

No. 713,997.

Patented Nov. 18, 1902.

H. T. LEES.  
STEAM OR VAPOR TURBINE.  
(Application filed May 1, 1902.)

(No Model.)

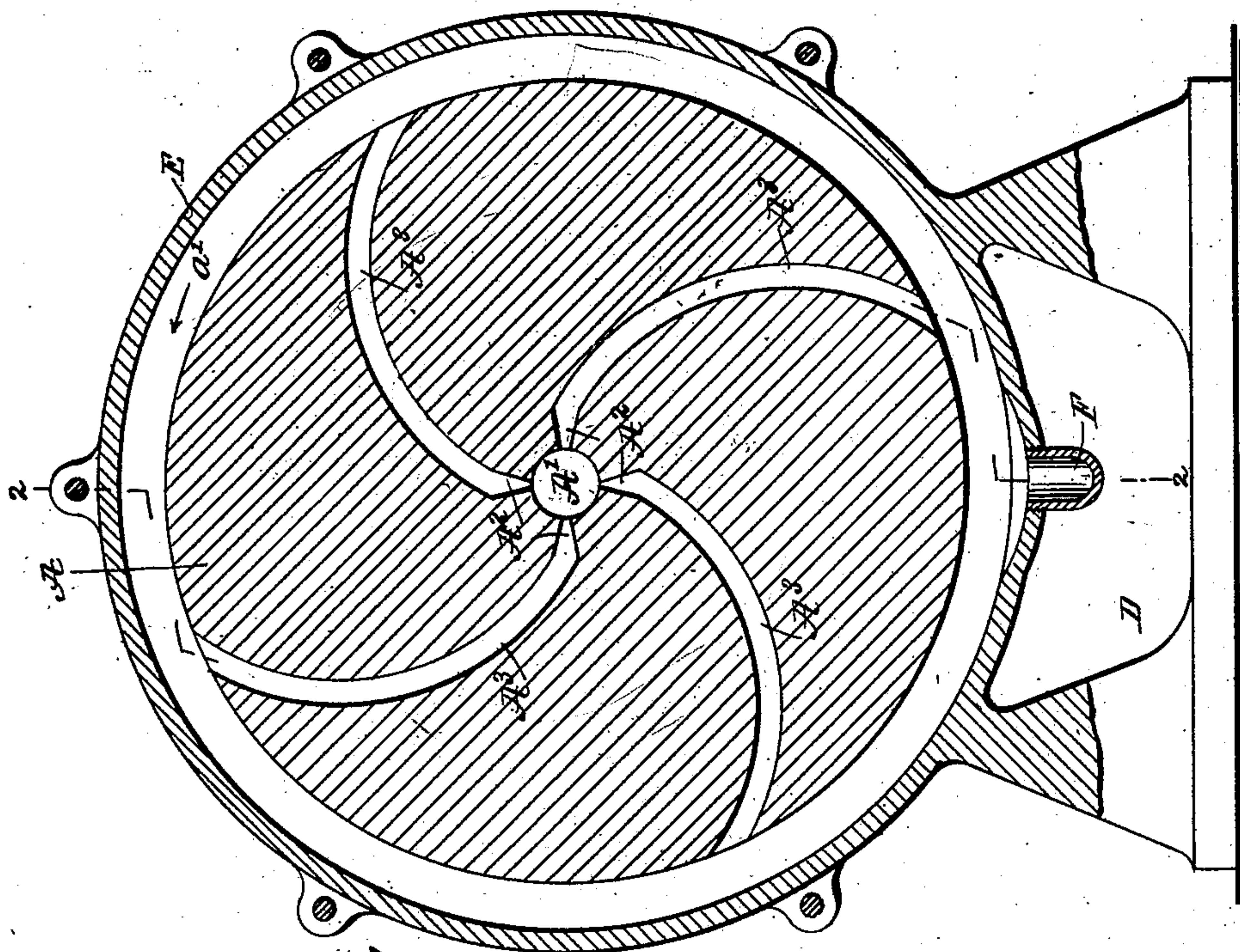


Fig. 1

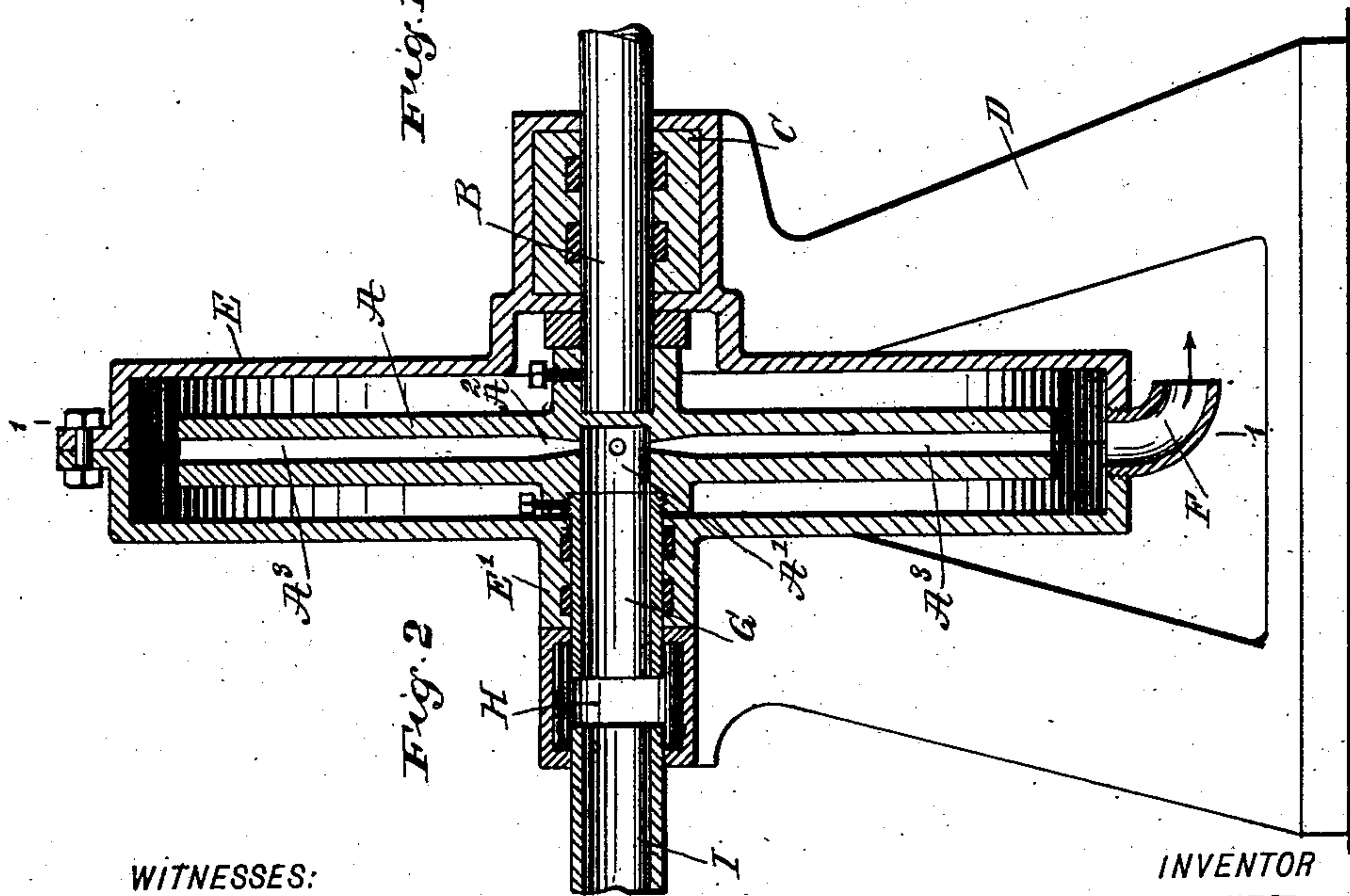


Fig. 2

WITNESSES:

*John A. Simpson*  
*Geo. G. Foster*

INVENTOR

*Henry T. Lees*

BY

*Mumford*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

HENRY T. LEES, OF BROOKLYN, NEW YORK.

## STEAM OR VAPOR TURBINE.

SPECIFICATION forming part of Letters Patent No. 713,997, dated November 18, 1902.

Application filed May 1, 1902. Serial No. 105,520. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY T. LEES, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Steam or Vapor Turbine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved turbine adapted to be driven by steam or other vapor, which is simple and durable in construction, very effective in operation, and arranged to utilize the expansion of the motive agent to the fullest advantage to obtain an exceedingly high rate of speed at a comparatively low initial or boiler pressure.

The invention consists of novel features and parts and combinations of the same, as will be more fully described hereinafter and then pointed out in the claim.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a transverse section of the improvement on the line 1 1 of Fig. 2, and Fig. 2 is a sectional side elevation of the same on the line 2 2 of Fig. 1.

The improved turbine is provided with a wheel A, secured on a shaft B, mounted to turn in suitable bearings C, held on a frame D, supporting a casing E, inclosing the said wheel A and provided with an outlet-pipe F for carrying off the exhaust motive agent to a condenser or other suitable place of discharge.

The wheel A is provided with a central receiving-chamber A', from which radiate a plurality of expansion-chambers A<sup>2</sup> in the form of nozzles, the contracted ends of which open into the receiving-chamber A' and the wider or outer ends of which open into curved passages A<sup>3</sup>, leading to the peripheral surface of the wheel A, as plainly illustrated in the drawings. The motive agent passes into the receiving-chamber A' by a pipe G, secured to the wheel A and extending in a bearing formed on the hub E' of the stationary casing E, the said pipe G opening into a chamber H, carried by the frame D and connected by a pipe I with the boiler or other motive-agent supply.

Now it will be seen that the motive agent from the boiler or other supply passes by the pipe I, chamber H, and pipe G into the central receiving-chamber A' of the wheel A and then passes from this receiving-chamber through the contracted ends of the expansion-chambers A<sup>2</sup> into the latter and expands therein, to then pass into the curved passages A<sup>3</sup> to act on the wheels thereof to rotate the wheel A in the direction of the arrow  $\alpha'$ .

Now it will be seen that by the arrangement described the motive agent from the receiving-chamber A passes into the radial expansion-chambers A<sup>2</sup>, so as to expand therein, to give a high velocity to the motive agent now passing into the curved passages A<sup>3</sup> to rotate the wheel A at a very high rate of speed. It is expressly understood that the steam is expanded in the radial expansion-chambers A<sup>2</sup> to obtain a high velocity for the steam during its passage through the passages A<sup>3</sup>, the steam leaving the said passages passing into the casing E and out through the pipe F to the condenser or other place of discharge.

From the arrangement above described it will be seen that the turbine can be run at an exceedingly high rate of speed by a motive agent of a comparatively low initial or boiler pressure, as the expansion of the motive agent in the chambers A<sup>2</sup> produces a high velocity of the motive agent during its travel through the passages A<sup>3</sup>.

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

A vapor-turbine, comprising a wheel mounted to rotate and having a central receiving-chamber into which passes the motive agent under initial or boiler pressure, nozzles extending radially from the said receiving-chamber and having their contracted ends opening into the said central receiving-chamber, and curved passages leading from the outer or wider ends of the said nozzles to the peripheral face of the wheel, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY T. LEES.

Witnesses:

F. W. WURSTER, Jr.,  
FREDK. WM. SCOTT.