

No. 673,340.

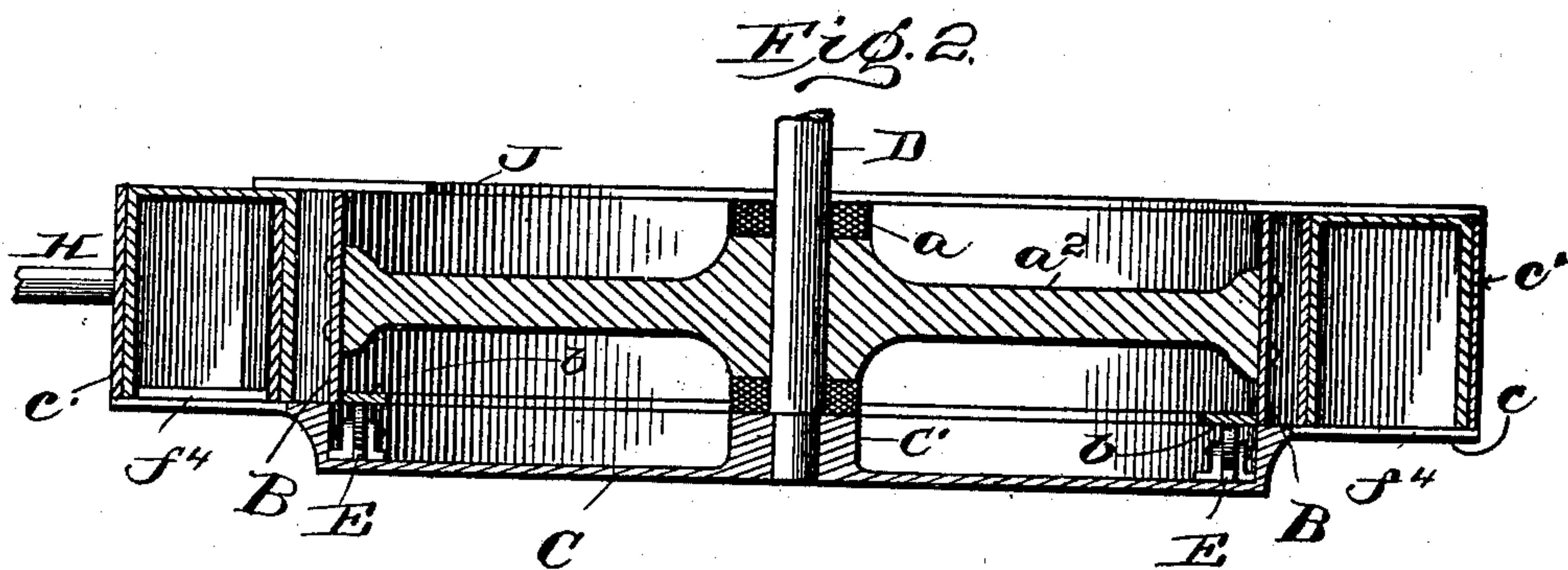
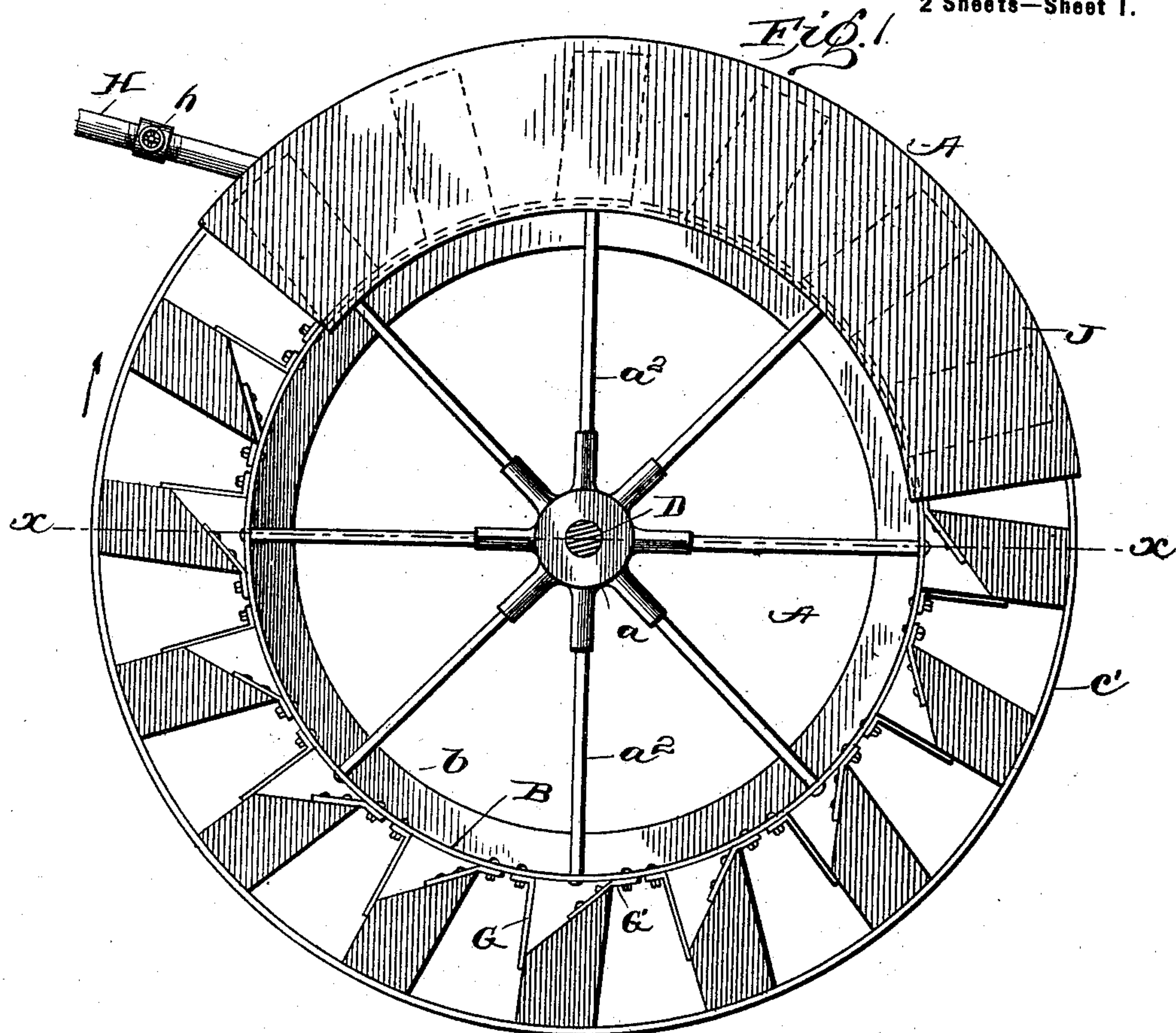
Patented Apr. 30, 1901.

W. HUBARTT.
WATER WHEEL.

(Application filed July 9, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

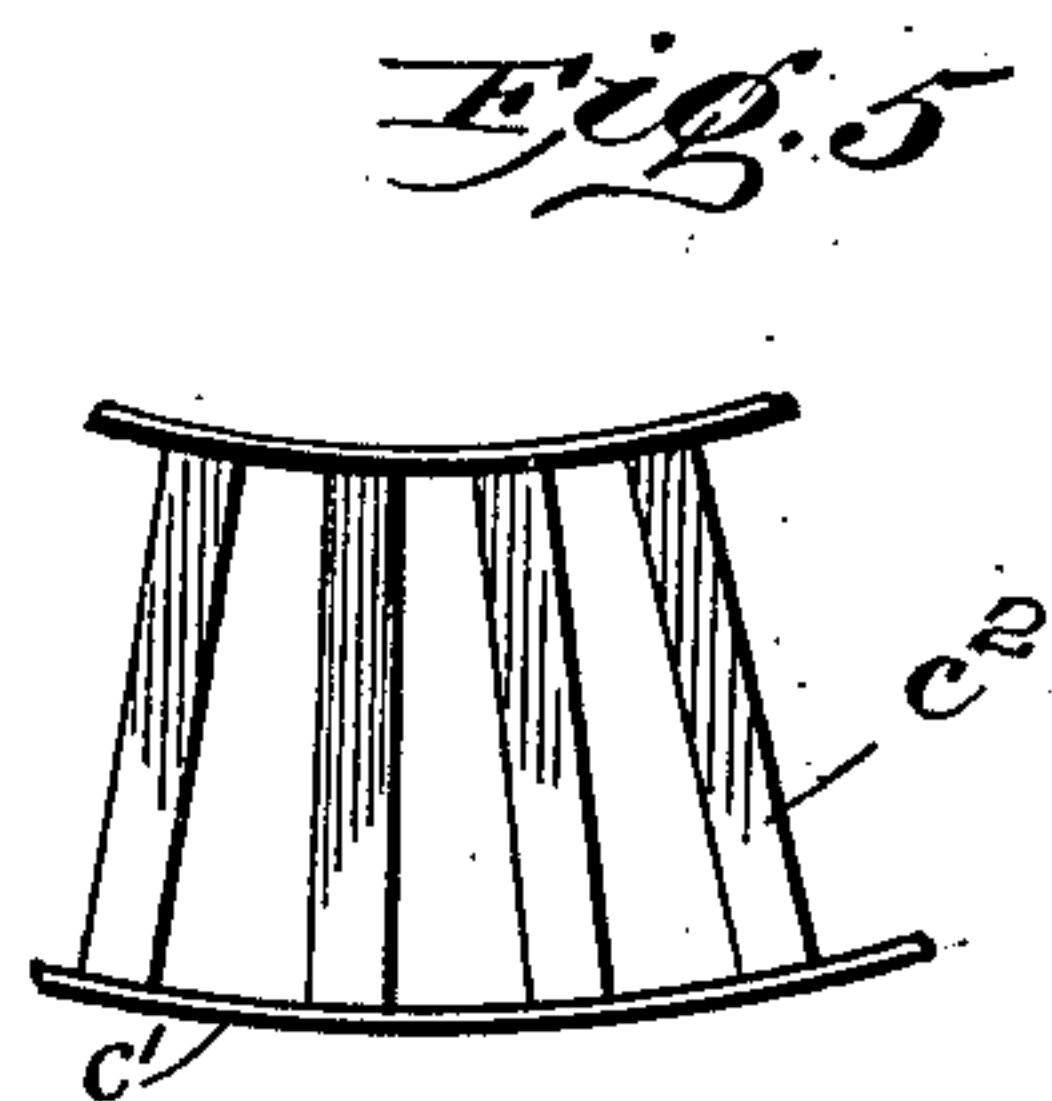
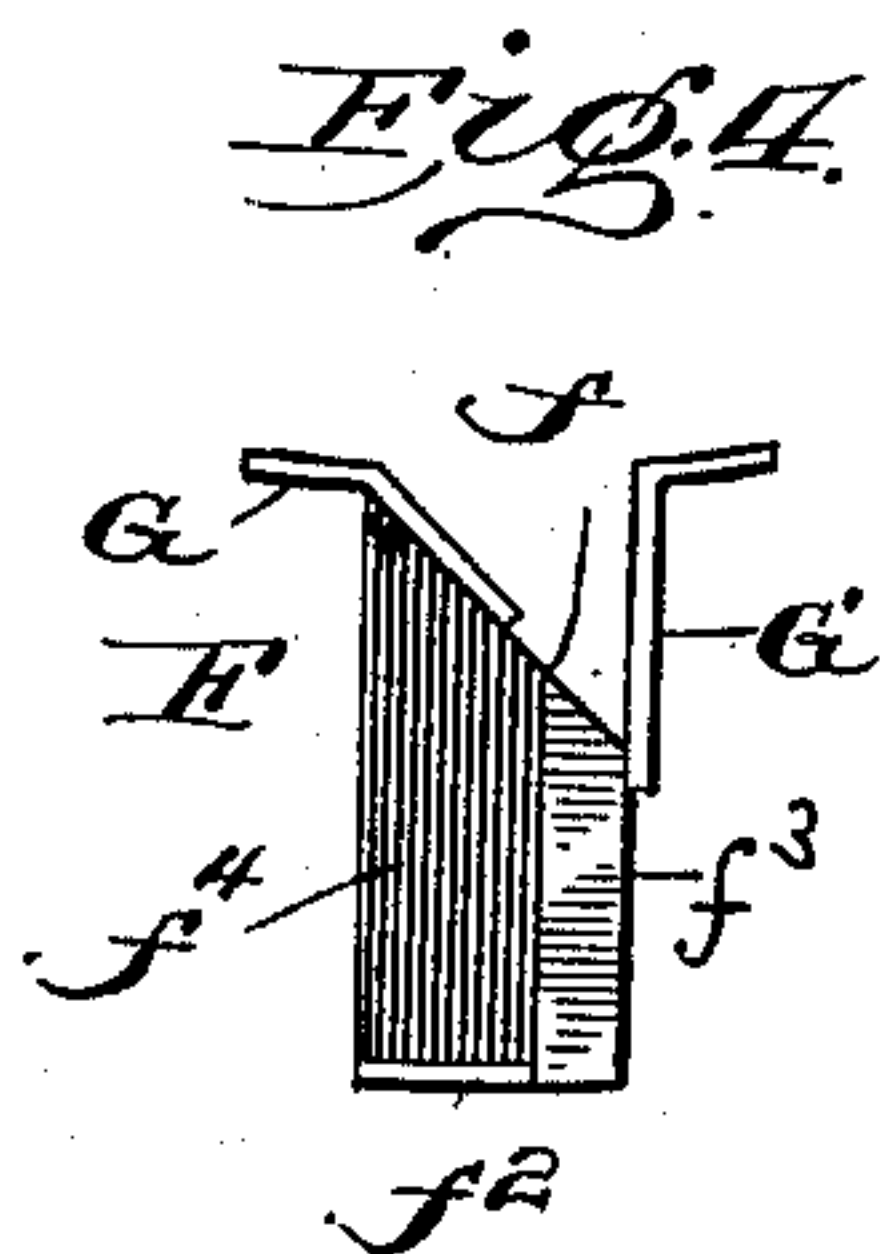
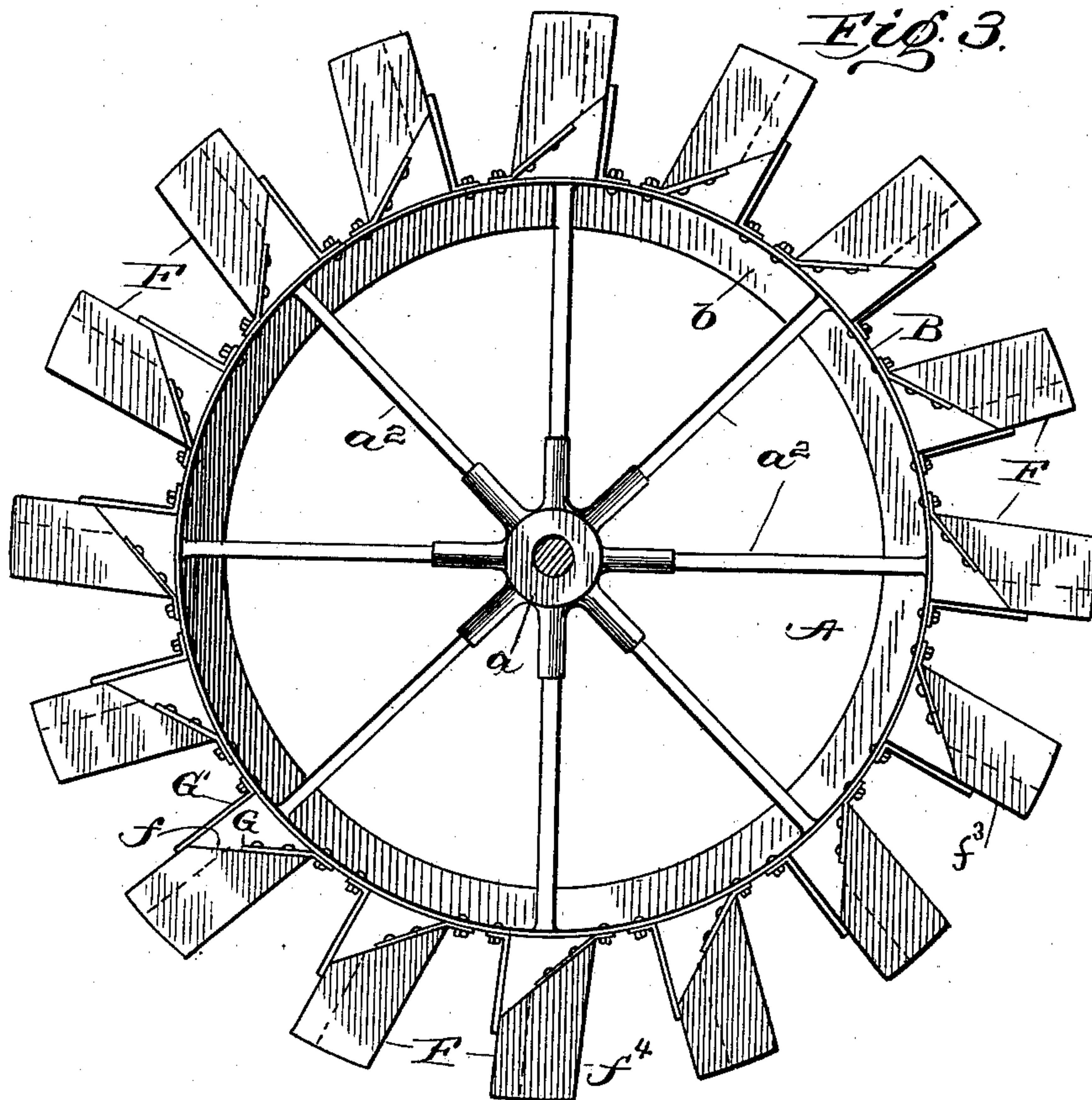
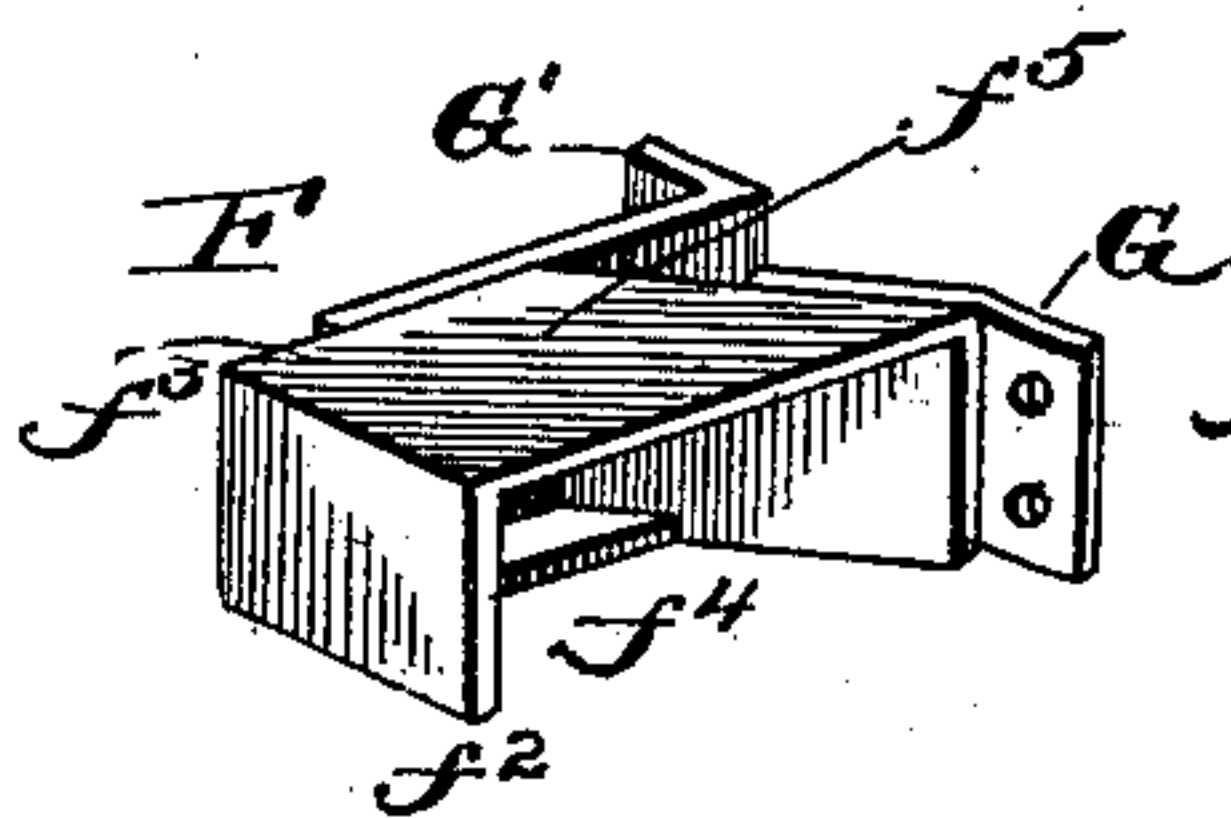


Fig. 6.

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Attest

UNITED STATES PATENT OFFICE.

WILLIAM HUBARTT, OF NORTH PLATTE, NEBRASKA.

WATER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 673,340, dated April 30, 1901.

Application filed July 9, 1900. Serial No. 22,939. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HUBARTT, a citizen of the United States, residing at North Platte, in the county of Lincoln and State of Nebraska, have invented certain new and useful Improvements in Water-Wheels; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

15 This invention relates to water-wheels.

The object of the invention is to provide a water-wheel of such construction that water projected against the buckets thereof shall be utilized to the fullest extent so long as the water retains momentum and shall then be discharged from the wheel in a manner to offer no resistance to the revolution of the wheel. Further, the object of the invention is to provide a water-wheel which shall be simple and cheap in construction and which by its construction shall be capable of operation without friction between the moving parts.

30 With these objects in view the invention consists of a water-wheel composed, essentially, of a horizontal revoluble frame and a series of buckets attached to the outer edge of the frame, the buckets being open on one side and at their bottoms to allow introduction and escape of the water after its force is spent and being closed at their ends and tops.

40 Further, the invention consists of a water-wheel comprising a circular revoluble frame, a series of buckets attached to the frame and having one side and a portion of their bottoms open, a conduit for projecting water against the buckets, and a curved casing arranged in such position that the buckets pass through it in the revolution of the wheel, the curved casing being of a size to close and confine the buckets as they pass through it and extending around the frame a short distance from the point at which the water is projected against the wheel.

Further, the invention consists of various novel details of construction, whereby the objects of the invention are attained.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the water-wheel constructed in accordance with my invention. Fig. 2 is a section on line X X of Fig. 1. Fig. 3 is a plan view of the water-wheel removed from the supporting-base. Fig. 4 is an inverted plan view of one of the buckets removed from the wheel. Fig. 5 is a fragmentary view of the bottom of the raised outer portion of the base, and Fig. 6 is a perspective view of one of the buckets.

In the drawings, A represents the main frame of the wheel and consists of the hub a and the radial arm a^2 , connected to the hub. Attached to the outer ends of the radial arms is a circular rim B, having an inward-extending flange b .

C represents the base of the wheel, in which is mounted the shaft D, to which the frame A is connected. The shaft D is only for the purpose of centering the wheel and for transmitting power from the wheel to a pump or to any mechanism to be operated. None of the weight of the wheel is imposed upon the shaft, the entire weight of the moving parts being carried by rollers located on the base of the wheel.

The buckets which I employ and the form of which is shown particularly in Figs. 4 and 6 of the drawings are designated by the letter F. The walls of the buckets are all plane, there being no curved surfaces by which the water projected against the walls is diffused, thereby insuring the most effective use of water under pressure projected into the buckets. Each bucket is formed with an inner end f , which is at an angle to the sides, as shown particularly in Figs. 4 and 6 of the drawings, the inner end, in connection with the closed side f^3 , forming an obtuse angle. The tops f^5 are closed, as are also the outer ends f^2 and the front sides f^3 . The bottoms are open for about two-thirds of their area, leaving a space f^4 for the free discharge of the water when its force is expended.

The buckets are attached to the circular rim B by angular metal pieces G and G', bolted to the buckets and to the rim in a manner to allow rapid attachment to and detachment from the frame and at the same time to hold them securely in position during the use of the water-wheel.

The base of the wheel is composed of the central circular portion C and the outer raised portion c. In the middle of the central portion C is a seat C' for the shaft D of the wheel, and around the edge thereof are the rollers E, arranged in a circular line beneath the flange b of the rim B of the wheel. The lower horizontal part of the raised portion of the base is composed of ribs c², which allow escape of the water from the buckets which pass over the raised portion c of the base. Formed with the raised portion of the base is the upright circular plate c', forming the outer casing of the wheel.

H represents a pipe for conducting water under pressure to the wheel, which pipe is provided with a cock h for turning on and off the supply of water for the regulation of the quantity of water projected against the water-wheel.

J represents a casing, preferably of metal, which is attached to the base of the wheel and the interior of which is of a shape corresponding to the exterior of the buckets. The casing J is of a size only slightly greater than that of the exterior of the buckets in order that when the buckets pass through it and the water is projected into the buckets the escape of water from them will be prevented while in the casing. The casing extends from a point adjacent to the pipe H to a point a short distance from the outlet end of the pipe H.

In the operation of the wheel water under pressure is allowed to pass from the pipe H and to be directed against the buckets F. The water comes into contact with the buckets successively within the casing J, with the result that the water is retained in the buckets and prevented from escaping therefrom until its momentum is exhausted. The water projected into the buckets comes first into contact with the outer faces of the latter, then into contact with the closed front side f³, and finally into contact with the inclined inner end f. The water always impinges against plane surfaces when directed into the buckets, thus avoiding loss of power by diffusion. When it strikes the inclined inner end, it is deflected outward by the shape of this end to exert its force against the outer end and front face. The two last-mentioned parts form a pocket at a point farthest removed from the axis of the wheel, and thus the water deflect-

ed by the inclined inner end is directed to impinge against the most effective point before being discharged from the buckets. As the buckets pass from the casing J in the revolution of the wheel in the direction of the arrow in Fig. 1 the water contained by the buckets and the power of which has been expended will be discharged from the wheel at the bottom of the buckets. Friction of the circular rim against the base will be materially lessened by reason of the whole wheel being supported upon the rollers E, and therefore the greatest possible amount of the force exercised by the stream of water from the pipe H is converted into rotary movement of the wheel.

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

1. A water-wheel comprising a horizontal revoluble frame and buckets attached to the outer face of the frame, the buckets having one side open and one side closed, the inner end of each being at an angle to the sides and in connection with the closed side forming an obtuse angle, the outer end being closed and the bottom being partially open, all the surface against which the water impinges being flat, substantially as described.

2. A water-wheel comprising a base having an outer raised portion the bottom of which is formed of slats, a revoluble frame mounted in the base, and buckets attached to the outer face of the frame, the buckets having one side open and one side closed, the inner end of each being at an angle to the sides and in connection with the closed side forming an obtuse angle, the outer end being closed, and the bottom being partially closed, all the surfaces against which the water impinges being flat, substantially as described.

3. A water-wheel comprising a revoluble frame, buckets attached to the frame, the buckets having one side open and one side closed, the inner end being at an angle to the sides and in connection with the closed side forming an obtuse angle, the outer end being closed, and the bottom being partially open all the surfaces against which the water impinges being flat, a nozzle for projecting water into the buckets, and a casing arranged adjacent to the nozzle and in such position that the buckets pass through it in the revolution of wheel, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HUBARTT.

Witnesses:

GUY B. WRIGHT,
DAVID H. MEAD.