

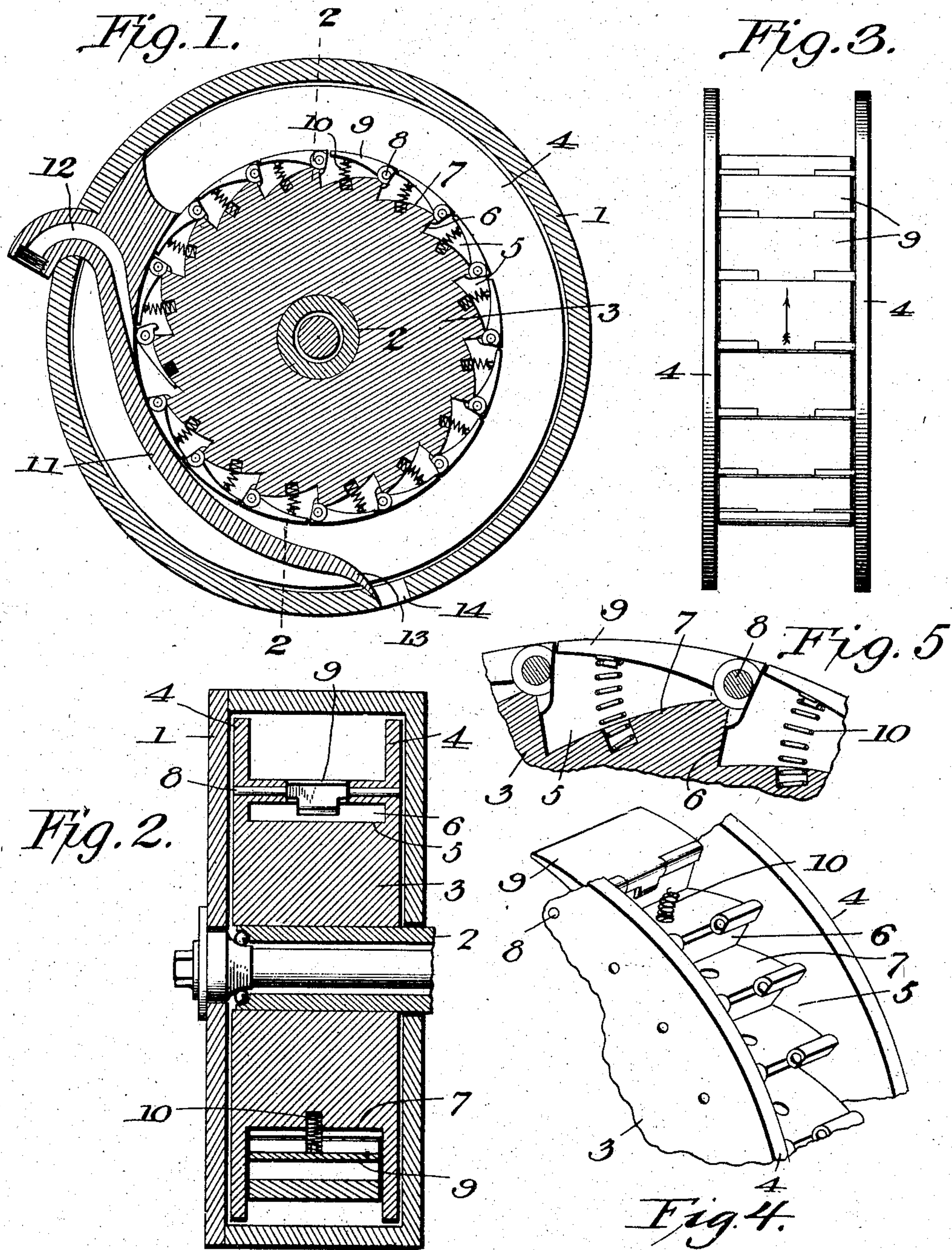
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T. WAXEL, ADMINISTRATRIX.

ROTARY MOTOR.

APPLICATION FILED SEPT. 15, 1904.



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# UNITED STATES PATENT OFFICE.

TINA WAXEL, OF WEST OAKLAND, CALIFORNIA, ADMINISTRATRIX OF  
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## ROTARY MOTOR.

SPECIFICATION forming part of Letters Patent No. 791,596, dated June 6, 1905.

Application filed September 15, 1904. Serial No. 224,591.

*To all whom it may concern:*

Be it known that OLE E. WAXEL, deceased, late a citizen of the United States and a resident of Oakland, in the county of Alameda and State of California, did invent a new and useful Rotary Motor, of which the following is a specification.

This invention relates to revoluble motors, and has for its principal object to provide a novel form of motor to be propelled by air, steam, or other fluid under pressure, the device being applicable for the propelling of vessels and vehicles or for operating machines of any kind or character.

A further object of the invention is to provide a novel form of rotary impact motor in which provision is made for utilizing all of the force of the current of operating fluid without danger of loss of pressure or any rearward tendency of the movable part of the motor due to pressure exercised in the wrong direction.

With these and other objects in view, as will be more fully hereinafter described, the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of invention may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation of a motor constructed in accordance with the invention. Fig. 2 is a transverse sectional elevation of the same on the line 2 2 of Fig. 1. Fig. 3 is an end elevation of the motor. Fig. 4 is a detail perspective view of a portion of the periphery of the revoluble piston with the bucket-covering plates detached. Fig. 5 is a detail sectional view of a portion of the piston drawn to an enlarged scale.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The cylinder 1 of the motor is circular in

form and may be made in two or more sections, as required. The opposite side walls of the cylinder are provided with bearings for a transversely-disposed shaft 2, to which is secured a piston-drum 3, the latter being provided with a rather wide peripheral groove forming two flanges 4, disposed one at each side of the drum. At the base of the groove the piston is cut away to form a plurality of pockets 5, which to some extent resemble the spaces between ratchet-teeth, each having an approximately radial wall 6 and a curved or inclined wall 7. Extending transversely across the drum are pivot-pins 8, one at the apex of each tooth-like division between the buckets, and pivoted on these pins are segmental plates 9, each of a width equal to the width of the bucket and of a length equal to the distance between the adjacent walls of the toothed flanges 4. These plates are arranged on arcuate lines following the curvature at the bottom of the piston-groove, and they normally occupy such position as to form covers or lids for the buckets, so that the bottom wall of the groove is, to all intents and purposes, a practically continuous and smooth surface, which when the piston is rotated will not offer any resistance, as would a broken or irregular surface, and if all of the plates occupied the full out position the resistance to the rotative movement would be no greater than if the piston were in the form of a solid circular body. These plates are projected by compression-springs 10 of a size proportioned to the size of the motor, but in all cases must be sufficiently yieldable to permit compression and the inward movement of the plate when the latter is subjected to the impact of the jet of actuating fluid.

Arranged within the cylinder is a curved abutment 11, approximately crescentic in form. One end of this abutment occupies practically the whole of the cross-sectional area of the piston-groove, and through this portion of the abutment leads a port 12, through which the jet of actuating fluid will be introduced. The inner surface of the abutment closely follows the line of the piston-



drum to a short distance beyond the lower end of the port 12, and thence the space is gradually widened to permit the free escape of the air after its force has been utilized.

- 5 The lower end of the abutment terminates in a curved tongue 13, which extends into the exhaust-port 14, this proving convenient in the manufacture and assembling of the parts, the abutment being held in place simply by passing portions thereof through suitable openings in the cylinder.

In the operation of the device the bucket-closing plates normally follow the contour of the drum and during rotation of the latter are successively presented to a position in alignment with the inlet-port. The pressure of the entering fluid compresses the spring by forcing the covering-plate inward, and the approximately radial wall of the bucket is subjected to the impact force of the jet, and after passing beyond the influence of the jet the buckets will again be closed, so as to present a continuous smooth surface, which will not be retarded by air within the cylinder. The construction is further advantageous, in that the covering-plates being pressed closely against the abutment prevent the passage of any air upward from the port to the top of said abutment. The buckets will not be sufficiently steam-tight to prevent the escape of any steam from the bucket under pressure greater than the pressure within the cylinder.

Having thus described the invention, what is claimed is—

- 35 1. In a rotary motor, a piston-drum having peripheral pockets, and covers carried by the

drum and movable to open and close the mouths of the pockets.

2. In a rotary motor, a revoluble piston-drum having peripheral buckets, and pivoted plates arranged on curved lines following the curvature of the piston and serving to close the mouths of the buckets.

3. In a rotary motor, a revoluble piston-drum having peripheral buckets, an arcuate plate for closing each bucket, said plate following the curvature of the periphery of the drum, and a spring tending to force the plate outward.

4. The combination in a rotary motor, of a cylinder, a piston arranged in said cylinder and provided with a peripheral groove forming a pair of edge flanges, the inner wall of the groove being recessed to form buckets, and a ported abutment arranged within the cylinder and fitting between said flanges.

5. The combination in a rotary motor, of a cylinder, a revoluble piston-drum arranged therein and provided with a peripheral groove forming a pair of edge flanges the inner wall of the groove being recessed to form buckets, a ported abutment fitting between the two flanges and close to the inner wall of the groove, and closing-plates for said buckets.

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

TINA WAXEL,

*Administratrix of the estate of Ole E. Waxel, deceased.*

Witnesses:

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