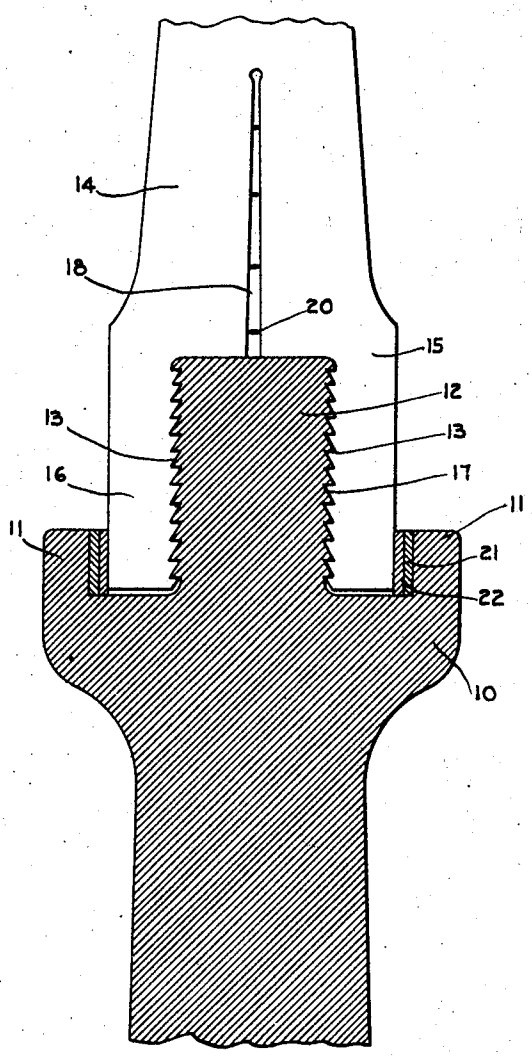
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BLADE FASTENING

Filed Oct. 11, 1927




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# UNITED STATES PATENT OFFICE.

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## BLADE FASTENING.

Application filed October 11, 1927. Serial No. 225,562.

My invention relates to elastic fluid turbine blading and it has for its object to provide an improved form of blade fastening.

Apparatus made in accordance with my invention is illustrated in the accompanying drawing in which the figure is a sectional detail view of a turbine wheel and blading showing my improvement applied thereto.

Referring now to the drawing more in detail, I show a turbine wheel 10 provided with lateral peripheral flanges 11 and an intermediate peripheral flange 12, the latter extending radially further out than the flanges 11 and being provided with lateral serrations or projections 13.

Each turbine blade 14 has its root portion 15 bifurcated to provide furcations 16 whose interior and opposed faces are provided with serrations or projections 17 interfitting with the serrations or projections 13 in order to connect the blades to the turbine wheel or rotor.

In order to permit of the assembly of the construction so far described, it is necessary that each blade shall be slitted, as indicated at 18, whereby the furcations 16 may be readily spread apart in order that the latter may engage over the flange 12 and have the serrations or projections 17 thereof properly interfit with the serrations 13. After each blade is assembled, the parts thereof separated by the slit are connected in any suitable manner, as by the welds 20. Short wedges 21 and 22 are arranged between the root portions and said lateral peripheral flanges 11 in order to assist in holding the blade in place and to prevent spreading of the furcations 16.

From the foregoing, it will be apparent that I have provided a blade fastening which affords a strong connection, is safe and reliable and which permits of the ready assembly of blading and a rotor. Centrifugal stresses are largely withstood by the inter-engaging serrations, furcations 16 being prevented from spreading apart by the wedges 21 and 22 and by the weld connections 20.

While I have shown my invention in one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. In a turbine, the combination of a rotor having a peripheral flange with lateral projections, a plurality of blades having bifurcated root portions fitting over the flange and provided with interior and opposed projections interfitting with said lateral projections, each blade being slitted outwardly from the space between the furcations, whereby the latter may be spread apart in fitting the root portions over said flange, and means for connecting the slit portion of each blade.

2. In a turbine, the combination of a rotor having intermediate and lateral peripheral flanges, said intermediate peripheral flange being provided with lateral projections, a plurality of blades having bifurcated root portions with interior and opposed projections interfitting with said lateral projections, each blade being slitted outwardly from the space between furcations, whereby the root portion of each blade may be spread in assembling it with respect to said intermediate peripheral flange, means for joining the parts of each blade separated by the slit, and wedge means interposed between the root portions and said lateral peripheral flanges.

3. In a turbine, the combination of a rotor having a peripheral flange with lateral serrations, a plurality of blades having bifurcated root portions with interior and opposed serrations fitting said lateral serrations, each blade being slitted outwardly from the space between furcations, and means for connecting the slitted parts of each blade.

4. In a turbine, the combination of a rotor having intermediate and lateral peripheral flanges and the intermediate flange being provided with lateral serrations, a plurality of blades having bifurcated root portions with interior and opposed serrations carried by the furcations and fitting said lateral serrations, each blade being slitted outwardly from the space between furcations, whereby the latter may be spread sufficiently to permit assembly of the blades over said intermediate flange, means for connecting the slitted parts of each blade, and wedge means interposed between the root portions and said lateral flanges.

5. A turbine blade having a bifurcated root portion, the furcations having opposed projections and being spaced apart to provide an intermediate abutment portion, said abutment portion being adapted to abut a flange on a rotor, and the blade having a slit extending outwardly from the intermediate abutment portion toward the tip of the blade to provide sufficient flexibility to permit the opposed projections on the furcations to snap over projections on the rotor flange.

6. In a turbine, the combination of a rotor having a peripheral flange with lateral projections and a plurality of blades having bifurcated root portions, the furcations of each blade being spaced apart to provide an intermediate abutment portion adapted to abut the peripheral surface of the flange, the furcations being adapted to fit over the flange and being provided with interior and opposed projections interfitting with said lateral projections, each blade being slitted outwardly from its intermediate abutment portion toward the tip of the blade, whereby the furcations may be spread apart in placing the latter over the rotor flange.

In testimony whereof, I have hereunto subscribed my name this fifth day of October, 1927.

HARRY F. CARES.