IMPULSE BLADES

Figure 1 shows the arrangement of an impulse element consisting of two rows of rotating blades attached to the rotor, and one row of stationary blades attached to the blade and seal strip holder. The rotating blades are secured to the rotor disc by the "straddle root" type of fastening. This consists of a T-root with lugs machined on the blade shank which straddle and hold in the sides of the rotor disc 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 sections caulked in place at the bottom.

The stationary blades are secured in a straight sided groove in the blade and seal strip holder by a series of short keys which fit in supplementary grooves cut in the blade shank and in the side of the main groove. A groove in the cylinder locates the blade and sealing strip holder axially in the cylinder and it is secured to the cylinder by fillister head screws as shown.

These blades are shaped so as to form their own shroud, thus forming a closed passage for the steam flow. The shanks are machined accurately to fit closely to one another and give the correct spacing for the steam passage area.

In order to decrease to a minimum the leakage of steam around the blades, special seal strips are used as shown on the drawing. These strips are held by soft steel locking segments which are rolled into grooves to wedge the strips in place. The seal strips and locking segments must be fitted 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 close running clearance.

On the longer rotating 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 in order to minimize 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.

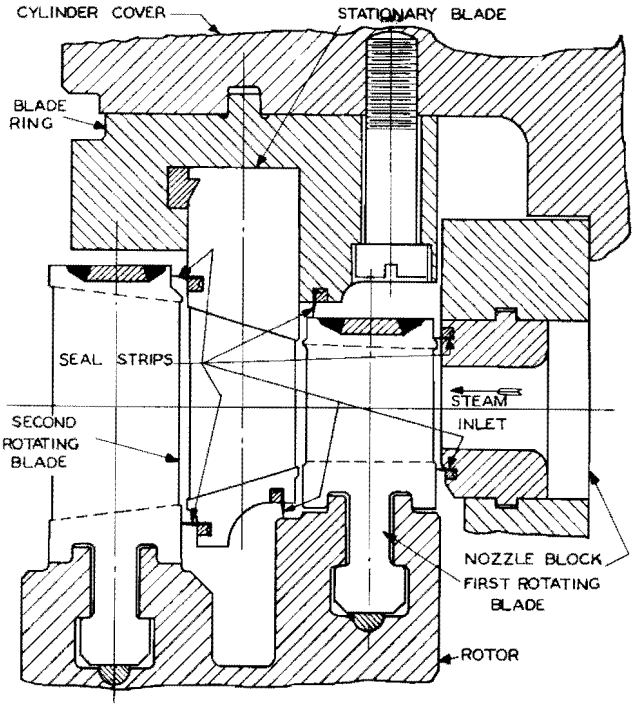

Figure 1

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