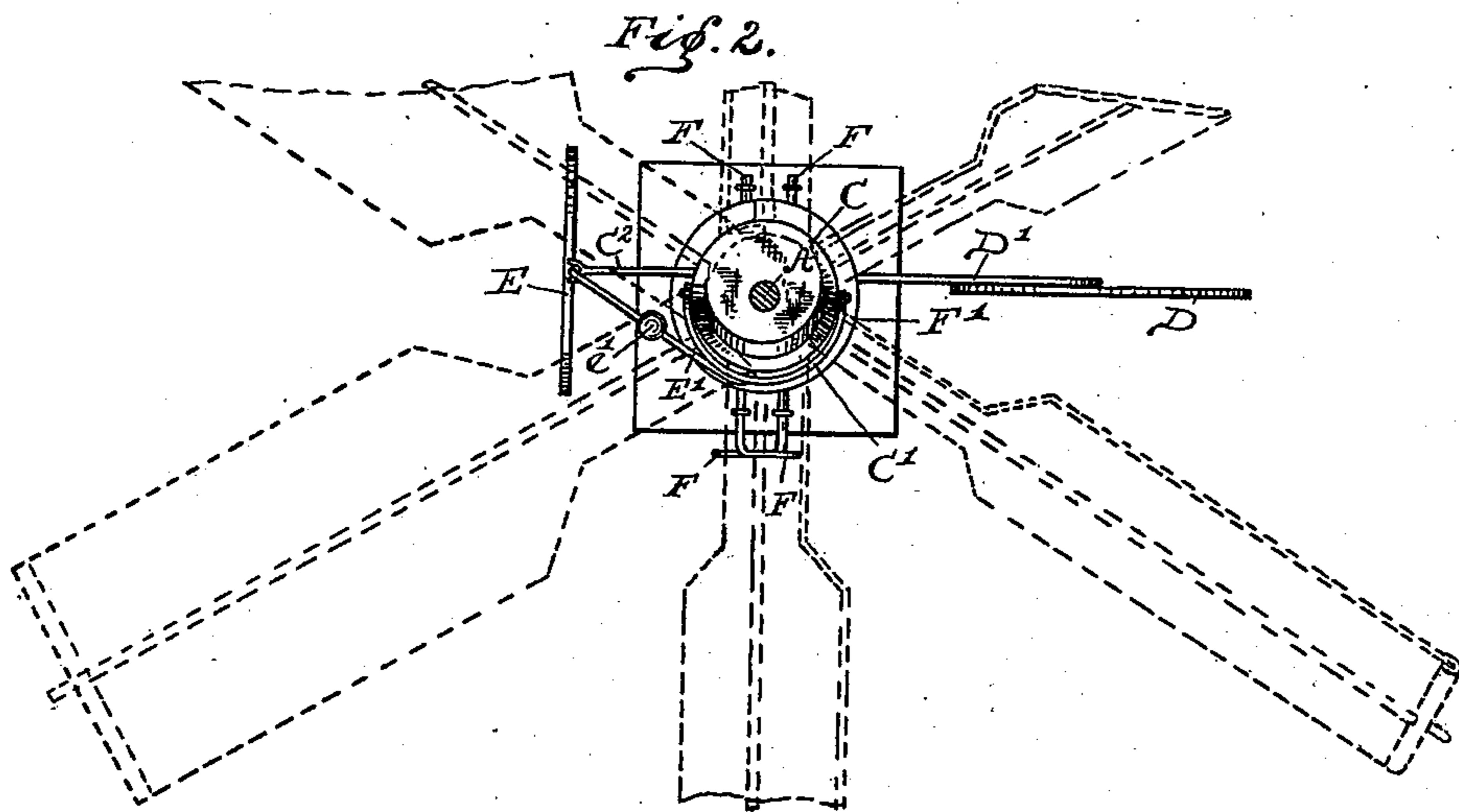
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UNITED STATES PATENT OFFICE.

JAMES P. KELSO, OF JACKSON, BROWN COUNTY, INDIANA.

WIND OR CURRENT OPERATED WHEEL.

SPECIFICATION forming part of Letters Patent No. 512,712, dated January 16, 1894.

Application filed January 10, 1893. Serial No. 457,895. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. KELSO, a citizen of the United States, residing at Jackson township, in the county of Brown and State of Indiana, have invented certain new and useful Improvements in Wind or Current Operated Wheels, of which the following is a specification.

The object of my said invention is to produce a wheel to be operated by an air or other current, in which the blades upon one side which travel against the current shall be presented edgewise to said current, and in which those on the other side which travel in the direction of said current are to be presented flatwise to said current and thus be driven thereby.

Said invention will be first fully described and then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of a "wind-mill" embodying my said invention; Fig. 2 a horizontal view looking downwardly on the dotted line 2—2 therein, the blades above said point being also shown by means of dotted lines; Fig. 3 a side elevation of the mechanism embodying the principal features of my invention, with a portion of the blades removed and Fig. 4 a sectional view on the dotted line 4—4 in Fig. 3.

In said drawings the portions marked A represent the main shaft; B a hub thereon carrying the blades; C the cam loosely mounted on said shaft below said hub; D a rudder secured to said cam; E a regulator secured to said cam, and F shafts having bends or arms whereby the operation of the machine may be automatically stopped when employed in certain uses.

The shaft A extends from the bottom to the top of the machine, and is adapted to be revolved with the blades. At its lower end it has a crank *a* by which the mechanism to be driven may be operated, an ordinary pump P being shown as such mechanism.

The hub B is secured rigidly upon the shaft A. It is preferably made up of two parts secured together by bolts, and between these parts, in appropriate grooves therein, arms *b* are secured, and extend out to the required

distance. The shaft A extends up some distance above said hub, and stay-rods *r*, extend therefrom to the ends of the arm *b*, and support the same, as shown in Fig. 1. Upon these arms *b* are mounted the wings or blades *B'* by which the machine is driven. Said wings or blades are so mounted as to pivot loosely on said arms, and the bearings are exactly central therewith, so that whatever position they assume the wind or current pressure will be equal upon both sides of the bearings. At the inner end are preferably extensions or cross-bars *b'* which rest upon the top of the cam C as the wheel revolves, and these are extended or weighted slightly at the lower end, or a small additional weight is provided at some point on the lower side of each of said blades or wings, thus causing them to assume a vertical rather than a horizontal position when free from the influence of any device or force. They will thus naturally assume the position shown at the right of Fig. 1, and thus be under the influence of the wind or current. This operation will be more fully described in connection with the description of the cam C.

The cam C is loosely mounted upon the shaft A, and is adapted to revolve freely around the same. One side of said cam is so positioned that the arms in passing over it may be raised up to a level horizontal position, and thus presented edgewise to the current, where they will encounter the least resistance. On the other side the cam slopes downwardly to a point, which permits the wings or blades to be substantially vertical or crosswise of the current, and thus be subject to its greatest force. Extending out from a median line through this cam is the arm which carries the rudder, whereby the cam is kept in proper relative position to the direction of the operating current or force, as will be presently described, and opposite thereto, upon the other side of the cam, is another arm upon which the regulator is mounted, as will also be presently described. Pivoted to the two sides of this cam is a bail-like device *C'*, whereby, upon occasion, a level can be produced and maintained entirely around the top of the cam, keeping the blades all edgewise to the current, and thus practically inoperative. The cam being held substantially stationary by the rudder, the blades, in

revolving, are first presented flatwise to the current and driven forward, and then edgewise to the current as they come back on the other side, and this movement is in continual
5 succession, thus bringing each blade into position to receive the full force of the current as it reaches the appropriate position therefor, and then into position to be substantially free from said force.

10 The rudder D is a large flat structure arranged to present its edge to the current, and is mounted on an arm D' extending out from the cam C. Its size and position are such that it controls the position in which the cam
15 shall remain, said rudder being at all times substantially in line with the direction of the current.

The regulator E is mounted upon an arm C² on the cam, and is presented sidewise to
20 the current so as to receive the force thereof, said plate, however, being much smaller than the plate of the rudder. It has an arm E' which extends back and engages with the device C' pivoted to the cam, and as the current
25 increases in strength the tendency is to force this regulator back, as shown by the dotted lines in Fig. 3, and thus raise the device C' toward a level, which reduces the angle at which the blades or wings are presented to
30 the current; or, if the current becomes strong enough, raises said device C' to a level, causing the wings or blades to remain flat in a horizontal position, and reducing the effect of the current thereon to a minimum, all as
35 will be readily understood. This regulator may be adjusted by varying the position of an adjustable weight e' on the arm E'.

The shafts F have outward bends or arms, and are pivoted upon the head-block of the
40 frame, and upon them rests a plate F'. Levers extend out from the ends of said shafts, and to these a cord F² is connected, which runs down to a point where it may be reached from the bottom and operated. When said
45 shafts are operated, they lift the plate F', and through it the device C', with the same effect that the regulator has thereon, the only difference being that this may be done at any time at will; whereas, the regulator operates
50 only as the operating current varies in force. Upon the lower end of this cord F² (when the wheel is used to operate a pump) may be hung a bucket, or other receptacle, F³, which may be positioned just under the overflow of the
55 tank or trough T into which the pump ordinarily discharges. The operation in such a case is, that whenever the tank or trough is full, the overflow will run into this bucket weight-

ing the cord F², and thereby operating the shafts F and plate F'. The bucket may have
60 a very small escape perforation, so that the water thus filled into it may gradually escape, permitting the wheel to resume its operation without a long delay; but this operation will only be continued for a few moments, unless
65 meanwhile the water has been used out of the trough or tank.

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

70 1. The combination, with the pivoted wings of a wheel, and a cam by which the same are operated, of a device C' pivoted to the cam, a regulator adapted to be operated also by the current, and an arm extending from said reg-
75 ulator and engaging with said device, whereby the same may be raised, and the angle of the cam thus reduced or rendered a plane surface, substantially as set forth.

2. The combination of pivoted blades or
80 wings, a cam, an adjustable device secured to said cam, a plate below the same, pivoted shafts having side extensions or arms thereon below said plate, and means whereby the same
85 may be operated and the device upon the cam raised, substantially as shown and described and for the purposes set forth.

3. The combination, in a wind wheel, with the pivoted blades or wings and the cam by which they are operated, of a device for re-
90 ducing the angle of said cam or rendering it a plane surface, mechanism by which said device is operated, a pump, a tank or trough, and a bucket attached to said mechanism and
95 positioned under the overflow of said tank or trough, whereby said mechanism may be automatically operated by means of the overflow of the tank after it is filled, substantially as set forth.

4. The combination, with horizontally piv-
100 oted blades or wings, and a cam over which they are adapted to pass and whereby the positions thereof are shifted, of a bail-like device C' pivoted to the sides of said cam and
105 practically forming a part thereof, which said device is adapted to be raised and become the cam surface, which said cam surface is thus rendered variable.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this
110 5th day of January, A. D. 1893.

JAMES P. KELSO. [L. S.]

Witnesses:

CHESTER BRADFORD,
JAMES A. WALSH.