Dec. 4, 1923. 1,476,626

F. LÔSEL

MEANS FOR FASTENING THE BLADES OF STEAM AND GAS TURBINES

Filed Aug. 17, 1921

Fig.1

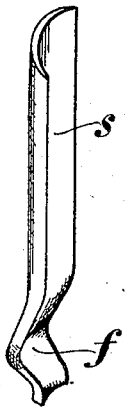


Fig.2.

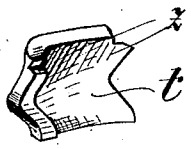


Fig.3

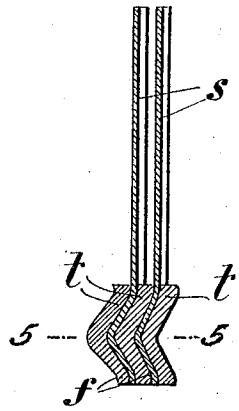


Fig.4

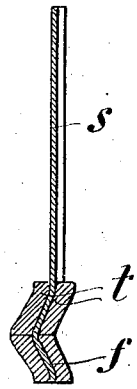


Fig.5

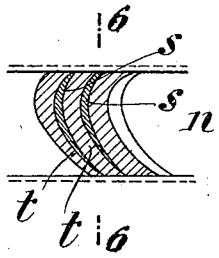
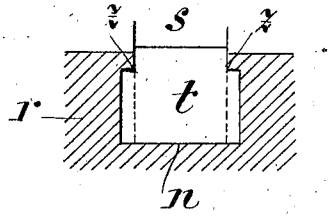


Fig.6.



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Patented Dec. 4, 1923. 1,476,626

UNITED STATES PATENT OFFICE.

FRANZ LÔSEL, OF BRUNN, CZECHOSLOVAKIA.

MEANS FOR FASTENING THE BLADES OF STEAM AND GAS TURBINES.

Application filed August 17, 1921. Serial No. 493,123.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, FRANZ LÔSEL, a citizen of Czechoslovakia, residing at Brunn, Czechoslovakia, have invented certain new and useful Improved Means for Fastening the Blades of Steam and Gas Turbines (for which I have filed applications in Austria, Feb. 12, 1914; Hungary, Feb. 14, 1914; Roumania, Feb. 23, 1914; Germany, Feb. 14, 1914, Patent #315,943; Switzerland, Feb. 26, 1918, Pat. #78,461; France, Mar. 14, 1918, Patent #516,377; Great Britain, April 15, 1918, Patent #115,231; Italy, July 29, 1919; Czechoslovakia, June 26, 1920; Poland, Jan. 5, 1920), of which the following is a specification.

This invention relates to the blades of steam or gas turbines and particularly to means by which the blades are fixed in the turbine drum, of the type in which they are secured by packing pieces or strips arranged between adjacent blades.

In one construction hitherto proposed, the root end of each blade is formed with a projection of elliptical form and a corresponding recess on the other side, the packing strip being correspondingly shaped to fit. In such an arrangement the centrifugal force will tend to shear the interfitting parts.

The object of the present invention is to overcome this tendency and a further object is to provide an improved means for fastening the blades of steam or gas turbines which will effectually prevent the turbine blades from becoming loose or detached in any way because an action is produced which becomes the more intensive the more the blades are strained by centrifugal force.

The invention consists in so forming the blade roots and their intermediate packing pieces that they are bent one or more times whereby a toggle action is produced which presses the blades against their adjacent packing pieces with a pressure which is the more intensive the more the blades are strained by centrifugal force.

In the accompanying drawings:—

Figure 1 is a perspective view of the improved blade fastening.

Figure 2 is a perspective view of a packing piece.

Figures 3 and 4 are vertical sections through the blade and the packing pieces.

Figure 5 is a section on the line 5—5 of Figure 3, and

Figure 6 is a section on the line 6—6 of Figure 5.

The root f of the blade s which is to be inserted in the groove n in the drum r, and the packing pieces t have a bent shape, and the back profile of the packing pieces is completely congruent with that of the blades. The bends may be as shown, or the blade roots and the packing pieces may have more than one bend.

The packing pieces may either be made of one piece as shown in Figure 3, or, and preferably, they may be divided at the apex of the bend as shown in Figure 4. They are provided on both sides with a shoulder or rabbet z by which they are held in the groove n in the drum r.

What I claim is:—

Fastening means for blades of steam or gas turbines, comprising a rotor provided with grooves having shoulders, packing means, blade roots inserted in the said grooves between the said packing pieces, which blade roots are bent from the surface of the blade, are longitudinally undulated in an obtuse angle and have a constant cross-sectional area, the said undulations extending over the entire width of the blade roots, between packing pieces similarly constant in cross-sectional area but thicker than the packing pieces, as set forth.

In testimony whereof I have signed my name to this specification.

FRANZ LÔSEL.

Witnesses:
MORITZ J. SUMEKA,
KARL RUBIREMS.