

D. A. FLUMMERFELT.  
Improvement in Water Wheels.

No. 118,708.

Patented Sep. 5, 1871.

Fig. 1.

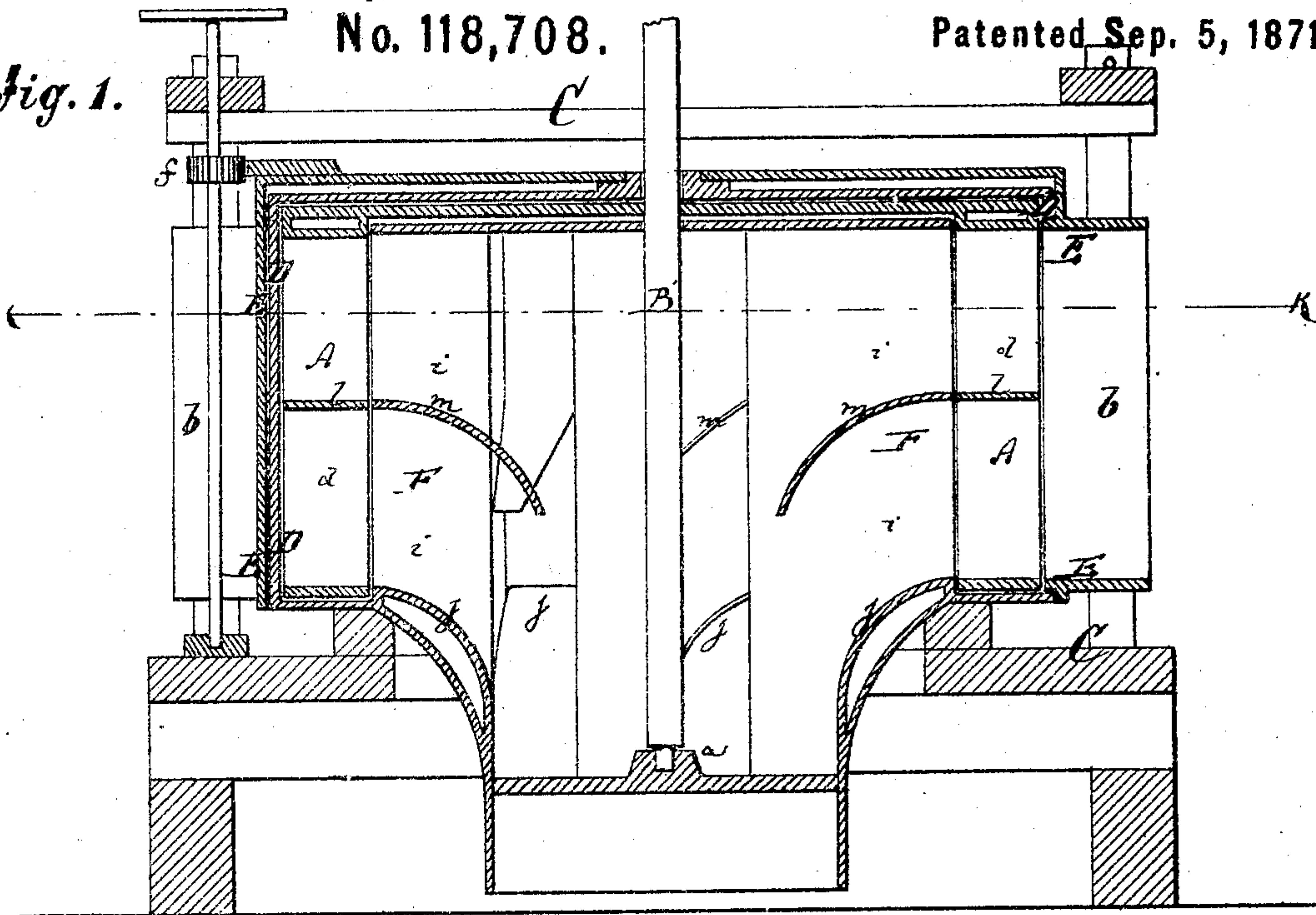
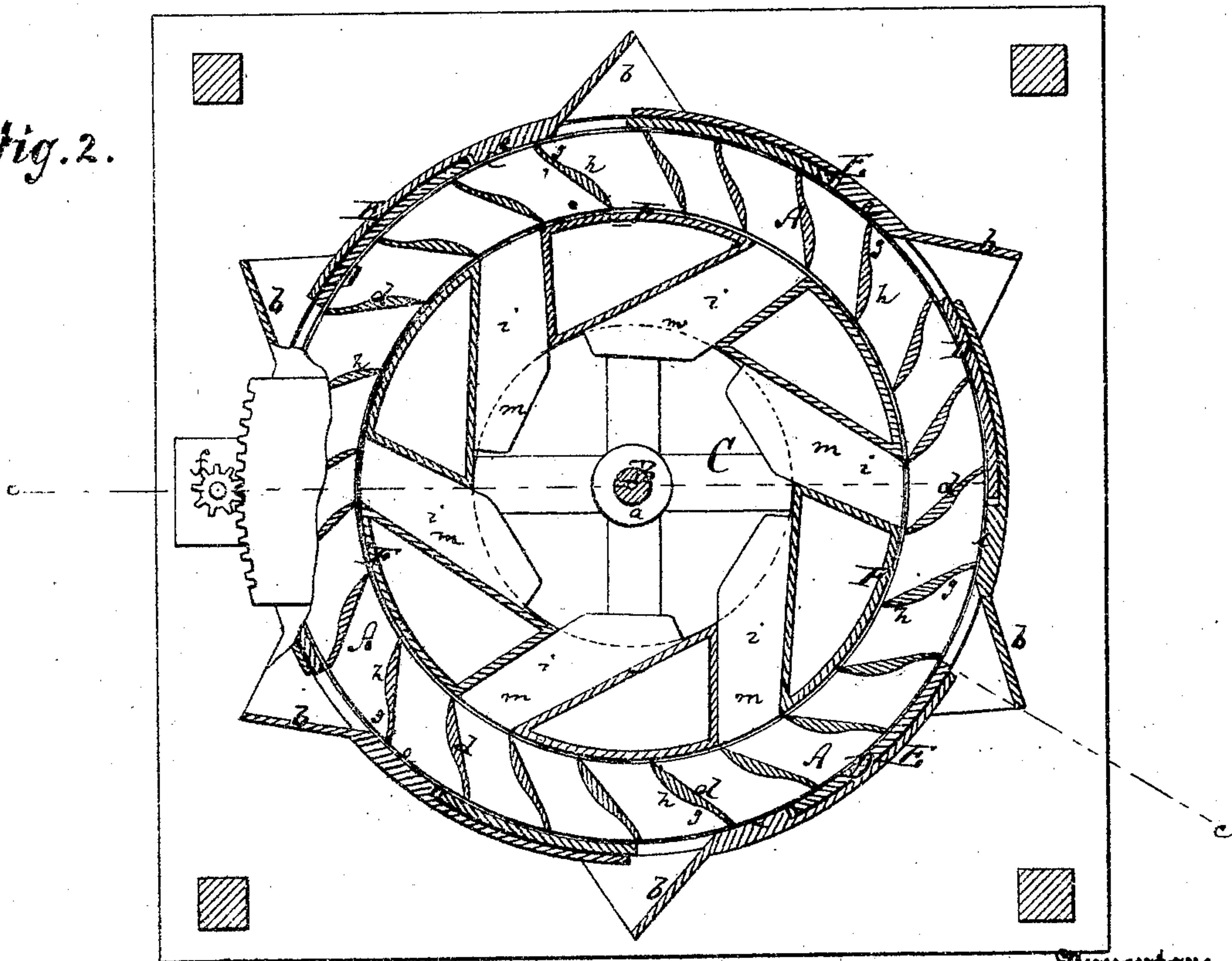


Fig. 2.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN WATER-WHEELS.

Specification forming part of Letters Patent No. 118,708, dated September 5, 1871.

*To all whom it may concern:*

Be it known that I, DANIEL A. FLUMMERFELT, of Bridgeville, in the county of Warren and State of New Jersey, 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 others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a vertical central section of my improved water-wheel, the line *c c*, Fig. 2, indicating the plane of section. Fig. 2 is a horizontal section of the same on the line *k k*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to several improvements in the parts used in connection with a turbine water-wheel, and in the arrangement of the wheel itself; and has for its object to provide means for more fully utilizing the force of the water than could be done by the appliances hitherto in use. The invention consists chiefly in a new arrangement of the central discharge-chamber, which is provided with convex discharge-plates, whereby the water is rapidly conducted away so that it cannot clog the wheel. The invention also consists in a new arrangement of certain other parts, as hereinafter described.

A in the drawing represents the water-wheel. It is mounted upon a shaft, B, which rests in a step, *a*, and is further journaled in a frame, C. The wheel A is surrounded by the chute-ring D, around which the movable cylinder E, constituting the gate, is placed. F is the discharge-chamber, placed stationary within the wheel. The gate E is a cylinder, of suitable thickness of material, and fits close to the circumference of the chute-cylinder D. It is perforated at proper intervals, the number of openings being the same as in the chute-cylinder and of equal height, as shown in Fig. 1; but horizontally the openings of the cylinder E are but half the length of those in the chute-cylinder, as shown in Fig. 2, having plates *b b* project from the gate-cylinder over its openings at such an angle as to guide the water to greatest advantage against the buckets *d d* of the water-wheel. These plates *b* take the place of the ordinary chutes, as far as the guidance of the water is concerned, and permit the use of the thin cylinder D in place of the cumbersome chutes heretofore required. One-half

of each opening in the chute-ring is closed by an inward projection, *e*, of the gate, shown in Fig. 2. As the gate is turned to one side or the other by a pinion, *f*, or equivalent means, the projection *e* enlarges or diminishes the size of opening in the chute for the admission of water. The buckets *d* of the water-wheel are concavo-convex, the water striking the concave portions *g*, and being detained by the inner projecting convex portions *h*, so that it will spend its entire force before escaping to the center. The reverse of each bucket is quite plain and smooth, so as not to offer resistance to the operating liquid. Within the wheel is set up a stationary cylinder, F, which constitutes the discharge-chamber. Its circumference has as many openings as the chute, whose number is considerably less than that of the buckets, one-fourth in the drawing. The discharge-openings of the cylinder F are continued to form discharge-channels *i i* by the extra thickness given to the cylinder, the sides of the same being flaring to make the channels larger toward the shaft B. The bottom of each channel *i* is curved, as shown in Fig. 1, so as to guide the water down, which will cause it to be discharged more rapidly and not to clog the wheel.

In order to prevent the entire weight of water to rest on the bottom of the wheel and discharge-channels, I have provided a horizontal partition, *l*, within said wheel, and corresponding partitions *m* in the channels *i*. The latter are bent parallel to the bottom of said channels to guide the water downward in a similar manner.

It is evident that the invention might be applied to wheels turning to the right or left.

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

1. The discharge-cylinder F, set up within the turbine wheel, and provided with the channels *i* and curved bottom, substantially as and for the purpose herein shown and described.

2. The curved partitions *m*, arranged within the channels of the discharge-cylinder and combined with the horizontal partition *l* of the wheel, as specified.

3. The combination of the gate-cylinder E with the chute-cylinder D, wheel A, and discharge-cylinder F, all parts being arranged to operate substantially as herein shown and described.

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Witnesses:

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