

G. COX.

Water-Wheels.

No. 134,520.

Patented Jan. 7, 1873.

Fig. 1.

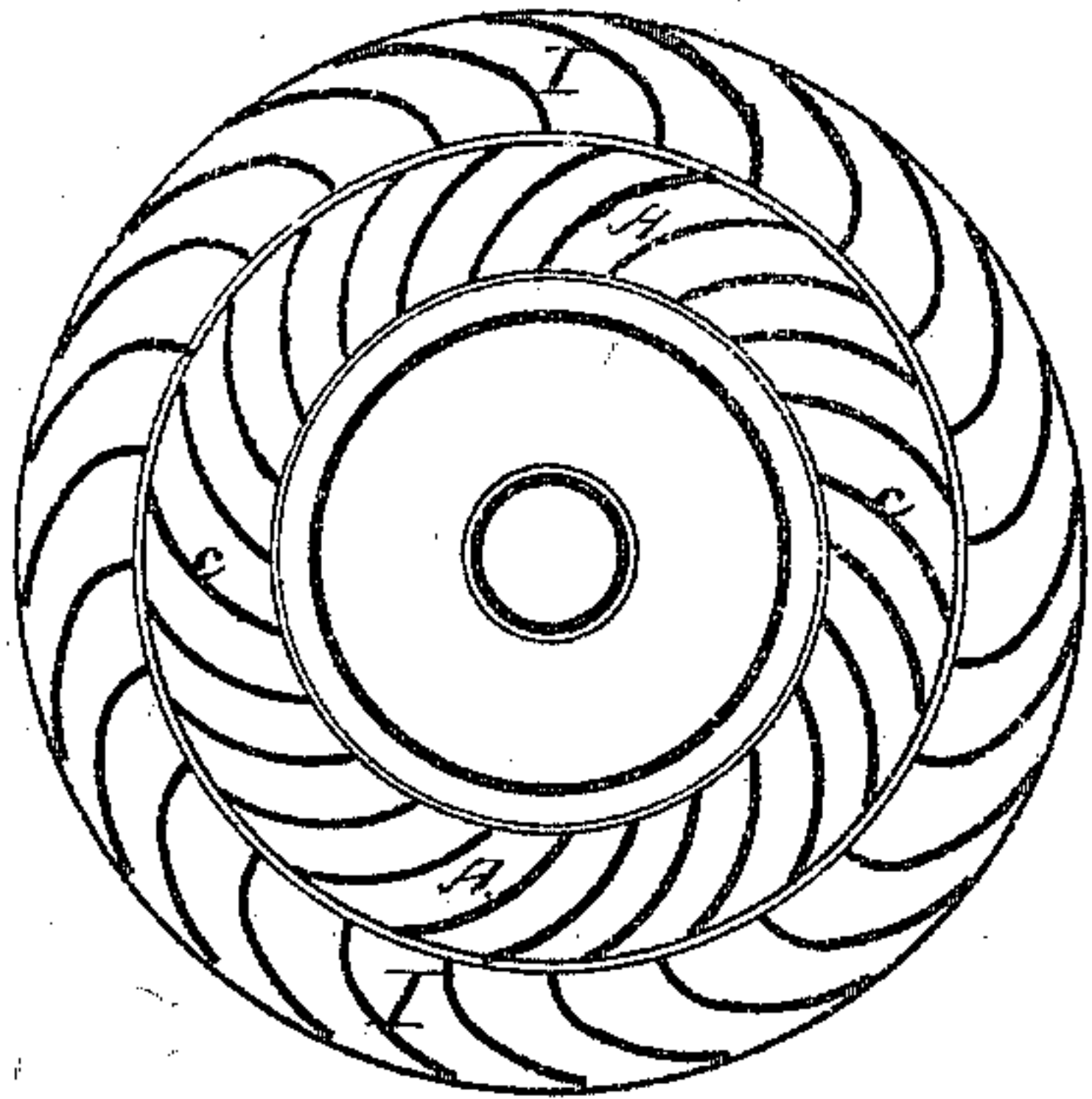


Fig. 2.

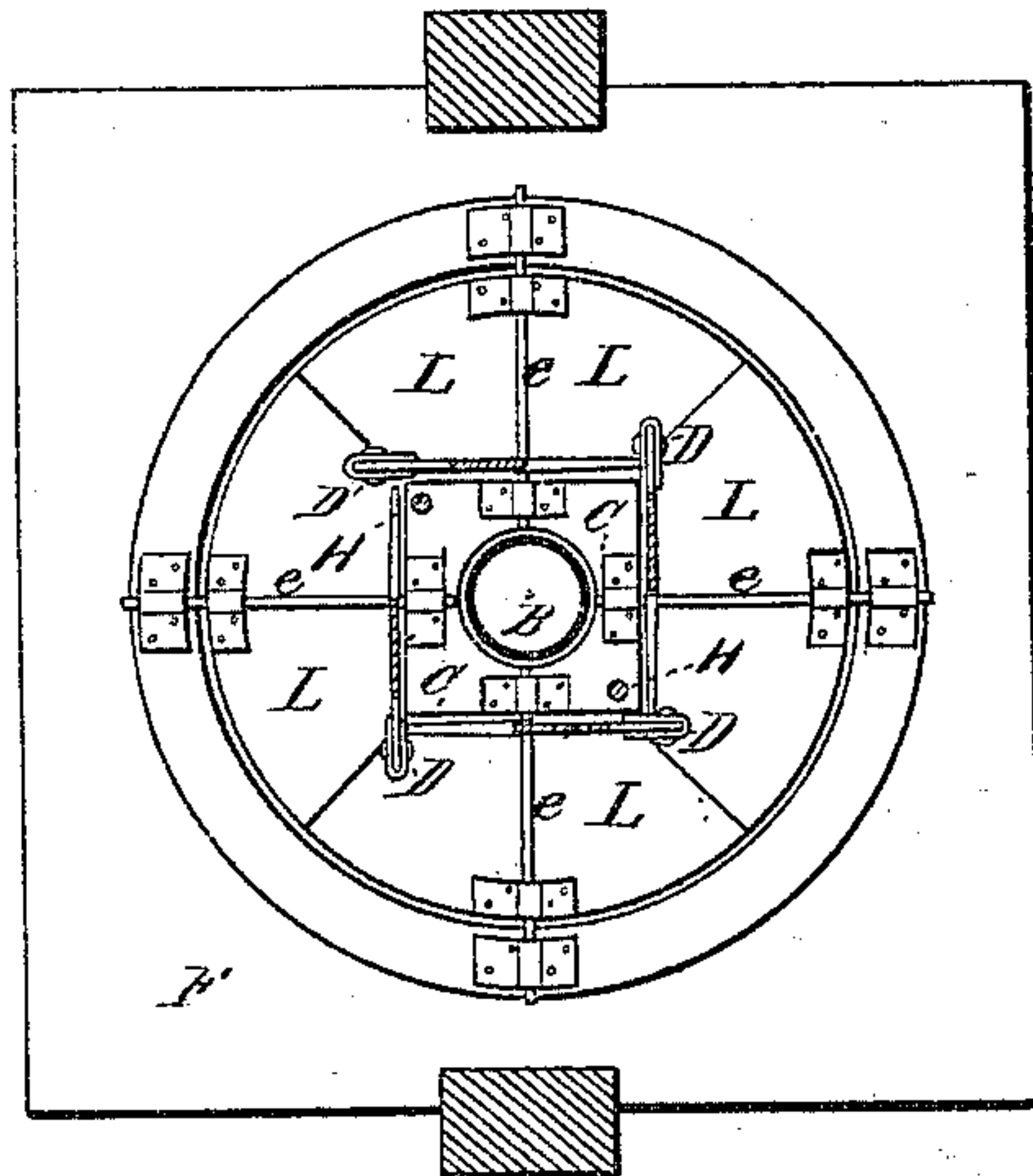


Fig. 3.

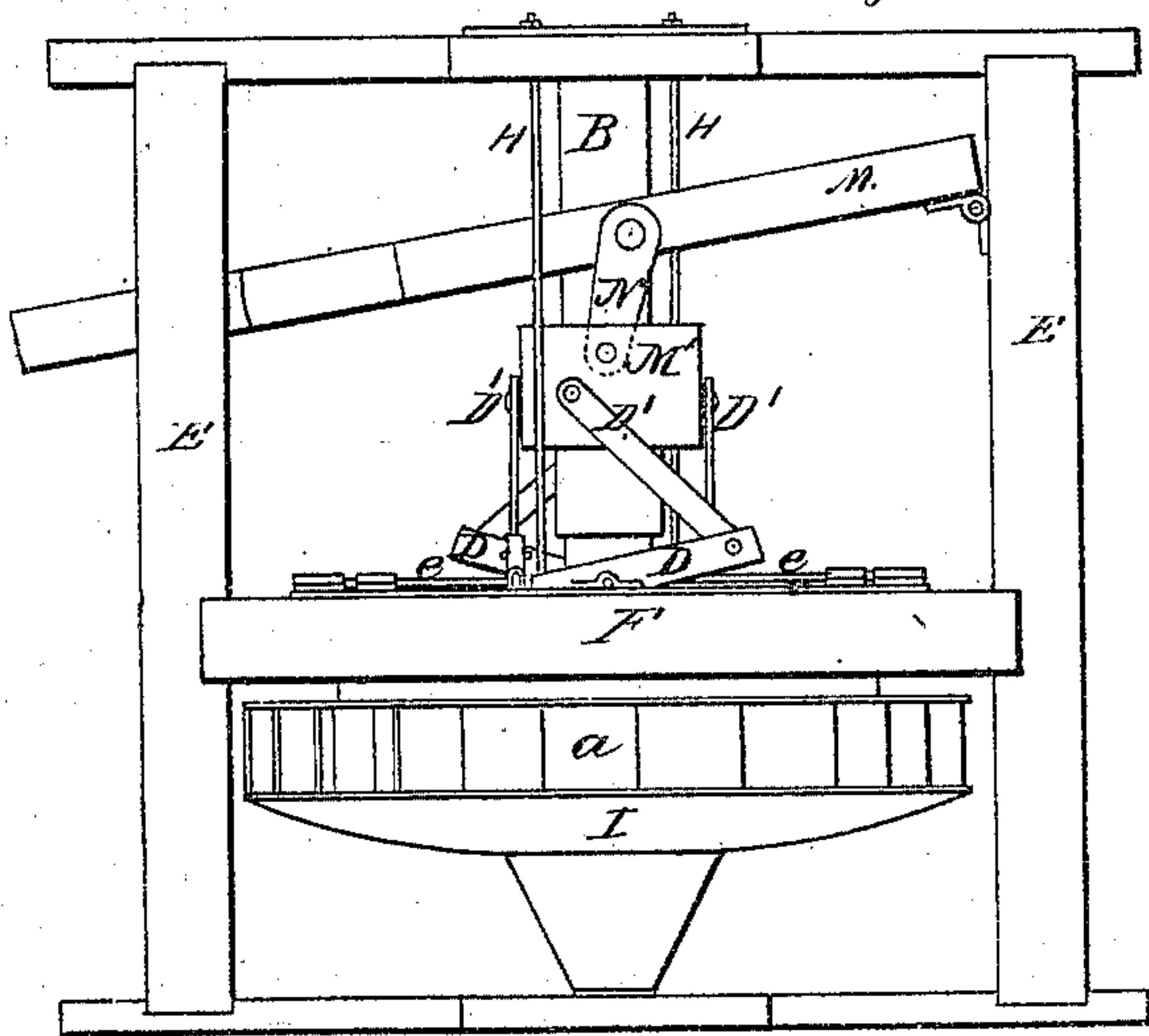
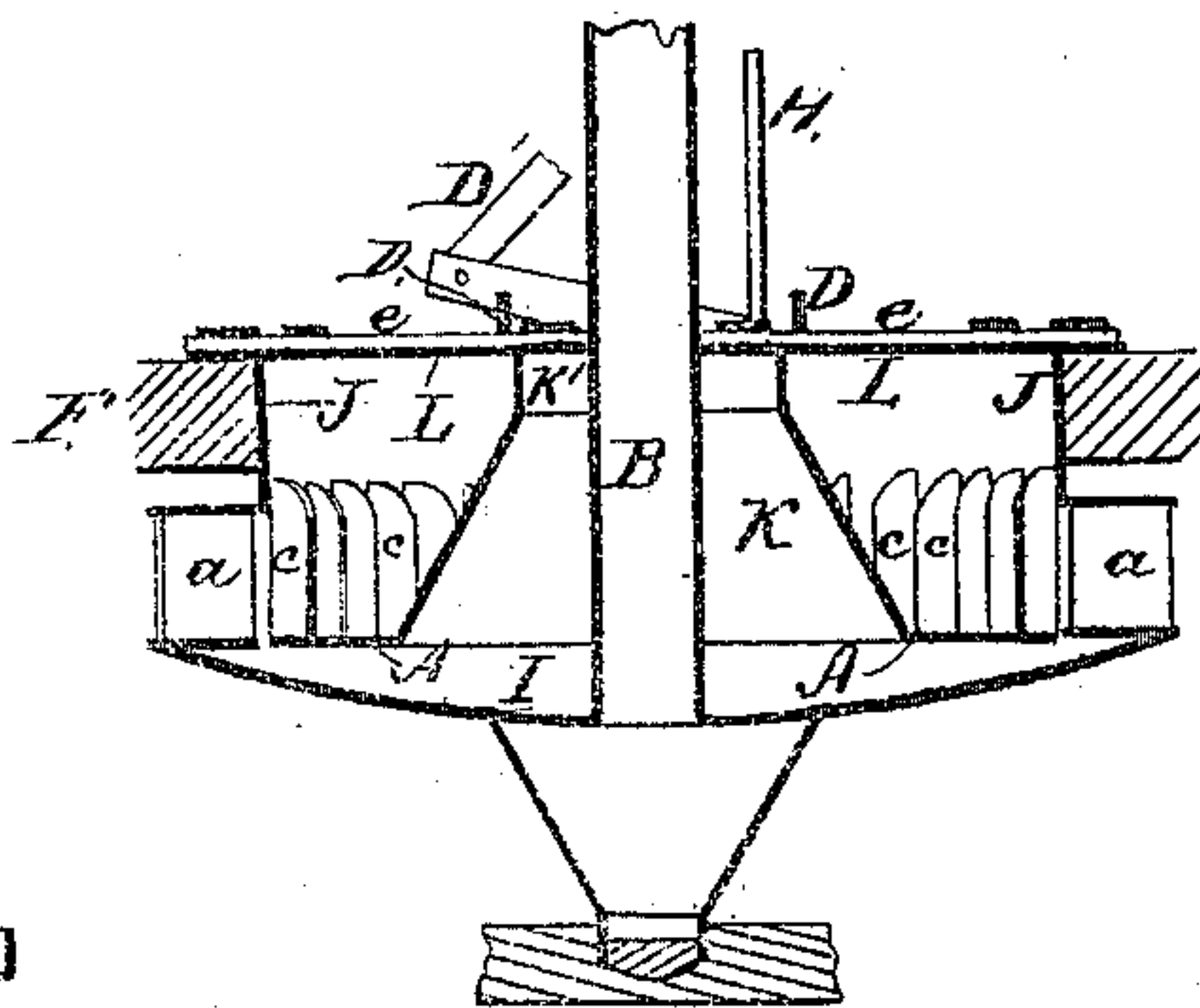


Fig. 4.



Witnesses,

Mary E. Welch  
Martin Welch

Inventor:

Gardner Cox

# UNITED STATES PATENT OFFICE.

GARDNER COX, OF PIERREPONT, NEW YORK.

## IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 134,520, dated January 7, 1873.

*To all whom it may concern:*

Be it known that I, GARDNER COX, of Pierrepont, St. Lawrence county, New York, have invented certain Improvements in Water-Wheels, of which the following is a specification:

Figure 1 is a detached plan of the wheel, disk, and guides; Fig. 2 is a plan of the curb, cap, gates, and bottom of the forebay; Fig. 3 is a side elevation of the wheel and the means of operating the gate; and Fig. 4 is a transverse vertical section of the wheel and disk.

Similar letters of reference in the accompanying drawing denote the same parts.

This invention has for its object to improve the construction of turbine water-wheels in respect of, first, the means for introducing the water to the wheel from the inside, and, second, the means for operating the gates. To this end the invention consists, first, in a horizontal wheel placed outside a curb extending downward from the bottom of the flume, to which curb the guides are riveted, to which guides a disk is attached, forming chutes, through which the water flows to the wheel; second, in gates combined with connecting-rods, a sleeve sliding on the wheel-shaft, and a lever to operate the sleeve, and through it the gates, all of which I will now proceed to describe.

In the drawing, I is the wheel, constructed in any sufficient manner, and having buckets *a*. J is the curb, suitably secured to the floor of the flume F, and extending downward through an orifice in the same. To this curb, near its lower edge, guides *c* are riveted, which guides spring from the upper surface of a cast-iron horizontal disk, A, that is held within the wheel, and on a level with its bottom, by the guides *c*, which give the water entering through the curb J its proper direction to the buckets *a*. The shaft B of the wheel passes through the center of the disk A, from which disk rises, concentric with and inclosing said shaft,

a cone, K, having a cylindrical top, K', on the top of which is secured a flat plate, C, through which passes the shaft. Rods H, connecting this plate with the frame E, help to support the disk A. The plate C has as many straight sides as there are gates—in this instance four. The gates L are hung on rods *e*, which are secured to the plate C and curb J. The gates have straight inner edges abutting against the edges of the plate C and curved outer edges abutting against the curb J. The ends of the gates are in radial lines to the shaft B, and the joints between the ends are mitered to prevent leakage. Vertical flanges D are fastened to the inner edges of the gates to strengthen them and to direct the water downward when the gates are opened. Each flange has a recess in one end, into which recesses enter the lower ends of rods D', the upper ends of which are jointed to the outside of a sleeve, M', which slides on the shaft B. Links N connect the sleeve M' with a lever, M, one extremity of which is articulated in one of the standards E, and the other extremity is in a slot in the other standard E.

By moving the free end of the lever M up or down, the gates are opened or closed.

Having thus described my invention, what I claim is—

1. The combination of a wheel, I, curb J, disk A, and guides *c*, arranged substantially as described.

2. The swinging gates L, connecting-rods D', sleeve M', shaft B, and lever M, all combined as specified.

3. The curb J, guides *c*, disk A, cone K, plate C, and rods H, all arranged, as described, for holding the disk firmly in the center of the wheel.

GARDNER COX.

Witnesses:

MARY E. WELCH,  
MARTIN WELCH.