

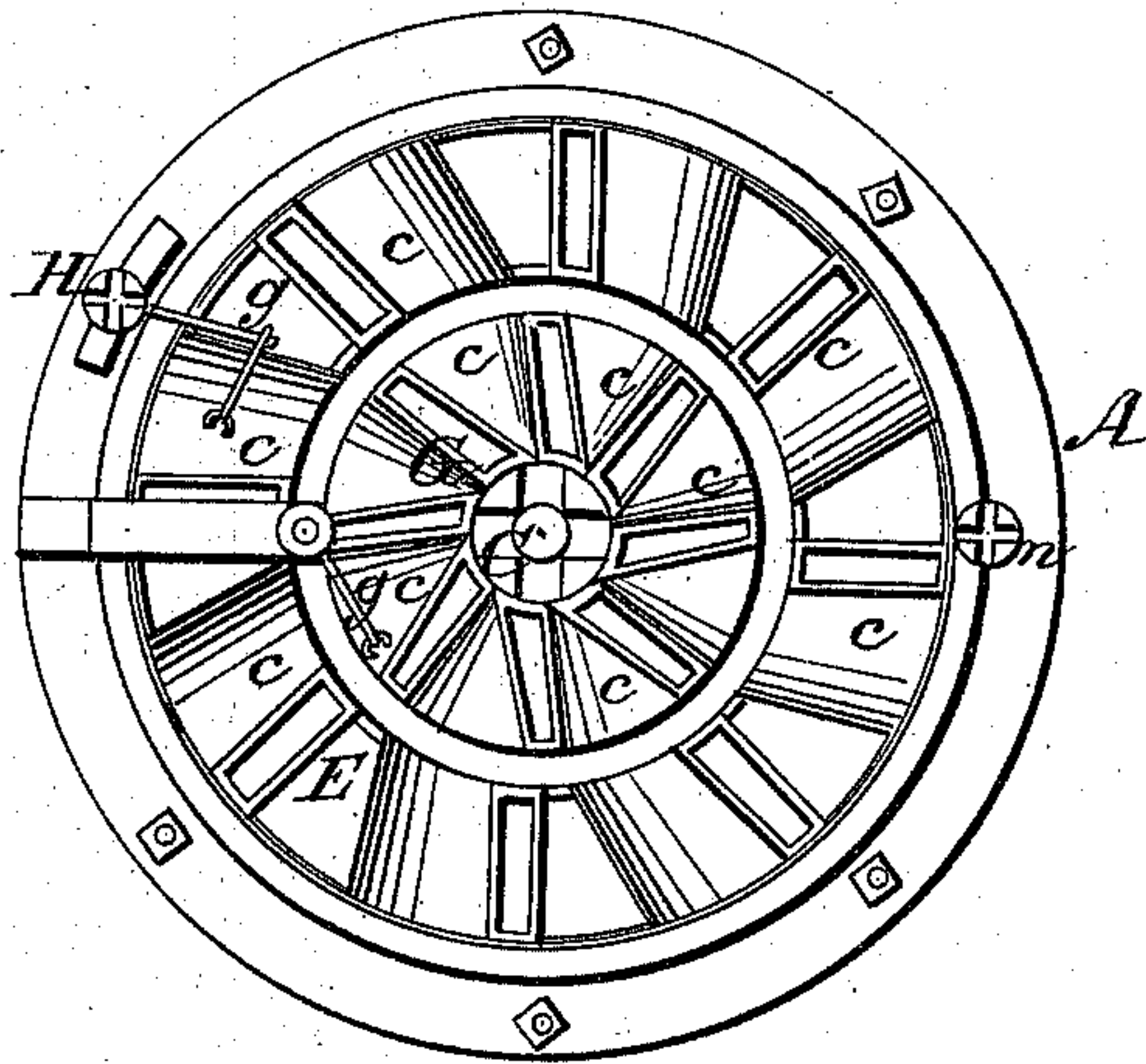
*J. C. Kelly.*

*Turbine Water Wheel.*

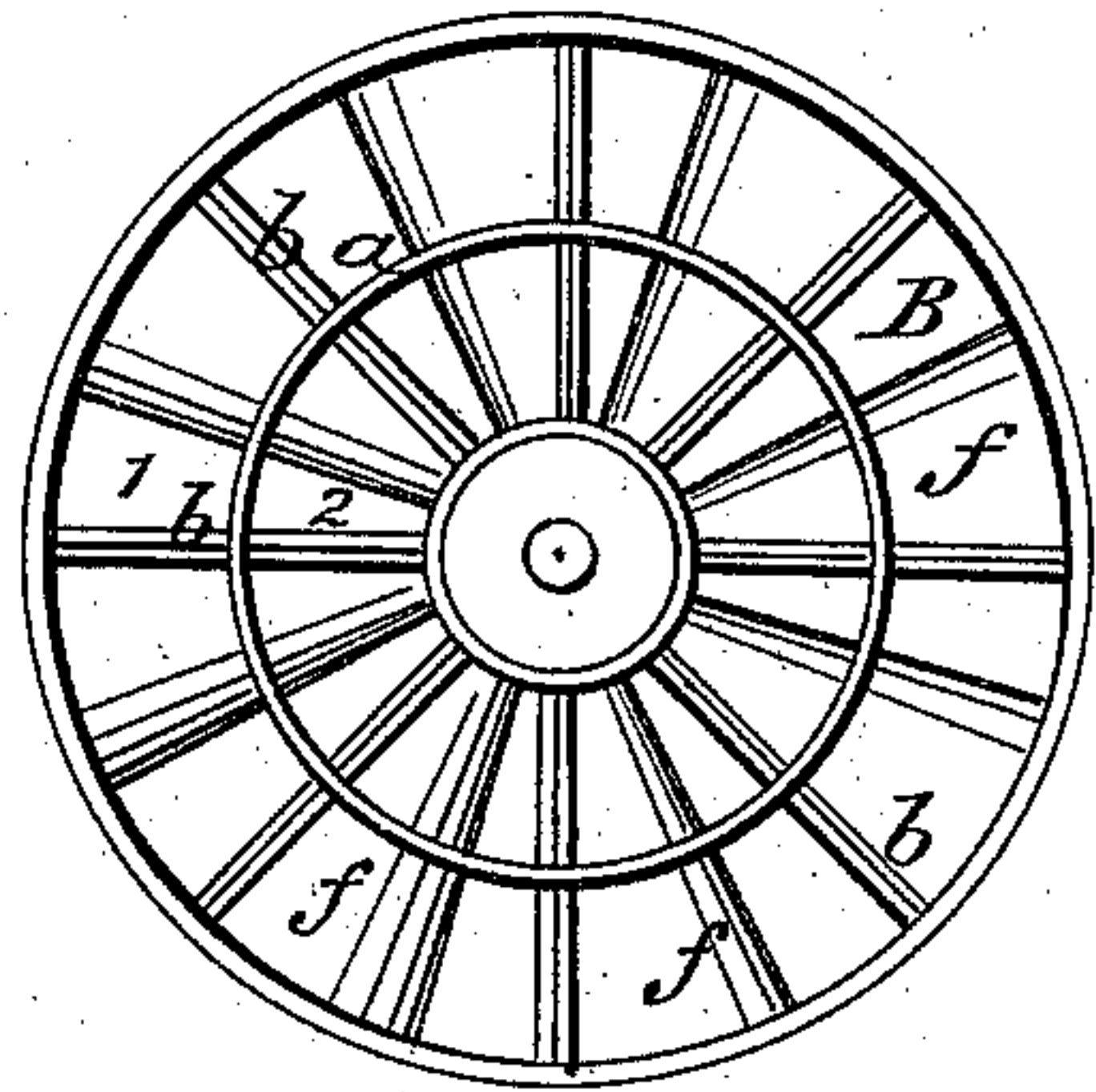
*N<sup>o</sup> 104,600.*

*Patented Jun. 21, 1870.*

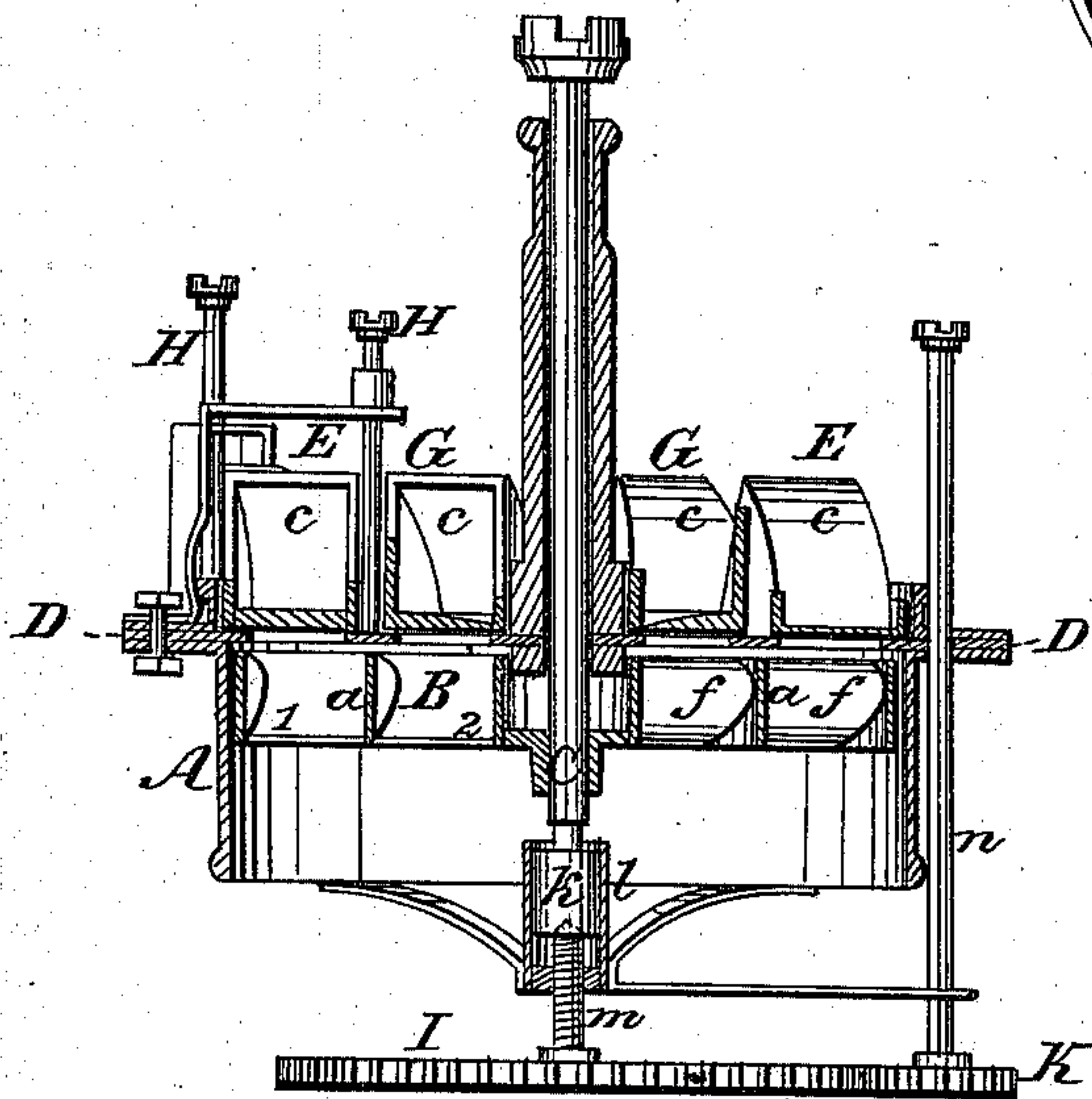
*FIG. I.*



*FIG. III.*



*FIG. II.*



*Witnesses*  
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*Geo. W. Mott.*

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# United States Patent Office.

JAMES C. KELLY, OF GROVELAND, NEW YORK.

Letters Patent No. 104,600, dated June 21, 1870.

## IMPROVEMENT IN WATER-WHEELS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JAMES C. KELLY, of Groveland, in the county of Livingston and State of New York, have invented a certain new and useful Improvement in Water-Wheels; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a plan of my improved wheel.

Figure 2, a vertical section.

Figure 3, a plan of the water-wheel proper, detached.

Like letters of reference indicate corresponding parts in all the figures.

My invention consists in the arrangement of two horizontal wheels on top, which serve the double purpose of gates and chute-wheels; also, in an arrangement of parts for adjusting the step as it wears away, the whole operating in the manner and for the purpose set forth.

In the drawing—

A represents the outer case, which is set in a hole in the bottom of the flume.

B represents the water-wheel proper, which is attached to spindle C.

This wheel is made in two divisions, 1 2, fig. 3, with a rim, *a*, dividing them.

The water is let on to either division independent of the other, as will be presently described.

The buckets of the wheel have an angular turn at the rear, as shown at *b b*, by which means the reaction of the water is more effective than would otherwise be the case.

Above the wheel proper is situated a plane cap-plate, D, cut with a double annular series of ports or holes, to correspond in position with the two divisions 1 2 of the water-wheel.

On top of this plate rest two wheels or rims, E G, covering, respectively, the two series of ports in plate D.

Each of these wheels or rims has an independent turning motion, and is armed with elevated chutes, *c c*, pointing in that direction which is the reverse of the incline of the buckets *f f* of the water-wheel.

These wheels are operated from shafts H H by means of toggle-connections *g g*.

I am aware that a chute-wheel has before been employed, covering the water-wheel proper, but situated beneath a gate on top, which admits the water. It

is a special object of my invention to avoid the use of the independent gate by making the chute-wheels themselves act as the gates. By this means I not only avoid cost of construction, but I secure a special advantage by giving the water a long passage in the elevated chutes *c*, thereby giving it a direction or lead which imparts great force when it strikes the buckets of the wheel. This result is specially accomplished by the upward projection of the chutes. In other devices, covered by an extra gate, the chutes must project downward, thereby contracting the water-passage. This projection of my chutes also obviates, in a great degree, clogging or choking from sticks and leaves.

By the use of the two wheels E G, and the two divisions 1 2 of the water-wheel, I am enabled to let on the water through either one or both, thus gauging the power to the work to be done, or to the amount of water in the flume.

The step *k*, on which the spindle C rests, is situated in a box, *l*, and is adjusted higher, as it wears away, by the following arrangement:

A screw, *m*, passes up through the bottom of the box, resting under the step.

To this screw is attached a large cog-wheel, I, and with this gears a pinion, K, secured to shaft *n*, which passes up into the mill.

By turning this shaft, the proper adjustment is secured.

This is an exceedingly simple means of keeping the proper adjustment of the spindle at all times, and I believe the same to be original with myself.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, with the water-wheel B, of the wheels or rims E G, overlying the same, and provided with the elevated chutes *c*, thereby serving the double purpose of chute-wheels and gates, substantially as described.

Also, the combination, with the box *l* and step *k*, of the screw *m*, gear-wheels I K, and shaft *n*, arranged as described, and operating in the manner and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JAMES C. KELLY.

Witnesses:

R. F. OSGOOD,  
GEO. W. MIATT.