No. 626,619.

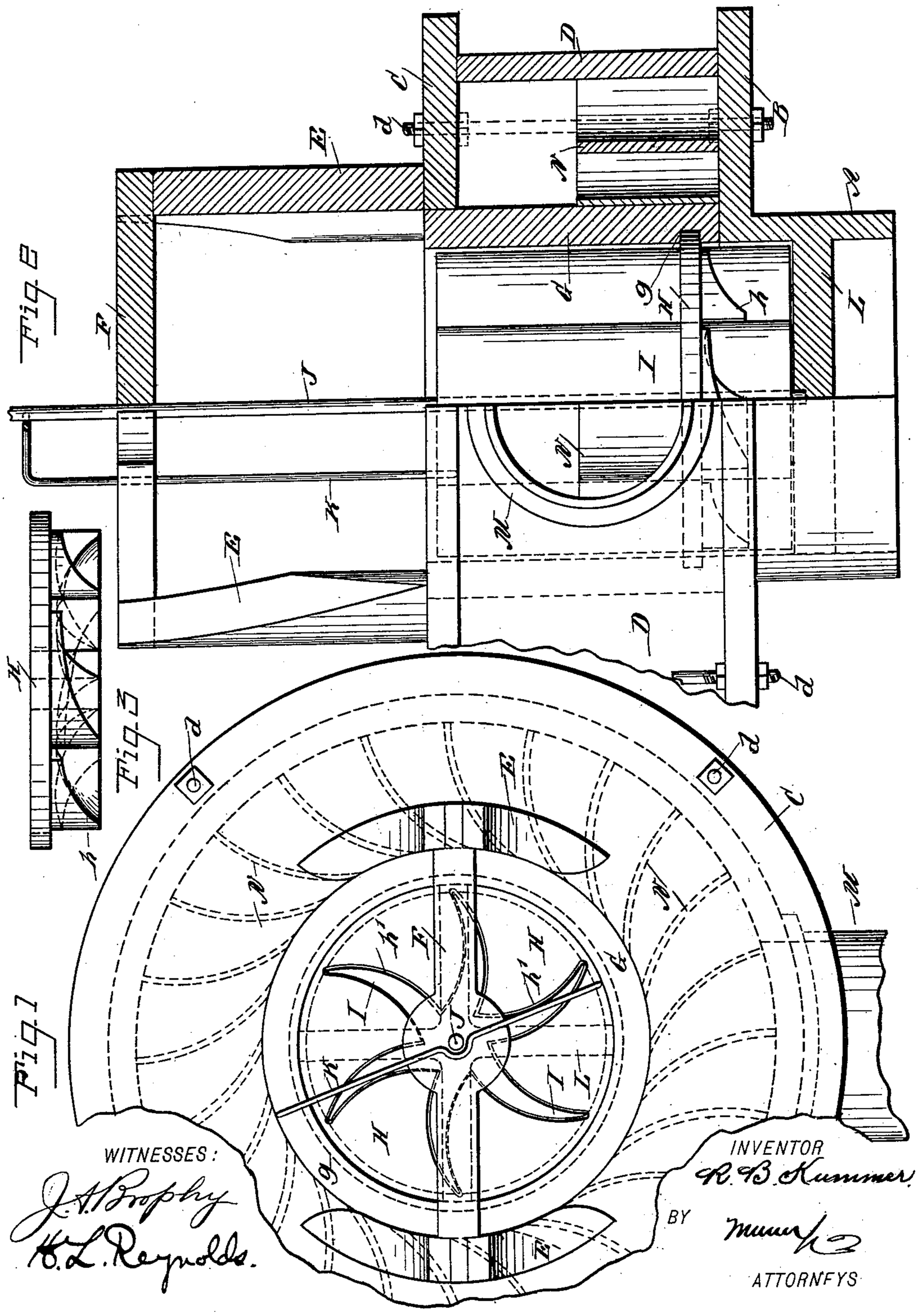
Patented June 6, 1899.

R. B. KUMMER.

WATER WHEEL.

(Application filed July 6, 1898.)

(No Model.)



UNITED STATES PATENT OFFICE.

RUDOLPH B. KUMMER, OF COLUMBUS, NEBRASKA.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 626,619, dated June 6, 1899.

Application filed July 6, 1898. Serial No. 685,243. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH B. KUMMER, of Columbus, in the county of Platte and State of Nebraska, have invented a new and Improved Water-Wheel, of which the following is a full, clear, and exact description.

My invention relates to an improvement in water-wheels, and has for its object a construction which will enable full efficiency to be obtained with any gate-opening.

My invention comprises the novel features hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a top plan view of my wheel, portions thereof being broken away. Fig. 2 is an elevation, partially in section, of the same; and Fig. 3 is an elevation of the partition-plate removed.

The discharge-pipe A is provided with a flange B and cross-bars L, the latter being used to form a central support for the wheel-shaft J. A flange C, similar to the flange B, is secured at a given distance opposite the flange B by means of rods *d*, which connect the flanges. Between these two flanges is placed a ring D, forming a casing about the wheel proper. The wheel proper consists of a central hub having longitudinally-extending blades or buckets I, which preferably are curved, as shown in the drawings. The lower end of the shaft J is journaled in the cross-bars L and the upper end in a cross-bar F, supported upon standards E, which extend upwardly from the flange C.

A cylindrical gate G immediately surrounds the wheel and is of such length as to entirely close the space between the flanges B and C when in its lowest position. This gate is connected by means of rods K or any other suitable device, with means by which it may be raised and lowered, but is held against rotation. The hole in the upper flange C and the space between the standards E are of such diameter that the gate G will slide snugly between the same.

Within the space immediately surrounding the gate G is placed a series of guiding-partitions N, curved as in an ordinary inward-flow turbine, so as to guide the water upon the wheel-buckets in the direction best adapted for communicating power thereto. The water may be admitted to the chamber immediately surrounding the gate in any suitable manner. As herein shown, the water is admitted through a pipe M, which connects with said chamber.

In the lower end of the gate G is formed a groove *g*, which extends entirely around the inner periphery and is close to the lower end of the gate. Within this groove is placed a partition-plate H, which fits snugly within the groove, but so that it may rotate freely therein. The partition-plate is also provided with slots *h*, adapted to receive the blades I of the wheel. The lower surfaces of the sections between the wheel-blades are curved downwardly, so as to direct the water entering beneath the gate in a downward direction. This gives a larger contact-surface for the water, so disposed as to assist in the rotative effect and especially at full gate-opening increases the efficiency. By this construction the partition-plate is adapted to be raised and lowered upon the flanges of the wheel by the adjustment of the gate and also to rotate with said wheel. Said plate therefore forms a movable partition, which exposes more or less of the blades, as the power consumed demands.

This construction of the wheel, it will be seen, secures a constant velocity of flow of the water entering the wheel, and consequently a constant efficiency at whatever the gate-opening. It will thus obviate the particular disadvantage of the ordinary turbine wheel due to loss of efficiency at a small gate-opening.

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

A water-wheel, having longitudinally-extending blades or buckets, a cylindrical gate movable longitudinally of the wheel, said gate having a peripheral groove near its lower end, a partition-plate fitting and rotating in said groove and having slots receiving the wheel-blades, and means for raising and lowering the gate.

RUDOLPH B. KUMMER.

Witnesses:
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