CONTROLLED AND UNCONTROLLED EXTRACTION

By Sydney Gross

Steam turbines are custom machines for the most part. They are designed around the steam conditions and needs of the plant. Non-condensing or backpressure turbines are an efficient method of driving a load while letting down high-pressure steam to some pressure above atmospheric that is needed in the plant. When there is no use for the intermediate pressure steam, a condensing turbine may be used to derive the most powerful practical from the steam. Turbines with essentially the same exhaust mass flow as inlet mass flow are referred to as straight through, either straight through backpressure (fig 1) or straight through condensing (fig 2).

However, there are many instances where steam is required at intermediate conditions for process heating. For this purpose, steam is bled off or extracted from the turbine at an appropriate location or locations to suit the heat load need. We refer to these machines as extraction turbines. Depending on the heat load, the extraction may be either controlled (automatic) or uncontrolled (nonautomatic).

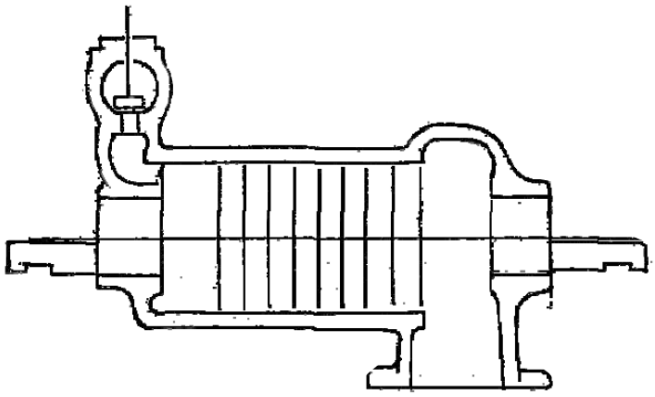

Figure 1

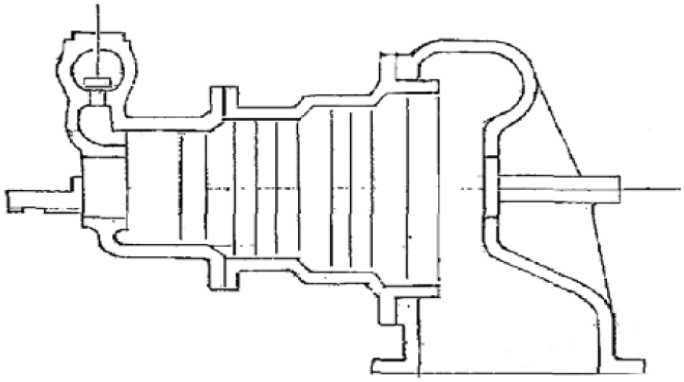

Figure 3

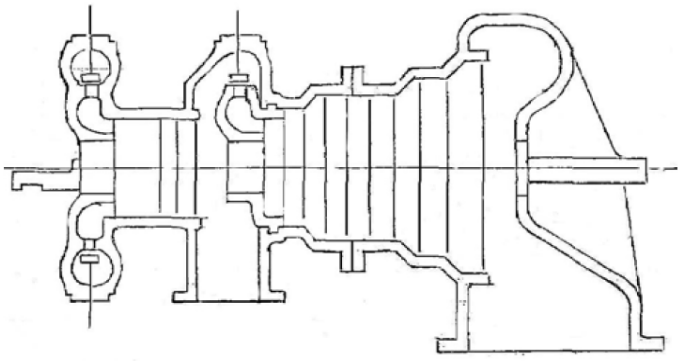

Figure 2

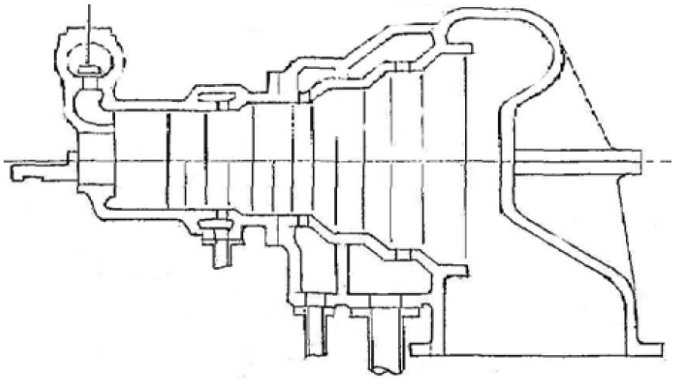

Figure 4

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