

No. 835,471.

PATENTED NOV. 6, 1906.

M. ROTTER.
STEAM TURBINE.
APPLICATION FILED APR. 7, 1906.

Fig. 1.

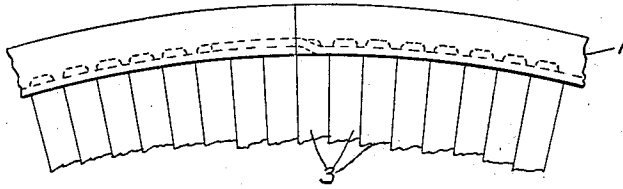


Fig. 2.

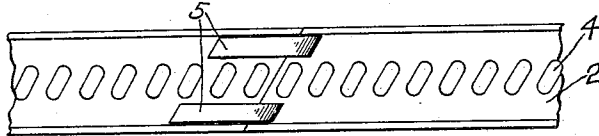


Fig. 4.

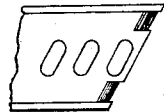
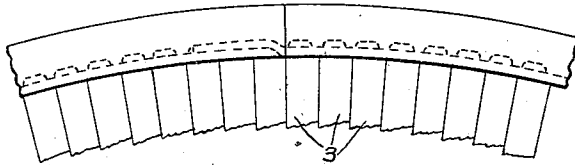


Fig. 6.

Fig. 5:

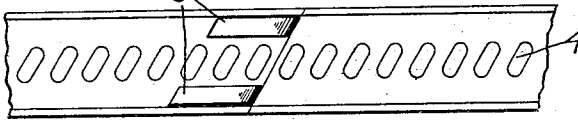


Fig. 3.

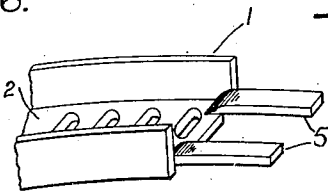


Fig. 7.

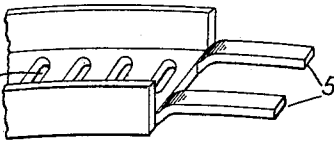


Fig. 8.

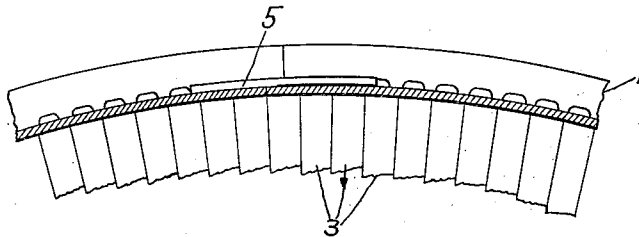
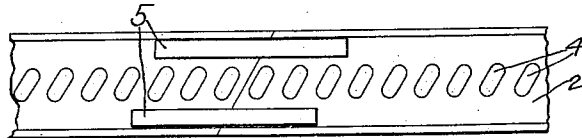


Fig. 9.



WITNESSES:

A. K. Allison
H. Case

Max Rotter

INVENTOR

BY

G. F. DeWain

ATTORNEY.

UNITED STATES PATENT OFFICE.

MAX ROTTER, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO ALLIS-CHALMERS COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF NEW JERSEY.

STEAM-TURBINE.

No. 835,471.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed April 7, 1906. Serial No. 310,427.

To all whom it may concern:

Be it known that I, MAX ROTTER, 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, and more particularly to means for preventing the ends of the baffling-ring from getting out of alinement.

It is old to provide the ends of the vanes and blades of steam-turbines with a baffling-ring; but it is sometimes found impractical to secure the two ends of the ring rigidly together by reason of the expansion and contraction which it undergoes; due to changes in temperature of the ring itself and of the vanes and blades; but it is found to be of the greatest importance that the ends of the ring be kept in alinement at all times, for should the end of one of the sections of any ring become displaced sufficiently to catch into the adjacent parts while rotating at a very high rate of speed a great amount of damage would ensue, possibly to the extent of ruining the entire machine. My invention is designed to obviate any mishap of this kind, and through its use it is practically impossible for the ends of the sections to get out of alinement.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of a structure embodying one form of my invention. Fig. 2 is a plan view thereof. Fig. 3 is a perspective view of the right end of the ring shown in Figs. 1 and 2. Fig. 4 is a side elevation of a structure embodying a modified form. Fig. 5 is a plan view thereof. Fig. 6 is a plan view of the left end as detached. Fig. 7 is a perspective of the right end as detached. Fig. 8 is a section through a ring embodying another modification, and Fig. 9 is a plan view thereof.

My invention consists in providing one end of each section of the baffling-rings with one or more strips, which may be integral therewith or rigidly secured thereto, and these strips overlie the opposite end of the baffling-ring and fit against the inner sides of the flanges on the ring; so as to prevent any lateral displacement of either end. It is evident that this is equally as applicable to radial-flow turbines as to parallel-flow and to the stator-vanes as to the rotor-blades and that it might also be applied in rotary compressor and pumps as well as in turbines.

In Figs. 1, 2, and 3 of the drawings I have shown one form which my invention may assume, while Figs. 4 to 7 illustrate a slightly different form. The baffling-ring, which is usually made up of two or more sections, is preferably channel-shaped in cross-section, having flanges 1 and a web portion 2, to which the vanes or blades 3 are secured in any suitable manner, preferably by riveting their ends in openings 4, provided in the web of the baffling-ring. The flanges 1 and the central portion of the web are cut away for a short distance back from the end, thus leaving two strips or tongues 5 5, which are offset to overlap the web of the opposite end and fit against the inner sides of the flanges, thus allowing for free longitudinal movement, but preventing any lateral movement of the parts in respect to each other. The strips or tongues may be offset at a slight distance back of the line on which the flanges and center portion of the web are cut off, as clearly shown in Fig. 3, in which case the opposite end may be cut off, flush, or the strips or tongues may be offset on the line on which the other parts are cut away, as shown in Fig. 7, in which case the opposite end must be cut or chamfered, as shown in Fig. 6, in order that a flush joint may be formed.

A third form is shown in Figs. 8 and 9, in which the strips 5 5, instead of being integral with the baffling-ring, are separate and brazed or secured in any suitable manner to one end of it. By providing two strips either integral with or secured to the ring rather than a single one of the full width of the web there is no interference with the riveted ends of the vanes or blades, and the strips may lie flat on the bottom of the web in the same plane as the rivet-heads and less liable to be bent outward or otherwise displaced if the flanges should wear down to the level of the rivet-heads.

As shown, in each of the forms the meeting ends of the baffling-ring sections are cut at an angle. This is not essential, although it is preferable. By so cutting the ends lateral displacement toward one side may be prevented without the aid of strips or

5 tongues, and in that case it is only necessary to guard against displacement toward the other side. Thus a single strip may be all that is necessary to accomplish the desired results.

10 It is evident that the strip or strips may be formed from or secured to the flanges rather than the web portion and that other minor changes may be made without departing from the spirit of my invention.

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

15 1. A sectional baffling-ring comprising a web portion and flanges at an angle thereto, a strip or tongue projecting from one section, lapping the adjacent section and contacting with one of the flanges thereof.

20 2. A sectional baffling-ring comprising a web portion and flanges, a plurality of strips or tongues on one section lapping the web

portion of the adjacent section and contacting with the flanges thereof.

25 3. A sectional baffling-ring having the ends of the adjacent sections formed to prevent displacement thereof toward one side, and means for preventing displacement toward the other side.

30 4. A sectional baffling-ring having one section provided with an extension laterally contacting with the adjacent section.

35 5. A sectional baffling-ring having the ends of adjacent sections in sliding engagement and coacting to prevent lateral displacement.

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

MAX ROTTER.

Witnesses:

G. F. DE WEIN,
H. C. CASE.