IMPULSE BLADES

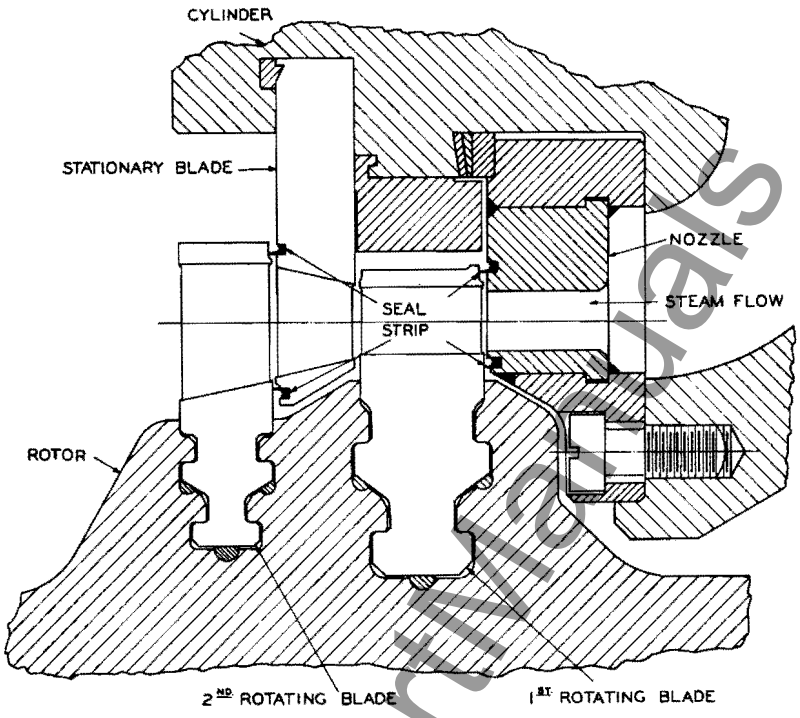

Figure 1

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 cylinder.

The rotating blades are secured to the rotor by the "double T-root" type of fastening. This consists of a double T-root machined on the blade shank which fits in a similarly shaped groove in the rotor. The blades are held against the top of the groove by three half-round steel sections caulked in place as shown.

The stationary blades are secured in straight sided grooves by a series of short keys which fit in auxiliary grooves cut in the blade shank and in the side of the main groove.

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 to give the correct spacing for the steam passage area. The longer rotating blades of this type are welded together in groups, thus causing the blades to vibrate as groups instead of individually. This raises the frequency and lowers the amplitude of the vibration which, of course, decreases the vibrational stresses.

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 thin flat strips and are held in place by soft steel caulking strips which are rolled into grooves. The seal strips and caulking strips must be fitted after the blades are installed. Since the strips are very thin, slight rubs between them and adjacent parts are neglibible. Hence they can be set with a close running clearance. On those strips having the close clearance in an axial direction, it is usually obtained by grinding the edges by actual rubbing contact with the machine in operation.