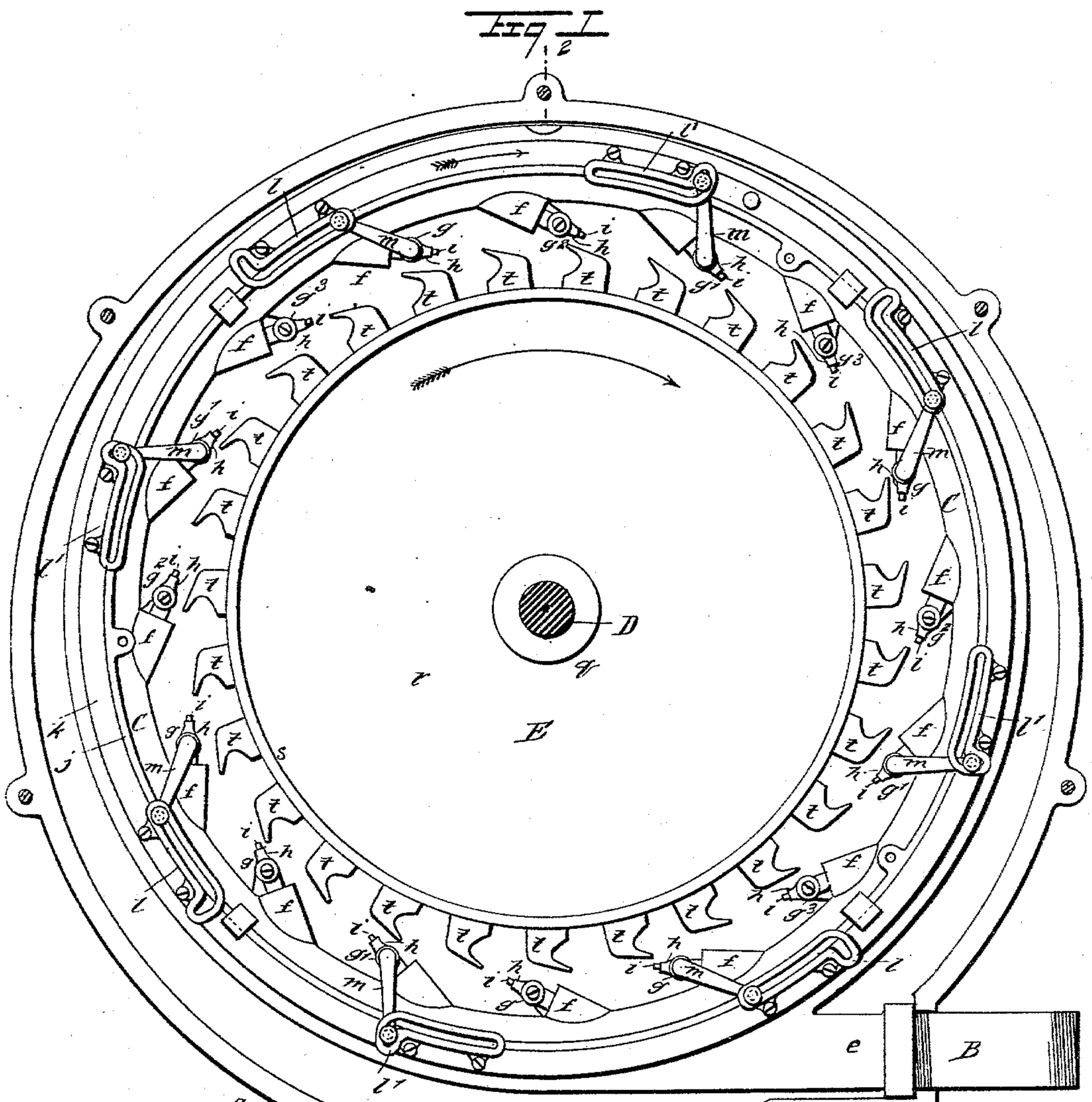
(No Model.) 2 Sheets—Sheet 1.

I. J. GRIFFIN.

MOTOR.

No. 562,821. Patented June 30, 1896.

Fig. 1.



WITNESSES:

H. Walker

G. M. Hopkins

INVENTOR

I. J. Griffin

BY Munn & Co

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig 2

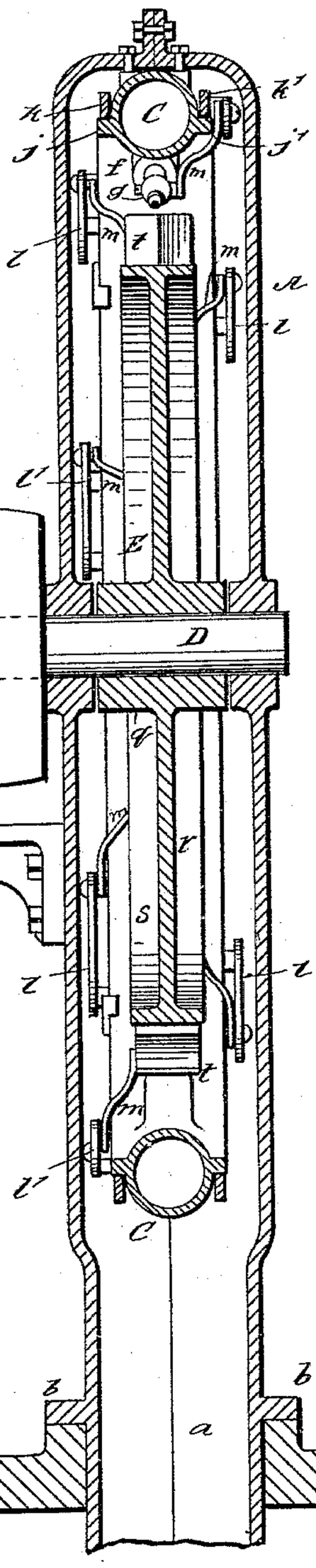


Fig 3

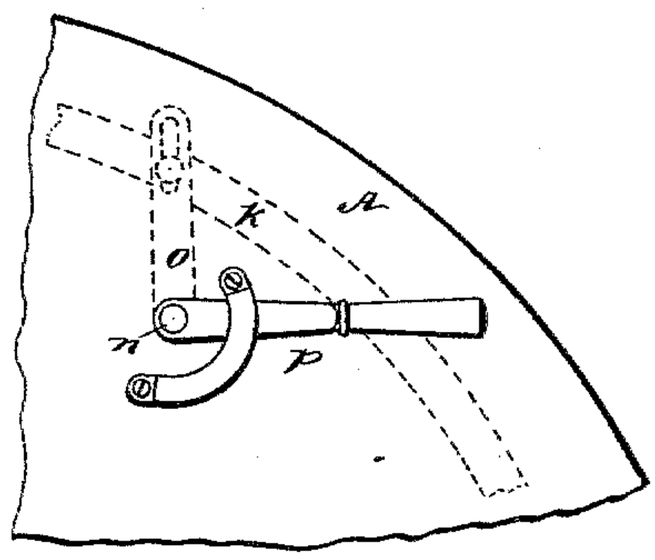


Fig 6

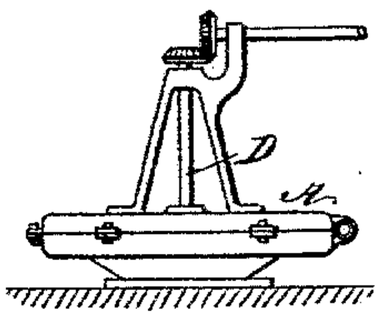


Fig 5

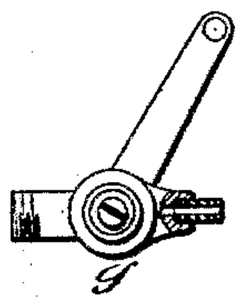
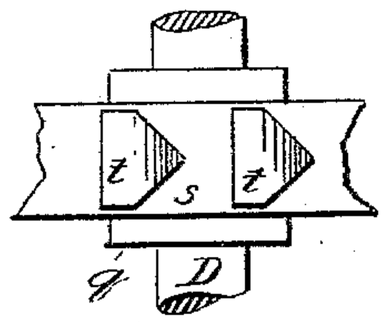


Fig 4



WITNESSES:

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C. M. Hopkins.

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UNITED STATES PATENT OFFICE.

IRA J. GRIFFIN, OF SING SING, NEW YORK.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 562,821, dated June 30, 1896.

Application filed October 12, 1894. Serial No. 525,658. (No model.)

To all whom it may concern:

Be it known that I, IRA J. GRIFFIN, of Sing Sing, in the county of Westchester and State of New York, have invented a new and Improved Motor, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side sectional elevation of my improved motor. Fig. 2 is a vertical transverse section taken on line 2 2 in Fig. 1. Fig. 3 is a detail view of one of the shifting-levers. Fig. 4 is an enlarged plan view of a portion of the wheel, showing a plan view of the buckets. Fig. 5 is a detail view, partly in section, of one of the stop-cocks and nozzles; and Fig. 6 represents a motor having a wheel arranged to revolve in a horizontal plane.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to construct a simple and effective motor, to be used with water or any other suitable propelling agent.

The invention consists in the novel arrangement and construction of parts hereinafter described and claimed.

The circular casing A, which contains all the working parts of the motor, is provided with a discharge-pipe *a*, having the flange *b* adapted to rest upon the base-piece *c*, which is perforated to receive the discharge-pipe. At one side of the discharge-pipe an offset *d* is formed in the casing, which is apertured to receive the water-supply pipe B. Within the casing is supported an annular water-supply tube C, furnished with a tangential neck *e*, which receives the water-supply pipe B. The annular tube C is suspended from the top of the casing A by tap-bolts. The said tube C is provided on its interior with necks *f*, in which are inserted stop-cocks *g*, in the present case sixteen in number, divided into four groups of four each, $g\ g\ g\ g$, $g'\ g'\ g'\ g'$, $g^2\ g^2\ g^2\ g^2$, and $g^3\ g^3\ g^3\ g^3$. Each stop-cock is provided with a nozzle *h*, into which is inserted an auxiliary nozzle *i*, which may be readily removed and replaced to adjust the motor to varying conditions of use.

The sides of the tube C are provided with flanges *j j'*, to which are fitted rings *k k'*, capable of turning on the flanges, and to the said rings *k k'* are secured plates *l l'*, having formed therein L-shaped slots, and to the plugs of the stop-cocks are attached curved levers *m*, furnished with studs projecting into the slots of the plates *l l'*. The four slotted plates *l* alternate in position with the slotted plates *l'*, and the plates *l* receive the levers *m* of the stop-cocks *g*, while the plates *l'* receive the studs of the levers *m* of the stop-cocks *g'*. The radial or outwardly-projecting portion of the slot of the plates *l* is remote from the stop-cock *g*, while the radial portion of the slot of the plates *l'* is nearest the stop-cock *g'*. The object of this construction is to permit of opening the stop-cocks in groups of four in succession, so that when the ring *k'* is moved in the direction indicated by the arrow in Fig. 1, the four stop-cocks *g'* will be opened by the engagement of the slotted plates *l'* with the levers *m*, thus opening the said stop-cocks, after which the plate slides upon the stud of the lever without producing any further effect. At the same time the studs of the levers of the stop-cocks *g'* slide in the slots of the plates *l* without affecting the stop-cocks *g*, unless it is desired to open the stop-cocks *g*, when the ring *k* is moved still farther, bringing the studs of the levers *m* of the stop-cocks *g* into the radial portions of the slots of the plates *l*, when the engagement of the slotted plate with the levers opens the levers.

In the side of the casing A is journaled a short rock-shaft *n*, to which, upon its inner end, is secured a slotted arm *o*, the slot of which receives a pin or stud projecting from the ring *k*. Upon the outer end of the said shaft *n* is secured a hand-lever *p*. By means of the said levers the ring *k* is turned to open four or eight stop-cocks, or to close them. The mechanism on the opposite side of the motor is like that already described, the ring *k'* operating levers *m* by means of angled plates and slotted plates *l l'*, thus opening or closing the stop-cocks $g^2\ g^3$ in the manner described in connection with the stop-cocks *g g'*.

To the shaft D, journaled in the center of the casing A, and within the annular pipe C and series of stop-cocks $g\ g'\ g^2\ g^3$, is attached the motor-wheel E, consisting of the boss *q*, the web *r*, the rim *s*, and buckets *t*, projecting radially from the rim. The buckets *t* are in the form of a triangular prism arranged ra-

dially, with one of the angles of each prism lying in the direction of the rotation of the wheel. The rear face of the prism is parallel with the axis of rotation, and is concaved or provided with an approximately semicircular transverse groove across its face adjoining the outer end of the bucket, the portion of the bucket adjoining the rim *s* being radial. The jets of water impinge upon the outer portion of the concave face of the buckets, and following the concave face return toward the angled side of the next succeeding bucket, which divides the jet and discharges it toward the sides of the casing. The transverse groove of the bucket being narrow confines the water as it impinges on the bucket to a narrow surface, and thus concentrates the effect of the jet. Water is supplied to the motor through the pipe B, by means of which it is distributed to the different buckets through the stop-cocks *g g'*, &c. The power of the motor is regulated by increasing or diminishing the number of jets projected against the bucket.

It will be observed that the concaved surface or groove of the bucket is cylindrical, the axis of the cylinder extending transversely of the bucket, so that all lines drawn transversely on said surface will be straight, and the water therefore can freely escape at both sides or ends of the bucket-groove. The rings *k k'* are located out of the line or plane of the buckets, so that they will form no obstruction in the path of the water discharged. The neck *e* is located at the bottom of the casing A and supply-pipe B, so that when the water is shut off, the said neck may be used as an outlet for drainage.

Although I have in the present case described my improved motor as having sixteen jets, I do not limit or confine myself to any particular number of jets or of buckets. The shaft D is prolonged beyond the casing A, and provided with a pulley for receiving a belt.

It will be observed (see Fig. 1) that the sharp rear edge of each bucket extends inwardly beyond the tangential line according to which the water escapes from the groove of the adjacent bucket, that is, beyond the tangent at the inner end of the bucket's groove. The water, therefore, will impinge against said edge and thus will be thrown laterally without reaching the rim *s* and considerable friction will be avoided.

When the motor is arranged to revolve in a horizontal plane, it is provided with bevel-gearing for changing the direction of the motion, as shown in Fig. 6.

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

1. A fluid-motor comprising a wheel provided with a rim, buckets secured to the outer surface of the rim, each bucket having a broad front face provided with a transverse cylindrical groove open at both ends, and a rear portion tapering to a sharp edge, said edge extending inwardly beyond the tangent at the inner end of the groove of the adjacent bucket, to throw the waste fluid laterally before it reaches the rim, and means for throwing jets of a fluid into the grooves of the buckets, substantially as described.

2. The combination of the casing, the wheel journaled therein and provided with buckets, the surrounding supply-pipe having valve-controlled nozzles adapted to discharge the fluid upon the buckets, operating projections extending from the valves, and a ring movable upon the casing and provided with slots that are partly concentric with the wheel and partly radial, sundry of the slots having radial portions at one end of the horizontal portions, and the other slots having their radial portions at the opposite end of the horizontal portions, whereby the sets of valves may be operated successively and independently, substantially as described.

3. The combination of the casing, the wheel journaled therein and provided with a hub, a continuous solid web extending outwardly therefrom, a rim at the periphery of the web, buckets secured to the outer surface of the rim, a supply-pipe surrounding the buckets and provided with a series of valve-controlled nozzles, projections extending from the nozzle-valves to opposite sides of the buckets, rings located on each side of the rim and out of the plane of the buckets, and means for turning the said rings, the rings engaging the projections from the nozzle-valves, substantially as described.

IRA J. GRIFFIN.

Witnesses:
JOHN HOAG, Jr.,
FRANKLIN J. WASHBURN.