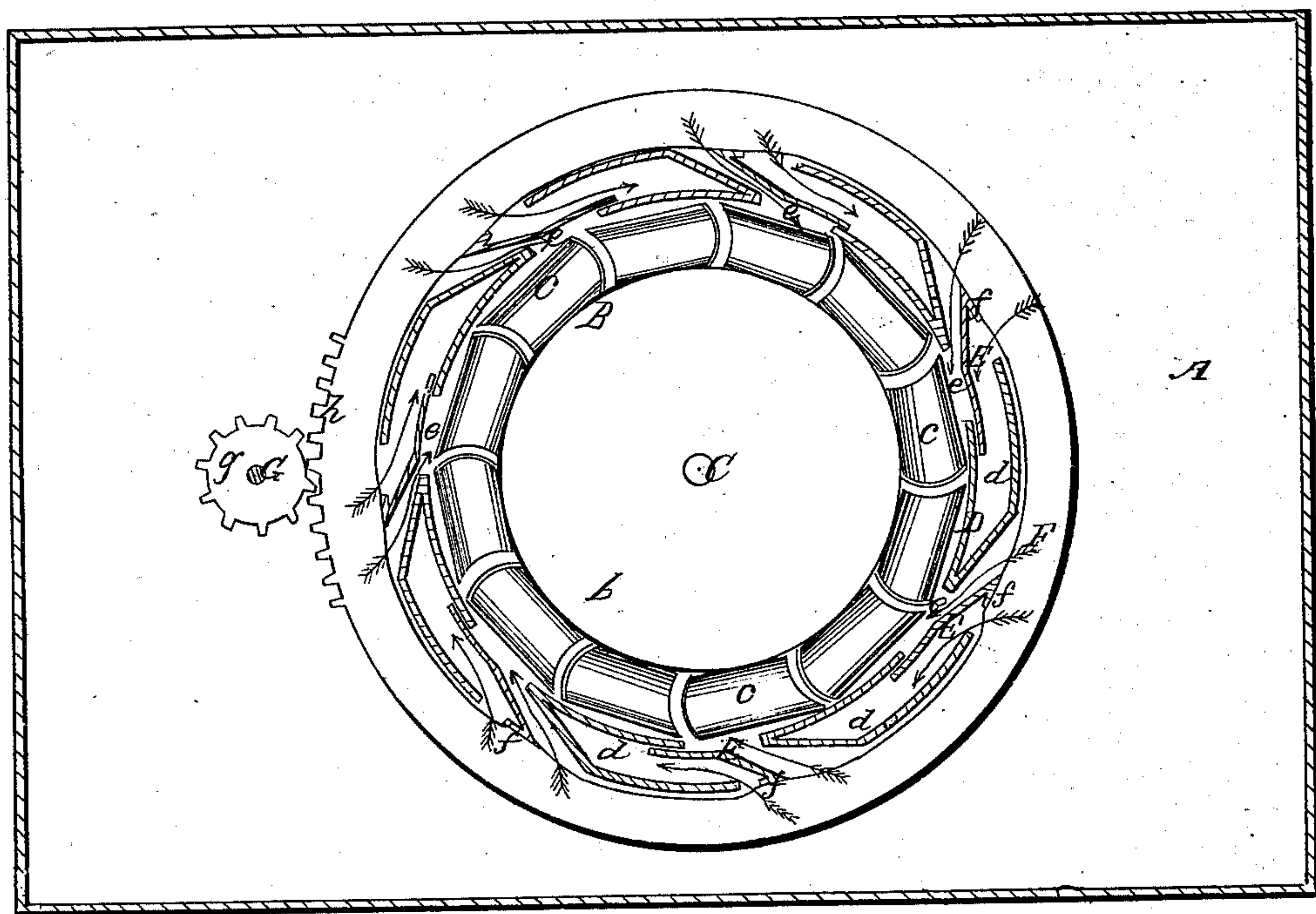
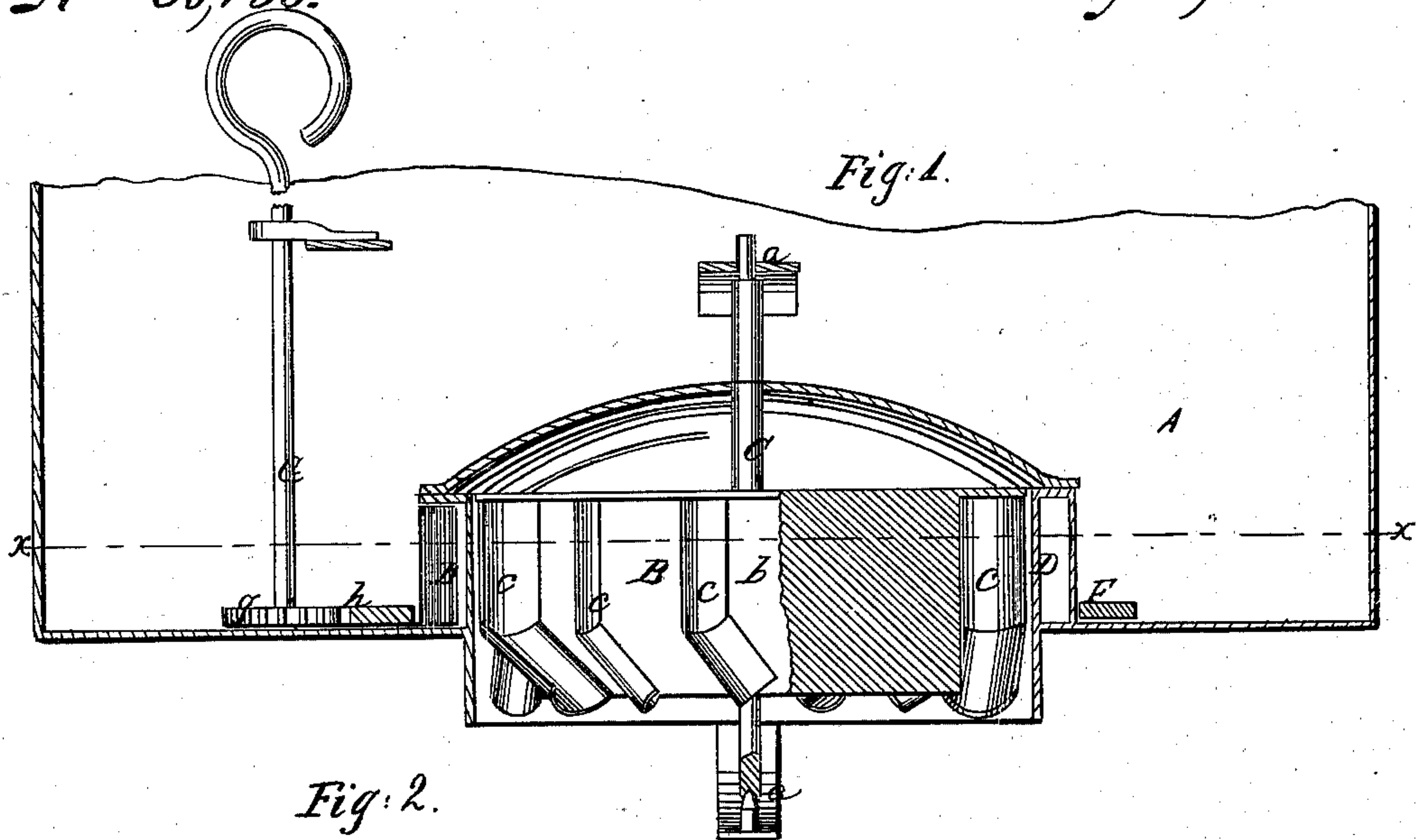


D. W. Case,

Water Wheel.

N^o 80,136.

Patented July 21, 1868.



Witnesses.
Am A Morgan
Ch. E. Cotton

Inventor
D. W. Case
per Murray &
Attorneys.

United States Patent Office.

D. W. CASE, OF GARDEN CITY, MINNESOTA.

Letters Patent No. 80,136, dated July 21, 1868.

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, D. W. CASE, of Garden City, in the county of Blue Earth, and State of Minnesota, have invented a new and improved Water-Wheel; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and useful improvement in water-wheels, and it consists in a novel arrangement of chutes and gates, as hereinafter fully shown and described, whereby the gates may be readily operated, opened, and closed, and rendered self-regulating when desired, so as to obtain a uniform speed of the wheel.

In the accompanying sheet of drawings—

Figure 1 is a side view of my invention, partly in section.

Figure 2 a horizontal section of the same, taken in the line *x x*, fig. 1.

Similar letters of reference indicate corresponding parts.

A represents a penstock, in which the wheel B is fitted, the shaft C of the latter working in suitable bearings, *a a*.

The wheel is composed of a cylindrical hub or centre, *b*, having buckets, *c*, attached to its periphery at suitable and equal distances apart, the upper portion of the buckets being vertical and the lower parts inclined, as shown clearly in fig. 1, and both parts of curved form in their transverse section, (see fig. 2.)

The upper part of the wheel, a portion equal in depth to the vertical parts of the buckets *c*, is enclosed by a fixed rim, D, composed of a series of sockets or chambers, *d*, (see fig. 2,) with spaces *e* between them, which form chutes through which the water is admitted to the buckets *c* of the wheel.

E are the gates which are attached to a ring, F, the latter encompassing the rim D, and allowed to turn freely.

The gates work into the sockets or chambers *d* and across the chutes E, and the outer parts of the gates are provided with flanges, *f*, for the water in the penstock to act against, as indicated by the arrows.

It will be seen, from the above description, that the pressure of the water in the penstock against the gates E will have a tendency to close the same over the chutes *e*.

The gates are retained open at any desired point by means of a pinion, *g*, on a shaft, C, said pinion gearing into teeth *h* on the ring F, a catch or fastening of any suitable kind being connected with shaft C to retain it at any desired point, or, in lieu of the catch or fastening, a spring, spiral or other kind, may be applied to said shaft in such a manner as to have a tendency to keep the gates in an open state, the spring regulating the gates so as to cause a uniform speed of the wheel under a varying head of water, the gates opening further under a diminished head in consequence of the decreased pressure against the exterior surface of the gates, and the gates being further closed under an increased head, owing to the increased pressure against the exterior of the gates.

I claim as new, and desire to secure by Letters Patent—

The fixed rim D, composed of a series of sockets or chambers, *d*, in combination with the gates E, provided with flanges *f*, and attached to the ring F, all arranged to operate in connection with the wheel B, pinion *g*, and the teeth *h* of the ring, substantially as shown and described.

The above specification of my invention signed by me, this 25th day of March, 1868.

Witnesses:

C. W. FROME,
J. S. SMITH.

D. W. CASE.