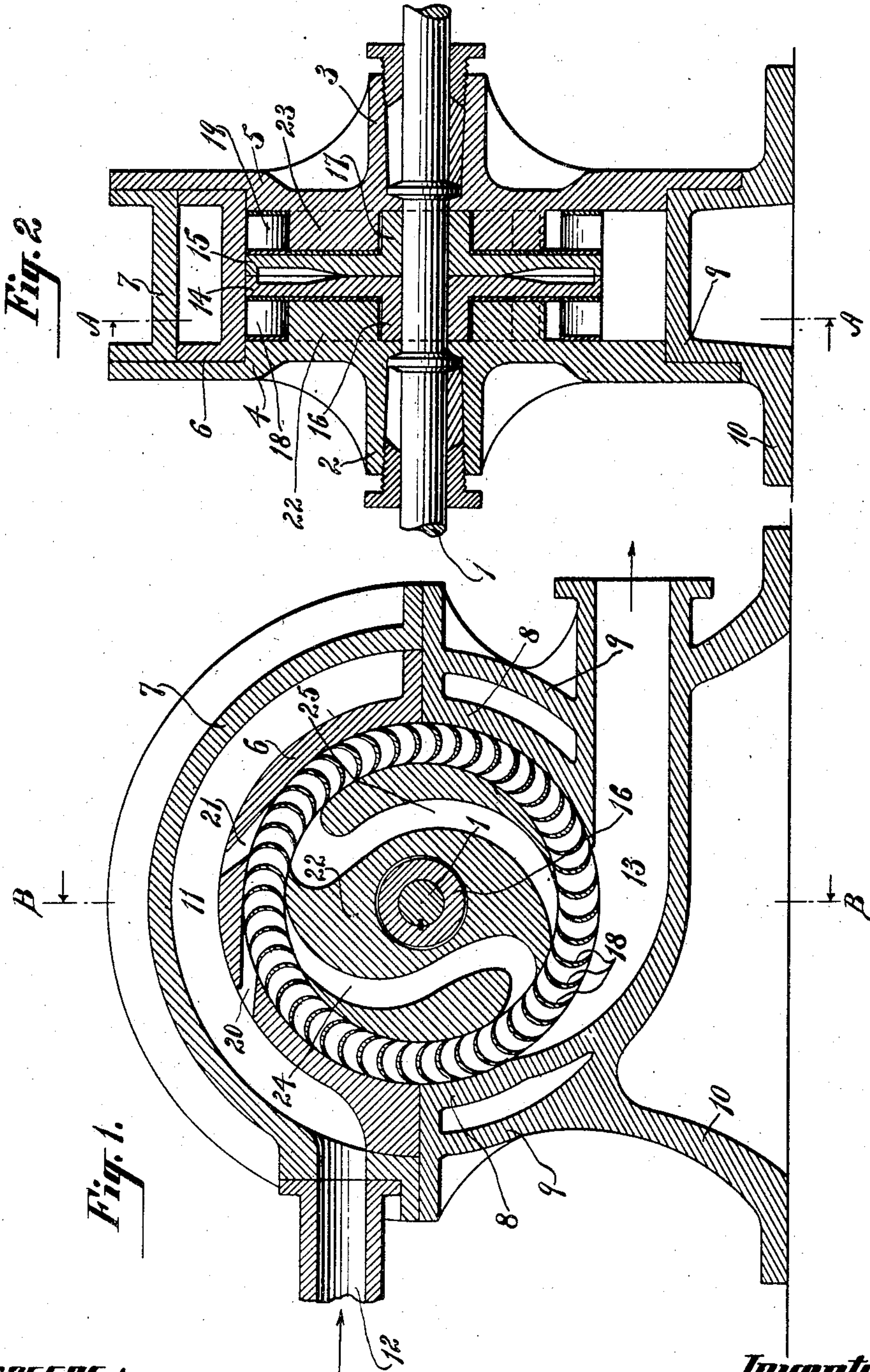


No. 877,502.

PATENTED JAN. 28, 1908.

L. HACHENBERG.
TURBINE ENGINE.

APPLICATION FILED JUNE 8, 1906.



Witnesses:

J. S. Hachenberg.
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Inventor:

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UNITED STATES PATENT OFFICE.

LOUIS HACHENBERG, OF NEW YORK, N. Y.

TURBINE-ENGINE.

No. 877,502.

Specification of Letters Patent.

Patented Jan. 28, 1908.

Application filed June 8, 1906. Serial No. 320,871.

To all whom it may concern:

Be it known that I, LOUIS HACHENBERG, a citizen of the United States, and resident of the borough of Bronx, in the city and State of New York, have invented a new and useful Improvement in Turbine-Engines, of which the following is a specification.

My invention relates to improvements in turbine engines and has for its object to provide certain improvements in the construction, form and arrangement of the several parts of the engine whereby the motive fluid may be directed therethrough in the most economical manner.

My invention contemplates the use of a piston having a plurality of vanes, one or more nozzles arranged to supply the motive fluid and give it velocity and direction whereby the motive fluid is caused to impinge upon the vanes more than once in one revolution of the piston.

In the accompanying drawings, Figure 1 is a transverse section through the engine in the plane of the line A—A of Fig. 2, looking in the direction of the arrows, and Fig. 2 is a longitudinal central section through the engine taken in the plane of the line B—B of Fig. 1, looking in the direction of the arrows.

The engine shaft 1 extends through central lugs 2 and 3 of the cylinder heads 4 and 5. The upper half sections of the inner and outer cylinder rings are denoted by 6 and 7 and the lower half sections are denoted by 8 and 9. In the present instance, the lower half sections are shown as formed integral with the base 10. A motive fluid inlet chamber 11 is formed between the upper half sections 6 and 7 of the cylinder rings to which a motive fluid is supplied through a fluid inlet pipe 12 from any suitable source, not shown herein. A motive fluid exhaust chamber 13 is formed in the lower half sections of the inner and outer cylinder rings, which exhaust chamber is in open communication with the lower portion of the rotary piston. The rotary piston is shown herein as comprising two disk sections 14, 15, to equalize the side thrust, their hub sections 16, 17, fixed to rotate with the shaft 1 and annular series of vanes 18, 19. One or more nozzles, in the present instance two nozzles 20, 21, are arranged to supply motive fluid from the chamber 11 to the piston vanes at the upper portion of the piston and give the motive fluid velocity and direction. The cylinder heads 4 and 5 are provided with inwardly project-

ing central portions 22, 23, which fill the space between the hubs 16, 17, of the pistons and the annular series of piston vanes. One or more passages, in the present instance two passages 24, 25, extend through each of the portions 22, 23, from the inner side of the piston vanes at the upper portion of the piston to the inner sides of the piston vanes at the lower portion whereby the motive fluid is caused to impinge upon the piston vanes more than once, in the present instance twice, during one revolution of the piston.

In operation, the motive fluid, as for instance steam, is introduced into the chamber 11 through the pipe 12. The steam is then supplied to a predetermined number of piston vanes through the nozzles 20 and 21 which give the steam velocity and direction. The steam then passes through the passages 24, and 25, and is again directed against a plurality of the piston vanes at the lower portion of the piston. From these vanes the steam escapes to the exhaust chamber 13. It will thus be seen that the steam is used as a driving force for the piston more than once during its revolution.

What I claim is:—

1. A turbine engine comprising a rotary piston having an annular series of vanes, a motive fluid supply chamber having one or more nozzles arranged to supply the motive fluid from the chamber to the outer sides of the piston vanes at one portion of the piston, a motive fluid exhaust chamber in communication with the outer sides of the vanes at another portion of the piston, a stationary section filling the space inclosed by the said vanes and having one or more passages therethrough leading from the inner sides of the vanes at that portion adjacent to the motive fluid supply chamber, to the inner sides of the vanes at that portion adjacent to the exhaust chamber whereby the motive fluid is caused to impinge upon the vanes twice during one revolution of the piston.

2. A turbine engine comprising a rotary piston having annular series of vanes upon its opposite sides, a motive fluid supply chamber having nozzles arranged to supply the motive fluid from the motive fluid chamber to the outer sides of the vanes at one portion of the piston, a motive fluid exhaust chamber communicating with the outer sides of the vanes at another portion of the piston, stationary sections filling the

spaces inclosed by said annular series of
vanes and having passages therethrough
leading from the inner sides of the annular
series of vanes at that portion adjacent to
5 the motive fluid supply chamber to the inner
sides of the piston at that portion adjacent
to the exhaust chamber, whereby the motive
fluid is caused to impinge upon the vanes
twice during one revolution of the piston.

In testimony, that I claim the foregoing 10
as my invention, I have signed my name in
presence of two witnesses, this 7th day of
June, 1906.

LOUIS HACHENBERG.

Witnesses:

FREDK. HAYNES,
HENRY THIEME.