M. E. THOMPSON.

TURBINE WHEEL.

APPLICATION FILED JULY 2, 1912.

1,129,920. Patented Mar. 2, 1915.

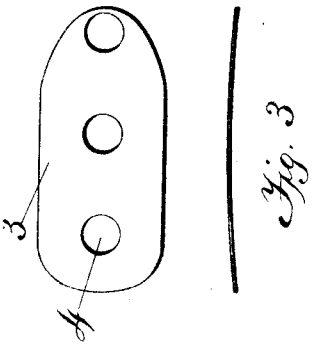


Fig. 3

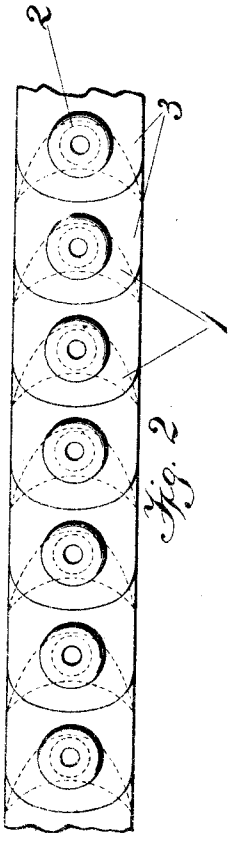


Fig. 2

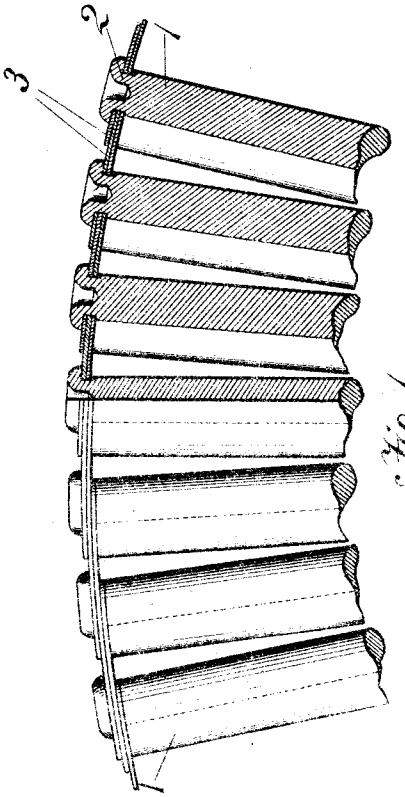


Fig. 1

WITNESSES:

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TURBINE-WHEEL.

1,129,920. Specification of Letters Patent. Patented Mar. 2, 1915.

Application filed July 2, 1912. Serial No. 707,172.

To all whom it may concern:

Be it known that I, MILTON E. THOMPSON, a citizen of the United States, and a resident of Ridgway, Elk county, State of Pennsylvania, have invented certain new and useful Improvements in Turbine-Wheels, of which the following is a specification.

My invention relates to turbine wheels for steam turbines, especially to the baffler at the outer ends of the blades or buckets, this baffler serving the dual purpose of preventing the steam from escaping radially between the blades and of assisting in holding the blades or buckets in their proper position.

The object of my invention is to provide a baffler that will serve these two purposes effectively while at the same time being reasonably economical to construct and apply, while being of such a nature as to permit ready detachability of any portion of the baffler so as to permit removal of any defective bucket without interfering with the other portions of the wheel.

Another object of my invention is to provide a baffler that will readily adjust itself to different temperatures in case it has a different coefficient of expansion from that of the material of other portions of the wheel.

I attain these objects by constructing the baffler of a number of similar short sections which overlie each other like shingles so as to produce a baffling ring that is jointed at the top of each bucket. I preferably secure the over-lying adjacent sections of the baffler to the top of each bucket by causing them to embrace a projection at the top of the bucket, which projection is then spread over as a rivet over the top of the over-lying sections.

Referring to the drawings, Figure 1 shows partly in section and partly in side elevation the outer ends of seven successive buckets of a turbine wheel with my improved construction for the baffler thereon; Fig. 2 is a developed top view of the same portion of the wheel; Fig. 3 shows two views of one of the sections of the baffler.

1 represents the outer ends of the turbine blades or buckets, it being understood that the portion of the wheel not shown is simply a continuation of the same character of equally spaced buckets as in the portion shown. These buckets may be of any desired form suitable for the purpose, although the drawings indicate a well known form of drawn blade with a curved face at the left of each blade in Fig. 1. Each bucket has a circular projection 2 at its top.

The sections 3 of the baffler, preferably of the form shown in Fig. 3, each has, in this instance, three perforations 4, which perforations fit upon the projections 2 of three adjacent buckets. As clearly shown in Fig. 1, the successive sections over-lie each other, shingle-wise, so that there are three over-lying sections at the top of each bucket and at least two over-lying sections at all points between the buckets. After these sections are in place the top projections 2 of the buckets are spread over the sections and formed as rivet heads to hold them in place. My baffler, therefore, is, when completed, continuous throughout but made up of a great number of over-lapping sections articulated at each bucket. It has all the advantages of a ribbon wound two or more times around the wheel and secured to each blade, but on the other hand, by my construction a defective blade can be removed and repaired without disturbing the baffler except at a very short section of the wheel. In addition I have the advantage of a sufficiently flexible baffler to accommodate itself to any irregularities in expansion and contraction of the wheel. The sections are exact duplicates and of such form as to be made in quantity at an extremely low cost, and the cost of assembling them is less than in the case where continuous ribs are employed. The end of the section which is next to the bucket portion of the blade has a contour which is the same as the adjacent edge of the bucket to which said end is attached. By referring to Fig. 3 it will be seen that the righthand end of the section 3 has a contour the same as the righthand side of the blades, as shown by dotted lines in Fig. 2. This is important because it increases the effective length of the buckets a distance equal to the thickness of a section, and prevents eddies and obstructions to the steam flow.

I desire it to be understood that whereas I have shown a specific form of bucket and

a specific form of baffler section, yet that such details are immaterial to my invention as herein claimed. Moreover, I have shown my baffler sections as each engaging three adjacent buckets and have shown a particular manner of fastening these sections to the bucket tops, but I desire it to be understood that my invention is not to be limited in these or other respects except as specified in the appended claims.

Having fully described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A turbine-wheel baffler composed of sections successively over-lapping at each blade.

2. A turbine-wheel baffler composed of sections successively over-lapping at each blade, the over-lapping portions at each bucket being fastened thereto.

3. A turbine-wheel baffler composed of sections, a plurality of which are secured to each bucket top, each section over-lapping a plurality of other sections.

4. A turbine wheel baffler composed of sections, each of which at one end overlies two sections, at the other end underlies two sections, and intermediate its ends lies between two sections.

5. A turbine-wheel baffler composed of sections each engaging three successive buckets and each over-lapping and under-lapping adjacent sections.

6. A turbine-wheel baffler composed of sections each embracing and riveted to three successive buckets and each over-lapping and under-lapping adjacent sections.

7. A sectional ring turbine-wheel baffler composed of short over-lapping sections secured together at each bucket top.

8. The combination with the buckets of a turbine-wheel each having a projection of substantially the same length at the top, of a baffling ring surrounding the projections and composed of sections articulated upon each projection.

9. The combination with the buckets of a turbine-wheel each having a projection of substantially the same length at the top, of a baffling ring surrounding the wheel and composed of sections over-lapping each other, said sections embracing said projections and riveted together on each.

10. The combination with the buckets of a turbine wheel each having a projection at the top, of a baffler ring surrounding the wheel and composed of sections overlapping each other, said sections embracing said projections and riveted thereon, each section having one of its ends of the same contour as the adjacent edge of the bucket to which said end is attached.

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

MILTON E. THOMPSON.

Witnesses:
RICHARD EYRE,
EDWIN SEGER.