STEAM CHEST

A typical arrangement of the multiple-valve steam chest is shown in Figure 1. The valves are arranged in parallel within the chest; that is all valves are surrounded by steam at approximately throttle pressure.

The valves are of the single seated, unbalanced, plug type. The seats are pressed into the steam chest body and can be replaced if necessary. The operating mechanism raises and lowers the valve bar "25", keeping it perfectly horizontal at all times. The bar in turn, lifts the valves by engaging the adjusting nuts "24". 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 "25" engaging the lower shoulder on each valve.

The valve bar stem packing consists of two closely fitting bushings "18" and "20" with suitable leak-off openings. On valves built for 650 pounds pressure or higher, two leak-offs are provided as shown in the Figure, while valves built for 450 pounds pressure or lower have only one leak-off, the upper one being omitted or plugged. When two leak-offs are used the upper one is connected to a point at atmospheric pressure where a small amount of escaping steam is not objectionable. The lower one is connected to a zone of intermediate pressure in the turbine. When only the lower leak-off is used it is connected to a point at atmospheric pressure at all times.

The operating lever "3" is in reality a rock shaft fabricated from two bars which are welded together at one end to form the connection to the governor linkage while at the other end they are separated to form the two connections to the valve bar stem links "12", and also connect to the closing springs "1". The lever has a center member or shaft, the ends of which fit in the supporting brackets "6" and "7" to form a fulcrum point. Therefore, downward movement of the governor piston opens the valves while upward movement of the piston closes them. An additional force is exerted by the tension springs "1" at all times tending to close the valves in case they have any tendency to stick.

The spring assembly items 10-11-13-14 and 15 shown in View "A" is provided to automatically take up any play in the linkage connections which might result from gradual slight wear of the pins "9".

The illustration shows a typical arrangement in which the first valve to open is in the center, and the sixth and seventh on the ends. However, the number of valves and the position of each in the chest may vary to suit different steam and load conditions. For each particular turbine there is a "Steam Chest Valve Diagram" which shows the correct valve locations and the dimensions for setting the valve adjusting nuts "24" 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 "24" to bring certain valves in earlier or later to obtain the correct pressure drop across each. This pressure drop is usually about 4 per cent.

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	-	Closing Spring
2	-	Closing Spring Pin
3	-	Lever (complete)
4	-	Governor connecting link pin
5	-	Governor connecting link
6	-	Lever Bracket (right hand)
7	-	Lever Bracket (left hand)
8	-	Lever Bracket Dowel Bolt
9	-	Valve Bar Stem Link Pin
10	-	Loading Spring Seat (Upper)
11	-	Loading Spring
12	-	Valve Bar Stem Link (in pairs)
13	-	Loading Spring Seat (lower)
14	-	Loading Spring Spacer Screw
15	-	Loading Spring Spacer
16	-	Valve Bar Stem Head
17	-	Valve Bar Stem
18	-	Valve Bar Stem Bushing (Upper)
19	-	Valve Bar Stem Bushing Retainer
20	-	Valve Bar Stem Bushing (Lower)
21	-	Steam Chest Cover
22	-	Steam Chest Cover Gasket
23	-	Valve Adjusting Nut Lock Nut
24	-	Valve Adjusting Nut
25	-	Valve Bar
26	-	Valve Seat
27	-	Valve
28	-	Valve Seat
29	-	Valve
30	-	Valve Seat
31	-	Valve
32	-	Valve Seat
33	-	Valve
34	-	Valve Seat
35	-	Valve
36	-	Valve Seat
37	-	Valve
38	-	Valve Seat
39	-	Valve

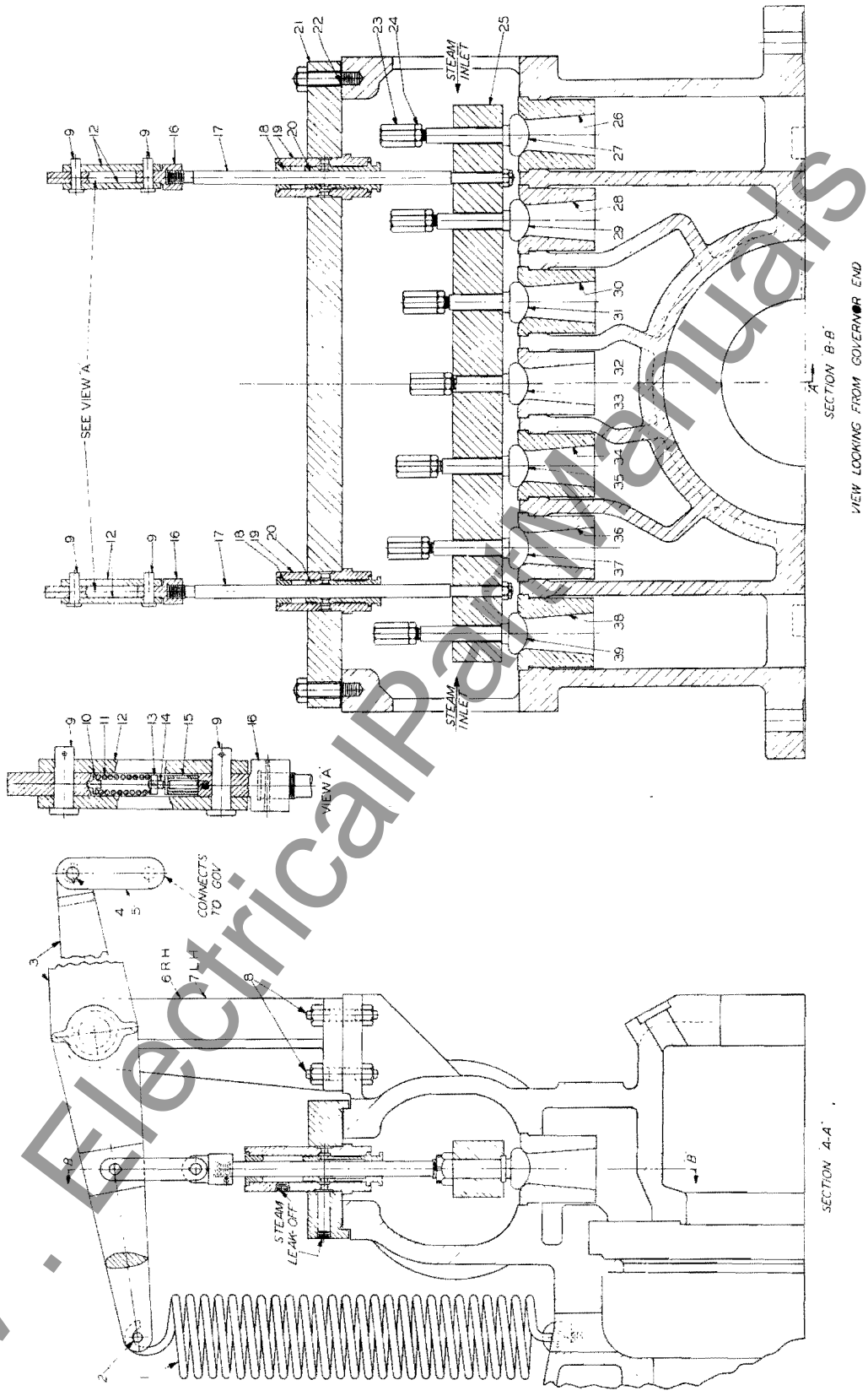

Figure 1