No. 875,644. PATENTED DEC. 31, 1907.

C. F. BARTH.

STEAM TURBINE.

APPLICATION FILED APR. 9, 1906.

Fig. 1.

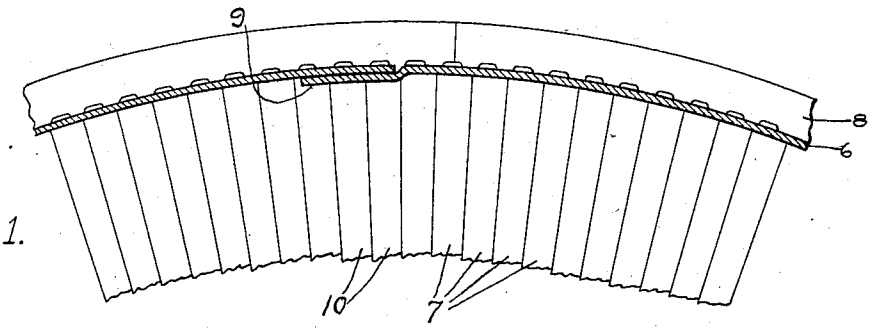


Fig. 2.

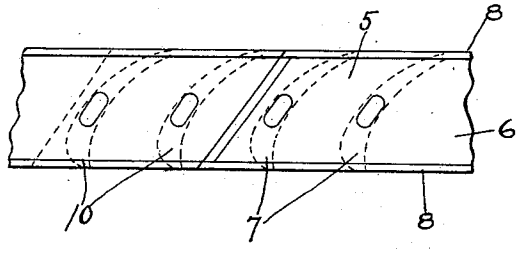


Fig. 3.

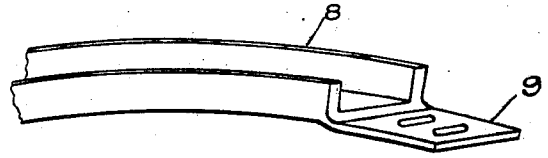
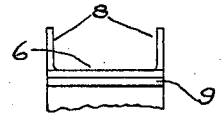


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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STEAM-TURBINE.

No. 875,644. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed April 9, 1906. Serial No. 310,638.

To all whom it may concern:

Be it known that I, CHARLES F. BARTH, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Steam-Turbines, of which the following is a specification.

My invention relates to elastic fluid turbines, more particularly to steam turbines, and its object is to provide a simple means for securing together the ends of the baffle strip which surrounds and is secured to the vanes or blades of both the rotating drum and the stationary casing.

The present invention relates particularly to extending the web of the channel shaped baffle strip beyond the flanges and offsetting it so that the adjacent end may overlap and produce an even joint.

Referring to the accompanying drawings which form part of my specification: Figure 1 is a side elevation of a portion of the vanes or blades and showing my improved baffle joint in section. Fig. 2 is a plan view of the parts shown in Fig. 1, but on a larger scale. Fig. 3 is a perspective view of the end of the baffle section shown to right of Fig. 1; and Fig. 4 is end view of the section shown in Fig. 3.

The drawings illustrate my invention as applied to the rotor-blades of a steam turbine, but it is evident that it is equally applicable to the stator-vanes, and also that it is applicable to various types of compressors and pumps having vanes or blades of any desired shape in cross-section, and that the blades may be secured to the rotors or stators in any desired manner. The baffle strip 5 is preferably channel-shaped, having a web 6 of approximately the same width as the row of vanes or blades 7, and having flanges 8 at any desired angle to the web portion. The vanes may be secured to the baffle strip in any suitable manner, but they are preferably secured by cutting away a portion of each vane near the end so as to leave a shoulder and extending the reduced end through corresponding openings in the web of the baffle strip and riveting over the extending ends, as clearly shown in Figs. 1 and 2. The baffle strip 5 is preferably made up of sections and my invention relates primarily to the improved means for securing the ends of adjacent sections together. One end of the baffle strip has the web portion 9 thereof extending a short distance beyond the flanges and offset toward the vanes or blades. The other end of the baffle strip laps this offset portion and the flanges of the meeting ends contact to form an even seam. The blades or vanes 10 coming adjacent the joint are cut away to a larger extent and their reduced ends are used, not only to hold the baffle strip in place, but also to firmly bind the lapping portions of the sections together. Preferably the ends of the sections of the baffle strip are cut at an angle, as clearly shown in Figs. 1 and 2, so as to prevent steam from blowing through. In some cases it may be found advantageous to narrow the web and offset it to lie beyond the web of the adjacent end and between the flanges. This would have the advantage of better keeping the ends in alinement and would allow the vanes to be all the same length; but the tenons of the vanes at the joints would in that case extend beyond those of the other blades where they would be first affected as the flanges wear down, and this is one of the main defects to be overcome by the present invention.

It will be noted that in the form illustrated the attaching rivets lie in the same unbroken line, that is, they are all equidistant from the roots of the blades. If the side flanges wear to an extreme extent, the rivet heads would all be equally and simultaneously affected.

Although my invention is shown as applied to a parallel flow turbine, it is apparent that it may be applied to a radial flow machine.

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

1. The combination of a plurality of blades, and adjacent baffle sections secured thereto, one end of one of said sections being off-set and lapped by the end of the adjacent section.

2. The combination of a plurality of blades, and adjacent baffle sections secured thereto each having a web portion and flanges at an angle to the web portion, one end of one of said sections having its web portion extending beyond its flanges and lapped by the web portion of the adjacent section.

3. The combination of adjacent baffle sec-

tions extending with their body portions end to end and in the same continuous surface, one of said sections having an extension lapping the adjacent section, said sections and extension having apertures, the apertures in the extension registering with apertures in the adjacent section, and blades having portions extending through said registering apertures, said portions having heads beyond the sections.

4. The combination of adjacent baffle sections extending with their body portions end to end and in the same continuous surface, the end of one section being disposed at an oblique angle to its side edges and an end of the adjacent section being correspondingly formed for close abutting thereto, one of said sections having an extension lapping the adjacent section, said sections and extension having apertures, the apertures in the extension registering with apertures in the adjacent section, and blades having portions extending through said registering apertures, said portions having heads beyond the sections.

5. The combination of a plurality of blades, and adjacent baffle sections secured thereto each comprising a web portion and flanges thereon, one end of one of said baffle sections having the web portion extending beyond the flanges and being off-set and lapped by the end of the adjacent section.

6. The combination of adjacent baffle sections one of said sections having one end thereof off-set and lapped by the end of the adjacent section and the lapping ends having registering perforations, and a plurality of blades having their ends of reduced cross-section for passing through said perforations for riveting.

7. The combination of a plurality of adjacent baffle sections extending with their body portions end to end and in the same continuous surface, one of said sections having an extension lapping the adjacent section, said sections and extension having apertures, the apertures in the extension registering with apertures in the adjacent section, and blades having projections extending through said apertures from one side of said sections and riveted, said extension lapping the adjacent section on the side towards the said blades.

8. The combination of a plurality of adjacent baffle sections extending with their body portions end to end in the same continuous surface, the end of one section being disposed at an oblique angle to its side edges and an end of the adjacent section being correspondingly formed for close abutting thereto, one of said sections having an extension lapping the adjacent section, said sections and extension having apertures, the apertures in the extension registering with apertures in the adjacent section, and blades having projections extending through said apertures from one side of said sections, said extension lapping the adjacent section on the side towards the said blades.

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

CHARLES F. BARTH.

Witnesses:
JOHN DAY, Jr.,
G. F. DE WEIN.