

(No Model.)

G. W. MASON.
WATER MOTOR.

No. 436,715.

Patented Sept. 16, 1890.

Fig. 1.

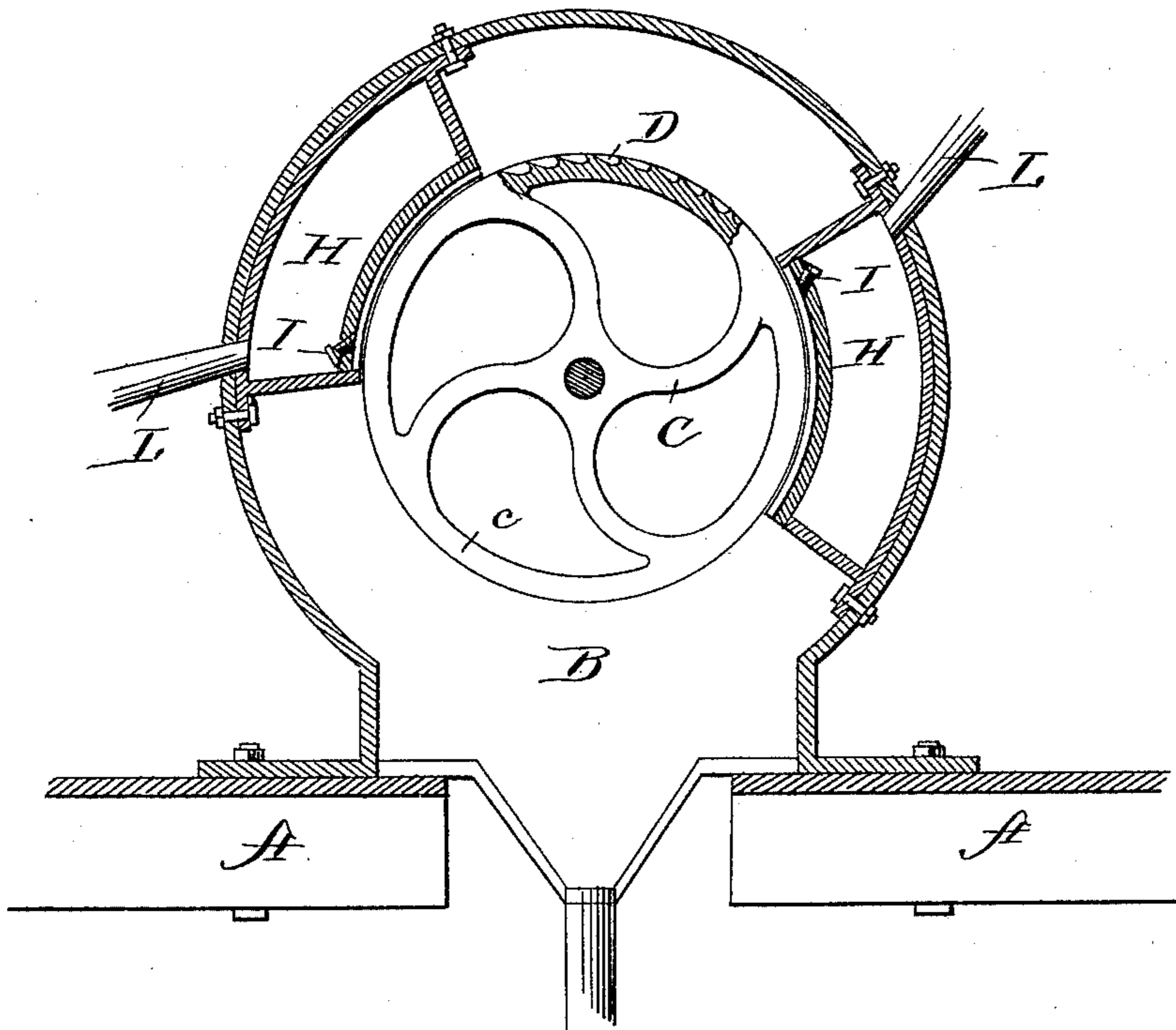


Fig. 2.

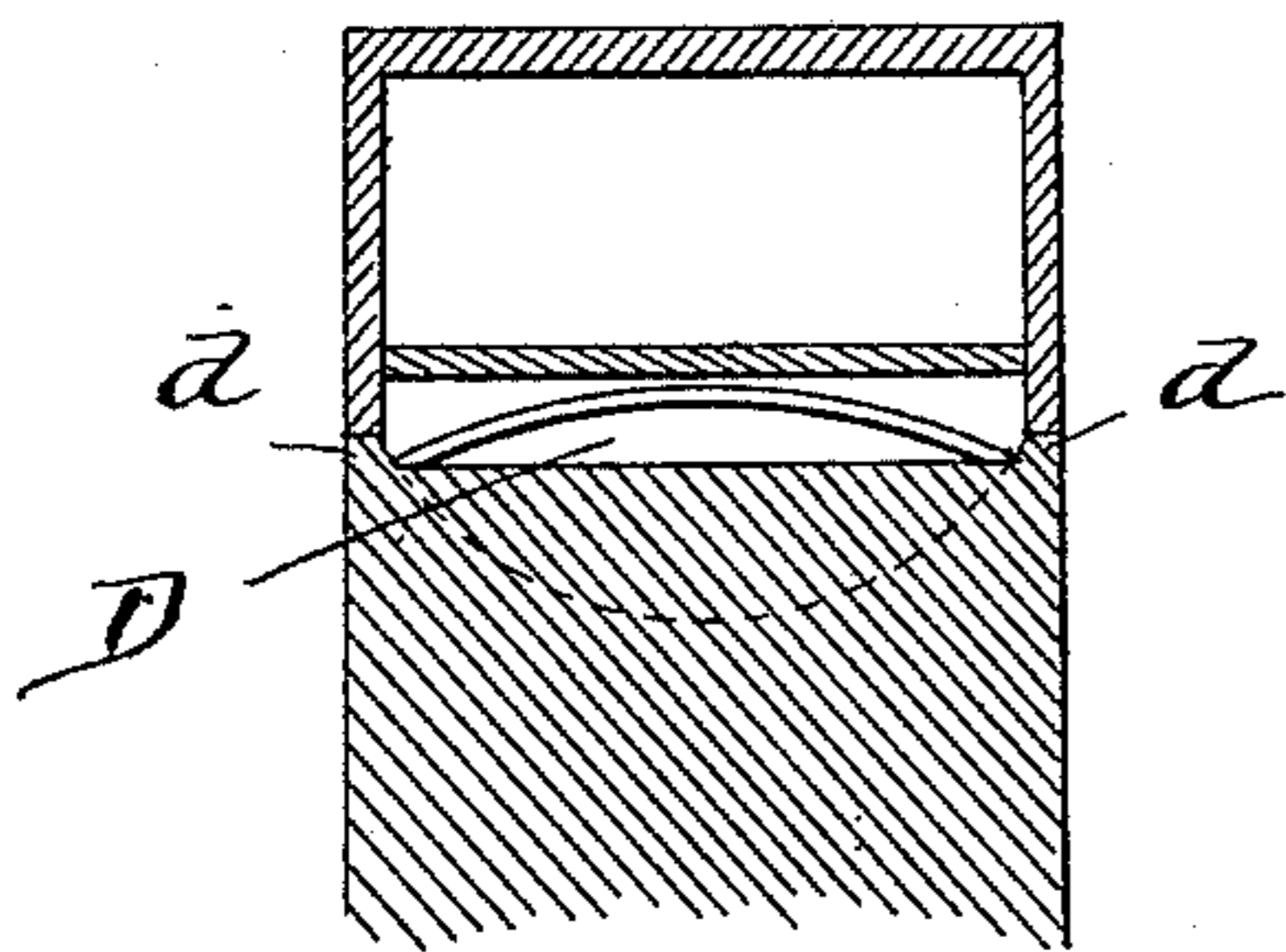


Fig. 3.

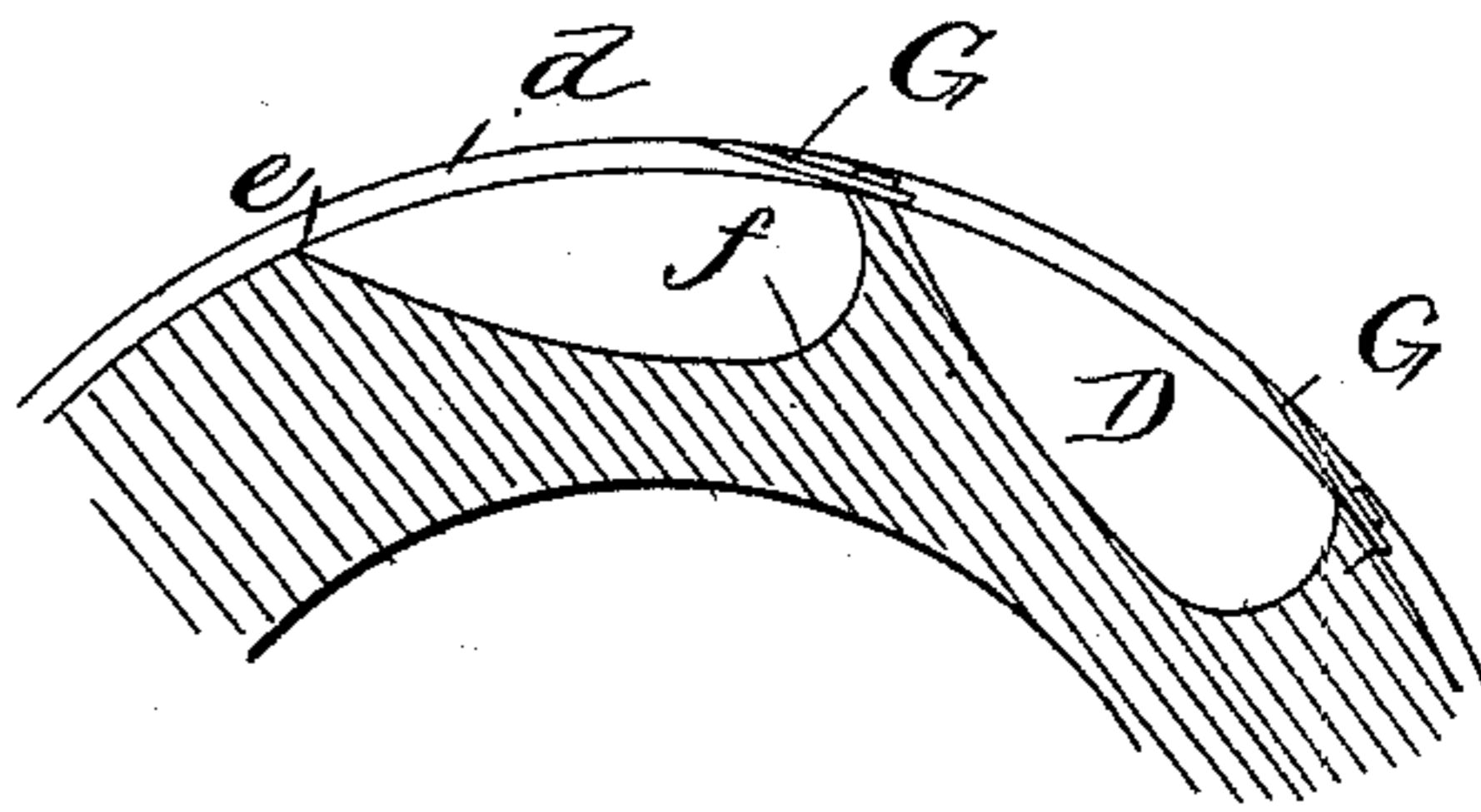
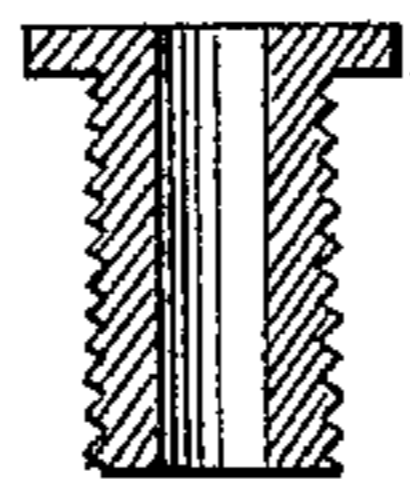


Fig. 4.



Witnesses—
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UNITED STATES PATENT OFFICE.

GEORGE W. MASON, OF SHARON, PENNSYLVANIA.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 436,715, dated September 16, 1890.

Application filed April 19, 1890. Serial No. 348,690. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MASON, a citizen of the United States of America, residing at Sharon, in the county of Mercer and State of Pennsylvania, have invented certain new and useful Improvements in Water-Motors, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to water-motors; and it consists in the construction and arrangement of the devices for supplying the water to it.

The entire device will now be fully described and claimed by the aid of the accompanying drawings, in which—

Figure 1 is a longitudinal section. Fig. 2 is a partial transverse section of the wheel-rim. Fig. 3 is a longitudinal section of the latter, showing one of the buckets on a larger scale than in Fig. 1. Fig. 4 is a detail view of the nozzle.

The wheel illustrated in the drawings is supposed to represent a small motor, such as is used for running sewing-machines and similar light machinery, and which is generally used in connection with the ordinary water-supply pipe in houses. The arrangement of such a pipe and its relation to such a motor are well understood, and are therefore not shown in the drawings, in which A represents any suitable support, such as a ceiling, beam, or joist, and B is a cylindrical casing mounted thereupon. In this casing is journaled a shaft or axle of the water-wheel C, the bearings not being shown in the drawings. The wheel is composed of a hub, spokes, and a rim c. A space is left between the casing and wheel, entirely surrounding the latter. In the periphery of the wheel are formed the buckets D, the shape and details of which are fully shown in Figs. 2 and 3. The rim is formed with two edge-flanges d d extending entirely around it. The bucket, or rather the bottom of the bucket, commences at the base of this flange, as at e, Fig. 3, and extends at an angle inward, so that the bucket gradually deepens. The line of the bottom is a chord of an arc of the periphery up to the point f, when it is curved up to the surface and thus completes the bucket. The bottom of the bucket is also curved or rounded transversely, as shown in Fig. 2. There are many of

these buckets placed closely together, as shown in Fig. 1. Over the deepest part of the bucket is a cap G, cast or secured between the flanges of the rim and which confines the incoming water and directs it against the end of the bucket. This cap may be straight or curved, as shown in Fig. 2.

The water is delivered to the wheel through shoes H H and nozzles or jet-inlets I I. Any number of these shoes may be used; but I prefer to use two—one upon each side and opposite or nearly opposite one another. The shoes shown at H are secured to the casing B. The front wall of the shoe is curved to conform to the curvature of the wheel and is in close proximity to the periphery thereof. The upper and lower ends of the shoe are closed in by partitions, so as to form a compartment in which a service-pipe L enters to supply it with water, and in the front wall of the shoe is located a small jet-orifice I for directing the water which is contained in the shoe H and which is under pressure from the constant supply entering through the service-pipe with force against the periphery of the wheel. I arrange the front wall of the shoe in such proximity to the periphery of the wheel as to leave a passage or channel of no greater diameter than that of the nozzle I, so that the force of the water is not only gained at the point where it strikes the buckets from the nozzles, but a continuous pressure is being exerted by the water as it passes upward or downward, as the case may be, between the inner face of the front partition of the shoe H and the face of the wheel, and as the water is forced out at the top or bottom of the shoe it exercises an additional impulse against the wheel periphery. In practice I have found that by thus confining the water close to the periphery of the wheel by the use of my shoe I secure a force of about six and one-fourth horse-power, and on the same wheels without the shoes I have been able only to secure a force equal to three horse-power.

I claim as my invention—

1. In combination, the water-wheel having peripheral buckets, the casing, and the means for supplying water thereto, consisting of the shoes H, formed hollow and comprising water-compartments, said shoes being located within

the casing and arranged with their inner wall conforming closely to the periphery of the wheel to leave a narrow passage for the water extending over a number of buckets and partially around the wheel, the jets I, located at the forward end of the shoes, whereby the water issuing therefrom under pressure from the compartment will be confined by the inner wall which extends forward from the inlet-jet, and the supply-pipes L, substantially as described.

2. In combination, the water-wheel having buckets, the casing, the jet-pipes I, and the shoe-wall located within the casing and intermediate of the same, and the buckets ex-

tending forward from the jet-pipe close to the buckets of the wheel and conforming to the periphery of the wheel to leave a narrow passage continuous over several buckets, the said jet extending through the outer casing and the shoe-wall, whereby the water issuing from the jet will be confined between the shoe-wall and the wheel, substantially as described.

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

GEORGE W. MASON.

Witnesses:

A. W. WILLIAMS,

JOHN H. ELLIOTT.