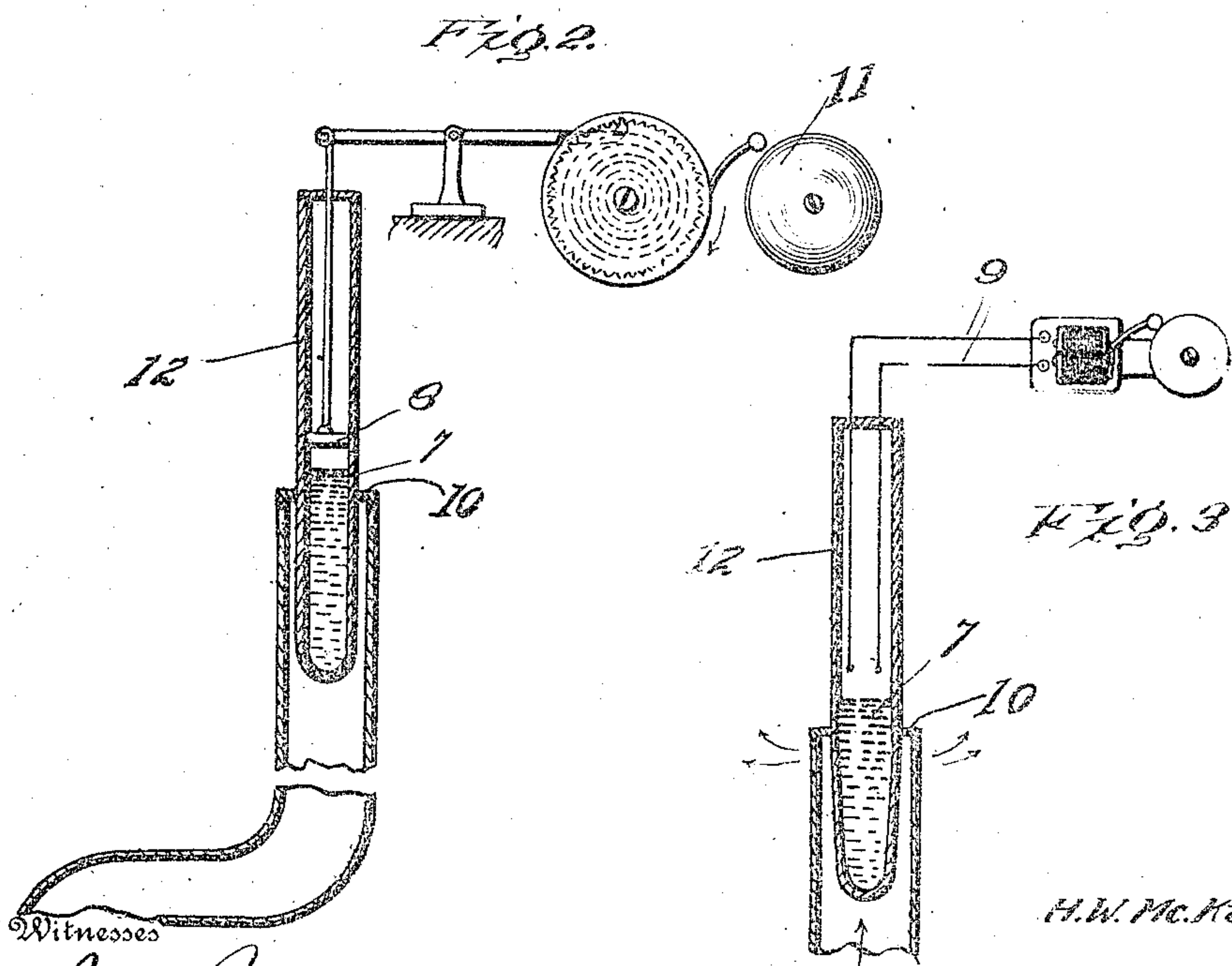
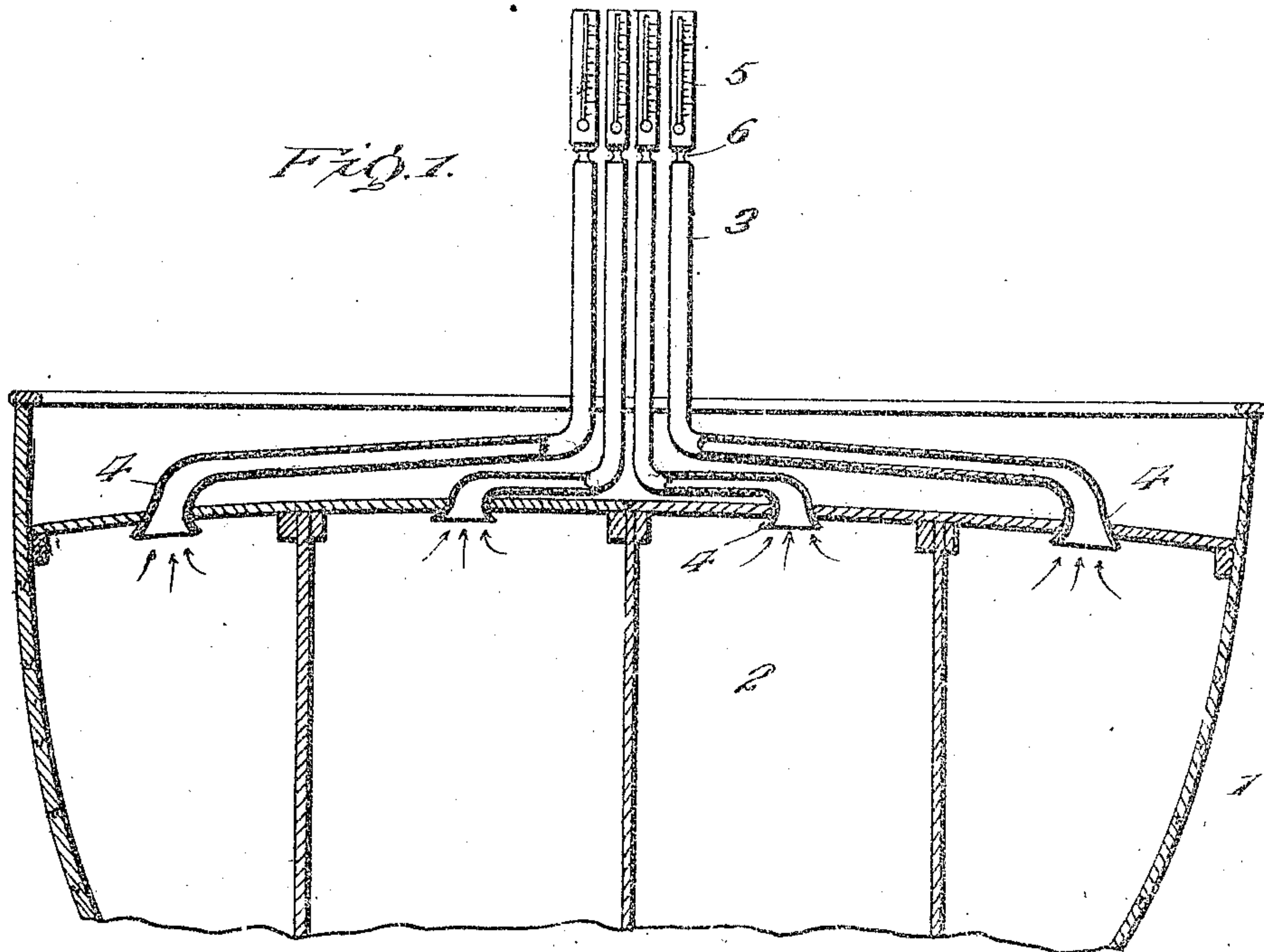


No. 824,573.

PATENTED JUNE 26, 1906.

H. W. McKINNE.
MEANS FOR PROTECTING SHIPS FROM FIRE.
APPLICATION FILED JUNE 8, 1905.



Witnesses
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UNITED STATES PATENT OFFICE.

HAYWOOD W. McKINNE, OF KINSTON, NORTH CAROLINA.

MEANS FOR PROTECTING SHIPS FROM FIRE.

No. 824,573.

Specification of Letters Patent.

Patented June 23, 1903.

Application filed June 8, 1905. Serial No. 264,331.

To all whom it may concern:

Be it known that I, HAYWOOD W. McKINNE, a citizen of the United States, residing at Kinston, in the county of Lenoir and State of North Carolina, have invented certain new and useful Improvements in Means for Protecting Ships from Fire, of which the following is a specification.

This invention relates to means whereby the presence of fire may be easily detected and located in any of the various compartments or bins in the hold of a ship.

It consists, essentially, of a series of air-passages having communication with the respective compartments and converging to a central point where thermometers are so placed as to indicate the temperature of the air circulating through the passages.

It has for its object to produce a device of this character which can be easily and quickly installed on any vessel, which is simple in construction, and which will positively give warning of the presence of a critical temperature in any of the closed compartments or bins.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and accompanying drawings, in which—

Figure 1 is a sectional view through the hull of a ship, showing my device applied thereto. Fig. 2 shows a modification which may be used instead of the thermometers. Fig. 3 also shows a similar modification.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The numeral 1 designates the hull of a ship, and 2 represents closed bins or compartments therein. Tubes or air-passages 3 lead from the upper part of these bins to a common center, but are prevented from coming into contact with each other, so that the temperature of one tube will have no effect upon the others. The ends of the tubes in communication with the bins 2 are flared outwardly at 4, so that the air can have ready access thereto. Thermometers 5 are placed in the opposite ends of the passages, so as to indicate the temperature of the air coming therethrough. These thermometers are held in position by bending the extremities of the tubes 3 inward, as seen at 10, and are so located that

the bulbs are within the tubes or passages, while the scale portion projects outwardly. This has the advantage of rendering the thermometers very sensitive to the temperature of the air within the passages and also of enabling them to be easily read by the inspector or other person whose duty it may be to see that the temperature of the compartments does not exceed a certain point. In order to facilitate the circulation of the air through the passages 3, a series of openings 6 are formed near the outer ends thereof.

In operation the heated air in the compartments expands and passes upward through the passages, and the temperature thereof can be observed by means of the thermometers. Should a critical temperature be reached, the operator can easily locate the position of and take precautions to alleviate same before it has a chance to spread or do much damage. Instead of the thermometers 5 tubes 12 may be substituted, which contain open columns of mercury or other suitable liquid 7, and pistons 8, which are so placed that when the critical temperature is reached the liquid will force same upward and release the catch of a spring-operated bell 11, and thus sound an alarm. The same result could be accomplished by placing wires 9 so that any undue rise of the mercury would close an electric circuit and ring a bell or give warning in any suitable manner.

While the invention is particularly designed for the detection of fire in ships, it will be obvious that it would be within the spirit of the invention to use it in any building or warehouse containing a number of closed compartments in which merchandise is adapted to be stored.

An essential feature of the invention resides in the provision of a mechanism for indicating when the temperature of the air circulating through the passages reaches a critical point, and this mechanism may either give a visual indication, as shown in Fig. 1, or an audible indication, as shown in Figs. 2 and 3.

Having thus described the invention, what is claimed as new is—

1. The combination of a compartment, a tube of approximately uniform cross-section leading upwardly from the top of the compartment so that the warmer and lighter air therein will ascend freely through the tube, said tube having a series of openings near its outer end, an outwardly-flaring receiving

member at the lower end of said tube, inwardly-extending flanges at the outer end of said tube, a second tube fitting within the outer end of the first-mentioned tube and
5 held in position by the inwardly-extending flanges, a column of expansible liquid within the second tube, and means for causing said expansible liquid to indicate when the temperature of the air within the first-mentioned
10 tube reaches a critical point.

2. The combination of a compartment, a tube of approximately uniform cross-section leading upwardly from the top of the compartment so that the warmer and lighter air
15 therein will ascend freely through the tube, said tube having a series of openings near its outer end, an outwardly-flaring receiving

member at the lower end of said tube, inwardly-extending flanges at the outer end of said tube, a second tube fitting within the
20 outer end of the first-mentioned tube and held in position by the inwardly-extending flanges, a column of expansible liquid within the second tube, a piston fitting within the second tube and operated by the expansible
25 liquid, a bell, and means for ringing the bell when the piston has reached a predetermined position.

In testimony whereof I affix my signature in presence of two witnesses.

HAYWOOD W. McKINNE. [L. s.]

Witnesses:

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