J. RIPBERGER.

ROTARY MOTOR.

APPLICATION FILED AUG. 31, 1908.

929,018.

Patented July 27, 1909.

2 SHEETS—SHEET 1.

FIG. 1

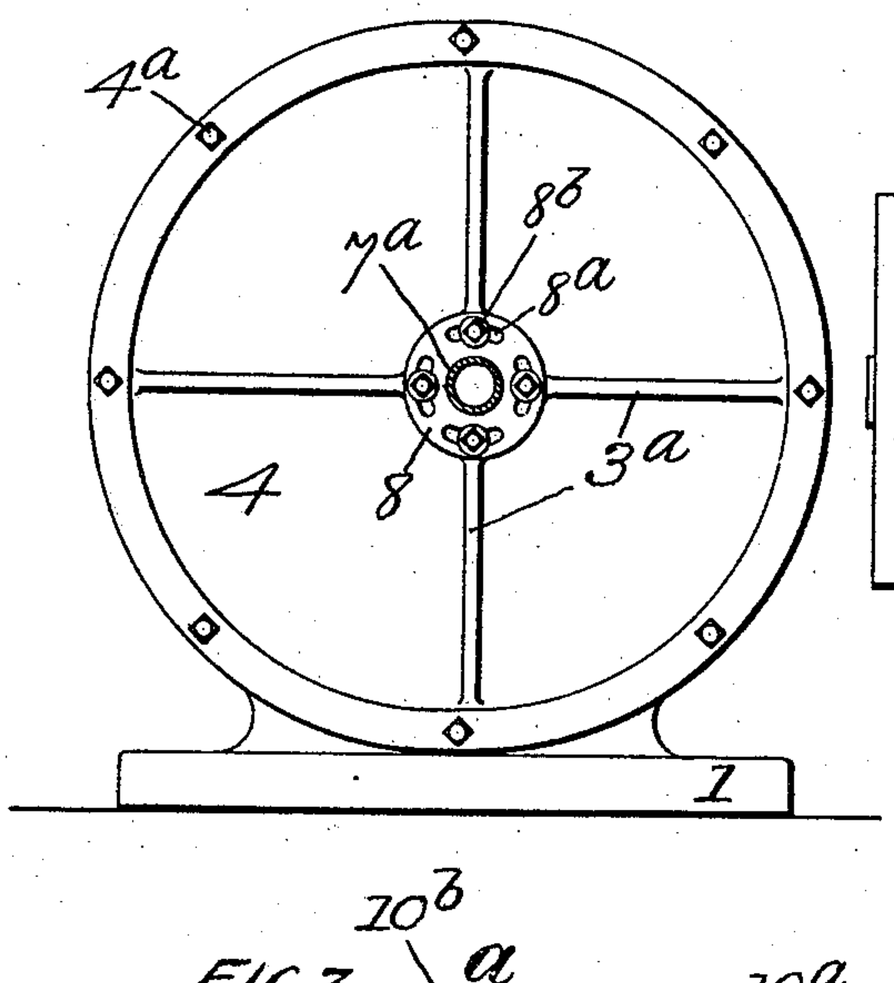


FIG. 2.

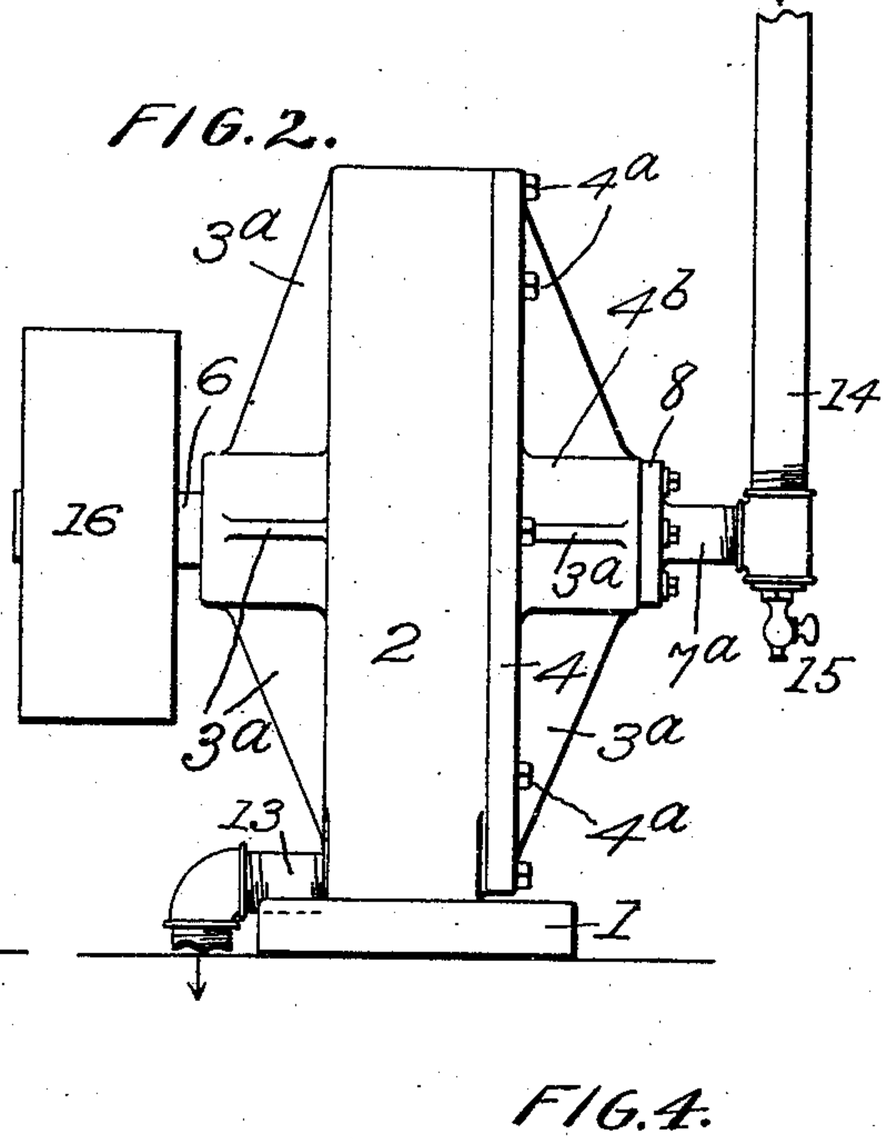


FIG. 3.

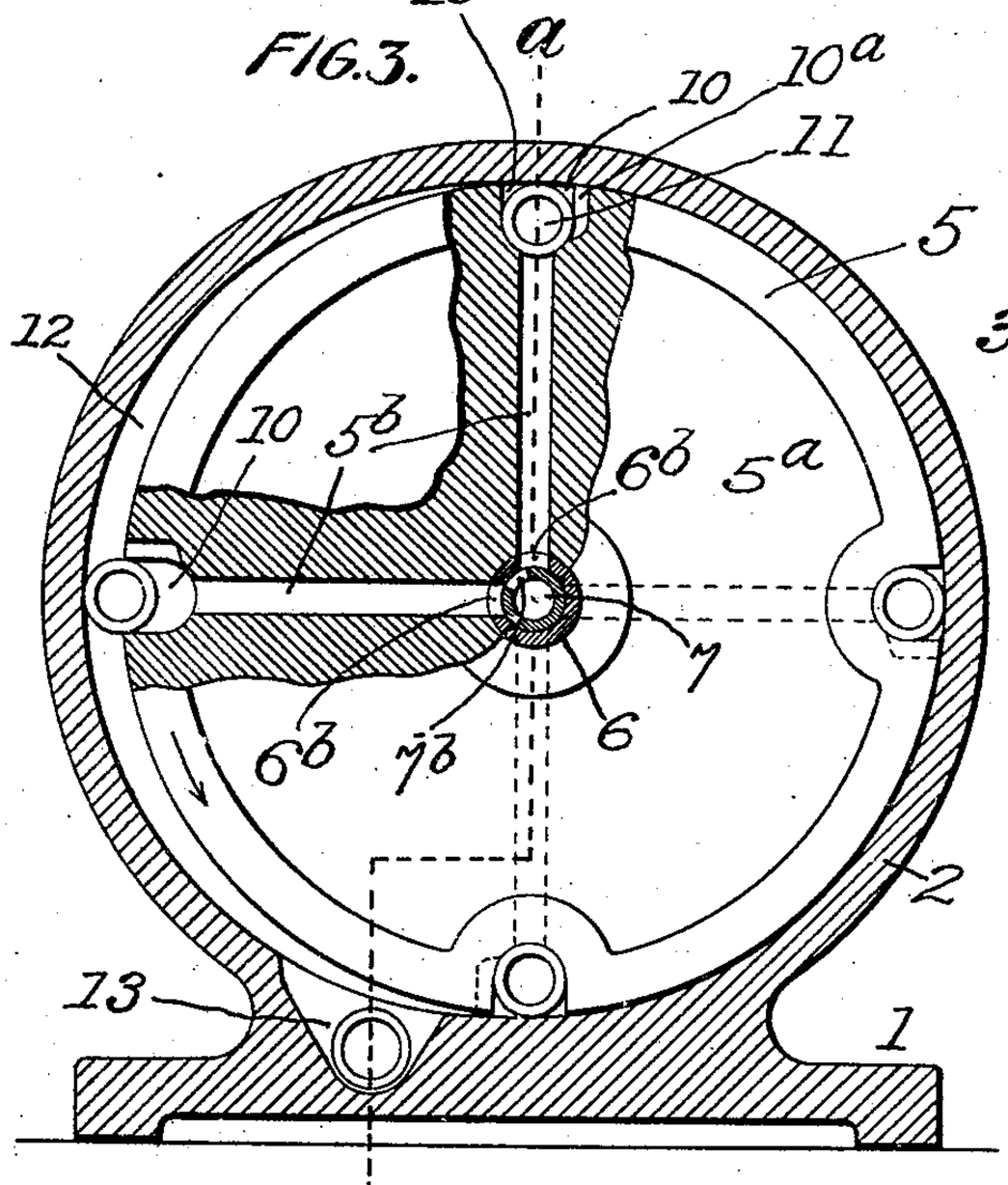
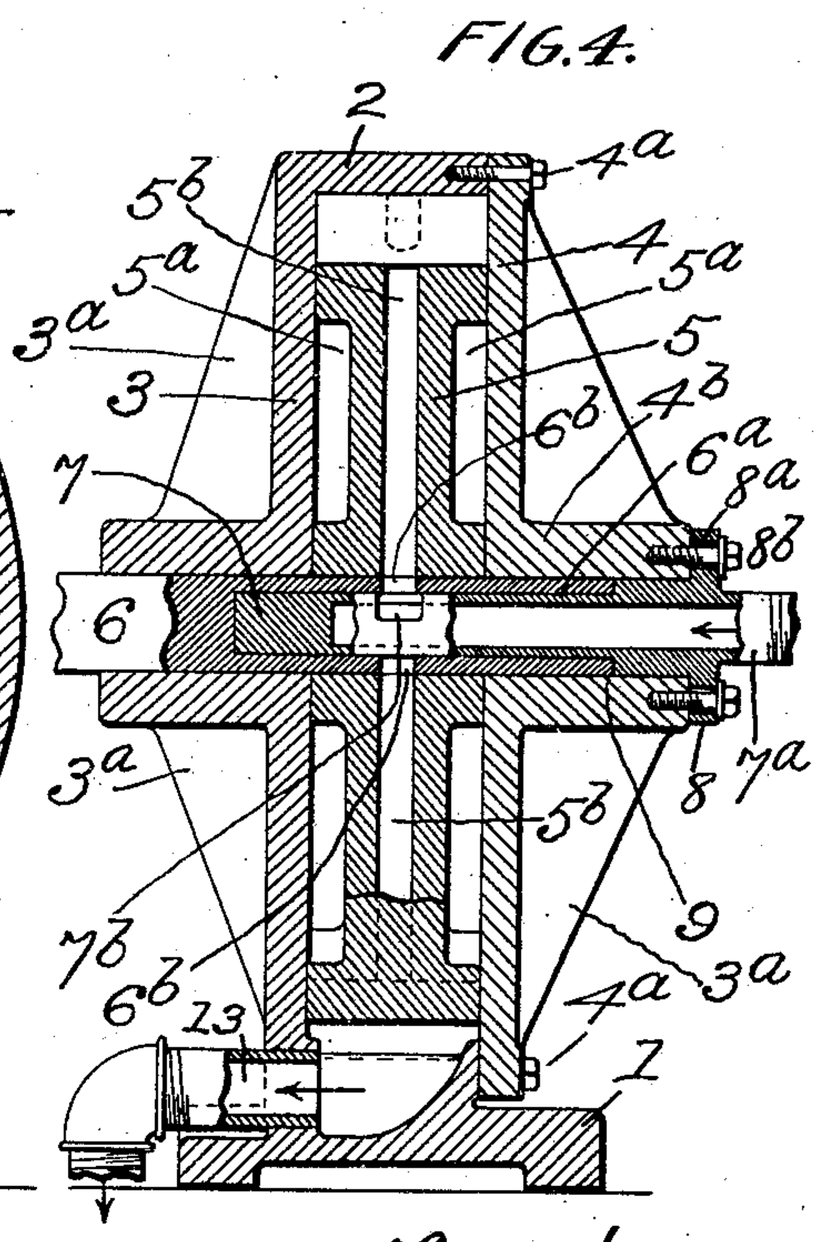


FIG. 4.



Witnesses:
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Norma Keiser.

Inventor:
Jacob Ripberger,
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his Attorney.

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2 SHEETS—SHEET 2.

FIG. 5.

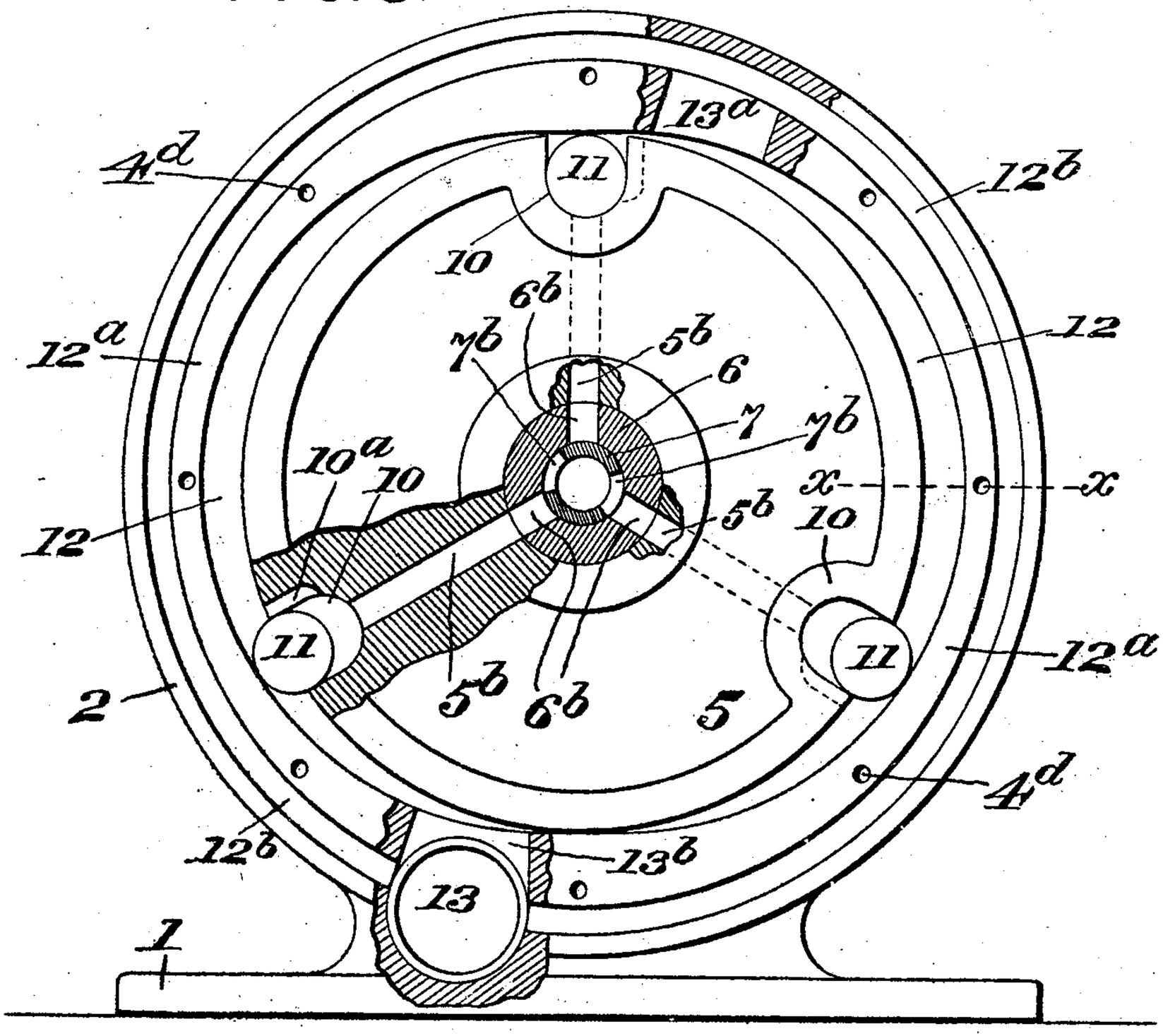
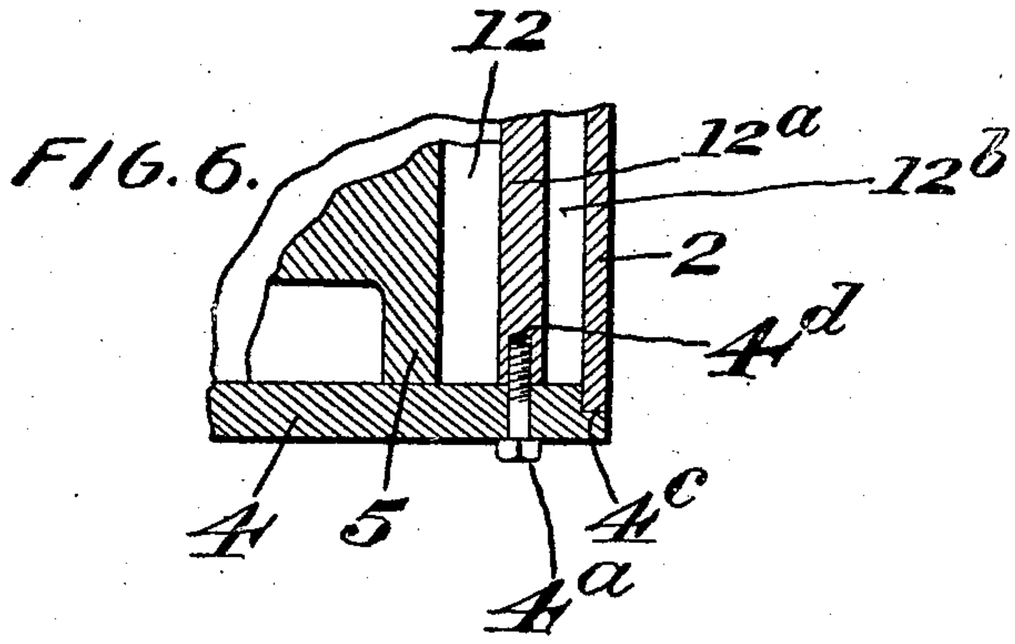


FIG. 6.



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UNITED STATES PATENT OFFICE.

JACOB RIPBERGER, OF BELLEVUE, KENTUCKY.

ROTARY MOTOR.

No. 929,018. Specification of Letters Patent. Patented July 27, 1909.

Application filed August 31, 1908. Serial No. 451,062.

To all whom it may concern:

Be it known that I, JACOB RIPBERGER, a citizen of the United States of America, and a resident of Bellevue, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Rotary Motors, of which the following is a specification.

This invention relates to improvements in rotary motors and more especially to the type of motor and structure already patented by me June 4, 1907, numbered 855,590, and the object of the invention is to somewhat simplify the motor already patented by me, as aforesaid, and to render its operation more efficient, with the chances and need of repair reduced to a minimum and the use of steam or other pressure somewhat economized.

The invention consists of a circular shell, a partially hollowed shaft having a circular series of side orifices and journaled in said shell, a drive-wheel suitably secured to said partially hollowed shaft and mounted within said shell eccentric to the inner circular wall thereof, a hollow feed-tube having a flange and a side orifice and with its inner end inserted in the hollow of said shaft to form a partial bearing for the latter and to convey the water or other pressure through the said side orifice in the feed-tube to and through radial passages or ports made in said drive-wheel and respectively coinciding or registering with the said series of side orifices in the said shaft, roller-buckets freely disposed in peripheral seats at the outer ends of the respective radial passages or ports in said drive-wheel and an exhaust-orifice leading from the interior of the shell in progressive relation to the said peripheral port-hole exit seats and roller-buckets in the drive-wheel.

Other important features of the invention will be fully hereinafter described and more particularly pointed out in detail in the description and, also, in the several claims immediately following such description.

In the accompanying sheet of drawings, Figure 1 is a side elevation of my device; Fig. 2, a front elevation thereof; Fig. 3, a central, longitudinal section thereof with part of the wheel in elevation; Fig. 4, a central, transverse, sectional elevation thereof, taken on the dotted-line *a*, *a*, of Fig. 3 but with the roller-bucket at the top in elevation; Fig. 5, a side elevation, partly in section of the device in a modified form, with its removable lid omitted to show the interior; and Fig. 6, a fragmentary section of the wheel and shell seen in Fig. 5, showing the manner of making and securing the side lid.

In these views, 1 indicates the base, 2 a circular rim supported thereby, 3 a closed, immovable, integral side head forming a part of said rim, and 4 the other side head of said rim but removably-attached thereto by screws 4^a, a suitable chamber being provided within said rim and sides, and containing a drive-wheel 5. Outer radial ribs 3^a are formed on the side heads 3 and 4, to provide the customary stiffness, lightness and strength.

The drive-wheel 5 is suitably keyed or otherwise rigidly secured to a horizontal drive-shaft 6, the latter being hollowed and open at one end, as shown at 6^a, to accommodate the inner end of a tubular bearing or arbor 7 that is preferably closed at its innermost end and provided with a flange 8 at its outer end, and has an intervening shoulder 9 against which the inner end of said hollow drive-shaft 6 abuts, all as best seen in Fig. 4.

An outward extension 7^a projects laterally beyond the flanged outer portion of tube or arbor 7 and leads to any source of steam, water, or other pressure supply, thereby forming a pressure-feed pipe to the interior of the shell that is formed by said rim and its two side-heads and more fully described hereinafter.

A port-hole 7^b is made in the periphery of tube or arbor 7 near its inner closed end, and flange 8 is provided with a series of axially-concentric slots or elongated openings 8^a through which latter screws 8^b are inserted for securing the combined feed-pipe and central arbor or shaft axially in place, the inner ends of screws 8^b engaging threaded holes in the outer circular end of boss 4^b on the removable side-head 4. The slots 8^a allow for any required circular adjustment of the feed-pipe within the hollow shaft 6, to provide for the proper pressure-delivery position of the port-hole 7^b relative to the several port-holes 6^b made in the hollow shaft 6 and each registering with said port-holes 7^b as it advances in the rotation of the drive-wheel.

The drive-wheel 5 is a circular disk of

suitable thickness, but hollowed out or concaved at both sides, as shown at 5^a, 5^a, in Fig. 4, to reduce side-friction, and it has a series of radial passage-ways or port-holes 5^b, preferably four in number, or a number to suit the power required and the average ordinary use of the motor, each of which leads from the central hub-orifice made in said drive-wheel up to and including a peripheral notch or recess 10 that carries a hollow tumbler or roller 11, the latter comprising a bucket that gravitates or is movable to and from seating-position in its carrying-recess 10 and projects laterally outward in the gradually increasing and decreasing eccentric, crescent-shape chamber 12 that leads downwardly to the exhaust port or orifice 13 provided in the base of the shell, as best seen in Fig. 3. A laterally-retreating notch 10^a is made in each of the several recesses 10 to provide for a free passage or feed of pressure to each projected or extended bucket 11 after it has once begun to pass into the eccentric-chamber 12 and forms an important feature of my invention herein.

In the operation of the device, the water or other pressure, under any suitable control, enters the tube or pipe 14 that is duly connected to the extension 7^a of the hollow bearing-arbor or feed-pipe 7; thence said pressure passes through the side orifice or port-hole 7^b of said feed-pipe 7, which port-hole 7^b is readily set or arranged in the position seen in Fig. 3 by due manipulation of the feed-pipe 7 and its slotted flange 8, so that the initial entrance of the pressure to the consecutively-advancing radial passages 5^b in the drive-wheel shall become at once effective when each passage 5^b is about to move away from its uppermost perpendicular position in the rotation of the disk 5, as best indicated in Fig. 3, and as the previous radial passage 5^b is about to leave or move entirely away from its first horizontal position in the rotation of said disk or drive-wheel 5, as best indicated in Fig. 3, and thereby preventing any "dead-centering"; thence said pressure passes along each radial passage or port 5^b, while advancing between the perpendicular and first horizontal positions, immediately above-referred to, causing the uppermost tumbler or bucket 11 to move outward from its seat 10 into the eccentric-chamber 12 and such pressure having a tendency to enter the retreating-notch 10^a so as to impinge upon the rear side of said bucket, the latter, in turn, riding on its fore side against the plane face 10^b of the notch 10 and gradually rolls outward to the full extent of its stroke, which is at a time when the adjacent radial passage 5^b is in the said first horizontal position, and then said tumbler or bucket rolls backward into the notch 10 until the latter reaches the lowermost perpendicular position of its adjacent radial passage. Such pressure as intervenes between the first bucket to advance and its immediately-following one freely discharges into the exhaust-port 13 after said first-named tumbler passes beyond the point of first contact with said exhaust-port and there is thus no back-pressure on the next said immediately-following tumbler to retard the forward rotation of the drive-wheel. The said rollers are especially well adapted to form buckets that roll to and from impinging position with the pressure in the eccentric-chamber 12.

A pet-cock 15 is supplied in the feed-pipe 14 at its junction with the extension 7^a, for the purpose of drawing off any water of condensation, or other suitable purpose.

A drive-pulley 16 is suitably mounted on the outer end of the drive-shaft 6 for connection with the device or devices to be operated by the motor.

In Fig. 5, I have shown a modified form of device, having three roller-buckets instead of four and an eccentric-chamber 12, 12, of crescent-form, at either side of the vertical axis of the wheel 5 and, also, an annular partition 12^a made integral with the side head or back 3 and lying between the rim of the shell and the wheel, a circular or annular chamber 12^b also intervening between said shell rim and partition. An additional exhaust-port 13^a is provided in the partition 12^a at the upper part of the shell, leading from the upper part of the additional eccentric-chamber to said annulus or circular chamber, which latter in turn, leads to the lower exhaust-port 13. An opening 13^b is provided in the partition 12^a at the lower part of the partition 12^a and provides for the exhaust from the eccentric-chamber 12 shown to the left in Fig. 5. Both eccentric-chambers 12, 12 thus exhaust through the one lower port 13 which has free access to the annulus 12^b. In this form of device, there is always two of the roller-buckets under a full pressure or head of steam in the respective eccentric-chambers, the remaining third roller-bucket being either free from pressure in its seat in either its uppermost or in its lowermost position, or when it is just about to take pressure for advancing the wheel when one of the other roller-buckets is just about to be relieved of pressure. This is an extremely simple form but adapted to a higher power than the other form, owing to the greater amount of steam or other pressure being exerted at one time or simultaneously on more than one roller-bucket, which is quite obvious.

In Fig. 6 is shown the annular partition 12^a and the manner of constructing the removable side-head or lid 4 with a shouldered pressure-tight edge 4^c. Screws 4^a are used to secure the said side-head or lid 4 in place, the inner threaded shanks of such screws en-

gaging screw-holes 4[d] in the annular partition 12[a].

I claim:—

1. A rotary motor comprising a circular rim or shell having a suitable base and a closed head or side, a detachable head or side for said rim, a circular disk or drive-wheel in said rim intervening said heads and having radial passage-ways leading from a central orifice therein to its periphery and, also, having notches or recesses together with retreating pressure-feed notches in said periphery at the outer ends of the respective radial passages, roller-buckets freely mounted within said peripheral notches or recesses in the drive-wheel, a partially hollow drive-shaft mounted in eccentrically-arranged bearings in the said shell-heads and rigidly-carrying said drive-wheel eccentric to said rim so that a pressure-chamber is provided along part of the periphery of said drive-wheel within the rim for due action of said roller-buckets in rotating the drive-wheel, inlet ports in said hollow drive-shaft registering with said radial passages, a concentric feed-pipe whose inner end engages inside the hollow of said shaft and has a side orifice therein which is consecutively engaged by said inlet-ports in said shaft, means comprising a flange having slots or elongated openings therein constructed on said feed-pipe and screws engaging said slots and the removable head of the shell whereby the feed-pipe is adapted to proper adjustment within the said hollow shaft, and a suitable exhaust port leading from said roller-bucket pressure-chamber at the retiring end thereof.

2. A rotary-motor comprising a shell having an immovable side-head and a removable side-head or lid and both side-heads lying opposite each other and having central bearing-orifices made therein, a drive-wheel having a central orifice and radial passage-ways or ports leading from its said central orifice to its periphery, and, also, having retreating pressure-feed notches or recesses in said periphery at the outer ends of said radial passage-ways, roller-buckets freely mounted in said retreating pressure-feed notches or recesses of the drive-wheel, a partially hollow drive-shaft keyed in the central orifice of said drive-wheel and journaling eccentrically in the bearing-orifices of said opposite side-heads of the shell and having a circular series of inlet-ports registering with the said radial passages of the drive-wheel, an annular partition having eccentric inner edges, vertical crescent-shape pressure-chambers one at either side of the vertical axis of the drive-wheel and intervening the periphery of the latter and the inner wall of the shell rim, a pressure-feed pipe leading to and within said hollow shaft and having a side orifice or port consecutively engaged by the inlet-ports of said hollow drive-shaft and independent exhaust-passages for both said pressure-chambers.

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Witnesses:

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