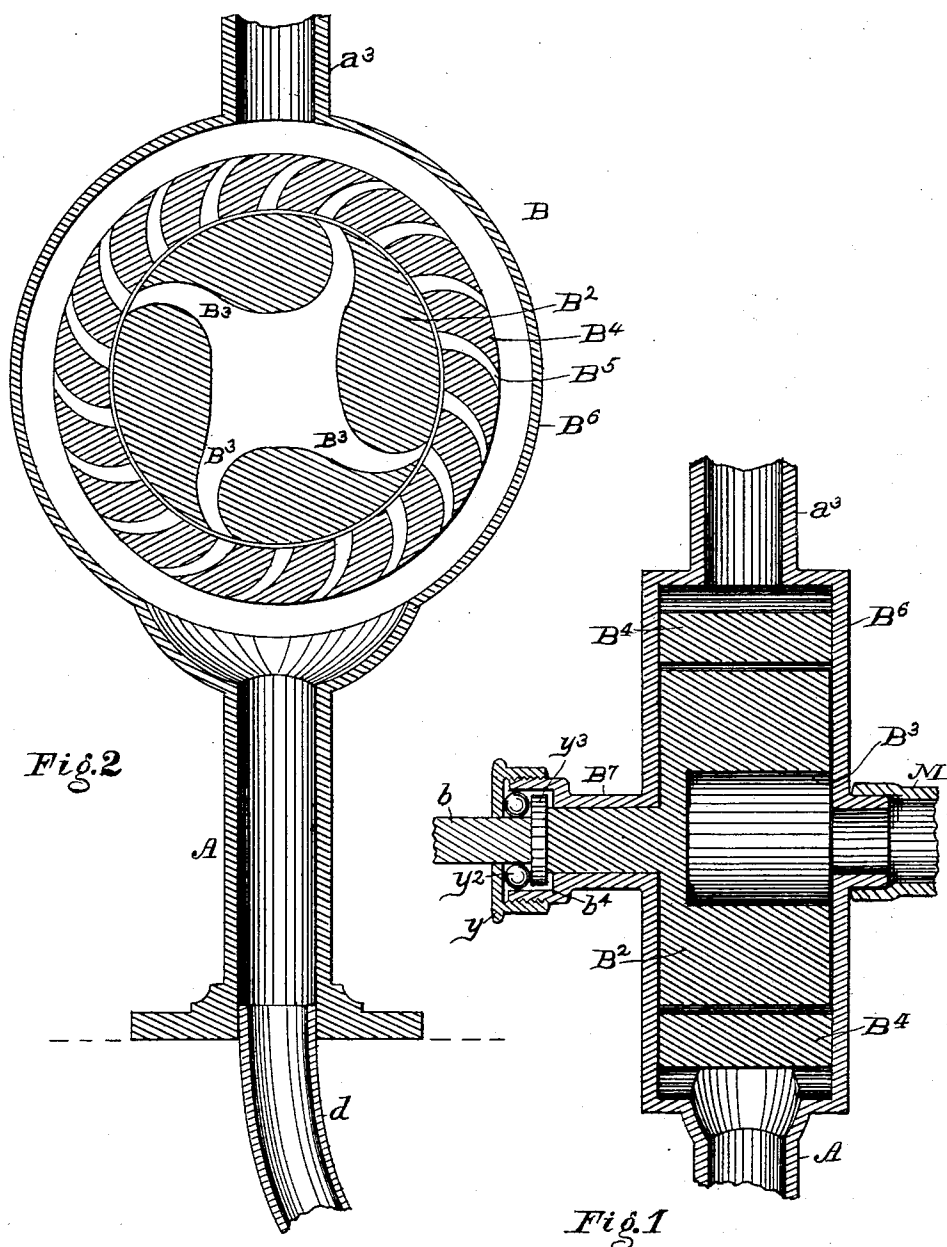


(No Model.)

G. VALLEY.
PRESSURE OPERATED MOTOR.

No. 590,247.

Patented Sept. 21, 1897.



WITNESSES

John R. Ryder.
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UNITED STATES PATENT OFFICE.

GUSTAF VALLEY, OF JOHNSTOWN, PENNSYLVANIA.

PRESSURE-OPERATED MOTOR.

SPECIFICATION forming part of Letters Patent No. 590,247, dated September 21, 1897.

Application filed July 31, 1896. Serial No. 601,279. (No model.)

To all whom it may concern:

Be it known that I, GUSTAF VALLEY, a citizen of the United States, residing at Johnstown, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Pressure-Operated Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in pressure-operated motors, its object being to simplify and improve the construction, cheapen the cost, and increase the efficiency of the device; and it consists in the new and improved structure, arrangement, and combination of parts, as hereinafter fully described, and pointed out in the claims.

In the drawings, Figure 1 represents a central vertical section through a motor embodying my invention, taken in its narrow lateral dimension. Fig. 2 is a like section taken at right angles to the plane of Fig. 1, and hence in the wider lateral dimension of the motor, which is discoid in general shape.

A represents the hollow base or standard, on which the motor B is supported and through which the exhaust-discharge is taken. The motor B comprises the rotatable disk or wheel B², having a central cavity into which the actuating medium, whether it be water, steam, or air, enters under pressure, and from which radiating curved channels B³ extend to the periphery of the disk. Closely surrounding the disk B², but not in actual contact therewith, is a fixed ring B⁴, having ports B⁵, reversely curved from the channels B³ and extending entirely through the ring B⁴ radially. The ring B⁴ entirely fills the case or shell B⁶ from side to side, as seen in Fig. 1, but has a circumferential space all around between it and the shell, as seen in Fig. 2, while the disk B² has a slight clearance between it and the shell on each side to avoid friction.

At the top of the shell or case is an air-chamber a³, communicating with the interior of the case and extending to any suitable height, (shown broken away in the drawings,) whereby an equalization of the pressure is obtained on natural principles well understood.

Attached to or integral with the disk B² is

the stem or shaft b, whose rotation actuates, directly or by suitable gearing, (not shown,) the mechanism to be driven. A sleeve B⁷, extending from the motor case or shell, forms a bearing for the stem or shaft b, and to more effectually relieve the disk B² from the friction caused by the pressure thereon the sleeve B⁷ is distally expanded to form a chamber b⁴, and the stem b is shouldered at this point to receive a washer y³, which is of slightly less diameter than the chamber b⁴. Between the washer y³ and the cap y, which closes the chamber b⁴, balls y² are interposed, and thus the friction of disk B² is almost entirely eliminated.

From the hollow base A at any convenient point a discharge-pipe d conducts the exhaust to a sewer or other suitable point of emission in a manner common and well understood.

The back pressure of the water, steam, or air entering through the supply-pipe M and escaping through the ports B⁵ and B⁵ rotates the disk B² very rapidly and forcibly and, escaping into the annular space outside of the ring B⁴, exhausts through the standard A without causing the eddies or cross-currents and friction which waste so much of the initial pressure when the changes of direction in the current of pressure medium are numerous or abrupt.

While the motor is preferably used in an upright position, as shown, it may be used very efficiently when placed horizontal, and such an arrangement of it is within my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a pressure-operated motor the combination of a hollow standard, a vertically-flattened discoid chamber supported thereon and communicating peripherally therewith, a ring secured in said chamber with an annular circumferential space between it and the chamber-wall and having curved ports extending radially through said ring and opening into said circumferential space, a disk substantially filling the interior of the ring and having a central space open on one side and channels curved in the opposite direction to those in said ring extending from said open space to the periphery of the disk, said ring and disk completely filling said chamber lat-

erally, a pressure-supply communicating with an opening in said chamber opposite the open center of said disk, a stem or shaft rigid with said disk and extending through the opposite side of said chamber and having a bearing on said chamber-wall, substantially as described.

2. In a pressure-operated motor the combination of a disk centrally open on one side and having curved channels extending from said central opening to the periphery and opening thereon, a shaft extending from the opposite side of said disk, a ring closely surrounding said disk, and having reversely-curved ports extending radially through and discharging only on the periphery of said ring, a flat discoid case inclosing said ring with a

circumferential space between them and having on one side an inlet-opening opposite the open center of said disk and a bearing for said shaft on its opposite side, said disk and ring completely filling said case laterally, a hollow standard on which said case is supported in a vertical position and with which it communicates peripherally at its bottom part, and an air-chamber above said case and communicating with it peripherally at its top, substantially as described.

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

GUSTAF VALLEY.

Witnesses:

J. HUGO NORMAN,

J. H. JOWETT.