

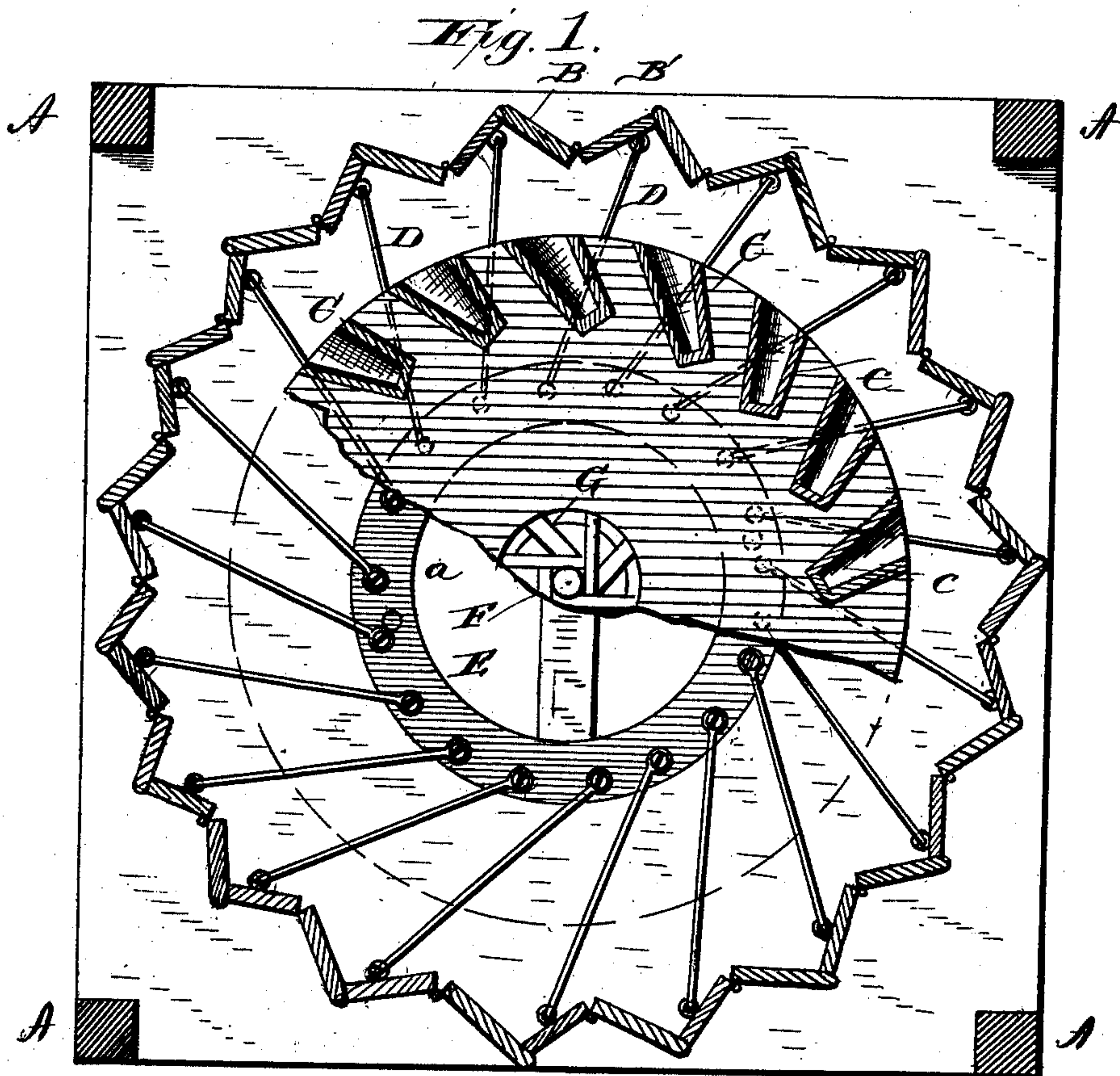
(No Model.)

W. & A. J. GOFORTH.
Wind Engine.

2 Sheets—Sheet 1.

No. 232,258.

Patented Sept. 14, 1880.



Witnesses:
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H. Hubert Taulmin.

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

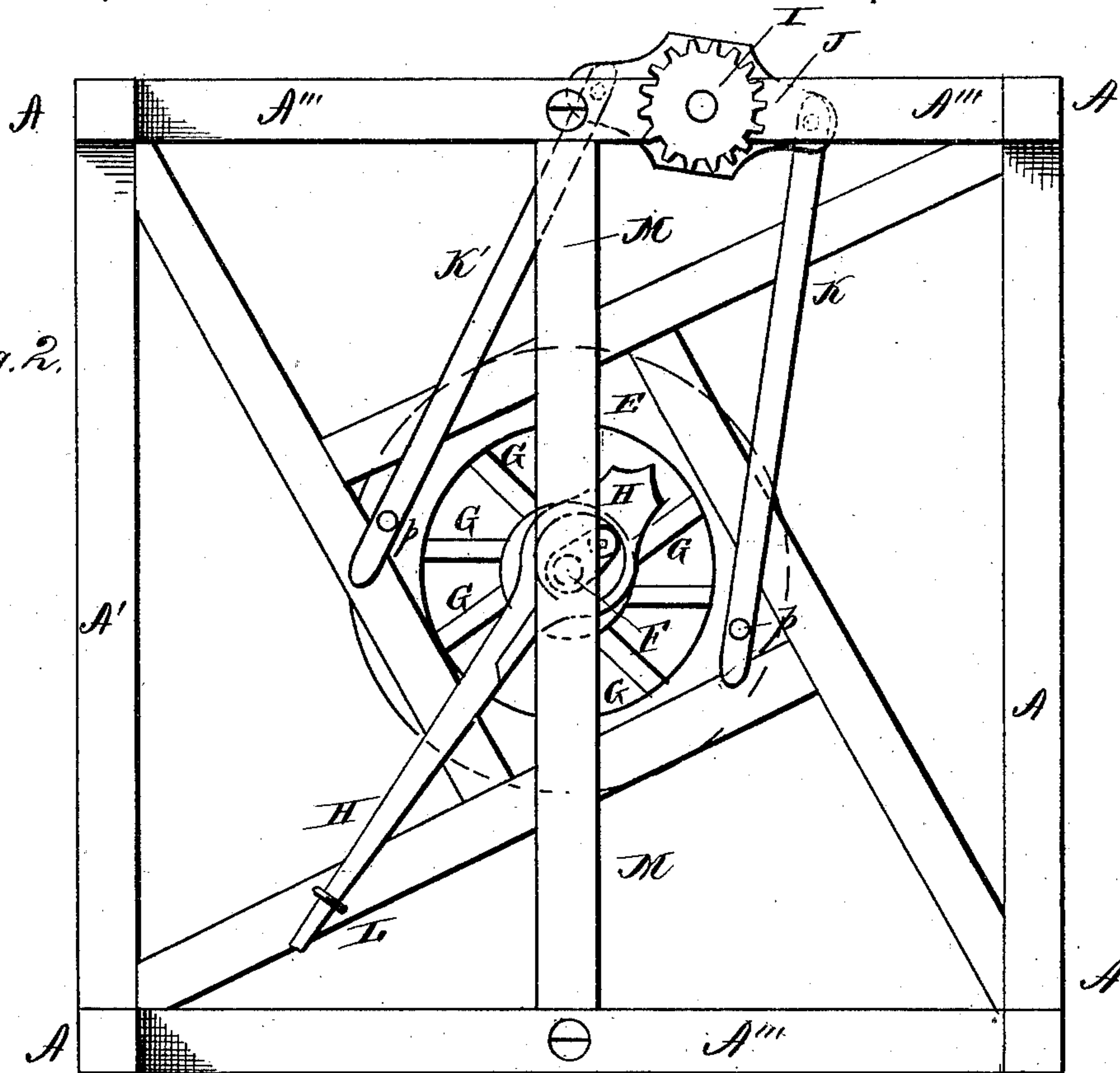


Fig. 3.

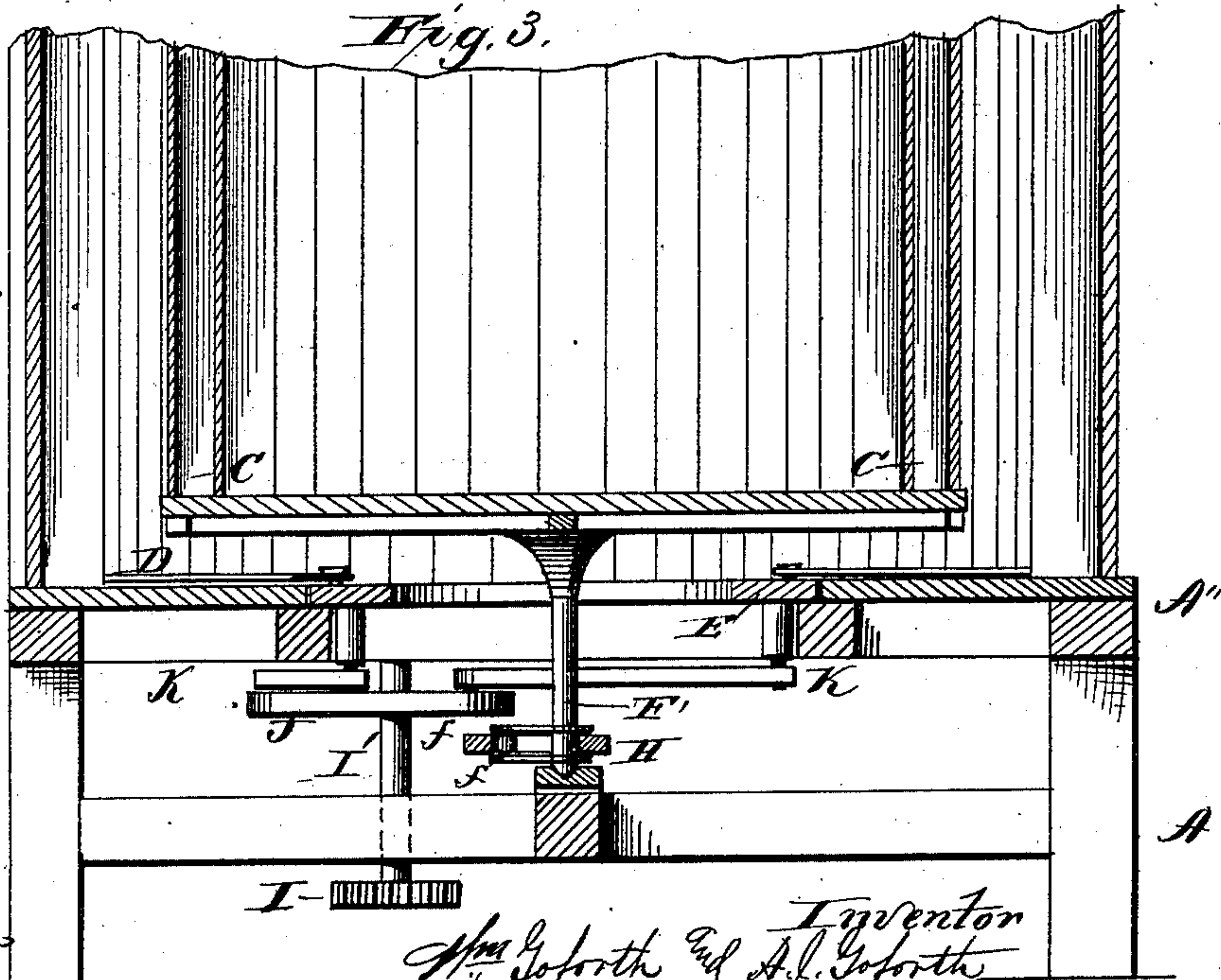
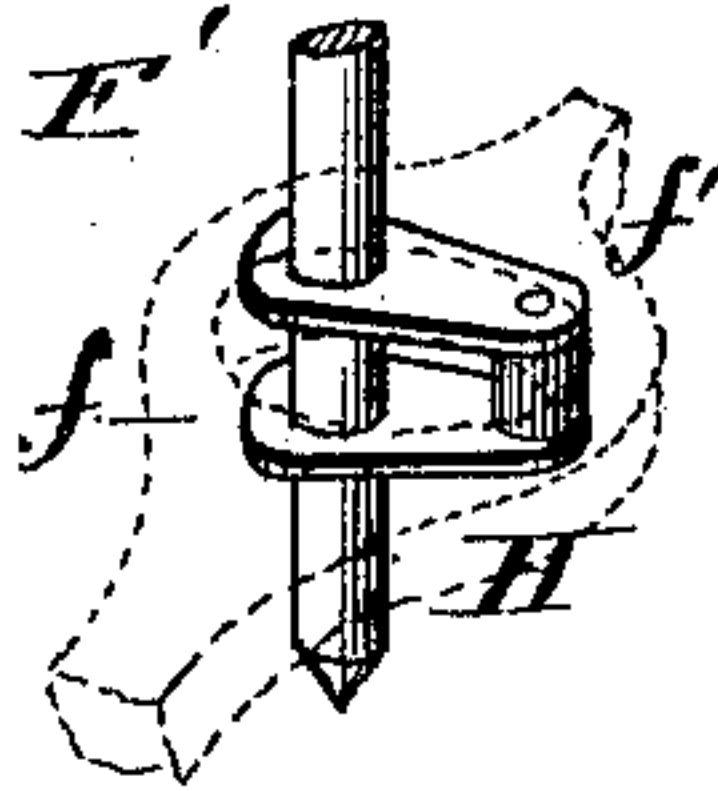


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM GOFORTH AND ANDREW J. GOFORTH, OF WINDSOR, MISSOURI.

WIND-ENGINE.

SPECIFICATION forming part of Letters Patent No. 232,258, dated September 14, 1880.

Application filed July 19, 1880. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM GOFORTH and ANDREW J. GOFORTH, of Windsor, in the county of Henry, and in the State of Missouri, have invented certain new and useful Improvements in Turbine Wind-Engines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of our invention consists in the peculiar construction of a vertical wind-wheel supported at top and bottom by gudgeons, so as to revolve freely by the force of the wind, and an outer casing for the same, composed of stationary and hinged shutters so arranged with suitable mechanism as to cut off or admit outer currents of air, which may be operated automatically or otherwise.

Figure 1 is a plan in section. Fig. 2 shows the bottom of the casing or building containing the vertical wheel. Fig. 3 is a vertical section of the lower part of the wheel and casing. Fig. 4 is a detailed view of the lower end of shaft or gudgeon F, crank f, and pitman H, the latter shown in dotted lines.

B are the stationary shutters. B' are the hinged shutters, to which are attached rods D at their outer ends, their inner ends being fastened to the wheel E. C are the buckets forming part of the vertical wheel. F is the central shaft or gudgeon upon which it revolves. G are the arms, forming part of its construction. A A A A are the corner-posts, which are a part of the frame which supports the whole. A' A'' A''' A'''' connect the corner-posts together. I is a wheel secured to the lower portion of a vertical shaft, I', which is provided with a double lever, J, to which are pivoted arms K K'. These arms K K' are also pivoted to the wheel E at p p.

The wheel is made vertical. The buckets are placed at equal distances around the outside of rim, the wheel being first spaced into equal parts. The buckets are made two-fifths the width of one space, leaving the other three-fifths of space for the wind to pass through and act on the opposite side of the wheel.

In constructing the wheel two cast heads are used. Each head is provided with eight arms, which are secured to the heads by bolts. Four

of the arms are so arranged and fitted to the cast heads that they leave a square hole or socket for the reception of a shaft, which serves to hold the two heads apart, and also for the purpose of putting pins in, by which access is given to the top of the wheel and to oil top gudgeon, &c. After the arms have been floored and ceiled the buckets are fitted and secured thereto and set at angles of four-ninths of the radius of the wheel. In this position they receive a direct draft of wind, which, with the action of the wind on the inside of the wheel combined, gives the engine great power.

The outside shutters are each made in two sections. The outside section is secured by nailing or by any other means of fastening at top and bottom, the inside section being hinged thereto. The outside section of shutters, being stationary, imparts great strength to the wheel house or building.

The hinged shutters are so arranged and hung that the inner edge opens outward and forms a joint against the inner side of the outer edge of stationary shutter. When they are open the inner edge is near the rim of the wheel, allowing a full current of wind to pass into the engine, giving it velocity and power.

The shutters or cut-offs should be strengthened by having battens or ribs running horizontally across them and securely fastened thereto with nails or screws at top, bottom, and center of shutters. This will prevent their warping and getting out of place.

The hinged shutters are operated by rods D, loosely connected at bottom and near the inner edges, and extending to the wheel E, where they are fastened by screws a, or by other suitable means.

The wheel E is supported and held in place by inside flange of floor and on floor joists or supports. To relieve the friction of wheel E six or more small flanged rollers may be placed under it at equal distances apart. The wheel E is operated by means of arms K K' and levers J. The arms K K' are loosely pivoted on either side and on lower part of wheel E, and to double lever J, attached to shaft I.

The operator, by means of a wheel, I', or cross-lever on the lower end of shaft I, controls the engine by oscillating the wheel I' back and forth, thus imparting the same mo-

tion to wheel E with rods D, which open and close the hinged shutters at any point desired by the operator, and places the wind-engine entirely under control.

5 On the lower part of shaft F' is placed an anti-friction crank, *f*, which is made by having two peculiar-shaped pieces of iron fastened to the shaft F', having a space between them for a spool, *f'*, which is held in place by means of
10 a bolt.

The diameter of the hole in pitman H is the same as the extreme points of spool *f'* and shaft F'.

15 By this device an effective crank or reciprocating motion is obtained with less friction, and leaving the shaft with its full strength.

Having thus fully set forth and described our invention, we claim—

The combination, in a wind-wheel, of an outer casing composed of stationary shutters 20 B, hinged shutters B', arranged so as to be opened and closed by means of wheel I, levers J, arms K' K, wheel E, and rods D, and enclosing a vertical wind-wheel constructed with buckets C, arms G, shaft F', friction-crank *f*, 25 and pitman H, as described, and for the purposes set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 17th day of June, 1880.

WILLIAM GOFORTH.

ANDREW J. GOFORTH.

Witnesses:

G. W. GIVENS, M. D.,

B. W. HUEY.