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PATENTED JUNE 11, 1907.

C. A. BACKSTROM.
TURBINE NOZZLE PARTITION AND NOZZLE.
APPLICATION FILED MAY 29, 1905. RENEWED APR. 22, 1907.

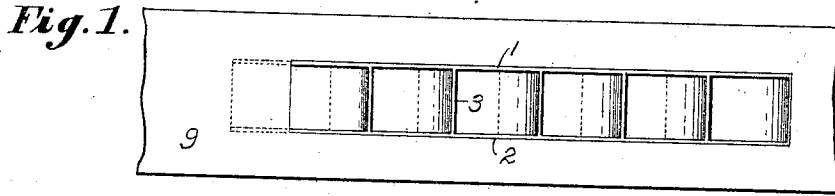


Fig. 2.

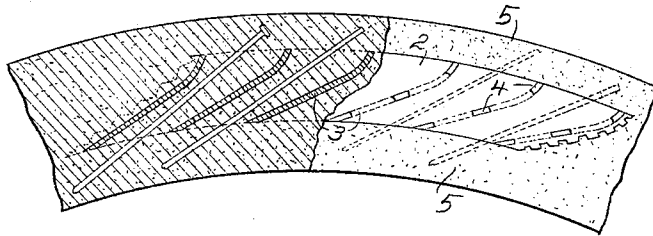


Fig. 3.

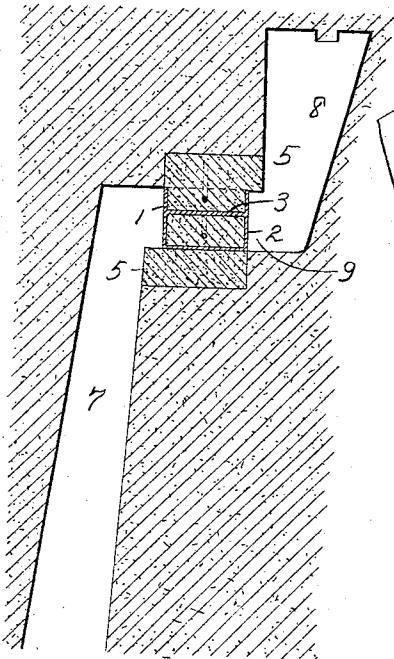
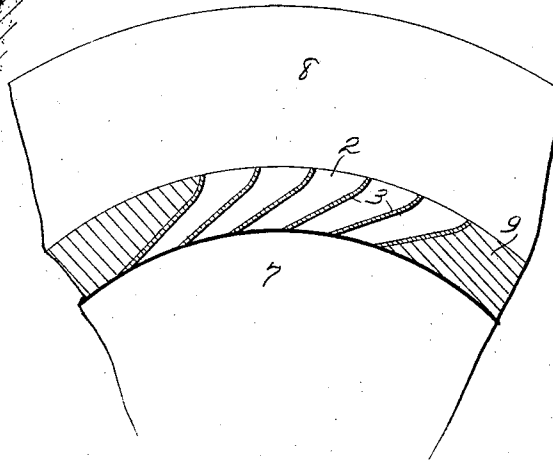


Fig. 4.



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CHARLES A. BACKSTROM, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO BACKSTROM-SMITH STEAM TURBINE & MANUFACTURING COMPANY, A CORPORATION OF WISCONSIN.

TURBINE NOZZLE-PARTITION AND NOZZLE.

No. 856,208.

Specification of Letters Patent.

Patented June 11, 1907.

Application filed May 29, 1905. Renewed April 22, 1907. Serial No. 369,576.

To all whom it may concern:

Be it known that I, CHARLES A. BACKSTROM, a citizen of the United States, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Turbine Nozzle-Partitions and Nozzles, of which the following is a specification.

My invention relates to improvements in turbine nozzle partitions and nozzles.

The object of my invention is to provide means for forming nozzles in a body of cast metal composing a partition member or wall, which nozzles will be provided with hard finished surfaces of material which is preferably different and more durable than the material used for the body of the casting, the nozzle walls being previously prepared and united with the body in the casting operation, whereby greater accuracy is secured and machine work largely avoided.

To this end my invention contemplates the provision of metallic forms of sheet metal conforming to the desired contour of the nozzles and casting these forms in position in the nozzle partition to produce the completed nozzles, the nozzle openings in the form being protected from the molten metal during the casting operation by suitable cores.

In the following description reference is had to the accompanying drawings, in which Figure 1 is a detail view showing a segment of a nozzle partition in section and a portion of a nozzle ring embodying my invention, as applied to an impulse turbine of the inflow type. Fig. 2 is a detail view of the core as it is prepared for insertion in the mold. Fig. 3 is a sectional view of a portion of a mold and nozzle partition embodying my invention as it is cast therein. Fig. 4 is a detail sectional view of a completed casting drawn through the nozzles in a radial plane.

Like parts are identified by the same reference characters throughout the several views.

In the construction shown, a group of nozzles is formed of side plates 1 and 2 connected by cross plates 3, each of the plates being stamped from sheet metal, and so formed that when assembled the plates form nozzles

of the desired contour. The edges of the side plates 1 & 2 are notched and the plates 3 are formed with tongues 4 which enter these notches when the plates are assembled and may be riveted or clenched to bind the plates together in a rigid structure. The structure formed by the plates 1, 2, & 3 is then inserted in a core box and a core formed thereon, with core prints 5 to protect the nozzle apertures, but with the exterior surfaces of the side walls of the form exposed. The mold being prepared for casting the nozzle partition, this core is inserted in its proper position therein and molten metal flowed into the mold against outer surfaces of the walls 1 and 2 of the nozzle structure. The latter is preferably formed of material which will partially fuse with the molten metal and integrally unite the nozzle structure with the casting.

In the construction shown, the nozzle partitions are formed with radially extending walls 7 & 8 and an off-set ring 9 in which the nozzles are formed in segmental groups. My invention may be applied however to any style of turbine, the nozzle structure being merely altered in correspondence to its location and relation to the other parts of the nozzle partition. I therefore do not limit the scope of my invention to any specific shape of nozzle structure, nor to the specific manner of forming or assembling the several parts preparatory to the casting operation.

What I claim as new and desire to secure by Letters Patent is,

1. A nozzle partition member, comprising a cast metal body having a nozzle structure of different material, with its sides and ends embedded in the cast metal, and forming one or more nozzle apertures in the partition member.

2. A nozzle partition member, comprising a cast metal body having a nozzle structure of different material with some of its wall faces embedded and cast in the body, said structure being arranged to form one or more nozzle apertures in the partition member.

3. A nozzle structure comprising a set of side walls and cross walls; said side walls and

intermediate walls being provided with interlocking parts; and a body of metal cast on the outer surface of the side walls.

4. A nozzle structure comprising a set of
5 side walls and cross walls; said side walls and intermediate walls being provided with interlocking parts; and a body of metal cast on the outer surface of the side walls, and on the

outer surfaces of the cross walls at the ends of the structure.

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

CHARLES A. BACKSTROM.

Witnesses:

JAS. B. ERWIN,

LEVERETT C. WHEELER.