

W. KILMER.
STEAM TURBINE.
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948,176.

Patented Feb. 1, 1910.

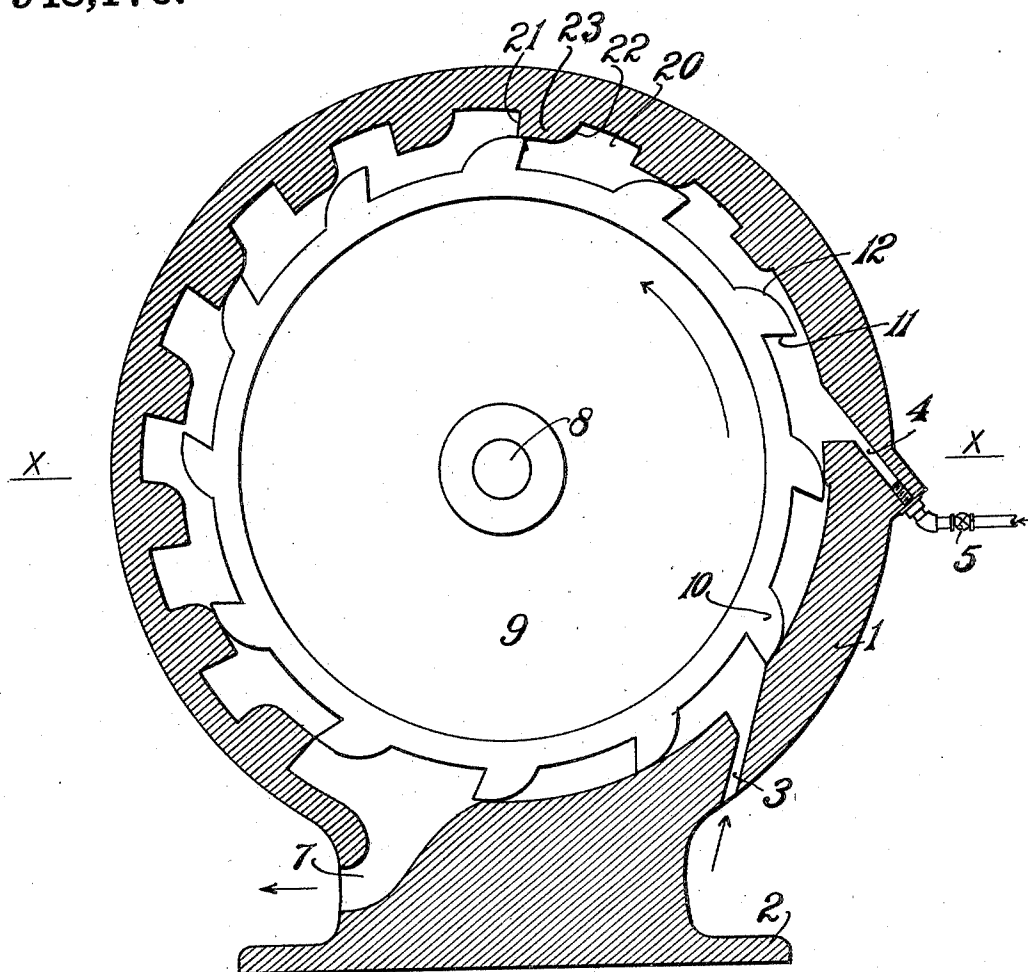


FIG. 1.

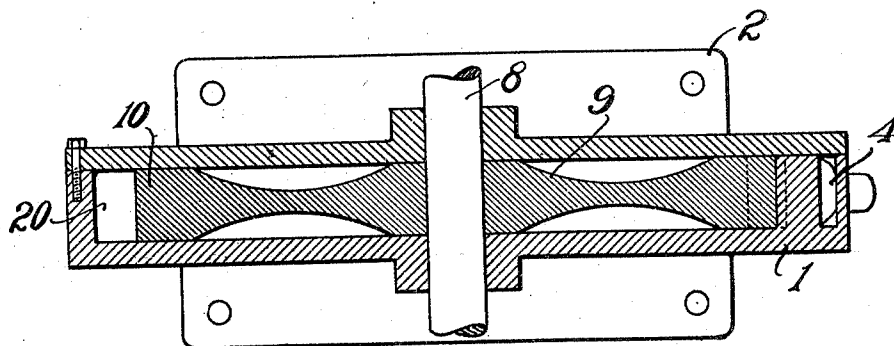


FIG. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

WELLINGTON KILMER, OF HYDE PARK, MASSACHUSETTS.

STEAM-TURBINE.

948,176.

Specification of Letters Patent.

Patented Feb. 1, 1910.

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To all whom it may concern:

Be it known that I, WELLINGTON KILMER, a citizen of the United States, residing at Hyde Park, county of Norfolk, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Steam-Turbines, of which the following is a specification.

This invention relates to a rotary motor, and more particularly to a steam turbine.

The object of my present invention is to increase the effective force of the steam, overcome the tendency of the steam to race ahead while in the presence of the buckets, and to improve and simplify turbine structure in general by which a more efficient motor may be produced while still preserving simplicity and durability of structure. To this end I have devised a certain relation of coöperating spaces on the operative phase of my turbine so arranged and inter-related as to take advantage of complete expansion and to prevent undue or sudden expansion or displacement before the proper work has been secured.

As illustrative of my invention, and as more fully descriptive of the objects and means above suggested, I have described and shown in the following specification and in the drawing which forms a part thereof, an embodiment which for the present purposes will afford a sufficiently complete understanding of my invention to those skilled in the art.

Throughout specification and drawings like reference numerals indicate corresponding parts, and in the drawings—

Figure 1 is a side view in section of my turbine, and Fig. 2, a transverse section on the line X—X, Fig. 1.

1 is a shell or casing having a suitable base 2.

3 is an intake, and 4 an auxiliary intake for the steam. The auxiliary intake 4 is preferably supplied by a cut-off device, as by the valve 5 which may be controlled by a ball governor, or other suitable automatic control, indicated in the drawing.

7 is the exhaust, preferably located at the bottom of the casing, whereby the chamber may be completely drained of any condensation.

8 is a shaft on which is mounted the rotary member 9 having buckets 10. These buckets are formed with a radial forward face 11, and a rearwardly relieved or curved rear

face 12, and are spaced apart uniformly about the periphery of the member 9.

On the inner surface of the casing 1, adjacent to the peripheral path of the buckets 10 are a series of pockets, or cylinder bases 20, successively arranged from the intake side through which the ports 3 and 4 pass around to the exhaust 7 in the direction of rotation of the motor which would be presumed to be over in the direction of the arrow. The forward faces 21 of the pockets are set radially, while the rear faces 22 are relieved or curved rearwardly so as to be oppositely disposed to the arrangement of the buckets. These pockets 20 are of progressively increasing capacity in the direction of rotation, whereby successive expansion chambers will be formed with the buckets on the rotary member, so that the steam in its course through the turbine will be successively expanded in chambers of increasing capacity. The pockets 20 are spaced apart by the wall thickness 23 of increasing thickness, whereby the uniformly spaced buckets upon the rotary member will be presented to the pockets at different phases of rotation so that succeeding pockets will not be wholly uncovered while the steam is passed from one pocket to another through a bucket which has just passed by complete registration of any one pocket. In this way the steam can not race or run through the motor, but will be directly confined within certain chambers in which its expansion may take place and its working efficiency secured.

In starting my turbine steam is applied through the parts 3 and 4 to the rotary member 9 but as soon as the motor is under way the supply at the auxiliary port 4 is cut off.

The length of the working phases of the motor, the size of the buckets, the size of the pockets, and the proportioning of the capacity and the spacing of the steam, may all be modified to suit the speed or work desired, without departing from the spirit of my invention.

What I therefore claim and desire to secure by Letters Patent is:—

1. A steam turbine comprising a rotary member having peripheral concentric bottom buckets suitably spaced apart and each having a radial rear working face and a rearwardly relieved forward face, a casing closely fitting about said member having suitably spaced pockets adjacent to the pe-

ripheral path of said buckets and each having a rear wall radially disposed and a forward wall rearwardly relieved, the spacing of said buckets and pockets being so progressively related that one space on said rotary member and on said shell shall always be opposite at every phase of the motor and the bottoms of said casing pockets being concentric to a point off center relative to the rotary member on the exhaust side thereof whereby said casing pockets will have a successively increasing capacity from the intake to the exhaust.

2. A steam turbine comprising a rotary member having peripheral buckets suitably spaced apart and each having a radial rear working face and a rearwardly relieved forward face, a casing closely fitting about said member having suitably spaced pockets adjacent to the peripheral path of said buckets and each having a rear wall radially disposed and a forward wall rearwardly relieved, said pockets being of increasing capacity successively in the direction of rotation of the member and the spacing of said buckets and pockets being so progressively related that one space on said rotary member and on said shell shall always be opposite at every phase of the motor.

3. A steam turbine comprising a rotary member having peripheral buckets suitably spaced apart, a casing closely fitting about said member and having suitably spaced pockets adjacent to the peripheral path of said buckets and of increasing capacity successively in the direction of rotation of the member, the spacing of said buckets and pockets being so progressively related that one space on said rotary member and on said shell shall always be opposite at every phase of the motor.

4. In a steam turbine, a rotary member having peripheral buckets suitably spaced apart, a casing closely fitting about said member and having suitably spaced pockets adjacent to the peripheral path of said buckets, said buckets and pockets forming in rotation successive expansion chambers of successively increasing capacity from inlet to exhaust, each chamber so formed having its outer and inner peripheral walls with a successively increasing separation.

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

WELLINGTON KILMER.

Witnesses:

ELLIS SPEAR, Jr.,
JOSEPH L. BURNS.