

I. SHERCK.
Turbine Water-Wheels.

No. 144,363.

Patented Nov. 4, 1873.

Fig. 1.

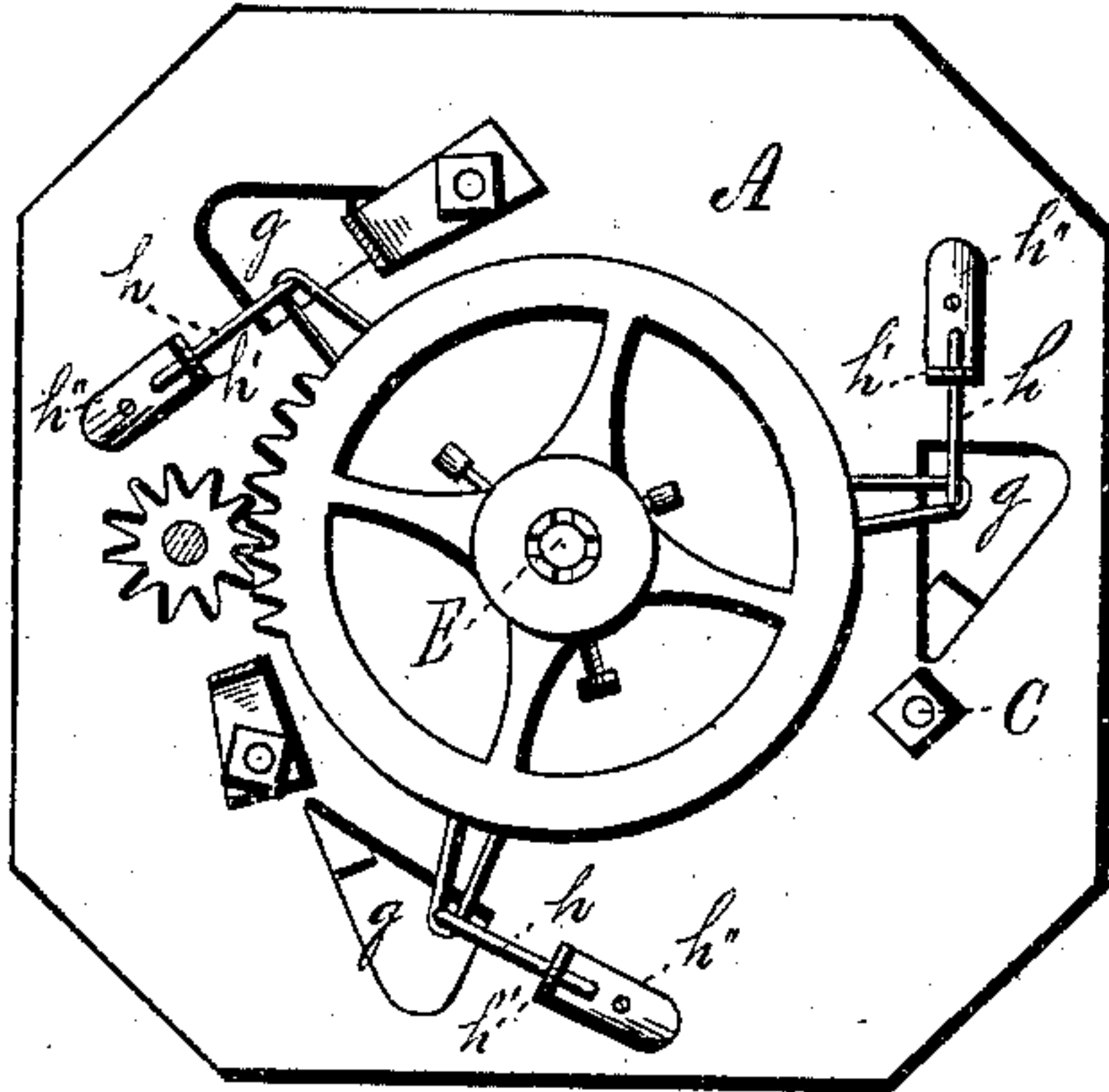


Fig. 2.

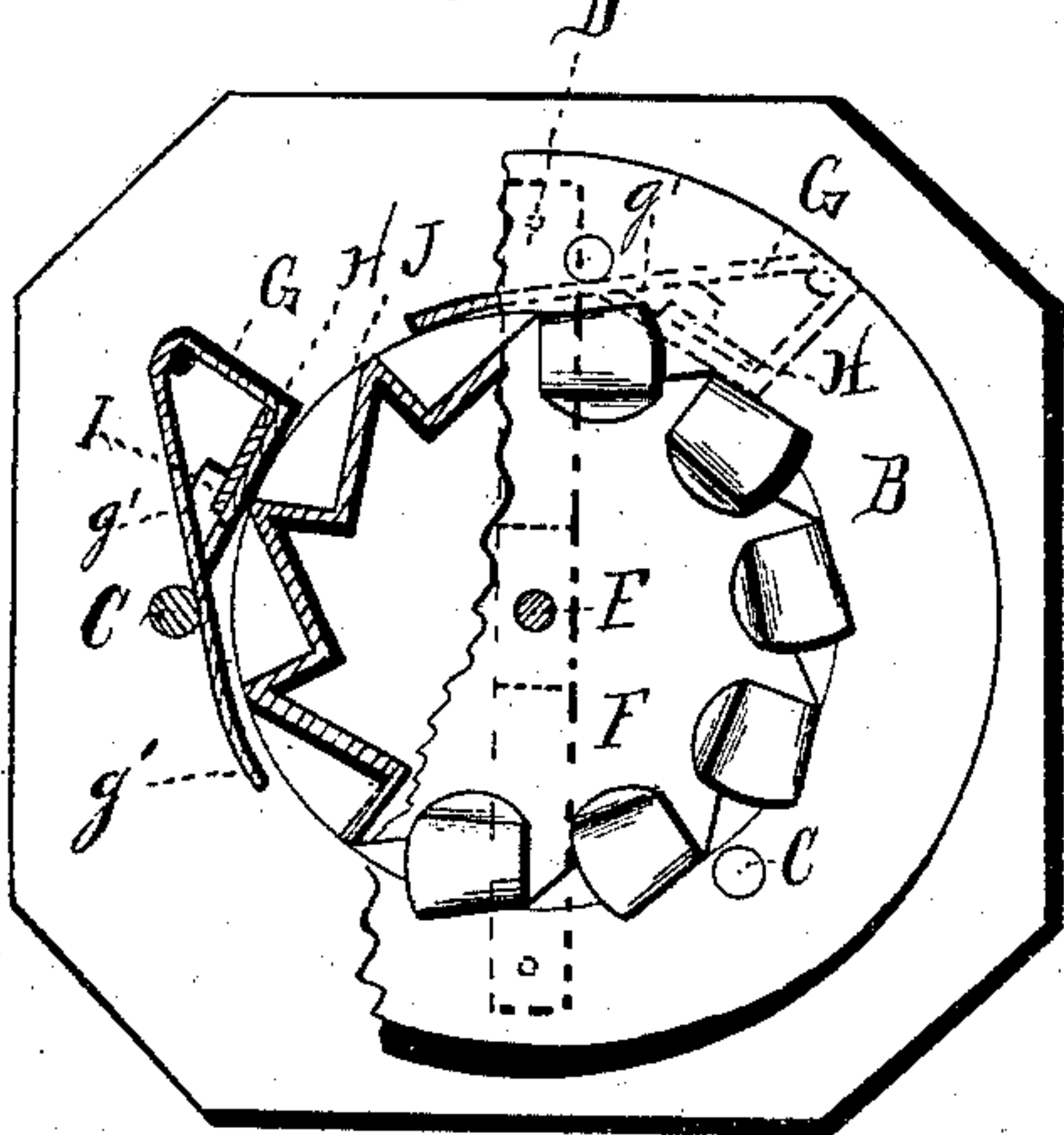


Fig. 3.

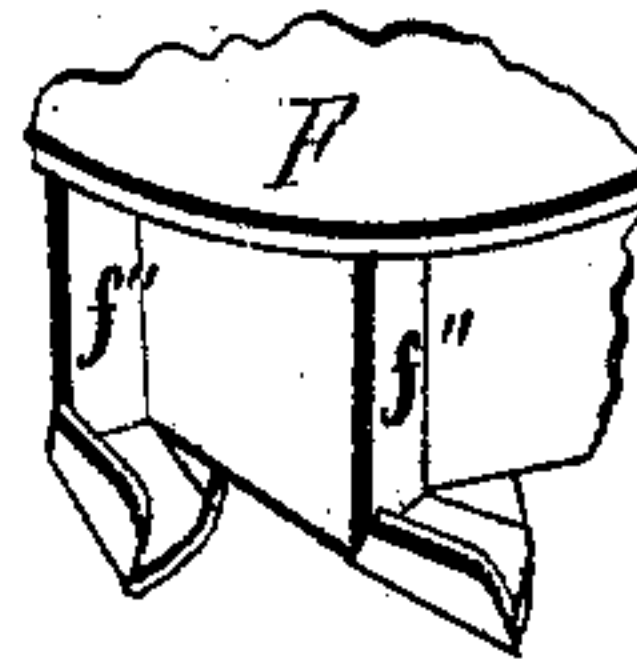
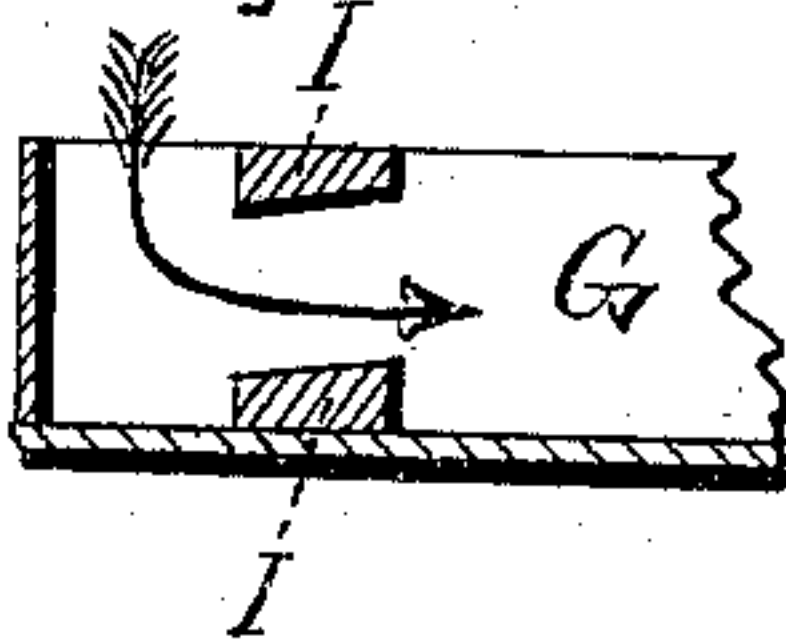


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN TURBINE WATER-WHEELS.

Specification forming part of Letters Patent No. **144,363**, dated November 4, 1873; application filed April 25, 1873.

To all whom it may concern:

Be it known that I, ISAAC SHERCK, of Fremont, in the county of Sandusky and State of Ohio, have invented certain new and useful Improvements in Turbine Water-Wheels; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to turbine water-wheels.

In the drawings, Figure 1 is a plan view of my invention; Fig. 2, an inverted view of same, part in plan and part in section; Fig. 3, a perspective view of a portion of the wheel; and Fig. 4 a section view of one of the sluices.

My invention consists of the various parts and combinations, as hereinafter set forth and claimed, wherein—

A is the cap, to which, beneath it, is fastened the bed-plate B by means of posts C. D is a transverse bar or brace, which bears the lower end of the axle E, which passes up through the center of the cap A and bears the wheel F. G G are sluices which feed the water to the wheel, the water entering through openings *g* in the cap-plate A, and passing against the buckets of the wheel through the gageable openings *g'* in the sluice, which openings are adjusted by means of the feed-gates H, which slide therein; and while the latter are operated by suitable mechanism, they are guided and supported by the slide-bars *h* slipping through the opening *h'* in the stud or brace *h''* above. I within the sluices are guide-cheeks, which incline slightly upward toward the buckets, in order to throw the jet or stream out of the sluice in an ascending trajectory, so that the whole column of water may be expended against the wheel, and not, as heretofore, permitting the greater portion to fall below without striking the buckets at all. The sluice, it will be observed, is so formed that its inner wall adjacent to the wheel rests so closely against the latter as to be nearly tangent to it; while its exterior wall, extended forward, passes also very nearly tangent to the circle described by the water-wheel, but passes beyond the point of junction of the inner wall, and forms a guide, *g'*, to direct the water from the sluice against the bucket, at the same time acting as a fender to hold it there until it has expended its momentum,

after which it is discharged at the side of the wheel, not at the center, as heretofore. The wheel is constructed as follows: The top and sides are one piece, while the bottom, with its wings, is made in another piece. The periphery of the wheel is serrated vertically, and each serration forms a bucket to receive the impact of the escaping water. The narrow, abrupt surfaces *f''* of these buckets are not upon a radius of the wheel, but, if continued past the center, would pass between the sluice and the axle of the wheel. The object of this is that the water, in striking this abrupt surface, may not be driven toward the center, but that it may be expended entirely at the extreme edge of the bucket, thus acting with the greatest lever-arm; and this shape of the bucket also favors the escape of the water after delivering its impact. It is thrown nearly in the direction of a tangent to the wheel, and, after its impact, comes opposite to the opening J and passes off along the same tangent.

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

1. The sluice G, triangular in horizontal section, provided with the sliding gate H against its inner wall, and the inclined cheek-plates I at its delivery-port, in combination with the wheel F, vertically serrated at its periphery, as described, and so arranged, relatively to the latter and the other sluices G, that water will be delivered at the side immediately after and in line with the impact, substantially as set forth and shown.

2. In combination with the sluice G, the cheek-plates I, inclined upward in the direction of the current, as and for the purposes substantially as described.

3. The arrangement of the sluices G, with their fender-plates *g'*, relatively to the wheel F and to each other, so that, immediately after the water has delivered its impact, it is discharged at the side in continuation of the line of its impact, substantially as set forth and shown.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of April, 1873.

ISAAC SHERCK.

Witnesses:

WELLS W. LEGGETT,
EDM. F. BROWN.