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R. J. MILLER

2,337,619

BLADE WHEEL

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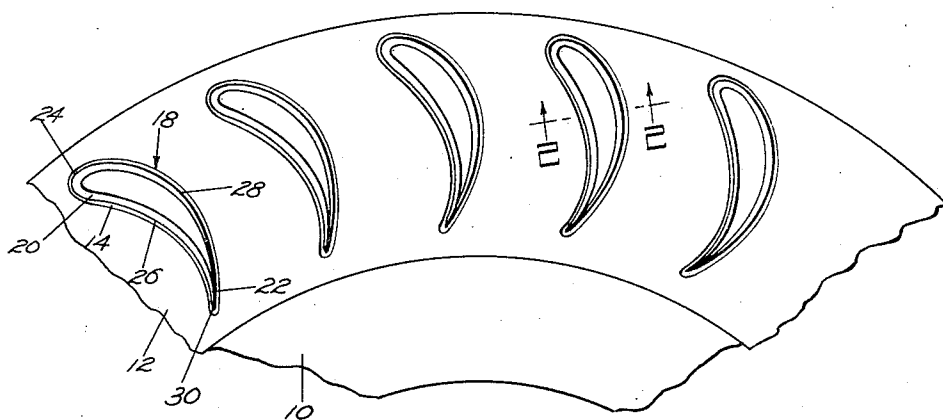


Fig 1

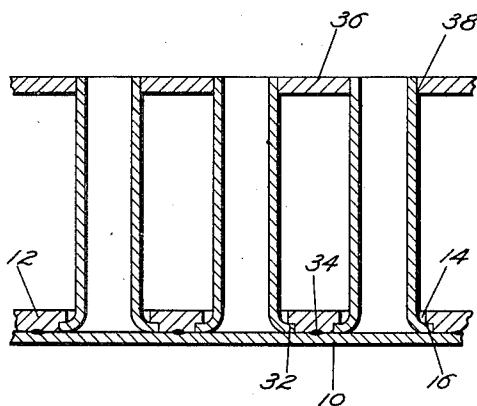


Fig 2

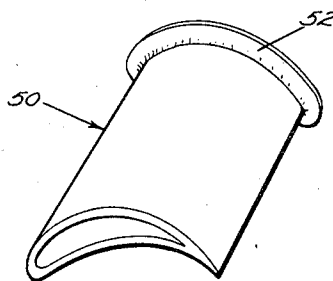


Fig 4

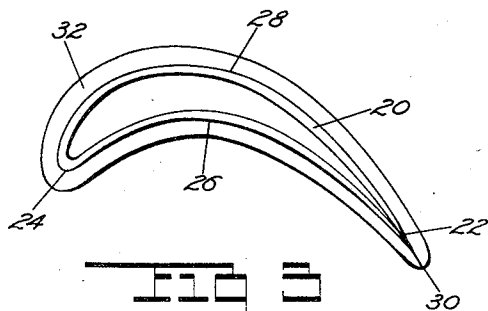


Fig 3

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BLADE WHEEL

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3 Claims. (Cl. 253-77)

This invention relates to blade wheels, and more particularly to the fabrication of turbines.

Broadly the invention comprehends a blade wheel fabricated from standardized parts preferably stamped from sheet metal, the parts being of very simple yet of durable structure, and affording great ease in assembly of the unit.

An object of the invention is to provide a blade wheel fabricated from a minimum number of parts each of simple structure.

Another object of the invention is to provide a blade wheel fabricated from stampings which may be easily and quickly assembled.

A further object of the invention is to provide a three-dimensional vane which may be stamped from sheet metal stock.

Other objects and advantages of the invention will appear from the following description taken in connection with the drawing, forming a part of this specification, and in which—

Fig. 1 is a front elevation of a blade wheel embodying the invention;

Fig. 2 is a sectional view substantially on line 2-2, Fig. 1;

Fig. 3 is an enlarged end view of one of the vanes; and

Fig. 4 is a perspective view illustrating a modification of the vanes.

Referring to the drawing for more specific details of the invention, 10 represents the body of a wheel, it, of course, being understood that this body portion may take the form of a housing or shroud, or any other suitable element for support of the structure.

An annular member 12, preferably stamped from sheet metal, has a plurality of equi-spaced openings 14. The perimeters defining these openings have profiles complementary to the type of vane it may be desired to employ, and the perimeters are coined on one side of the member to provide a continuous shoulder 16.

Vanes 18, preferably of the streamline type, are stamped from thin sheet metal. As shown, each vane includes a strip of metal 20 having its ends beveled as indicated at 22. The strip is deformed by any suitable folding process whereby substantially the central portion of the strip is bent to present a rounded or blunt entrance edge 24 diverging into a front face 26 and a back face 28 in spaced relation to one another and each face of such contour as to provide in conjunction with one another the desired fluid foil characters, and the beveled ends of the strip are brought together to provide a feather trailing edge 30. The strip is further deformed to provide a marginal flange 32 commensurate with the shoulder 16 in the member 12, and yet slightly thicker.

The vanes are passed through the openings 14 in the member 12 so as to seat the flanges 32 of

the vanes on the shoulders 16. The member 12 is then pressed on the wheel 10, and spot-welded thereto as indicated at 34.

When it is desired to provide an outer shroud, 5 an annular member 36 having spaced openings 38 therethrough complementary to the openings 14 in the member 12 is slipped on the vanes and suitably secured against displacement.

A modification of the vane is illustrated in 10 Fig. 4. In this modification a tubular section is deformed to provide a streamline vane 50 having the desired fluid foil characteristics, and one end of the tube is turned to provide a marginal flange 52. The assembly is identical with that 15 of the preferred form of the invention.

While this invention has been described in connection with certain specific embodiments, the principle involved is susceptible of numerous other applications that will readily occur to persons skilled in the art. The invention is, therefore, to be limited only as indicated by the scope 20 of the appended claims.

Having thus described the various features of the invention, what I claim as new and desire 25 to secure by Letters Patent is:

1. A fabricated blade wheel comprising a body, a plurality of vanes each having an outwardly extended flange on one end thereof, an annular member having spaced openings therethrough 20 conforming to the outline line of the vanes for the reception thereof, and shoulders on the perimeters defining the openings for the reception of the flanges, said member serving to clamp the flanges to the body, and a second annular member receiving the other end of the vane to 25 provide reinforcement for the blade wheel.

2. A fabricated blade wheel comprising a body, a plurality of vanes each having a perimetrical flange on one end thereof, an annular member having spaced openings for reception of the 30 vanes characterized in that the perimeters defining the openings are coined to provide shoulders for the reception of the flanges, said annular member secured to the body and serving to clamp the flanges to the body, and another annular member having openings conforming to the shape of the vanes for the reception thereof 35 so as to provide for rigidity of the vanes.

3. A fabricated blade wheel comprising a 40 body, a plurality of vanes each having a perimetrical flange on one end thereof, an annular member having spaced openings receiving the vanes with close fit and shoulders on the perimeters defining the openings receiving the flanges 45 and serving to clamp the flanges of the vanes to the body, and a second annular member having openings receiving the vanes and serving as a shroud and reinforcing member.

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