No. 759,584. PATENTED MAY 10, 1904.

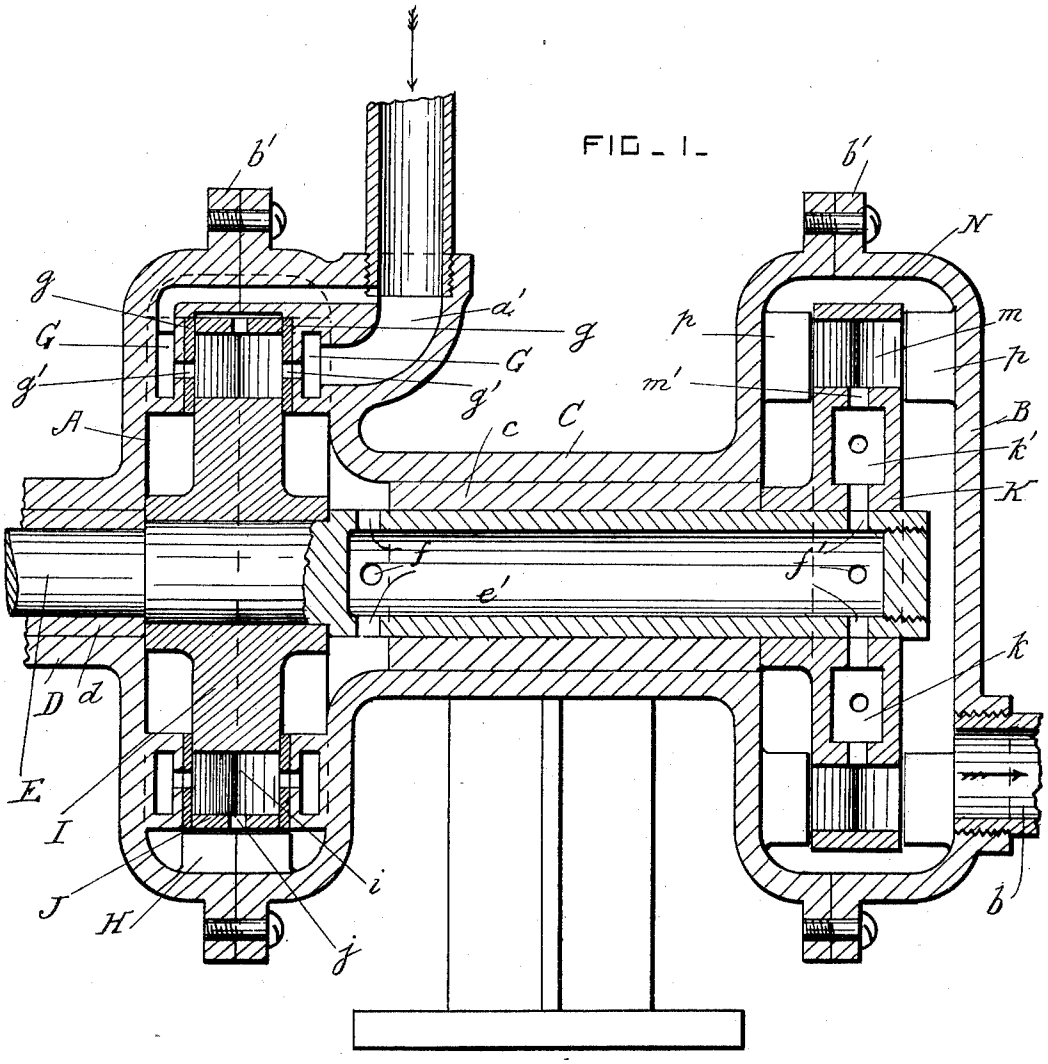
W. WYAND.

TURBINE ENGINE.

APPLICATION FILED SEPT. 15, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

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FIG. 2.

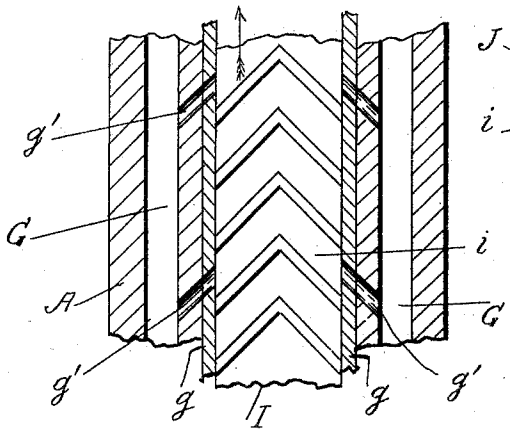


FIG. 3.

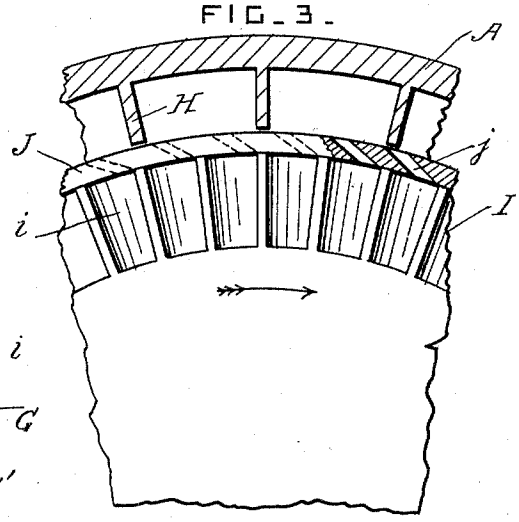


FIG. 4.

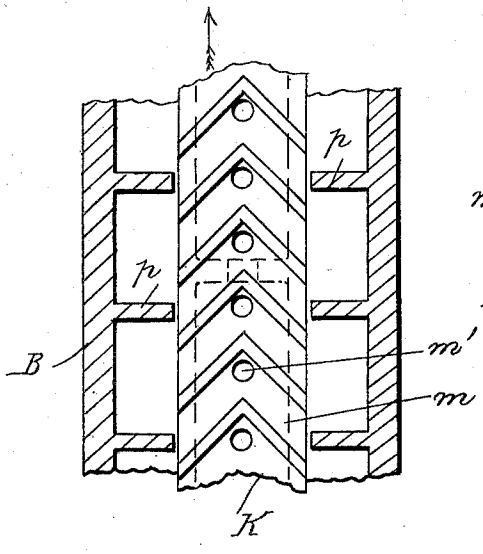
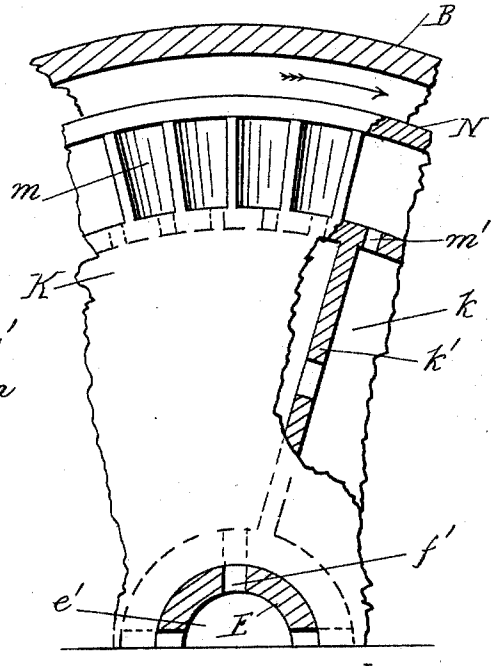


FIG. 5.



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No. 759,584. Patented May 10, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM WYAND, OF COLLINGSWOOD, NEW JERSEY, ASSIGNOR TO THE WYAND-SOMERS-MOORE PATENT DEVELOPING COMPANY, OF COLLINGSWOOD, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TURBINE-ENGINE.

SPECIFICATION forming part of Letters Patent No. 759,584, dated May 10, 1904.

Application filed September 15, 1903. Serial No. 173,327. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WYAND, a citizen of the United States, residing at Collingswood, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Turbine-Engines; 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.

This invention relates to steam turbine-engines; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a vertical longitudinal section through the engine. Fig. 2 is a detail plan view of a portion of the high-pressure wheel, showing portions of the cylinder in section. Fig. 3 is a detail side view of a portion of the high-pressure wheel, showing a portion of the cylinder in section. Fig. 4 is a detail plan view of a portion of the low-pressure wheel, showing portions of its cylinder in section. Figure 5 is a detail side view of a portion of the low-pressure wheel, partly in section, and showing also a portion of its cylinder.

A is the high-pressure cylinder or casing, provided with an inlet-passage a' for high-pressure steam.

B is the low-pressure cylinder or casing, provided with an outlet or exhaust passage b.

C is a tubular distance-piece which connects the cylinders A and B, and c is a bearing-bush which is inserted in the said distance-piece. Each cylinder is formed in two parts, which are provided with flanges b' and suitable bolts, so that the halves of the cylinders may be secured together and so that the turbine-wheels may be placed in their respective cylinders. The high-pressure cylinder also has a bearing-boss D on one side, which is provided with a bearing-bush d.

E is the engine-shaft, which is journaled in the bearing-bushes c and d, and e' is a steam-passage formed longitudinally in the shaft E and extending through that portion of it between the two said cylinders. The shaft E also has radial holes f, connecting the passage e' with the cylinder A, and radial holes f' in its end portion which comes inside the cylinder B.

G represents two circumferential steam-chambers arranged one at each side of the cylinder A, near its periphery, and these two chambers are constantly in communication with the steam-inlet passage a', as shown in Fig. 1. These chambers G have facing rings g, which are provided with inclined holes or jets g', through which the steam passes to the high-pressure wheel.

H represents abutment-plates placed inside the periphery of the cylinder A at intervals.

I is the high-pressure-steam wheel, which is secured upon one end portion of the shaft E inside the cylinder A and which runs in steam-tight contact with the two facing rings g. V-shaped chambers i are formed in the wheel I between the two facing plates and extend in a series all around the wheel.

J is a ring which forms the periphery of the wheel and which revolves with it. This ring has a series of inclined jet-holes j at its middle part, so that the steam in the chambers i may pass outward and impinge against the abutment-plates H.

K is the low-pressure-steam wheel, which is secured on the other end portion of the shaft E inside the cylinder B. This wheel K has an internal chamber k, which is constantly in communication with the holes f' of the engine-shaft, and this chamber k is provided with radial partition-plates k', which divide it into communicating sections.

V-shaped chambers m are formed in the wheel K and extend in a series all around it. These chambers have holes m' in their bottoms which place them in constant communication with the internal chamber k.

N is a ring, which forms the periphery of the wheel K and which also forms a cover for all the chambers m. Abutment-plates p are provided upon the sides of the cylinder B in line with the side openings of the chambers m. These abutment-plates are arranged at suitable distances apart.

The two cylinders are secured to any suitable foundation and remain stationary while the engine is at work.

High-pressure steam is admitted to the cylinder A through the inlet-passage and passes into the two chambers G, thence through the inclined jet-holes *j* into the chambers *i*. The jets of steam revolve the wheel by impact against the bottoms or pointed portions of the chambers and also by impact against the abutment-plates, against which they impinge after passing through the holes *j*. After the steam has impinged upon the abutment-plates H it passes from the cylinder A through the holes *f*, the passage *e'*, and the holes *f'* into the chamber *k* of the low-pressure wheel B. The steam then expands further inside the low-pressure wheel and impinges against the abutment-plates *p* in its passage from the chambers *m* of the low-pressure wheel to the exhaust-passage of the low-pressure cylinder, and in this manner the driving-shaft of the engine is revolved continuously.

What I claim is—

1. In a turbine-engine, the combination, with a high-pressure wheel having chambers at its periphery, a shaft having the said wheel secured on it and provided with a longitudinal steam-passage, and a low-pressure wheel also secured on the said shaft and provided with chambers at its periphery and passages between the said chambers and the said steam-passage; of a cylinder for the said high-pressure wheel provided with a steam-inlet passage at its periphery for admitting steam direct to the said chambers of the high-pressure wheel, the exhaust-space of the said cylinder being connected with the said longitudinal steam-passage, a cylinder for the said low-pressure wheel provided with a steam-outlet, and a distance-piece arranged between the said cylinders and forming a bearing for the said shaft.

2. In a turbine-engine, the combination, with a high-pressure cylinder, a low-pressure cylinder, and a distance-piece between the two said cylinders, said cylinders being formed in halves and the distance-piece being formed integral with the adjacent halves of the said cylinders; of a shaft journaled in the said distance-piece and provided with a longitudinal passage, a high-pressure wheel and a low-pressure wheel secured on the said shaft inside the respective cylinders, said wheels and cylinders being provided with suitable steam-chambers and passages which communicate with the said passage in the said shaft.

3. In a turbine-engine, the combination, with a high-pressure cylinder provided with circumferential steam-inlet chambers at its sides having inclined jet-holes, and abutment-plates at its periphery between the said chambers; of a wheel journaled in the said cylinder and provided with a series of **V**-shaped chambers which communicate with the said jet-holes, said wheel having also a series of inclined jet-holes which conduct the steam from the said **V**-shaped chambers to the said abutment-plates.

4. In a turbine-engine, the combination, with a low-pressure cylinder provided with abutment-plates at its sides; of a shaft projecting within the said cylinder and provided with a longitudinal steam-passage, a low-pressure wheel secured on the said shaft and provided with an internal chamber communicating with the said steam-passage, and a series of **V**-shaped chambers arranged between the abutment-plates and communicating with the said internal chamber, and means for exhausting the steam from the said low-pressure cylinder.

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

WILLIAM WYAND.

Witnesses:

T. G. COULTER,

K. L. BABCOCK.