STEAM CHEST

A typical arrangement of the multiple-valve steam chest is shown in Figure 1. The main body and nozzle chambers are cast integrally with the cylinder cover, thus eliminating joints between these parts. The valves are arranged in parallel within the chest; that is, all valves are surrounded with steam at approximately throttle pressure.

These valves are of the single seated type. The seats are pressed into the steam chest body and can be replaced, if necessary. The governor servo-motor raises and lowers the valve bar "24", keeping it perfectly horizontal at all times. The bar, in turn, lifts the valves by engaging the adjusting nuts "25". As shown in the illustration, the adjusting nuts are threaded on the valves and hence the point at which each valve opens, and the amount of opening can be varied by means of these adjusting nuts. Of course there is an unbalanced steam force tending to close the valves but, in addition, a positive closing force is obtained by the lower edge of the bar "24" engaging the shoulder on each valve.

The valve bar stem packing consists of two closely fitted bushings "9" and "11" with suitable leak-off openings. On valves built for pressures above 450 pounds, two leak-offs are provided as shown in the Figure; while valves built for 450 pounds pressure or lower have only the lower leak-off, the upper one being omitted or plugged. When two leak-offs are used, the upper one is led to a point at atmospheric pressure where a small amount of escaping steam is not objectionable. The lower one is led to a zone of intermediate pressure in the turbine. When only one leak-off is used, it is led to a point at atmospheric pressure at all times.

The operating lever is in reality a "V" shaped rock shaft, with the central arm connected to the governor and each of the two branch arms connected to a valve bar stem. Universal joints are used in the connecting links to insure correct alignment of the moving parts. This operating lever (or rock shaft) is fulcrumed so that downward movement of the governor servo-motor piston opens the valves and upward movement of the piston closes them.

The illustration shows a typical arrangement in which the first valve to open is just to the right of the center, and the fifth and sixth are on the ends. However, the number of valves and their order of opening may vary to suit different steam and load conditions. For each particular turbine there is a "Valve Setting Diagram" which shows the correct valve location and the dimensions for adjusting the valve nuts "25" to obtain the proper sequence of opening. A print of this diagram will be found in the instruction book for each particular unit.

The "Valve Lifts" as given on this diagram should give satisfactory operation. However, in some cases it may be desirable to adjust the nuts "25" to bring certain valves in earlier or later in order to obtain the correct pressure drop across each. This pressure drop is usually about 2% for non-condensing machines and 4% for condensing machines.

The following list has been compiled to facilitate ordering spare or renewal parts by name and number, together with the serial number of the turbine:-

Item No.	Name
1	Steam Chest Cover and Governor Lever Bracket
2	Universal Joint (Complete)

Item No.	Name
3	Operating Lever Fulcrum Shaft
4	Operating Lever Bracket Bushing
5	Operating Lever Fulcrum Shaft Pin
6	Operating Lever
7	Steam Chest Cover Taper Dowel
8	Steam Chest Valve Bar Stem
9	Steam Chest Valve Bar Stem Bushing (Upper)
10	Steam Chest Valve Bar Stem Bushing Retainer
11	Steam Chest Valve Bar Stem Bushing (Lower)
12	Steam Chest Valve
13	Steam Chest Valve Seat
14	Steam Chest Valve
15	Steam Chest Valve Seat
16	Steam Chest Valve
17	Steam Chest Valve Seat
18	Steam Chest Valve
19	Steam Chest Valve Seat
20	Steam Chest Valve
21	Steam Chest Valve Seat
22	Steam Chest Valve
23	Steam Chest Valve Seat
24	Steam Chest Valve Bar
25	Steam Chest Valve Adjusting Nut
26	Steam Chest Valve Adjusting Nut Locknut

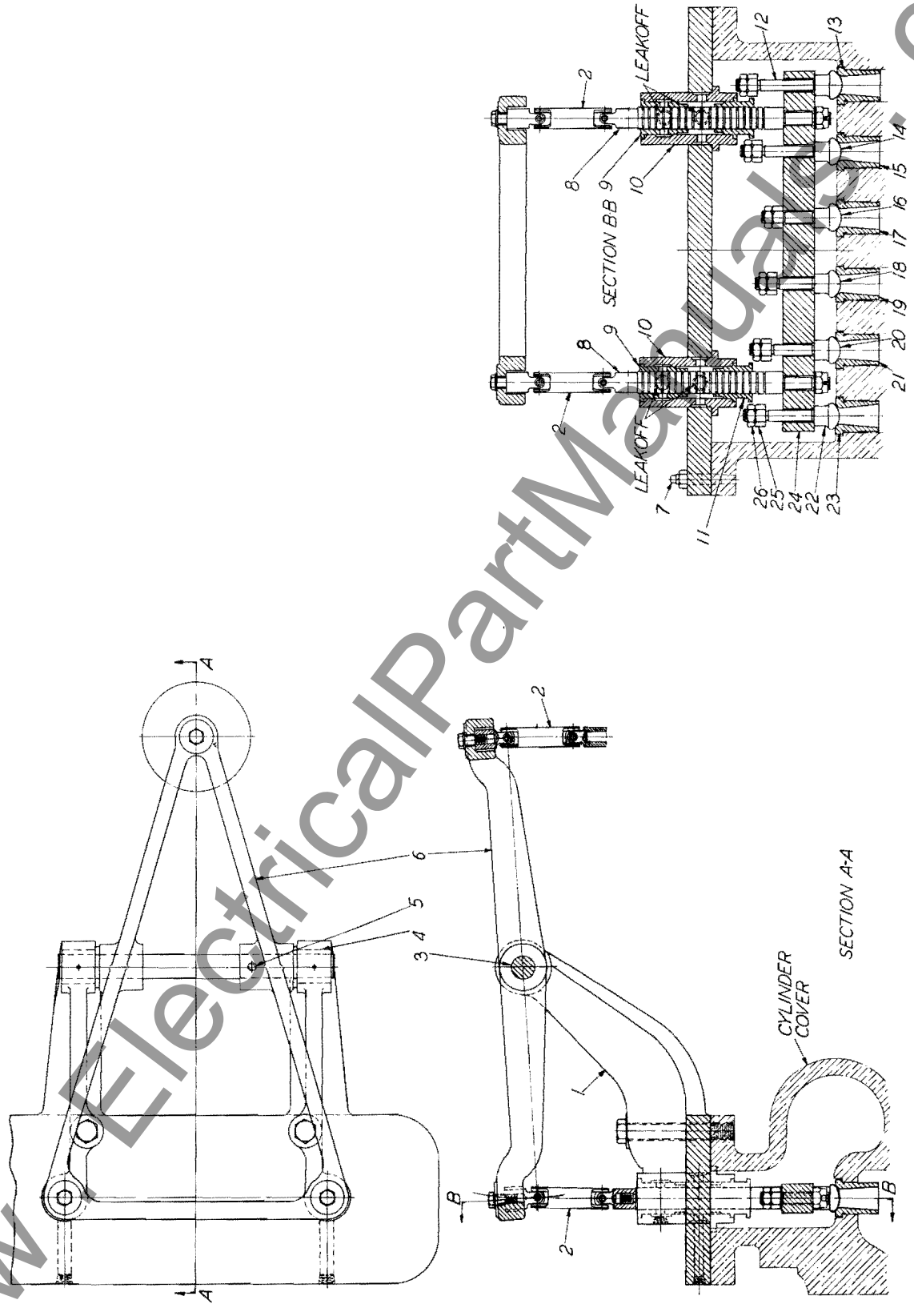

Figure 1

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