W. H. FREYGANG, W. KIDDE AND B. G. WORTH.

MARINE FIRE INDICATING SYSTEM.

APPLICATION FILED JULY 2, 1919.

1,343,911.

Patented June 22, 1920.

2 SHEETS—SHEET 1.

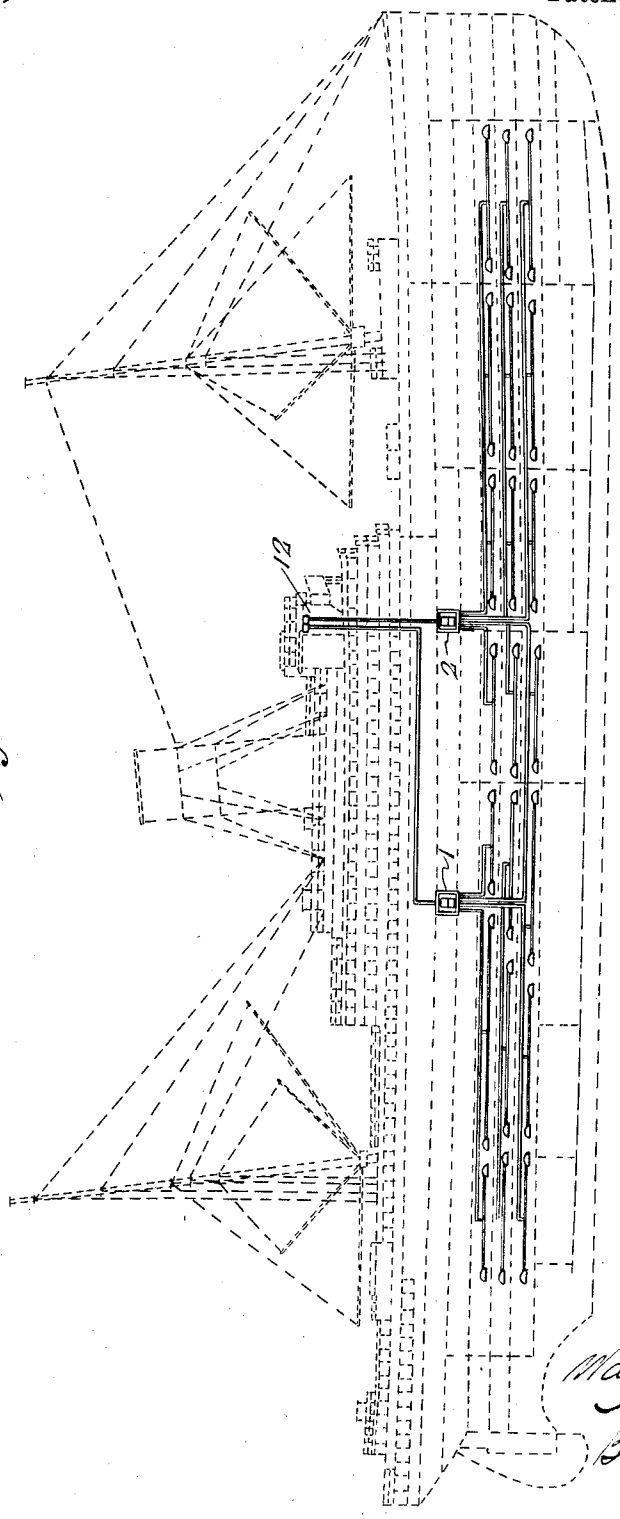


Fig. 1.

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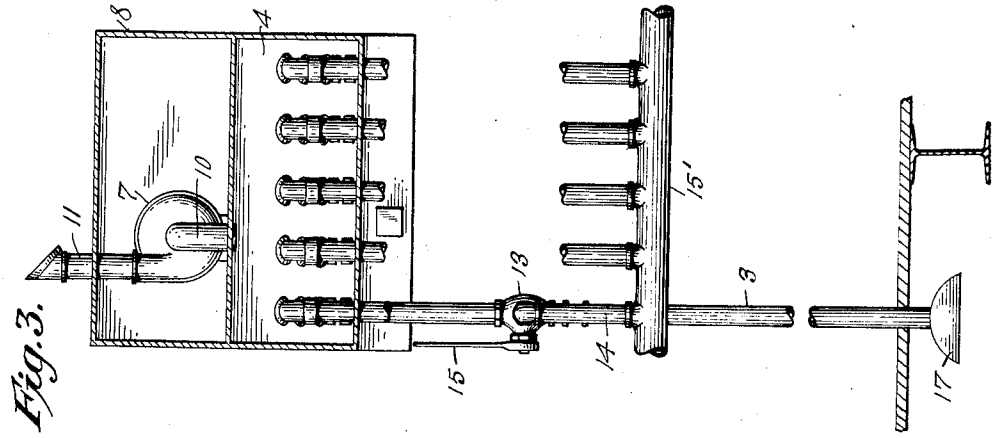


Fig. 3.

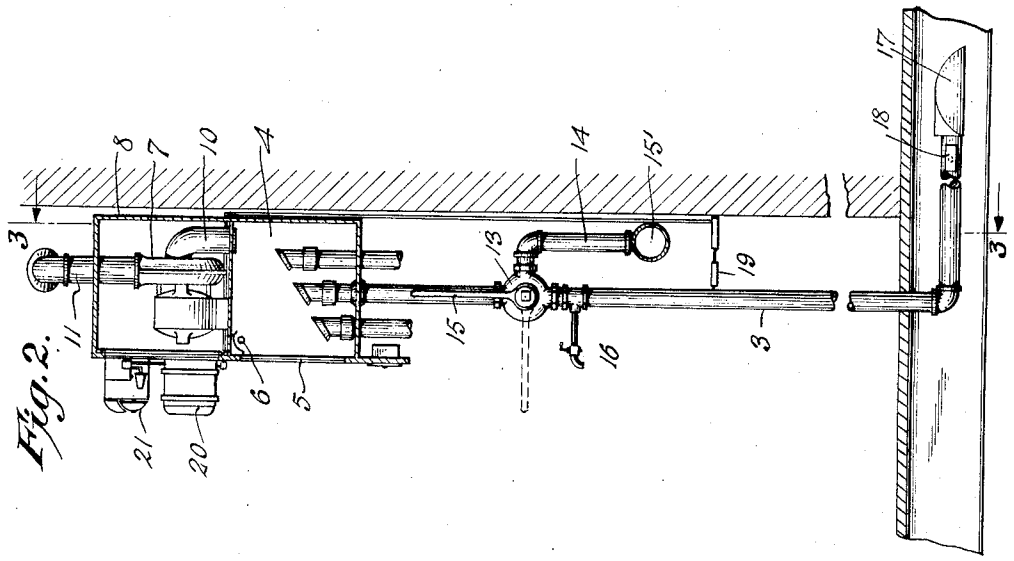


Fig. 2.

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UNITED STATES PATENT OFFICE.

WALTER H. FREYGANG, OF WEEHAWKEN, WALTER KIDDE, OF MONTCLAIR, AND BARZILLAI G. WORTH, OF WEST ORANGE, NEW JERSEY, ASSIGNORS TO WALTER KIDDE & COMPANY, A CORPORATION OF NEW JERSEY.

MARINE FIRE-INDICATING SYSTEM.

1,343,911. Specification of Letters Patent. Patented June 22, 1920.

Application filed July 2, 1919. Serial No. 308,272.

To all whom it may concern:

Be it known that we, WALTER H. FREYGANG, a citizen of the United States, residing at Weehawken, in the county of Hudson and State of New Jersey, (post-office address, No. 61 Highwood Terrace, Weehawken, N. J.,) WALTER KIDDE, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, (post-office address, No. 56 Gates avenue, Montclair, N. J.,) and BARZILLAI G. WORTH, a citizen of the United States, residing at West Orange, in the county of Essex and State of New Jersey, (post-office address, No. 422 Gregory avenue, West Orange, N. J.,) have jointly invented certain new and useful Improvements in Marine Fire-Indicating Systems, of which the following is a specification.

Our invention relates to improvements in marine fire indicating systems of the general type disclosed in patents to Meyer, No. 678,787, dated July 16, 1901, and to Rich, No. 892,088, dated June 30, 1908, and No. 1,154,128, dated September 21, 1915.

In the so-called Rich system, as disclosed in said patents, each compartment of the vessel has therein a detector pipe leading to one or more cabinets to which a suction fan is connected, whereby air either continuously or intermittently is drawn up through the pipes. In this way, in case of fire in any one of the compartments a definite indication of its presence will be given by smoke issuing from the particular detector pipe leading from that compartment. With the Rich system as heretofore constructed, a flexible steam pipe was provided by which live steam might be introduced into any one of the detector pipes and thus forced into the compartment in which a fire had started, to thus extinguish the same.

Our invention relates to various improvements in the system referred to, by which it will be better adapted to actual commercial use. With our improved system a detector pipe, as heretofore, is led from each compartment to one or more central cabinets from which air is intermittently or continuously drawn by means of a suitable fan, but instead of introducing the steam by means of a flexible pipe to the desired detector pipe, we provide each of the detector pipes with a steam valve or cock by means of which live steam can be immediately directed through the detector pipe into the desired compartment. This permits the extinguishing operation to be more quickly performed than when a flexible pipe is used, and the operation is more certain, because with a flexible pipe it is difficult to make even a reasonably tight joint between its nozzle and the open end of the desired detector pipe, and this is especially true under conditions of excitement, as is the case when a fire breaks out on board ship.

Preferably the valves used are three-way valves which normally present a clear passage for air or smoke through the detector pipe, but which when operated make a steam connection from the steam pipe to the detector pipe, and at the same time close the detector pipe above the valve to prevent the escape of steam into the observation cabinet. Each detector pipe, a short distance below its steam valve, is provided with a pilot cock which may be opened momentarily after the steam valve has been operated to assure that the steam is properly functioning. With our improved system therefore, when the smoke is seen to be issuing from any one of the detector pipes, it is only necessary to operate the steam valve of that particular pipe, whereupon steam will be introduced into the compartment in which the fire had started, to thus extinguish the same. With the system as heretofore installed, it has been necessary for the operator to first open the cabinet, then introduce the nozzle of the flexible steam pipe into the upper end of the detector pipe and thereupon to open the steam valve in the flexible pipe, all of which operations result in loss of time.

As a further precaution, we preferably employ an electric signal whereby an indication will be given by the ringing of a bell and the operation of an annunciator corresponding to each compartment. Any suitable thermostatic device may be employed, arranged to close or otherwise control a circuit when an unduly high temperature has been reached and thus operate an annunciator corresponding to the particular compartment. Preferably the circuit wires are placed within the detector pipe, thus facilitating the wiring operation

and protecting the circuits from accidental injury. An electric bell may be located in the common return circuit of all the thermostats and may be placed either adjacent to the detector cabinet or located in the chart room, and any desired number of such bells may be used to give an audible indication at various points throughout the ship. And if desired, additional annunciators may be placed in the chart room, or on the bridge or elsewhere to give a visible indication of a fire in any of the ship's compartments.

A further feature of our invention consists in leading the exhaust pipe from the suction fan into the chart room, officers' quarters or elsewhere, so that the presence of smoke by its smell can be immediately detected by the captain or other navigating officer or crew,—thus offering practically a still further indication of the presence of fire.

In order that our invention may be better understood, attention is directed to the accompanying drawings forming a part of this specification, and in which Figure 1 is a longitudinal section of a conventional vessel equipped with our present improvements illustrating two observation cabinets to which lead the detector pipes from the fore and aft compartments, respectively, of the ship, and with the exhaust from each detector cabinet leading to the chart room. Fig. 2, a vertical sectional view showing a section through the cabinet, one of the detector pipes throughout (except where the vertical and longitudinal legs thereof are broken away) and the upper ends of two other detector pipes leading into the cabinet. And Fig. 3, a section at right angles to Fig. 2. In all of the above views, corresponding parts are represented by the same numerals.

With the vessel shown in Fig. 1, we illustrate two cabinets, 1 and 2, the former controlling the compartments aft of the amidship line, and the latter the compartments forward of the same. It will, of course, be understood that with a small vessel only a single cabinet need be used, while with very large vessels more than two cabinets may be employed. A detector pipe 3 leads from each compartment into the chamber 4, the open ends of the detector pipes being disclosed through the glass front 5, and these ends being arranged in banks as shown, so as to be more readily seen. An electric lamp 6 illuminates the compartment so that the presence of smoke issuing from any one of the detector pipes can be readily observed. A rotary blower 7 is mounted in a suitable casing 8, above the chamber 4, and is operated by an electric motor 9. A pipe 10 connects the interior of the chamber 4 with the suction of the blower 7, and the exhaust pipe 11 from the blower leads to the chart room 12, whereby all or, if desired, a part only of the air drawn up through the detector pipes will be discharged into the chart room and the presence of any smoke will be detected by its odor. Each detector pipe 3 is provided with a steam valve or cock 13, which is preferably a three way valve, so that normally a straight passage is offered through the detector pipe for the passage of air or smoke through the valve. In its normal position the valve 13 cuts off steam from the steam pipe 14. By operating the lever 15 of the steam valve to the position shown in dotted lines (Fig. 2) the steam pipe 14 will be put in communication with the section of the detector pipe below the valve, while the section of the pipe above the valve will be cut off. Thus by moving the lever 15 to the dotted line position, steam may pass from the pipe 14 into the detector pipe and thus be forced into the compartment in which the fire has originated. The steam pipe 14 (and the corresponding steam pipes of all the detector pipes) connects with a steam header 15′, having connection directly with the boiler of the ship. If desired, the steam header 15′ may be in connection with the boilers at all times, so that steam will be on hand when any one of the valves 13 is operated, or instead a special steam valve may be employed in the boiler room, which, when an alarm has been sounded, may be opened to permit steam to enter the steam header 15′. Each detector pipe is provided with a pilot cock 16 immediately below the steam valve 13, whereby the operator after opening the steam valve 13 may open the pilot cock in order to be certain that the steam is properly functioning. The lower end of each detector pipe is preferably provided with a hood 17 in the compartment, made partly spherical, as shown, and through which air and smoke will be drawn into the detector pipe. Ordinarily the horizontal leg of each detector pipe with the hood 17 at its end will be located in the top of each compartment so as to be out of the way of its contents, but obviously these hoods may be located elsewhere. Adjacent to each hood 17 on the detector pipe is a thermostat 18 of any suitable construction, arranged to close or otherwise control an electric circuit when an unduly high temperature is reached. The wires from this thermostat pass through the detector pipe, as shown, so as to be protected in this way and these wires leave the detector pipe at 19 below the cabinet 4, from whence they extend to an annunciator 20 made of any suitable construction, an electric bell or

gong 21 being placed in the common return circuit of all of the thermostats, so as to sound when any one of the thermostats has been operated. We do not illustrate the particular circuit connections from the thermostats 18 to the annunciator 20 and bell 21, as these are of course common and well known.

It will be seen that with our invention the fan 7 continuously or intermittently operating, will draw air up through the several detector pipes from all the compartments of the ship.

When the discharge pipes 11 from the observation cabinet or cabinets lead to the chart room 12 as explained, (although, of course, this need not be done) all or if desired a part only of the air thus drawn up from the several compartments will be discharged into the chart room. In case a fire has broken out in one of the compartments of the ship, the odor of burning material will thus be immediately detected in the chart room.

The main indication of the presence of fire is given by the escape of smoke from the mouth of the corresponding detector pipe into the chamber 4, which will be observed through the glass front 5. If the steam header 15′ is in permanent connection with the boilers, all that the observer has to do is to operate the lever of the corresponding steam valve, thus permitting live steam to pass down the detector pipe into the desired compartment and extinguish the fire.

If the steam header is not permanently in communication with the boilers, the observer first signals to the boiler room and steam is permitted to enter the steam header. The proper functioning of the steam in the detector pipe will be indicated by the pilot cock 16.

Should the fire gain sufficient headway to raise the temperature in the compartment above the critical point, the corresponding thermostat will be operated, closing the circuit, operating the annunciator to indicate the compartment in which the fire is located, and sounding the gong or bell 21, whereupon steam will be introduced by way of the desired detector pipe, as explained.

While we prefer to employ live steam as a fire extinguisher owing to the ease with which it can be supplied on shipboard, it will be understood that other gases and vapors may be used having the capacity of extinguishing flame or at least not supporting combustion, such as carbon dioxid, and therefore the expression "fire extinguishing vapor" as employed by us in the claims is intended to comprehend not only live steam but such other extinguishing agents as may perform a substantially equivalent function.

Having now described our invention, what we claim therein and desire to secure by Letters Patent is:

1. In a marine fire indicating system, the combination of a series of indicator pipes leading to the several compartments of a vessel, an observation cabinet to which the pipes extend, whereby the open ends of said pipes may be observed, a fan for drawing air through the pipes into said cabinet, and a discharge from said fan extending to and terminating in one of the habitable quarters of the vessel, substantially as set forth.

2. In a marine fire indicating system, the combination of a series of indicator pipes leading from the several compartments of a vessel, an observation cabinet to which the pipes extend, whereby the open ends of said pipes may be observed, means for drawing air upwardly through said pipes, and a valve in each pipe for permitting a fire extinguishing vapor to be introduced by the detector pipe into the compartment with which it connects, substantially as set forth.

3. In a marine fire indicating system, the combination of a series of indicator pipes leading from the several compartments of a vessel, an observation cabinet to which the pipes extend, whereby the open ends of said pipes may be observed, means for drawing air upwardly through said pipes, a valve in each pipe for permitting a fire extinguishing vapor to be introduced through the detector pipes into the compartment with which it connects and a pilot cock in each detector pipe to indicate the functioning of the vapor therein, substantially as set forth.

4. In a marine fire indicating system, the combination of a series of indicator pipes leading from the several compartments of a vessel, an observation cabinet to which the pipes extend, whereby the open ends of said pipes may be observed, means for drawing air upwardly through said pipes, a three-way valve in each pipe for permitting a fire extinguishing vapor to be introduced by the detector pipe into the compartment with which it connects, a common vapor header adjacent to the cabinet, and a separate connection therefrom to each valve, substantially as set forth.

This specification signed and witnessed this 24th day of June, 1919.

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WALTER KIDDE.
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Witnesses:
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