J. J. KIMBALL.
Windmills.

No. 198,302. Patented Dec. 18, 1877.

Fig: 1.

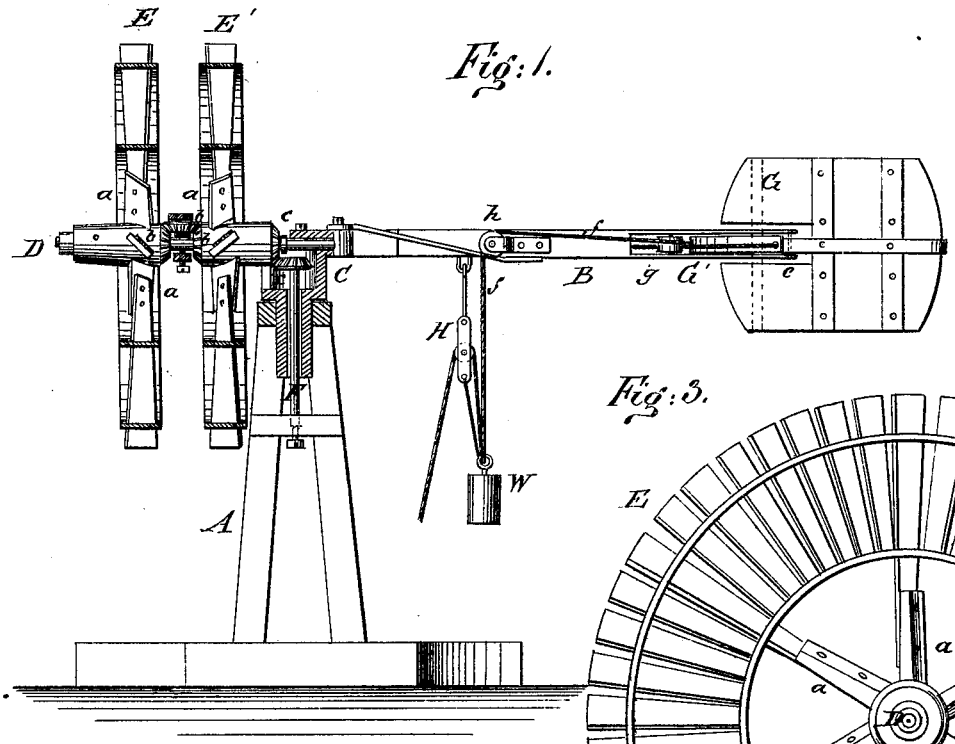


Fig: 3.

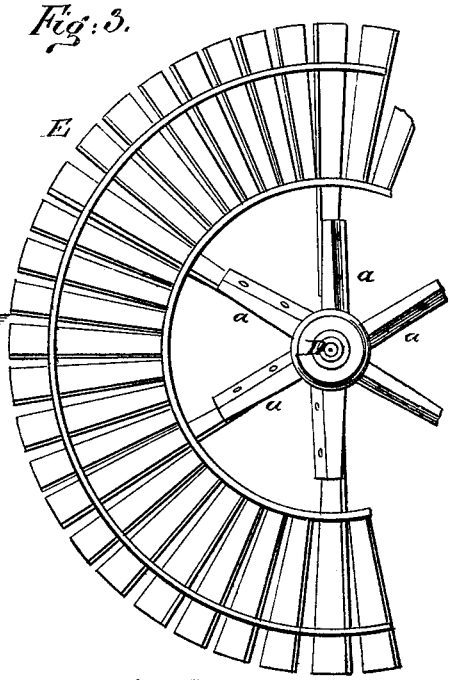
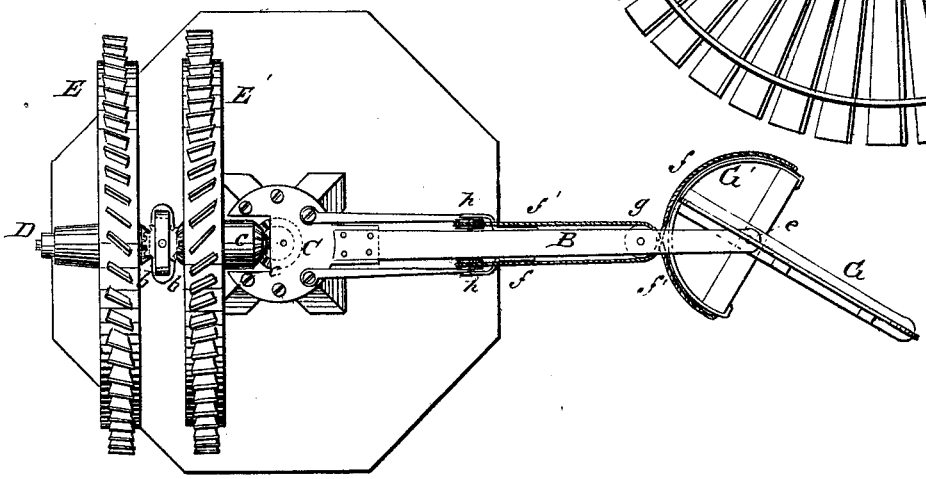


Fig: 2.



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

JOHN J. KIMBALL, OF NAPERVILLE, ILLINOIS.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. **198,302**, dated December 18, 1877; application filed May 12, 1877.

To all whom it may concern:

Be it known that I, JOHN J. KIMBALL, of Naperville, county of Du Page, and State of Illinois, have invented a new and useful Improvement in Wind-Power, of which the following is a specification:

Figure 1 is a sectional elevation of my improved wind-power. Fig. 2 is a top view. Fig. 3 is a detail of one of the wheels.

Similar letters of reference indicate corresponding parts.

This invention has relation to wind-powers for raising water and for other purposes; and the nature of my invention consists, mainly, in the employment of two wheels, which are geared together, and so constructed and arranged that the wind which escapes through one wheel will react on the blades of the other wheel, as will be hereinafter explained.

My invention also consists in novel means for regulating the speed of the wheels, and causing them to edge more or less to the wind, as the force thereof increases or diminishes, as will be hereinafter explained.

In the annexed drawing, A designates the tower of the mill, and B the shaft of the rudder-blade, which latter is suitably secured to a turn-table, C. There is also secured to the turn-table C a shaft, D, on which two wheels, E E′, are applied and arranged in close relation to each other. Both wheels E E′ are contructed alike, and are formed of radial blades, secured to rings or hoops, and also to beveled spoke-arms *a*, as shown in Figs. 1 and 3. Wheels E E′ are geared together, as indicated in Fig. 1 by the letters *b b b*, so that they turn in opposite directions, and transmit rotation to a vertical shaft, F, through the medium of beveled spur-wheels *c c*. It will be seen that the wind which acts on the wheel E will react on the wheel E′, so that both wheels turn the shaft F. The hubs of the wheels E E′ should be constructed with holes, through which oil can be supplied without removing the wheels from their shaft.

G designates the rudder-blade, which is suitably stiffened with battens, and which is of sufficient size to afford the required resistance to the wind. This blade is pivoted to the shaft B at *e*, and constructed with a semicircular portion, G′, arranged horizontally, to the extremities of which ropes or chains *f f′* are attached, and crossed in opposite directions around a pulley, *g*. Ropes *f f′* are carried over pulleys *h h*, thence to a weight, W, and over a pulley in a block, H, which is suspended from the shaft B. By this arrangement the weight will operate automatically as a regulator for the mill, and cause the wheels E E′ to edge more or less to the wind, as may be desired. If the rudder-blade is not sufficiently large to hold the wheels to the wind, it may be adjusted at any desired angle, and held by means of the rope *f* in pulley-block H. If the rudder-blade is sufficiently large to hold the wheels to the wind I may apply a bar across this blade, as indicated by dotted lines in Fig. 1, which will strike against the shaft B, and prevent the weight W from moving the rudder-blade G farther into the wind, and then the pulley in block H, which is suspended from the shaft B, may be dispensed with.

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

The pivoted rudder-blade G, having secured to it a segment, G′, in combination with ropes *f f′*, pulleys *g h*, weight W, and suspended pulley-block H, substantially as described.

JOHN JULIUS KIMBALL.

Witnesses:

FRANK W. HUNT,

JOSEPH MEISINGER.