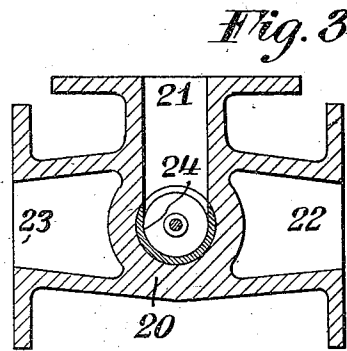
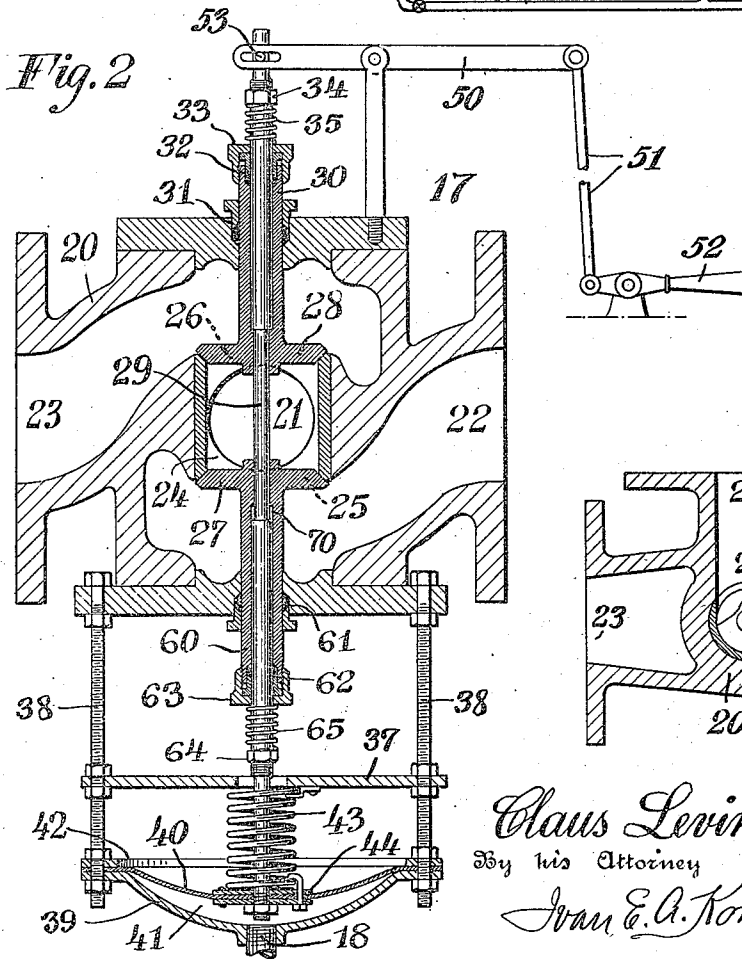
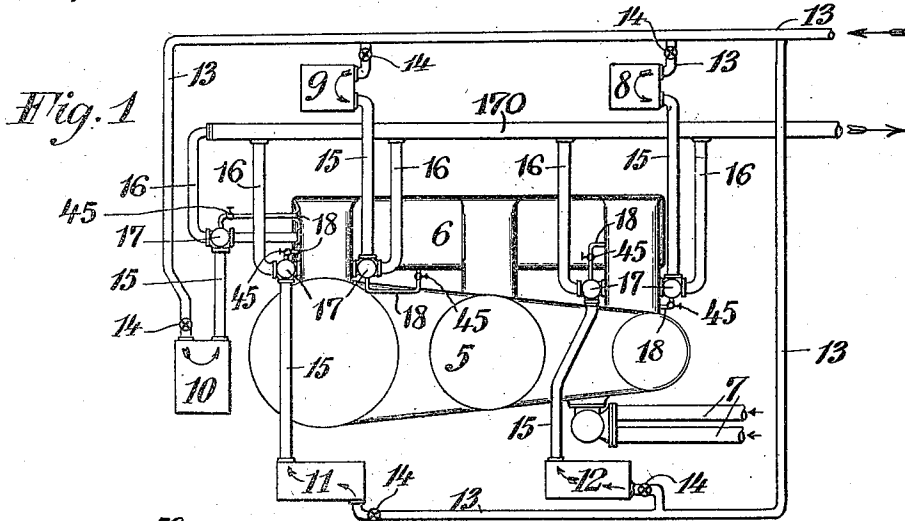


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STEAM REGULATING VALVE.
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1,296,410.

Patented Mar. 4, 1919.



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CLAUS LEVINSEN, OF BROOKLYN, NEW YORK.

STEAM-REGULATING VALVE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CLAUS LEVINSEN, a citizen of the Danish Monarchy, resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Steam-Regulating Valves, of which the following is a specification.

The object of my invention is to provide an improved steam regulating valve especially adapted for use in marine steam power plants in order to improve the operation thereof with respect to safety, efficiency and automatic action.

Accordingly, my invention comprises an improved steam regulating valve constructed and operated as hereinafter set forth, and also consists in certain combinations of elements including my improved valve.

In the accompanying drawing I have shown my steam valve applied to a typical marine power plant installation. The drawing, however, is illustrative only and in no sense does it attempt to show the only possible embodiment of the valve, nor the only way in which it may be used.

Figure 1 is a diagrammatic illustration of a marine steam power plant;

Fig. 2 is a vertical sectional view of my improved steam regulating valve; and

Fig. 3 is a horizontal section through the valve casing.

Referring to Fig. 1, the numeral 5 designates a marine steam engine connected in the usual manner to its condenser 6. Steam is supplied to the engine through the steam mains 7. The numerals 8 to 12 inclusive indicate the auxiliary power units or engines required for the operation of a vessel. Thus, 8 designates the boiler pump, 9 the bilge water pump, 10 the steering gear engine, 11 the generator unit for electric power and 12 the blower. The number of auxiliary units, their arrangement and location are immaterial so far as this invention is concerned.

The auxiliary units are supplied with steam from the boiler (not shown) through the steam pipes 13. Adjacent each unit or machine there is provided the usual steam valve 14 for controlling the steam supply to each machine. The exhaust of each auxiliary machine is connected by a pipe 15, and a pipe 16 to the common exhaust 17. The latter may be connected to an auxiliary con-

denser (not shown) or leads to the atmosphere.

The communication between the exhaust of each auxiliary machine and to either the condenser or the atmosphere is controlled for each of said machines by one of my improved steam regulating valves 17 which is connected in said exhaust at the point where the pipes 15 and 16 meet, and each of the valves 17 is connected to the condenser by a pipe 18.

The object or function of the regulating valve 17 is to connect automatically the exhaust of the auxiliary machine with either the condenser or the atmosphere according to whether or not the main power unit 5 and the condenser 6 are in operation.

The valve comprises a valve casing 20 having an inlet 21 connected to the auxiliary exhaust 15—16 and two outlets 22 and 23 leading respectively to the condenser 6 and to the atmosphere by way of pipe 18. The inlet 21 communicates with the valve chamber 24 having the two ports 25 and 26 leading to the outlet 22 and 23 respectively, and controlled by the valves 27 and 28 respectively. The valve 27 is provided with a sleeve 60 which extends to the outside of the valve casing 20 through a stuffing box 61. Another stuffing box 62 prevents leaks between the sleeve 60 and the valve spindle 29. The stuffing box 62 is adjusted by rotating a cap 63. 64 is a nut on the spindle and 65 is a spring which urges the valve 27 upward to close the port 25. The upper valve 28 is provided with a sleeve 30 which extends to the outside of the valve casing 20 through a stuffing box 31. Another stuffing box 32 prevents leaks between the sleeve 30 and the spindle 29. The stuffing box 32 is adjusted by rotating the cap 33. 34 is a nut on the spindle and 35 is a spring which urges the valve 28 downward to close the port 26. 37 is an abutment secured to the valve casing by bolts 38 which also support a dish member 39. 40 is a suitable diaphragm supported above said member 39 and forms with the latter a pressure chamber 41 which communicates with the condenser 6 by way of the pipe 18 aforesaid. The diaphragm is held in position by a member 42 as shown. 43 is a spring which is secured to the abutment 37 and a plate 44 fixed to the spindle 29 and the diaphragm 40 as shown. The spring therefore tends to

lift the spindle and diaphragm. 45 is a valve in the pipe 18 (see Fig. 1).

The running of the main engine 5 and the condenser 6 reduces the pressure in the pressure chamber 41 in communication therewith, consequently the diaphragm 40 is pressed downward by atmospheric pressure which overcomes the lifting tendency of the spring 43 causing the valve to assume the position shown in Fig. 2 which illustrates the normal position with both ports 25 and 26 closed.

If now one or more of the auxiliary units are operated, the exhaust steam therefrom will flow through the exhaust pipe 15 to the particular valve 17 and to the condenser 6. The steam passes into the valve at inlet 21, through the valve chamber 24, depresses valve 27 against the spring 65 and passes thence through port 25 and through outlet 22 to the condenser. It will be noted that relative movement of the valve on the spindle 29 is provided for at 70.

This condition only exists, however, so long as the main engine 5 and condenser 6 are operated which they of course are while the vessel is sailing.

When the main engine 5 and condenser 6 cease operation, the pressure in the pressure chamber 41 rises until, at a predetermined pressure (less than atmospheric pressure) the spring 43 lifts the spindle and closes the valve 27. By adjusting the abutment 37 on the bolts 38 the tension of the spring 43 may be adjusted so that it will act to lift the spindle and close the valve 27 at any predetermined pressure (less than atmospheric) in the pressure chamber 41.

If now none of the auxiliary engines are working, both valves 27 and 28 will remain seated, but if one or more of the auxiliary machines are operated, the exhaust steam from those machines will of course lift the valve 28 against the spring 35 and pass out through outlet 23 to the atmosphere (or auxiliary condenser). When the main engine resumes operation, the pressure will again be reduced in chamber 41 and the spindle 29 and valve 28 will be moved down, closing port 26 and the steam from the auxiliary engine will again operate valve 27 and pass through port 25 to the condenser.

Thus, the steam from the auxiliary machines will pass through the valve to the condenser while the main engine is operating, but will be automatically shunted through the valve so as to pass to the atmosphere (or auxiliary condenser) when the main engine ceases to operate.

It will therefore be seen that the main advantage of my valve and its use is that the exhaust steam from the auxiliary units is automatically sent either to the condenser or to the atmosphere (auxiliary condenser) according to whether the main engine is op-

erating or not, and operation of manually operated valves for the same purpose is eliminated.

Another advantage is that when the main engine is not running and one of the auxiliary engines is operated, the exhaust steam from the latter will assist in keeping the valves 28 closed in the other valves 17. This feature is one of safety in that the auxiliary units, not running, may be handled for repairs or otherwise without danger of scalding from the steam, which might happen to persons not specially acquainted with the steam circuit.

The above mentioned valve 45 in the pipe 18 leading from the pressure chamber 41 to the condenser 6 is a safety valve which may be closed manually in case the diaphragm 40 should break or become leaky, whereby the air would enter into the pressure chamber and hence by way of pipe 18 into the condenser. The closing of the valve 45 cuts off communication to the condenser by way of the regulating valve 17. In such case the valve 17 may be operated manually by the pivoted lever 50, connecting rod 51 and handle 52 by inserting a pin 53 in the spindle 29.

It will be seen that my improved steam regulating valve not only in itself operates to better advantage than ordinary hand operated valves, but that the operation of the power plant is simplified and made more efficient and automatic as described.

I claim:

1. A valve mechanism comprising a casing provided with an inlet passage, and two outlet passages, a valve controlling the communication between said inlet passage and one of the said outlet passages, resilient means for controlling said valve, a second valve for controlling the communication between said inlet passage and the other of said outlet passages and pressure regulated means for controlling said second valve.

2. A valve mechanism comprising a casing having an inlet and two outlets, a valve controlling the communication between said inlet and one of the outlets, adjustable resilient means controlling said valve, a second valve controlling the communication between said inlet and said second outlet and pressure regulated means for closing said second valve.

3. A valve mechanism comprising a casing having an inlet and two outlets, two valves for controlling the communications between said inlet and the said two outlets respectively, springs for normally closing said valves and pressure regulated means for closing one of said valves while the other valve is being operated.

4. A valve mechanism comprising a casing forming an inlet and two outlets, two valves for controlling the communications

between said inlet and said outlets and pressure controlled means for preventing the operation of one of said valves while the other of said valves is being operated.

5 5. A valve mechanism comprising two valves, resilient means for closing the same and a pressure regulated member operatively

connected to the said two valves for closing one of them while the other is being operated.

Signed at New York, in the county of New York and State of New York, this tenth day of November, A. D. 1916. 10

CLAUS LEVINSEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."