

No. 883,504.

PATENTED MAR. 31, 1908.

C. WEBER.
WATER MOTOR.

APPLICATION FILED JAN. 25, 1907.

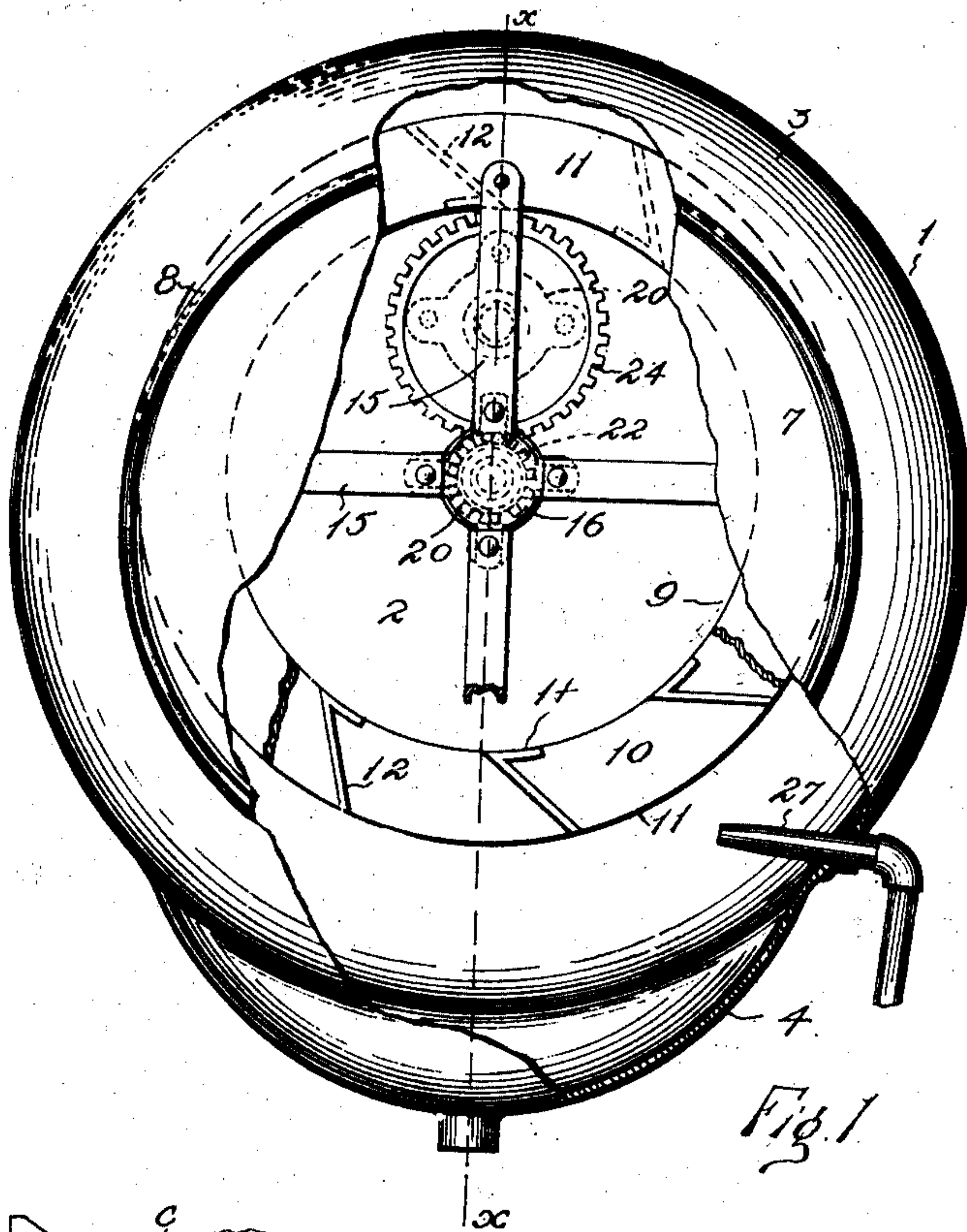


Fig. 1

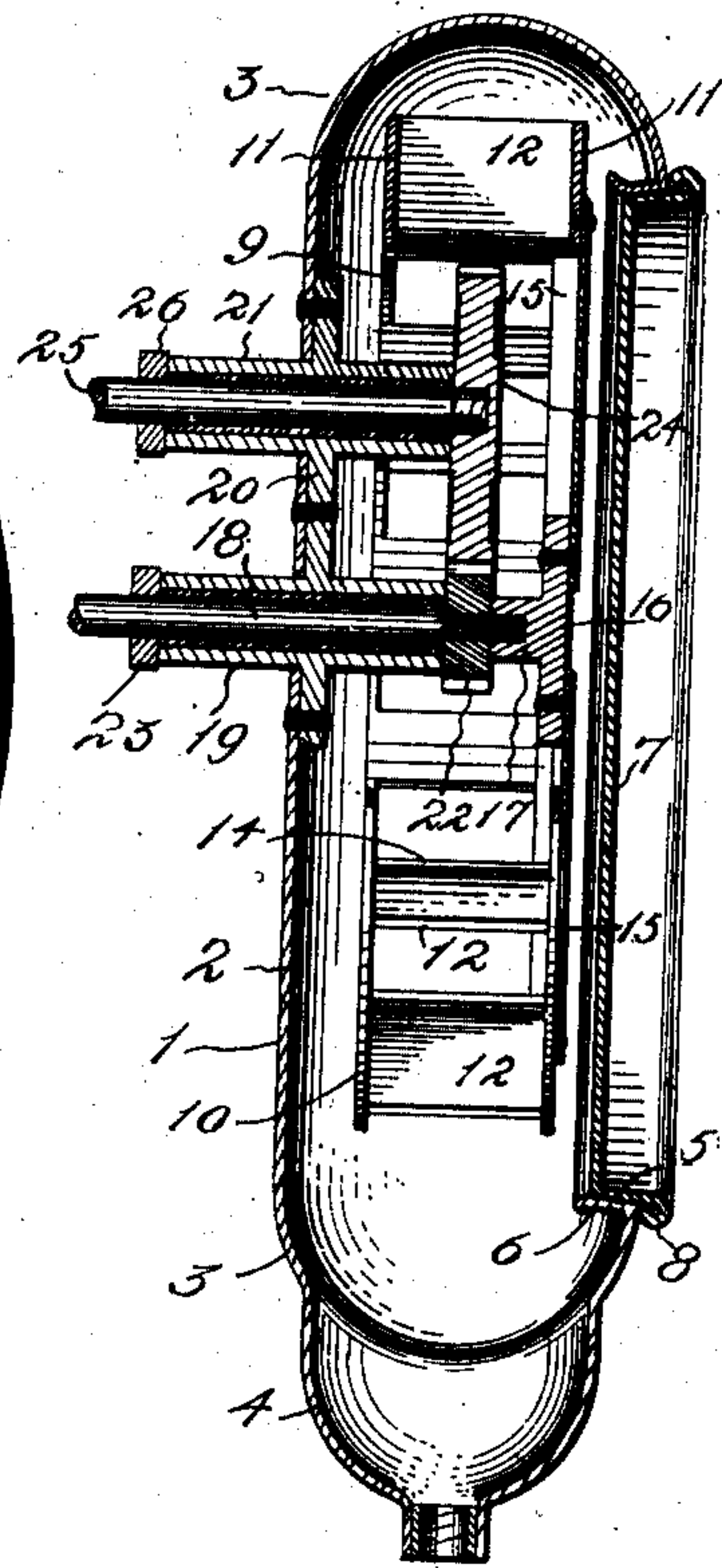


Fig. 2.

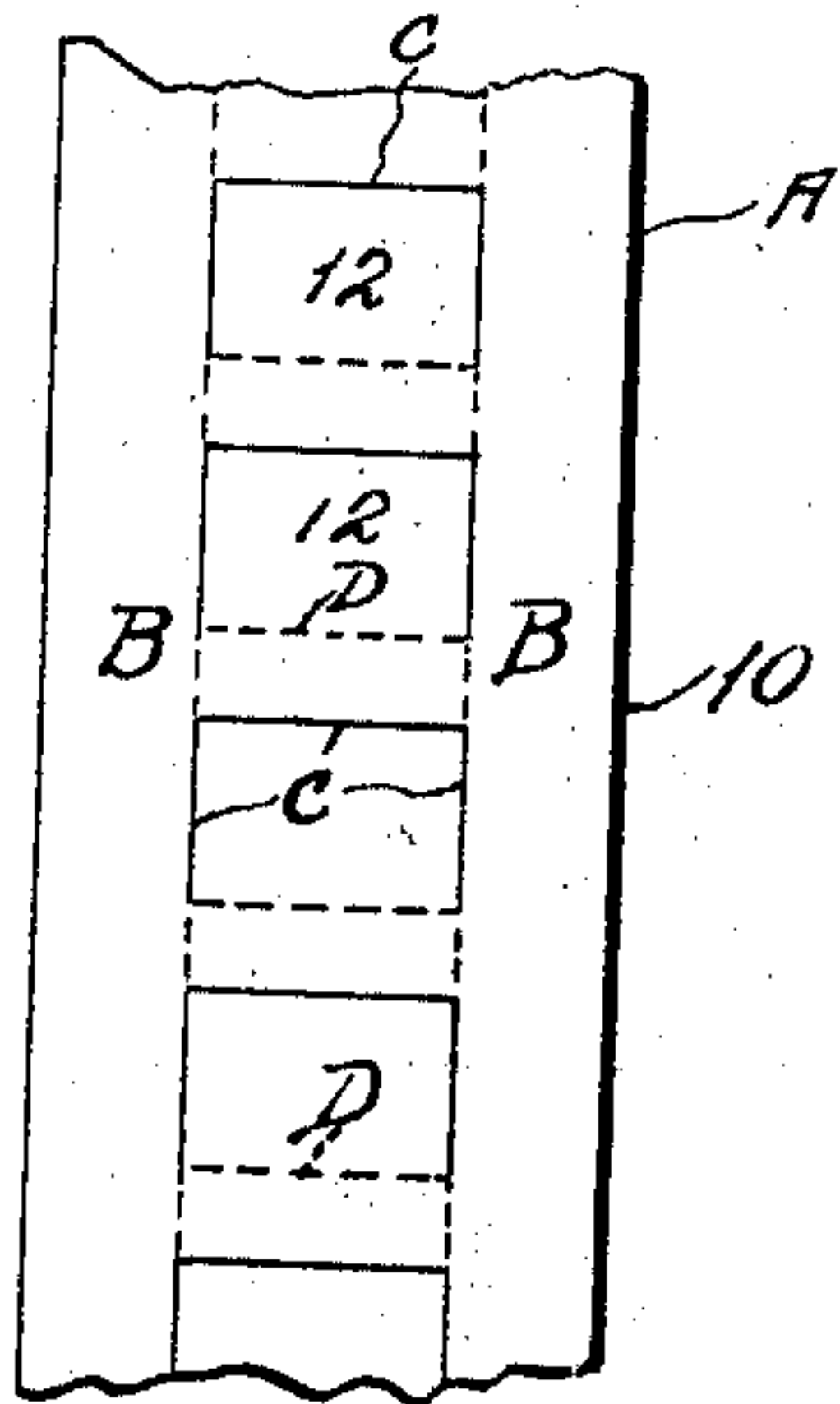


Fig. 3.

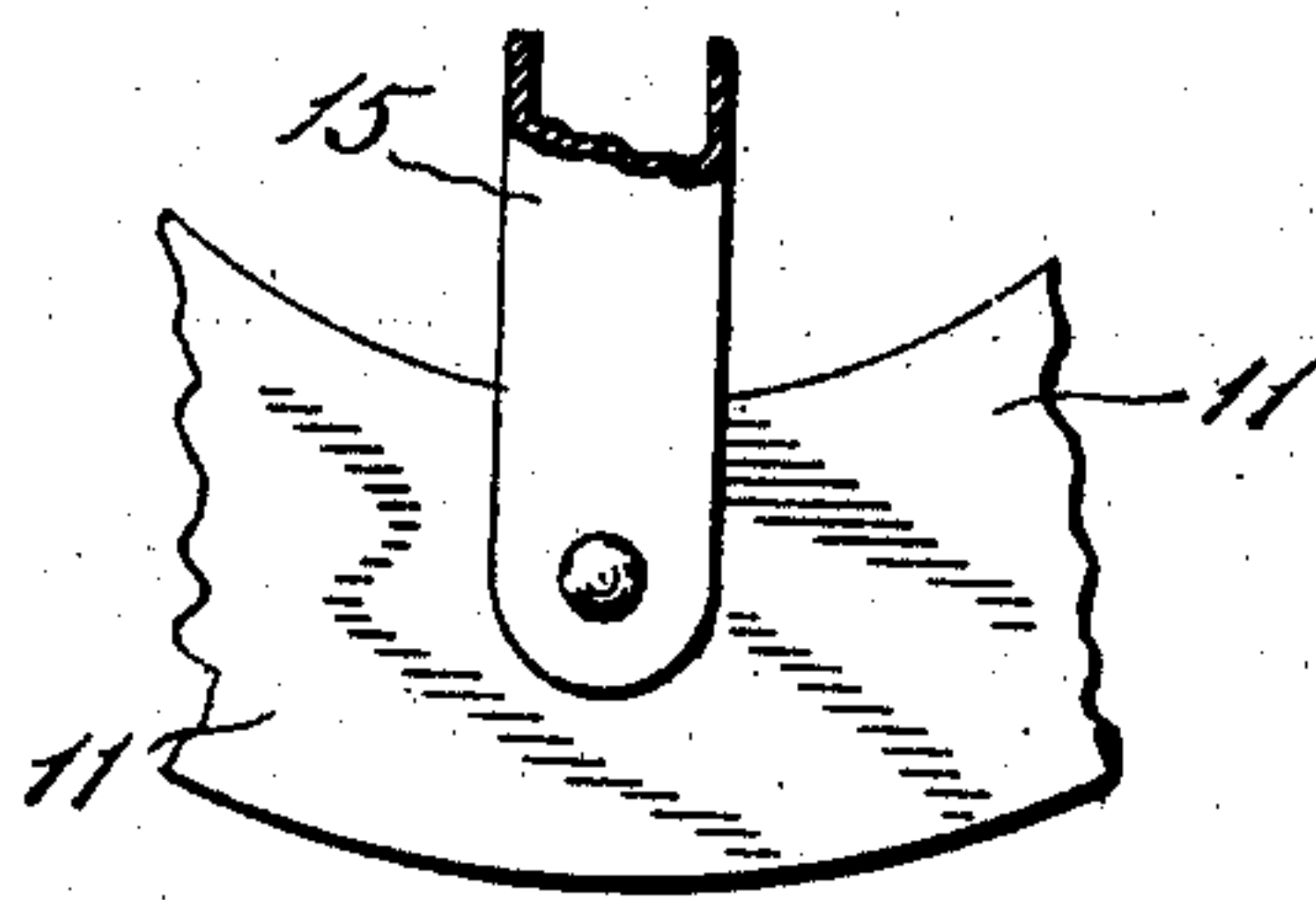


Fig. 4.

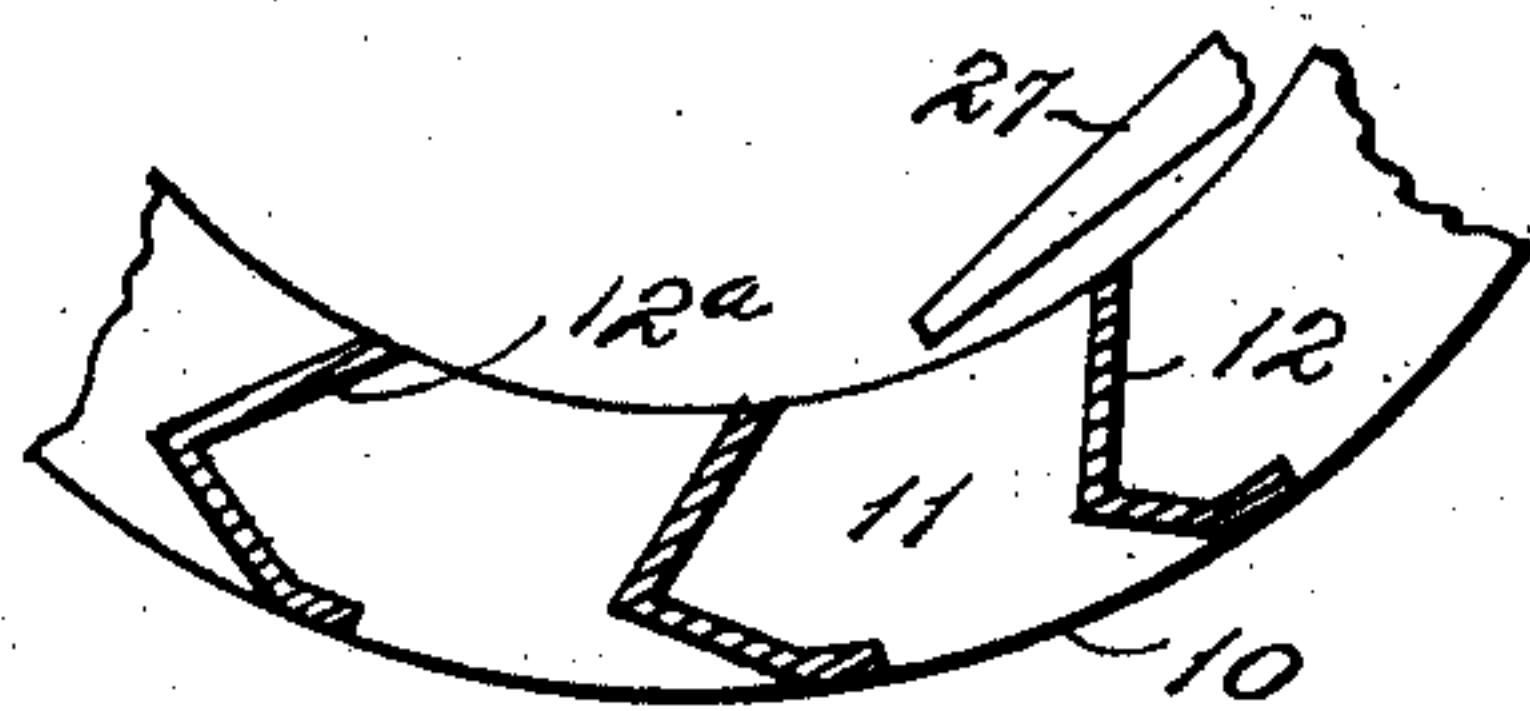


Fig. 5.

WITNESSES:

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CHARLES WEBER, OF COLUMBUS, OHIO.

WATER-MOTOR.

No. 883,504.

Specification of Letters Patent.

Patented March 31, 1908.

Application filed January 25, 1907. Serial No. 353,949.

To all whom it may concern:

Be it known that I, CHARLES WEBER, citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Water-Motors, of which the following is a specification.

My invention relates to new and useful improvements in water motors.

The object of the invention is to provide a water motor having a sheet metal casing shaped so as to be readily pressed into form and containing a power wheel, the rim of which is formed from a single sheet of metal.

Among other objects are the provision of a fast and slow gearing, a one piece bearing and a side opening and slip closure therefor so arranged as to permit free access to the inside of the casing and the removal of the parts therefrom.

Finally the object of the invention is to provide a device of the character described that will be strong, durable, efficient and simple and comparatively inexpensive to make, also one in which the several parts will not be liable to get out of working order.

With the above and other objects in view, the invention consists of the novel details of construction and operation a preferable embodiment of which is described in the specification and illustrated in accompanying drawings, wherein:

Figure 1 is a side elevation of the water motor, partially broken away to show the interior of the casing, one side of the wheel rim also being broken away to show the impact blades, Fig. 2 is a transverse vertical sectional view on the line X—X of Fig. 1, a portion of the wheel being shown in end elevation, Fig. 3 is a plan view of a portion of the metal sheet from which the rim is formed, Fig. 4 is a detail of a portion of one of the wheel arms and the rim, and Fig. 5 is a vertical sectional view of a portion of a modified form of rim.

In the drawings the numeral 1 designates the casing, which is circular in shape, having a flat side 2 and a peripheral portion 3, exhibiting a rounded cross-section. At the lower end of the casing an exhaust bowl 4 is formed, while opposite the flat side 2, a circular opening 5 and an inwardly directed ring flange 6 are provided. The casing, bowl and ring flange are formed from a single piece of sheet metal suitably stamped, pressed and spun into shape. This not only

reduces the cost of production, but simplifies the construction and obviates joints between the parts, and fastenings, such as bolts and screws, as well as removing the necessity of packing.

The ring flanges 6 converges slightly inward and has a rounded edge so as to snugly receive a flanged closure or head 7, the latter being shaped to close the opening 5 and provide a tight joint with the ring flange, by frictional contact. A bead 8 formed about the head 7, limits its insertion into the casing and affords means whereby it may be readily removed. This head is likewise formed of sheet metal stamped or otherwise shaped into form.

Within the casing a power or impact wheel 9 is eccentrically mounted as will be hereinafter described. This wheel comprises a rim or pocket portion 10 formed from a single piece of sheet metal as indicated at A in Fig. 3. The rim is formed by bending the parallel portions B, upward and inward to form the sides 11 and cutting the blades 12 along the lines C and then bending up on the lines D. The blades are suitably secured at the proper angle as by soldering or other means. This leaves the sides connected by narrow portions 14 which together with the blades form pockets. The openings provided by the turning up of the blades permit a free passage of the water so that the liability of back pressure is obviated. The rim is rolled into circular form and the opposite ends secured together.

Channeled arms 15 are cut away at their outer ends and secured to the rim at one side, while their inner ends receive and are secured to a plate-center 16 having an inwardly extending central boss 17 adapted to receive the reduced and screw threaded end of a driving shaft 18. This shaft is supported in a bearing sleeve 19 extending through the side 2 of the casing. This sleeve is formed integral with a plate 20 extending upward on and secured to the inside of the side 2. A second bearing sleeve 21 is formed integral with the plate 20 and extends parallel with the sleeve 19 through the casing. The plate 20 is positioned so that the wheel 9 and the driving shaft 18 are eccentric with relation to the casing. This provides a space at the lower end of the casing so that clearance between the inlet and outlet is had.

On the reduced end of the driving shaft a pinion 22 is mounted and held in position by

the boss 17. This pinion bears against the body of the shaft, so that when the latter is screwed into the boss, the parts are securely fastened together. The pinion also bears
 5 against the inner end of the sleeve 19, while a collar 23 secured on the driving shaft bears against the outer end of the sleeve preventing lateral displacement of the wheel, shaft and pinion. A spur gear 24 screwed onto the end
 10 of a driven shaft 25 mounted in the bearing sleeve 21, meshes with the pinion 22. A collar 26 like the collar 23 is secured on the shaft 25. Power may be taken from either shaft, the driving shaft 18 providing a fast
 15 gear and the driven shaft 25 constituting a slow gear.

I prefer to drive the wheel 9 from the under side and therefore insert a nozzle 27 through the casing just above the bowl 4 and
 20 at such an angle that water will strike the blades 12 at an angle and ride off quickly after exhausting its force and fall to the exhaust bowl. The space at the bottom of the wheel which is provided by the eccentric
 25 mounting, permits the water to enter the casing at high pressure, as the clearance afforded obviates interference between the inflowing and outflowing waters.

The gear 24 and the pinion 22 may be
 30 suitably inclosed to protect them from the water and for the purpose of lubrication.

In Fig. 5 I have shown a slightly modified form of blade 12^a, which forms a more pronounced pocket and a greater driving sur-
 35 face. With this form the nozzle 27 is mounted within the wheel and directed downwardly. This is necessary on account of the shape of the blades. Various forms of blades may be used and the nozzle mounted
 40 accordingly.

What I claim, is:

1. In a water motor, the combination with a casing open at one side, of a water wheel mounted in said casing, means for supplying
 45 water to said casing, and a cover plate adapted to be forced into the open side of the casing and to be frictionally held in position thereby.

2. In a water motor, the combination with a casing having an opening formed in one side thereof, of a flange surrounding said
 50 opening, and a cover plate adapted to be forced into engagement with said flange and to be frictionally held in position thereby.

3. In a water motor, the combination with a casing, of a shaft, a pinion mounted upon
 55 said shaft, a plurality of radial arms adapted to rotate with said shaft, a bucket carrying rim secured to said radial arms, said radial arms being located at one side of said rim, a gear wheel with which said pinion meshes,
 60 and a second shaft upon which said gear wheel is mounted, said pinion and said gear wheel lying within said rim.

4. In a power wheel for water motors, the combination with a rim comprising a flat
 65 peripheral portion and upstanding flanges located upon each side of said peripheral portion, of rectangular pieces cut from the flat peripheral portion along three of their sides and being connected to said peripheral
 70 portion along the remaining side, said rectangular pieces being bent to form buckets, said pieces extending between said upstanding flanges.

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

CHARLES WEBER.

Witnesses:

WM. FIX,
 HENRY D. SWALLER.