

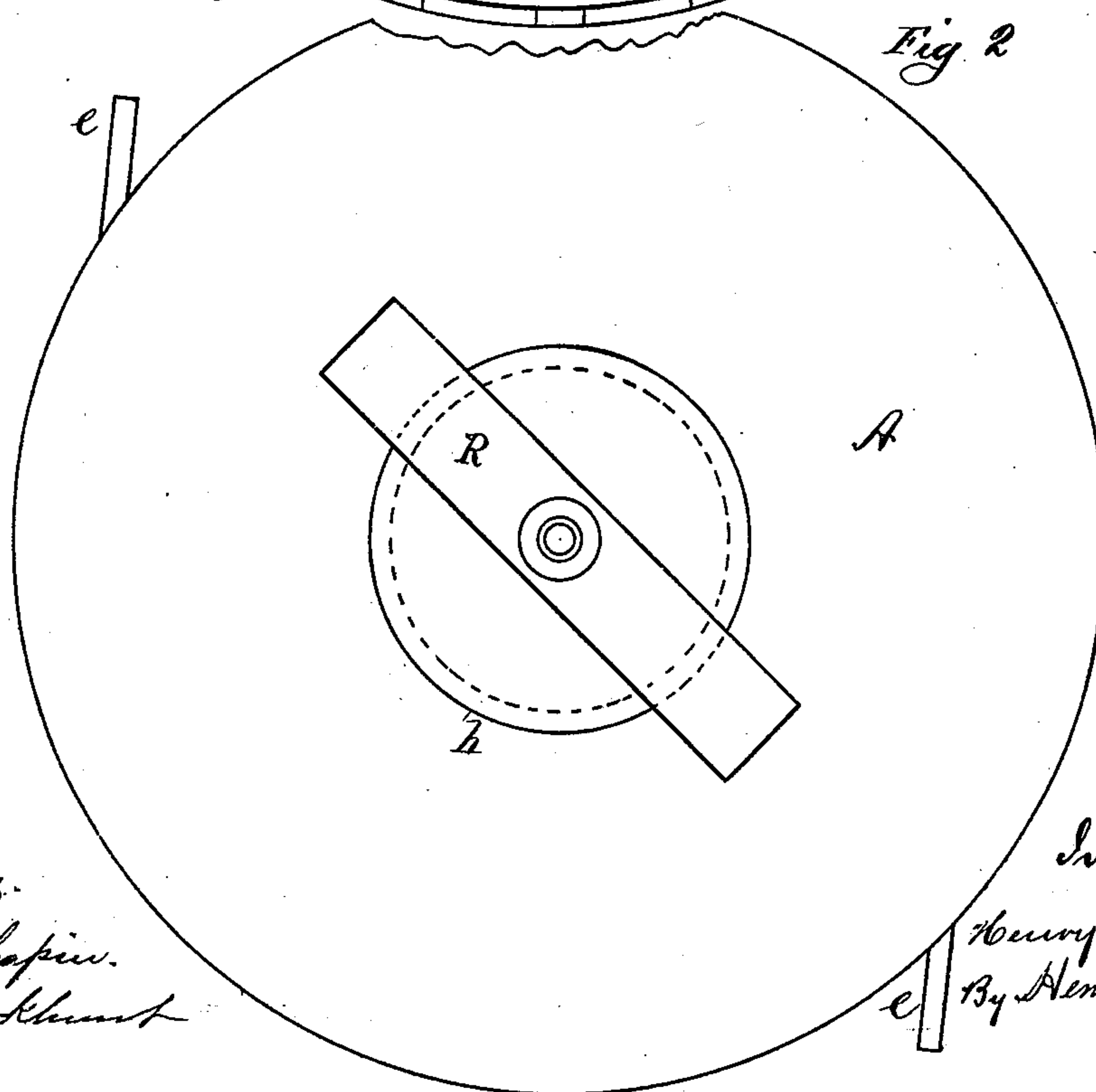
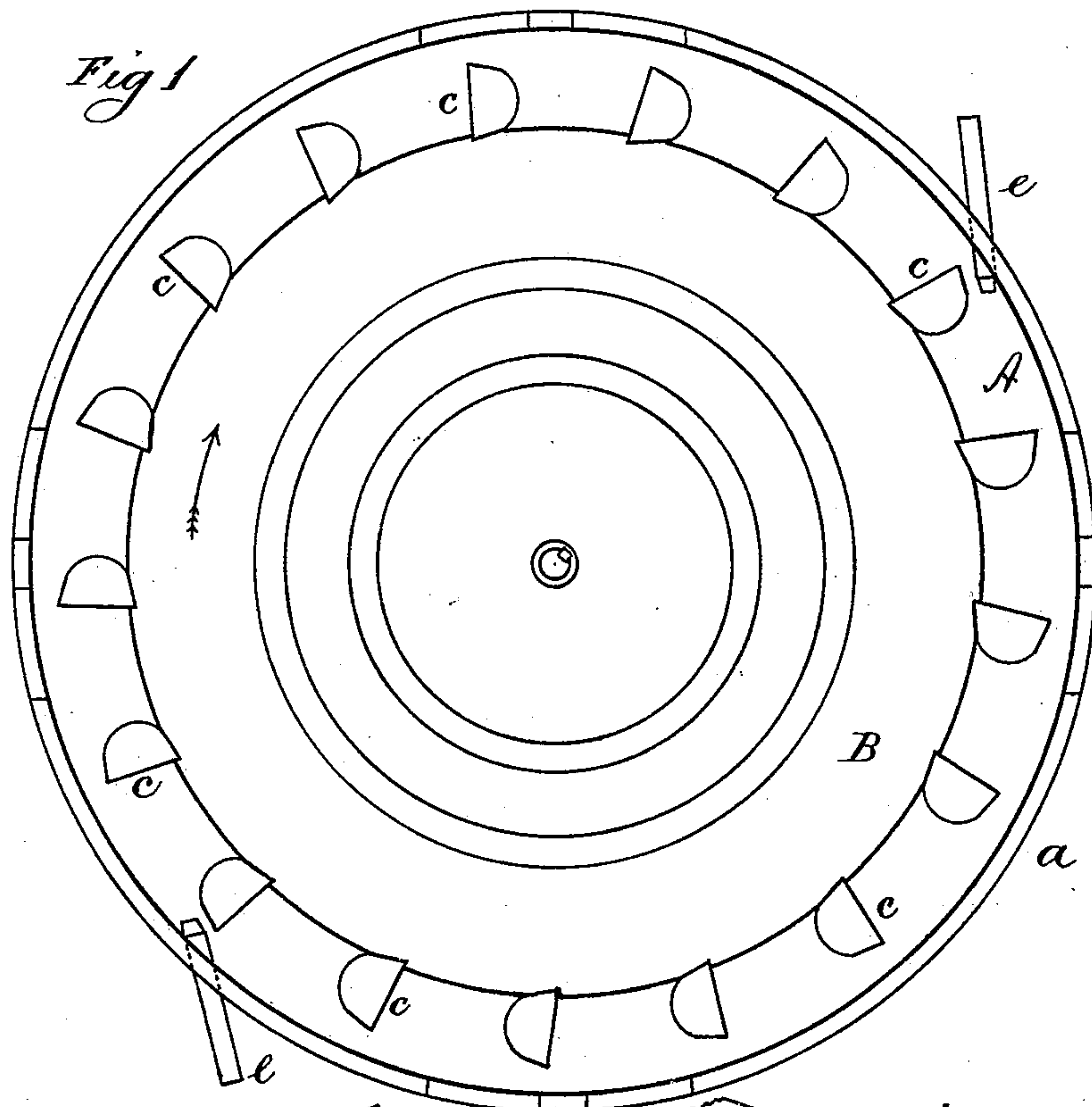
(Model.)

2 Sheets—Sheet 1.

H. M. COLTON.
Water Motor.

No. 236,554.

Patented Jan. 11, 1881.



Witnesses.
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C. S. Parkhurst

Inventor
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By *Henry A Chapin*
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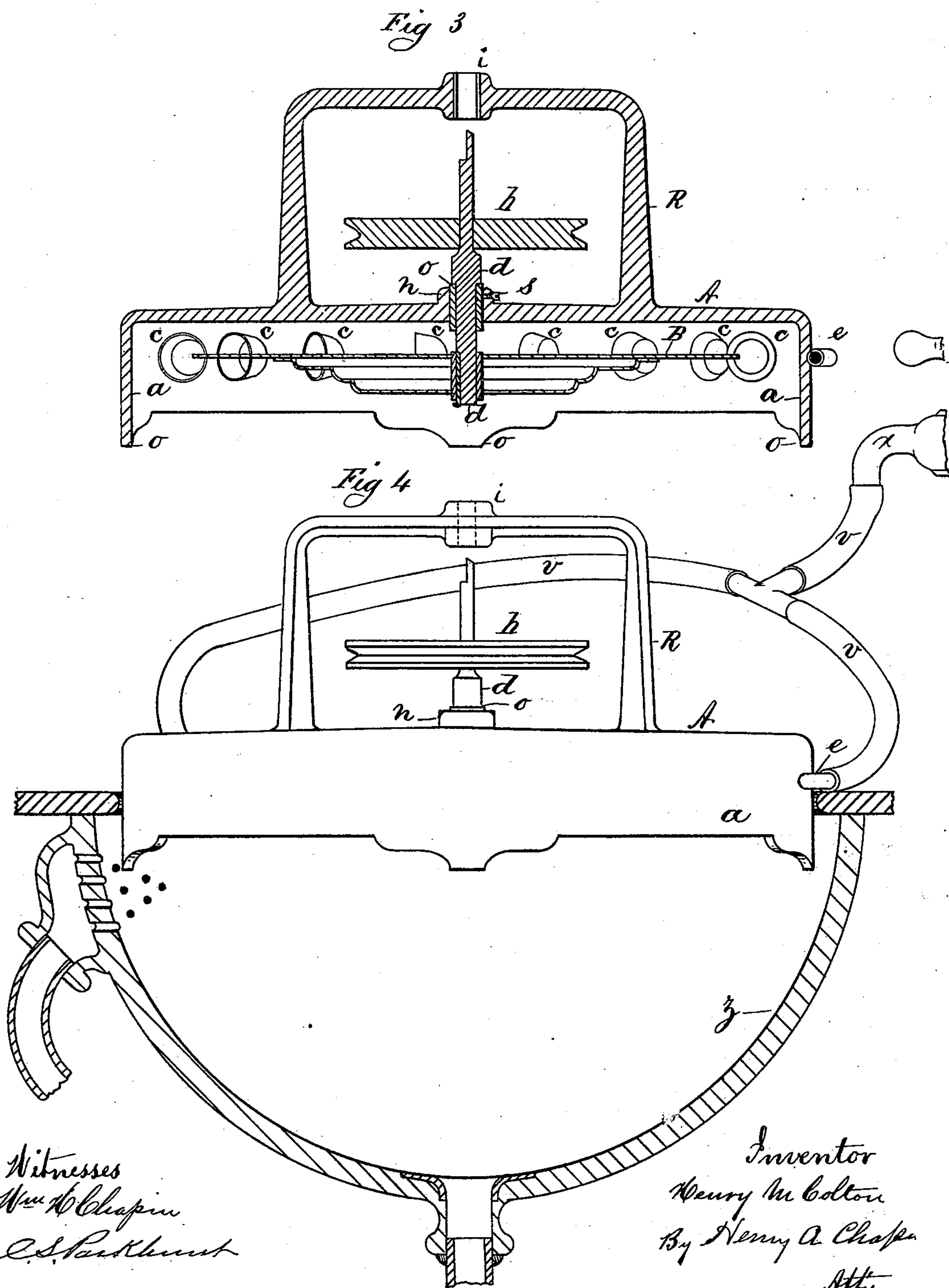
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UNITED STATES PATENT OFFICE.

HENRY M. COLTON, OF SPRINGFIELD, MASSACHUSETTS.

WATER-MOTOR.

SPECIFICATION forming part of Letters Patent No. 236,554, dated January 11, 1881.

Application filed May 31, 1880. (Model.)

To all whom it may concern:

Be it known that I, HENRY M. COLTON, of Springfield, county of Hampden, and State of Massachusetts, have invented new and useful
5 Improvements in Water-Motors, which improvements are fully set forth in the annexed specification and in the accompanying drawings.

The object of my invention is to provide a
10 cheap and effective motor for running light machinery, such as sewing-machines, &c., and which can be operated in dwelling-houses and other places at such points therein as may be provided with the usual conveniences for draw-
15 ing water from supply-pipes; and it consists of a horizontally-revolving wheel provided with a center shaft having fixed around its periphery a series of buckets of conoidal form, said wheel and shaft being arranged to run under
20 a simple cover or spray-shield provided with a proper bearing for the aforesaid shaft and with proper water-jet tubes, through which a stream or streams of water are directed onto said wheel.

Referring to the drawings, which consist of two sheets and four figures, Figure 1 is a plan view of the under side of my motor. Fig. 2 is a plan view of the top. Fig. 3 is a vertical section. Fig. 4 is a view of the motor in position to be run in an ordinary set-basin, showing it connected with the basin-cock by flexible hose.

In the drawings, A is the cover or spray-shield. B is the wheel. *c* are the buckets.
35 *d* is the wheel-shaft. *e* are the water-jet tubes. *h* is a pulley on shaft *d*. R is a hub-support on cover A. *i* is a hub or bearing in support R. *v* is a flexible hose. *x* is a basin-cock, and *z* is a basin.

40 Water-motors of this class have heretofore been constructed so as to entirely inclose the water-wheel within a case, within which the water is admitted and from which it is discharged through suitable specially-constructed
45 water-connections. The above-described construction involves considerable expense for a case, as it must have properly-fitting joints, and its parts must be bolted together, and when so made and set in position to run provision must be made for carrying off the waste
50 water, as well as for supplying water to it under a head. The above-named requirements

cannot always be conveniently met in locations where it is desirable to operate sewing-machines; but my improved motor, as herein
55 shown and described, is constructed and arranged to be applied in such a manner as to obviate said objections.

My motor is so constructed that it may be placed as a cover upon an ordinary set-basin, 60 or it may be placed in an ordinary sink, taking water from the supply-faucet of either one, as the case may be, and discharging the water directly beneath it. To convey the power to the machine to be run I use a convenient belt 65 running on pulley *h* and on the machine, or I employ a suitable flexible shaft. In the latter case I make use of the bearing-support shown on the top of the jet shield or cover in Fig. 3, by which to properly connect said flexible 70 shaft with shaft *d*.

When the motor is run in positions where it can rest upon a flat surface it stands upon the legs *o*, which are attached to cover A. (Seen in Fig. 3.)

The cover A of the motor, or the jet-shield, is made preferably of sheet or cast metal, having a hub, *n*, secured centrally therein, and a vertical rim, *a*, surrounding its border, as shown. A bushing, *o*, is fitted into hub *n*, and secured 80 therein by a set-screw, *s*, and shaft *d* runs in said bushing, a collar on said shaft under pulley *h* keeping it in proper vertical position.

Wheel B is constructed by securing a series of conoidal-shaped buckets upon the periphery 85 of a wheel or disk, B, as seen in Fig. 1. Said buckets *c* are secured by their sides to said wheel in such a position as to expose their open ends to the action of a stream of water entering through rim *a* by the jet-tubes *e* in 90 the direction of the movement of the periphery of wheel B and on a line with the edge of said wheel.

A strictly conoidal form of bucket is not essential to serve the purposes of the construction shown herein, but that form is adopted here because it is more convenient to make the bucket round than otherwise; but the object sought in employing buckets of substantially the form shown is to have a bucket 100 which gives better results as to power obtained from a given quantity or under a given head of water, when run in a horizontal plane especially, than can be derived from the use

of flat paddles or arms under like circumstances. Therefore I employ a bucket of such a form where the water strikes it as will serve more effectually to retain it upon its face while moving in a horizontal plane before it and impelled by it.

It will be seen that the bucket, in its revolutions around the circle described by the circumference of the wheel, is first struck by the stream of water coming through tubes *e* at the outer edge of its bottom, and as it moves in the circumferential line of the wheel the impact-point of the stream is gradually changed from said outer edge toward the center of the bucket. Therefore, in order to retain as much of the force of the moving water as possible for the instant that the bucket is before the current, I employ one which presents a rather deep concave face to it, thereby preventing all of the water from flying off from it the instant it strikes it, particularly when the motor is operated under a high head of water.

Water-motors which are constructed as herein shown—that is to say, with the wheel arranged to be run in a horizontal plane and suspended on the lower end of a vertical shaft—have not heretofore been provided with more than one water-feeding tube, so that the entire force of the water is in such constructions caused to act on one side only of the wheel. Such an application of the water, under the aforesaid conditions, creates more friction between said vertical shaft and its bearings than is caused when, as shown herein, the water is directed against the wheel in two streams and acts upon opposite points on its periphery. The action of the water thus applied to the wheel prevents the aforesaid frictional resistance which is caused by the application of a single stream of water, as each stream acts against the other to prevent it.

My motor is operated as follows, viz: When it is used in the manner indicated in Fig. 4 it is set over the basin *z*, with the lower portion

of its rim *a* projecting into it, and so arranged as to have it properly fit therein, and water-connection is made with it by hose *v*, leading from the faucet *x* and connecting with the inlet-tubes *e*, projecting through rim *a*, as shown. In the above-named position, with a belt or flexible-shaft connection with the machine to be run, the water is turned on and the motor operates the machine, the waste water escaping freely beneath the cover or jet-shield into the basin beneath, and running off through the ordinary waste-outlet.

When it is desired to employ the motor otherwise than in a set-basin, it may be allowed to rest upon the legs *o* on cover or rim *a*, in any convenient place where it can be similarly connected with a water-pipe and where the water can freely flow off.

When operated in either of the aforesaid positions wheel B is suspended by its shaft *d* in the center of cover A, revolving easily and freely therein, and a fair amount of power is developed.

What I claim as my invention is—

1. In combination, the cover or spray-shield A, extending horizontally over the upper side and vertically over the periphery of the wheel, and provided with jet-tubes, as shown, and the wheel B, provided with a series of deep conical-shaped buckets, attached by their sides to the periphery of said wheel and arranged to be run under said spray-shield, substantially as set forth.

2. A water-motor consisting of the wheel B, constructed as shown, and arranged to be run under the cover A, covering only its upper side and its periphery, and adapted to be operated upon, and in connection with, a set-basin, as shown, substantially as set forth.

HENRY M. COLTON.

In presence of—

H. A. CHAPIN,
E. L. KNIGHT.