

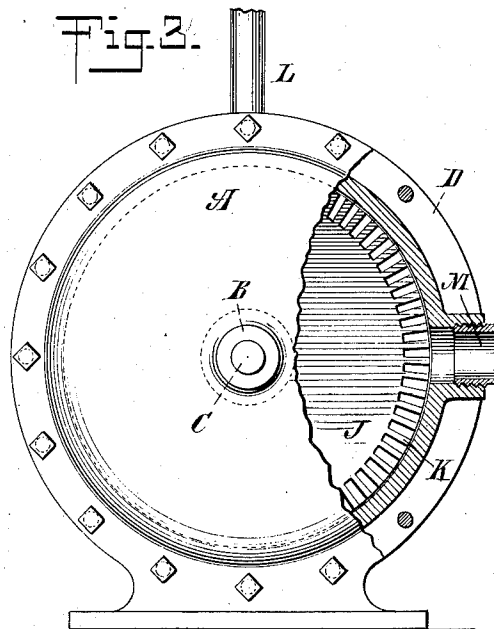
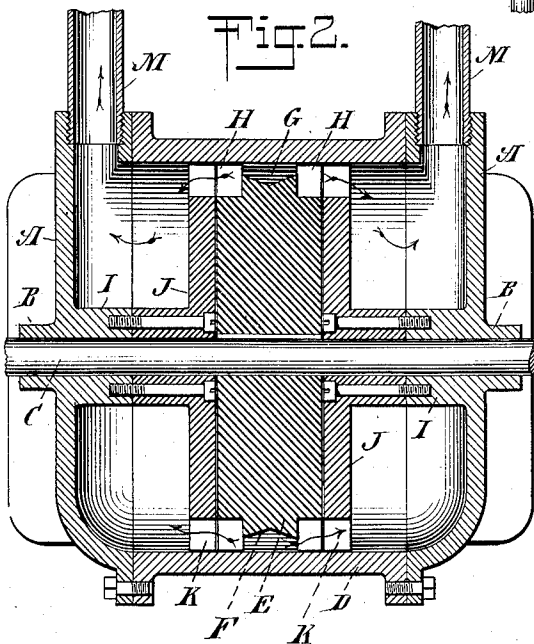
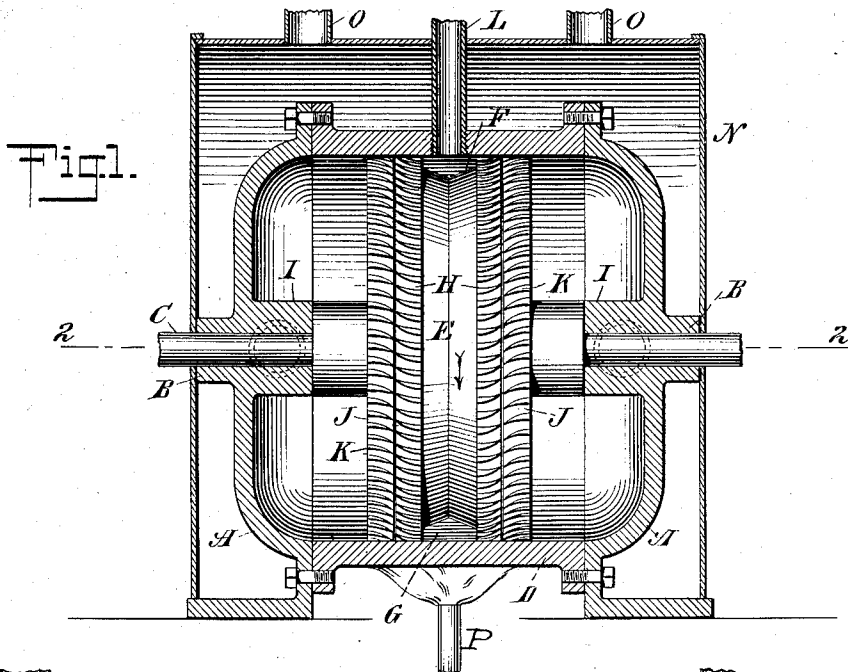
No. 850,196.

PATENTED APR. 16, 1907.

W. A. WARMAN.
TURBINE MOTOR.

APPLICATION FILED NOV. 20, 1905.

2 SHEETS--SHEET 1.



WITNESSES:

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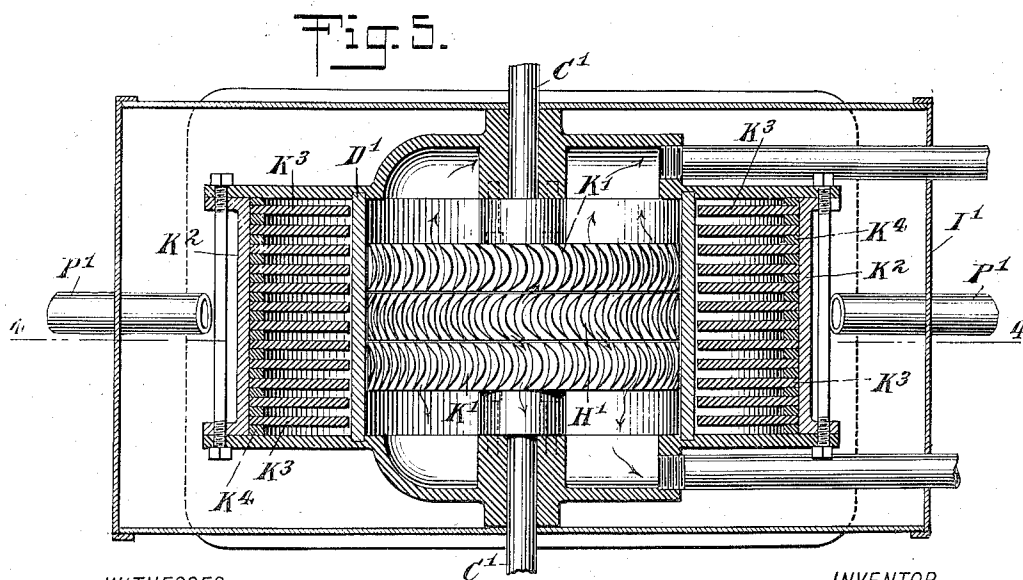
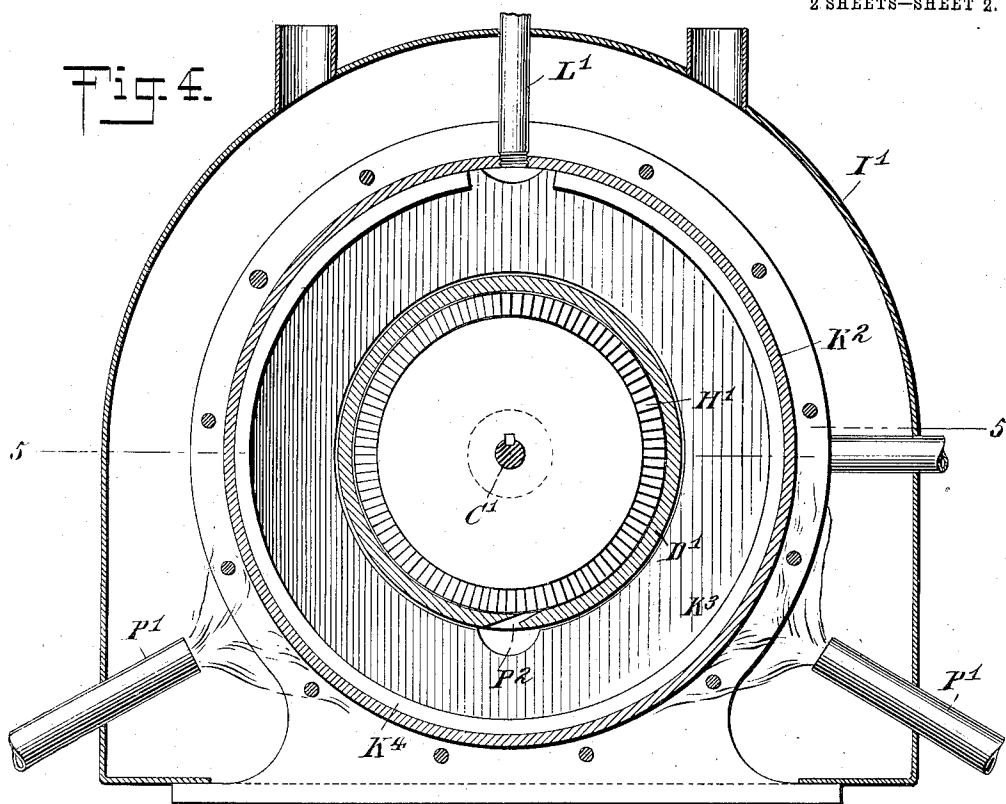
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WILLIAM A. WARMAN, OF NEW YORK, N. Y., ASSIGNOR TO KELLER
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TURBINE-MOTOR.

No. 850,196.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed November 20, 1905. Serial No. 288,124.

To all whom it may concern:

Be it known that I, WILLIAM A. WARMAN, a citizen of the United States, and a resident of New York, borough of Manhattan, in the county of New York and State of New York, have made and invented certain new and useful Improvements in Turbine-Motors, of which the following is a specification.

My invention relates to an improved motor, and preferably steam-turbine motors, the object being to provide a motor of this kind or character so constructed and arranged that it will be perfectly balanced and all end thrust upon the shaft avoided.

A further object is to so construct and arrange the motor that the steam will be generated therein instead of in a separate boiler and led thereto by supply-pipes, as is ordinarily done.

With these and other ends in view the invention consists in certain novel features of construction and combinations of parts, as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical section of a steam-turbine motor constructed in accordance with my invention. Fig. 2 is a sectional view taken on the line 2-2 of Fig. 1. Fig. 3 is an end view in elevation, some of the parts being broken away. Fig. 4 is a sectional view of a modified form of the boiler, taken on the line 4-4 of Fig. 5; and Fig. 5 is a sectional view of the same, taken on the line 5-5 of Fig. 4.

By reference to the drawings it will be seen that the motor consists of a casing comprising the end plates A, provided with the journals B, in which is supported the shaft C, said plates A being bolted or otherwise secured to the ring D, forming the central part or portion of the casing. Within the central portion of the casing D is located the wheel or disk E, of a diameter to nicely fit and rotate therein, said wheel or disk being keyed or otherwise tightly secured to the shaft C for the purpose of driving the same.

The central portion of the rim of the wheel E is V-shape in cross-section, as illustrated at F, forming a recess or chamber G for the generation of steam, as hereinafter described. On each side of this V-shape groove in the rim of the wheel are formed the vanes H, preferably curved, as clearly illustrated in

Fig. 1, and against which the steam impinges as it flows from the chamber G.

Formed on or secured to the end plates A are the lugs or hubs I, to which are securely fastened against movement the disks J, resting against each side of the wheel E and of a diameter the same as that of said wheel—that is, of a diameter to nicely fit within the ring D. The edge or periphery of each of the disks J is formed with the vanes K, curved in the opposite direction to those formed on the rim of the wheel E in order that the steam in escaping from the chamber G through the vanes H will react on said vanes K and drive said wheel in the proper direction.

Through the casing or ring D leads an inlet water-pipe L for conveying water into the chamber G, and from the end plates A lead the steam-exhaust pipes M, through which latter the steam after passing between the vanes on the wheel E and disks J and out into the casing escapes into the atmosphere or condenser, if such be employed.

The motor is partially or entirely covered by the metal hood N, having outlets O, and through which hood project pipes or torches P, the latter being employed to convey a suitable gas, which when burned, as illustrated in Fig. 1, will be directed on or against the central portion of the casing or ring D, the inclosing hood or cover N directing the heated air to all parts of the casing, the gases escaping through the outlets O. Any number of these torches P may be employed, the number thereof depending largely upon the size of the water-inlet pipe L and the rapidity with which it is desired to generate the steam within the motor.

In operation the water obtained from some suitable tank or reservoir (not shown) feeds through the pipe L into the chamber G and coming in contact with the heated casing and other parts of the motor is immediately converted into steam, which, impinging against the vanes H on the rim of the wheel E and passing between said vanes and the vanes K on the stationary disks J, against which latter vanes it reacts in passing out into the casing and through the exhaust-pipes Q, drives said wheel E in the direction as indicated by the arrow in Fig. 1, thereby driving the shaft C, to which said wheel is tightly keyed or fastened.

I have found by experiment that a motor so constructed and arranged may be comparatively small and compact in size while developing a relatively large amount of power; further, that it is evenly balanced, and thereby avoids any and all end thrust upon the shaft, allowing the motor to run evenly and smoothly and with but little loss of power from friction; and, further, is economical to build in that the necessity of a separate boiler for the generation of steam with the pipes leading therefrom to the motor is overcome.

If desired, I may construct the motor as illustrated in Figs. 4 and 5, wherein the central wheel secured to the shaft C' is provided with the single set of vanes H', the stationary disks provided with the reacting vanes K' being secured to the end plates, as before described. Again, the casing may be a double one—that is, around the central portion of the casing or ring D' may be fitted a second ring or jacket K², the space between said rings being filled, if desired, with the metal disks K³, separated by the rings K⁴, said outer ring K² being threaded therein the end of the inlet water-pipe L', as illustrated in Fig. 4. Through the hood or cover I' lead the torches P', the flames from which will impinge against the outer ring K², thereby heating the same as well as the rings or disks K³, which disks, dividing and subdividing the water into small particles or portions, will readily convert the same into steam, which passes through an inclined opening or openings P², formed in the ring or central portion of the casing D', which steam impinging against the vanes H' and reacting on the vanes K' will operate to revolve the wheel keyed or otherwise tightly secured to the shaft C'. This modified form of the motor is, as in the first instance, perfectly balanced, avoiding any end thrust upon the shaft. Again, it will be understood without further description and illustration that instead of surrounding the central portion or part of the casing with a jacket, as described with relation to Figs. 4 and 5, such jacket may be applied to the ends and containing disks or rings for facilitating the generation of steam in the motor and that also other changes might be made in the detail construction of the motor without in any way departing from the spirit and scope of my invention. I do not, therefore, limit the same to the precise construction described and illustrated; but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a steam-generating chamber, a motor located therein and comprising a rotatable disk having a circumferential channel forming an annular steam-chamber with vanes at each side thereof, and stationary vanes on each side of the rotatable disk.

2. A steam-turbine motor comprising a casing, a motor including a rotatable disk having a groove extending around its circumference forming an annular steam-chamber with vanes on each side thereof, stationary vanes on each side of the rotatable disk, and means for generating steam within the casing.

3. A steam-turbine motor comprising a rotating and stationary disks formed with vanes, said rotatable disk being contained between a pair of stationary disks, and being circumferentially channeled to form a steam-chamber and a casing inclosing the same and having a steam-generating chamber located within said casing, substantially as described.

4. A steam-turbine motor comprising a rotating disk and stationary disks located on either side thereof, said disks being provided with vanes, said rotatable disk being contained between a pair of stationary disks, and being circumferentially channeled to form a steam-chamber, a casing inclosing said disks and having a steam-generating chamber located within the same, substantially as described.

5. A steam-turbine motor comprising a rotating disk formed with a peripheral steam-chamber and with vanes on each side thereof, a stationary disk on each side of the rotating disk and provided with vanes, and a casing surrounding said disks, substantially as described.

6. A steam-turbine motor comprising a rotating disk, the rim of which is formed with a steam-chamber and with vanes on each side thereof, a stationary disk located on each side of said rotating disk and provided with vanes, and a casing surrounding said disks, substantially as described.

7. A steam-turbine motor comprising a motor proper, said motor including spaced stationary disks provided with vanes and an intermediate rotating disk having an annular steam-chamber and vanes on each side thereof, a casing inclosing said motor and having a steam-generating chamber located within the same, a water-inlet pipe leading through said casing, and means for heating said casing, whereby the steam is generated within said casing, substantially as described.

8. A steam-turbine motor comprising a motor proper provided with an annular steam-generating chamber with vanes on each side thereof and stationary vanes on each side of the disk, a casing inclosing said motor, an inlet-pipe leading through said casing, means for heating said casing, and a hood covering said casing for confining the heat, substantially as described.

9. A turbine-motor comprising a casing, a shaft passing through and journaled in said casing, a wheel secured to said shaft and provided with a chamber in the center thereof and vanes on either side of said chamber, a stationary disk located on either side of said

rotating wheel and fastened to said casing, and an inlet-pipe passing through said casing and communicating with the chamber in said rotating wheel, substantially as described.

- 5 10. A steam-turbine motor comprising a double casing, a shaft journaled in said casing, a rotating wheel secured to said shaft and provided with vanes, a stationary disk located on each side of said rotating wheel and
10 provided with vanes, an inlet-pipe leading through said casing to said rotating wheel,

means for heating said casing, and a hood covering said casing for confining the heat therein, substantially as described.

Signed at New York, borough of Manhattan, in the county of New York and State of New York, this 16th day of November, A. D. 1905.

WILLIAM A. WARMAN.

Witnesses:

N. B. SMITH,
M. VAN NORTWICK.