W. B. FLANDERS.

MEANS FOR SECURING BLADES.

APPLICATION FILED NOV. 2, 1910.

1,026,087. Patented May 14, 1912.

Fig. 4.

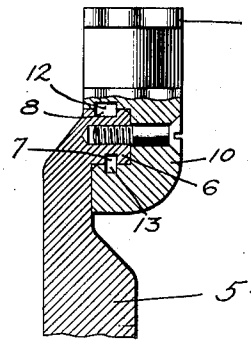


Fig. 2.

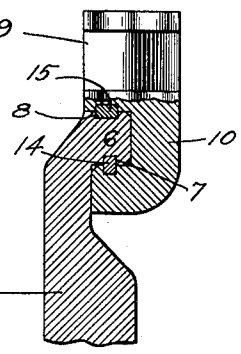
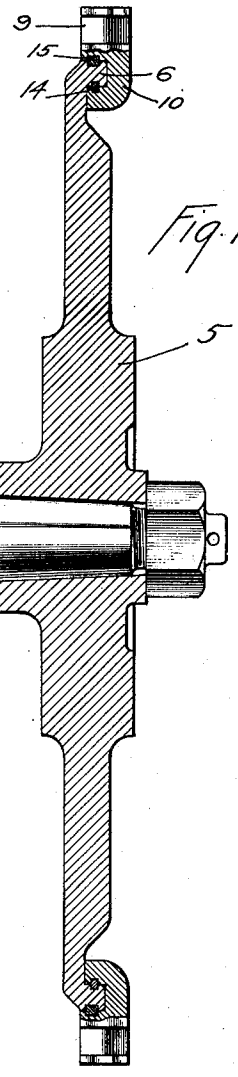


Fig. 1.



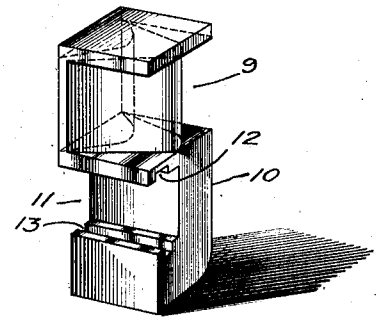


Fig. 3.

WITNESSES.

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BY

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UNITED STATES PATENT OFFICE.

WARREN B. FLANDERS, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE COLONIAL TRUST COMPANY, TRUSTEE, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

MEANS FOR SECURING BLADES.

1,026,087. Specification of Letters Patent. Patented May 14, 1912.

Application filed November 2, 1910. Serial No. 590,261.

To all whom it may concern:

Be it known that I, WARREN B. FLANDERS, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have made a new and useful Invention in Means for Securing Blades, of which the following is a specification.

This invention relates to means for securing blades to the blade carrying element of a fluid translating device, as for example, a turbine.

The invention is illustrated as being adapted for use in connection with the impulse blades of a turbine, whereby the blades are securely fastened to the periphery of the rotor of the turbine.

In the drawings: Figure 1 is a sectional view through the rotor of the turbine, to which blades are attached in accordance with my invention; Fig. 2 is an enlarged view of a portion of the turbine rotor and a blade secured thereto; Fig. 3 is a detail perspective view of a blade having means for connection to a rotor in accordance with my invention; and Fig. 4 is a slightly modified form of the fastening means.

Referring now to the drawings by numerals of reference, 5 designates a rotor, here shown as comprising a disk, having an out-turned flange 6 at its periphery; the upper and lower edges of said flange being provided with slots or grooves 7 and 8.

9 designates a blade of the impulse type having a tail piece 10 with a jaw 11, the upper edge of which is provided with a slot or groove 12, the lower edge of which is provided with a slot or groove 13. The jaw 11 of the tail piece 10 is adapted to receive the flange 6 of the rotor 5, and the slots 7 and 13 coincide or aline with each other when the flange is received by the jaw of the tail piece; likewise, the slots or grooves 8 and 12 coincide with each other.

A key or spring fastening device 14 may be inserted or sprung in the alined slots 7 and 13, while a spring key or fastening device 15 may be inserted in the alined slots 8 and 12; so it will be apparent that when the flange 6 of the rotor 5 is received by the jaw of the tail piece and the fastening devices, such as the keys 14 and 15, are driven home, a rigid fastening means will be provided for securing the blades to the blade carrying elements.

In Fig. 4, the same general construction for fastening the blades is followed out, as has been heretofore described, but in this form the fastening devices will be simply keys driven home and an additional fastening device is provided in the form of a screw 16, which may or may not be employed as occasion may demand.

Having thus described my invention, what I claim is:

1. The combination with a blade carrying element and a blade, one of these being provided with a jaw and the other a projection to be received by the jaw, alining slots in the jaw and projection and a key for engaging said slots.

2. The combination with a blade carrying element and a blade, one of these being provided with a projection and the other a jaw, slots on opposite edges of the projection, slots in the jaw to aline with those on the projection and keys for engaging the respective slots.

3. The combination with a blade carrying element and a blade, one of these being provided with a projection and the other a jaw, slots in the projection and jaw, fastening means engaging the slots to lock the jaw and projection together and a fastening device extending transversely through the jaw and projection.

In testimony whereof, I have hereunto subscribed my name this 28th day of October, 1910.

WARREN B. FLANDERS.

Witnesses:
C. W. McGHEE,
B. F. FUNK.