

IMPULSE BLADES

Figure 1 shows the type of blade and method of fastening used in the single row impulse element. The blades are secured to the rotor by the "straddle root" type of fastening. This consists of a T-root with lugs machined on the blade shanks, which straddle and hold in the sides of the rotor groove, thus resisting the tendency of the blade pull to spread the sides of the groove. The blades are held against the top of the groove by half-round segments caulked in place at the bottom.

While there is practically no pressure drop in the steam as it passes through the impulse element, it is nevertheless, desirable to provide the blades with a shroud so that they will form a closed passage and prevent spilling of the steam. These blades are shaped so as to form their own shroud, each pair fitting together at the top as well as at the bottom.

On the longer blades of this type (when the port height is greater than the blade width) a shroud strip is used to lash them together in groups. This grouping causes the blades to vibrate as groups instead of individually thereby raising the frequency and lowering the amplitude of vibration which, of course, decreases the vibrational stresses. This strip is installed by machining a groove in the end of the blades and welding the strip in place. The lengths of the shroud strip sections are made so as to form groups of six to eight blades each. On the shorter blades (that is, when the port height is less than the blade width) this shroud strip is not used because the short blades are so solid that their vibration is negligible, and no further strengthening is necessary.

In order to decrease to a minimum, the leakage of steam around the blades, special seal strips are used as shown in the Figure. These seals consist of very thin flat strips and are held in place by soft caulking strips which are caulked into grooves, after the blades are installed. Since the strips are very thin, slight rubs between them, and adjacent parts are negligible. Hence, they can be set with a small running clearance.

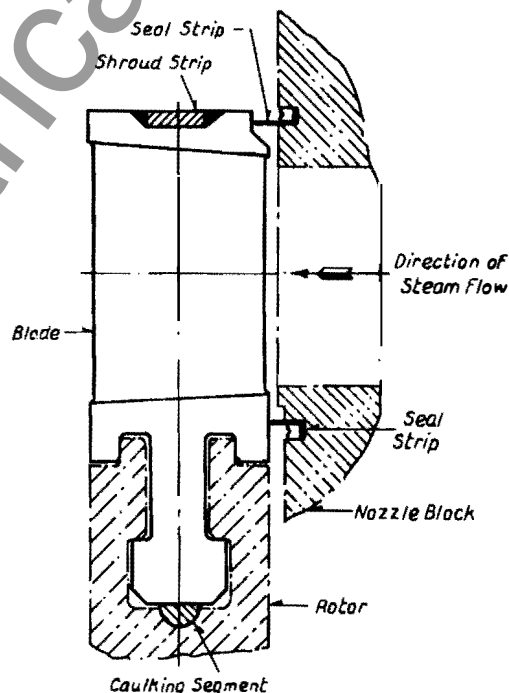


Fig. 1 - Impulse Blades

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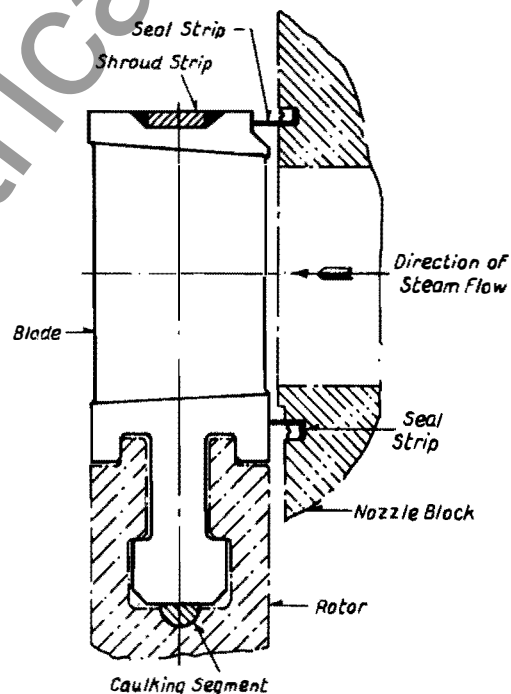


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