

"RADIAL CLEARANCE" LABYRINTH SEAL

Figures 1 and 2 show two arrangements of labyrinth seals in which the close running clearance is in a radial direction. The general construction of both arrangements is the same, the main difference being that Figure 1 shows the seal strips secured to the stationary element and Figure 2 shows the seal strips secured to the rotating element.

As shown in Figure 1 the seal strips are secured in the seal strip rings, and the rings, in turn are secured in the turbine cylinder. The illustration shows four rings each containing four complete seal strips. However, the number of rings and the number of seal strips per ring can be varied according to the number of seal strips required. These seal strips are rolled angles (or L sections). They are bent to the proper radius and held in the straight sided grooves by the soft steel locking segments which are rolled into the grooves. When the strips are carried in the rotating element as shown in Figure 2 the grooves are slightly dovetailed to give the caulking pieces a greater holding power.

The seal strip rings are inserted in grooves in the turbine cylinder and secured by caulking pieces at the horizontal joint and at several additional points. Each ring is also spot welded to the cylinder to prevent turning. The seal strips, locking strips and seal strip rings are made in half rings. The angle type caulking pieces are made in short segments.

When the rotating strips are used, (as shown in Figure 2) the seal strips are carried in the rotating element and the lands are machined on the rings which are inserted in grooves in the turbine cylinder and held in the same manner as the seal strip rings shown in Figure 1.

The seal strips and the lands with which they form the close running clearances are staggered in height so that any steam leakage must follow a zig-zag path. This, of course, eliminates the possibility of a straight blow through the seal, and greatly increases its effectiveness.

The strips are renewable and can be replaced if the clearance between them and the corresponding lands becomes excessive. The clearance desired for normal operation varies for different seals and is given on the "spindle clearance drawing" for each turbine.

In some special cases, the same general construction as shown in Figures 1 or 2 is used with two seal strips in each groove. Where such an arrangement is used, this description applies equally well, the only difference being that each caulking strip holds two seal strips in the groove.

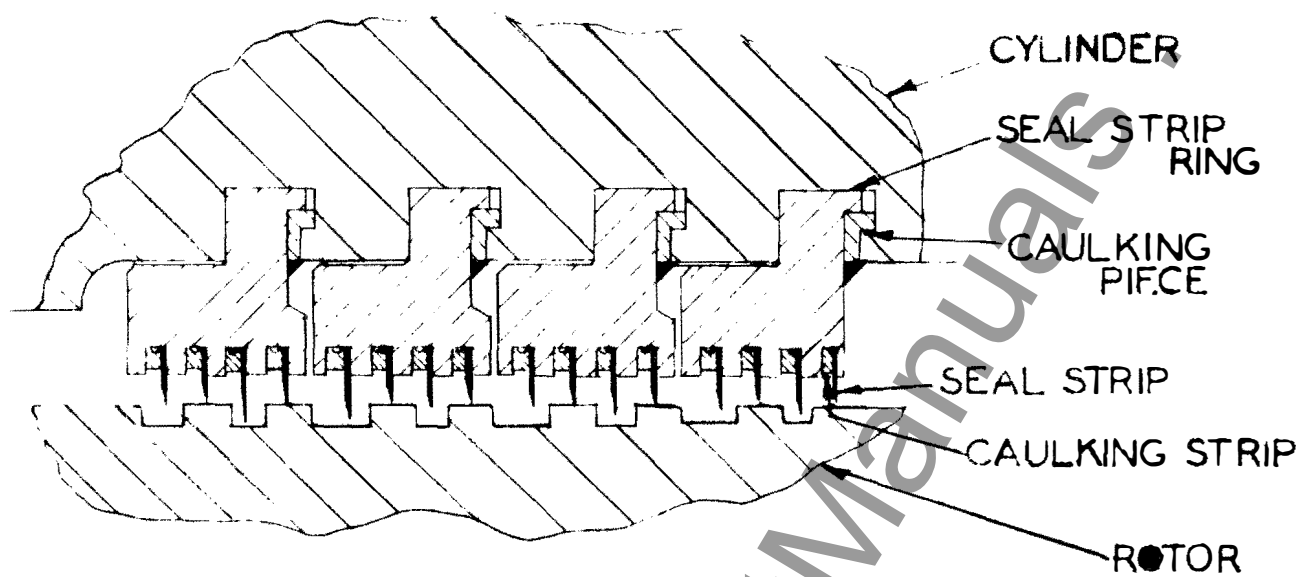


Fig. 1

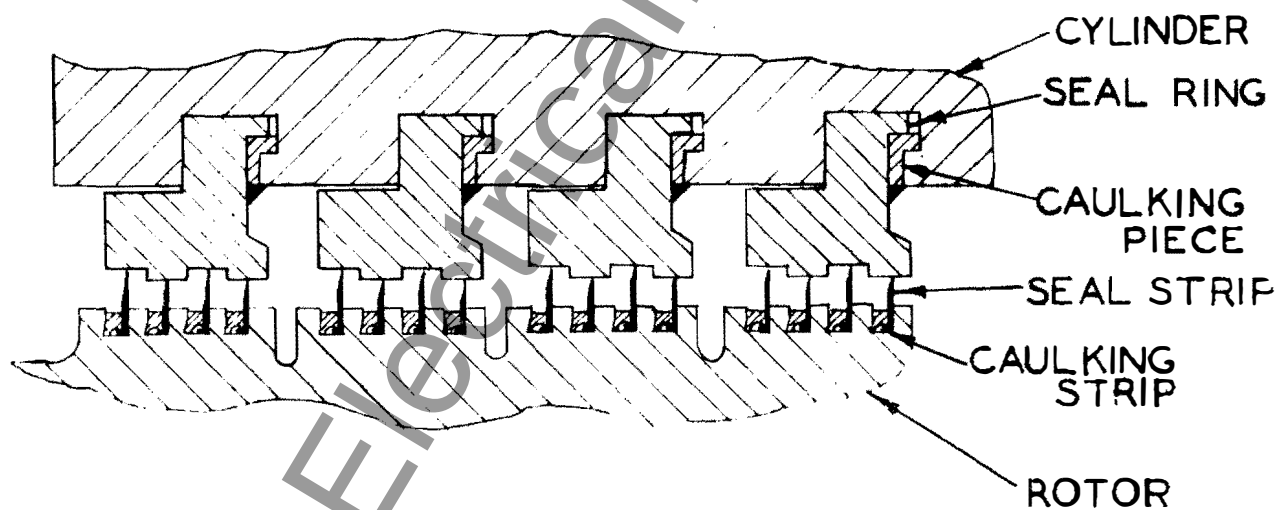


Fig. 2