

No. 641,198.

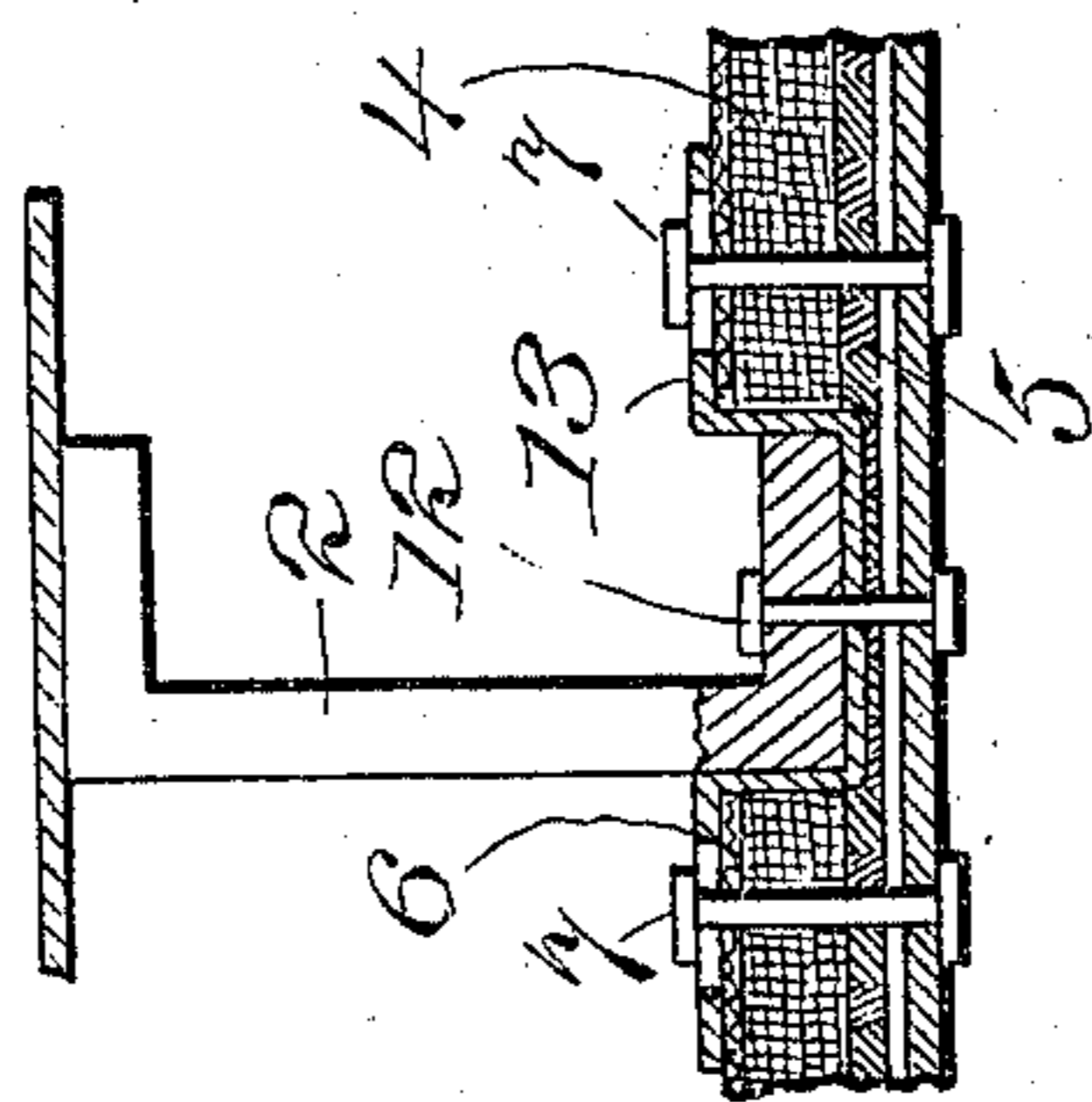
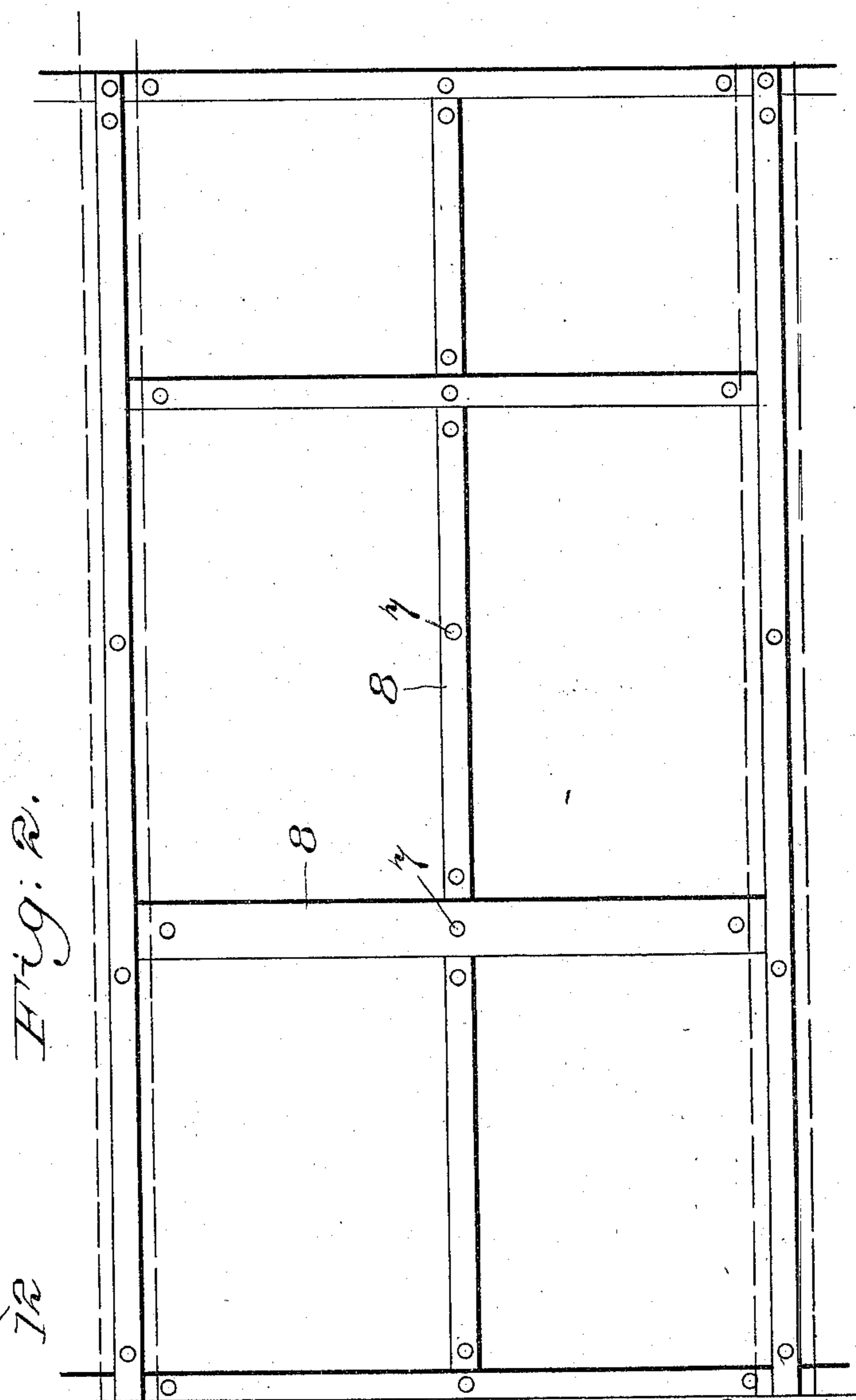
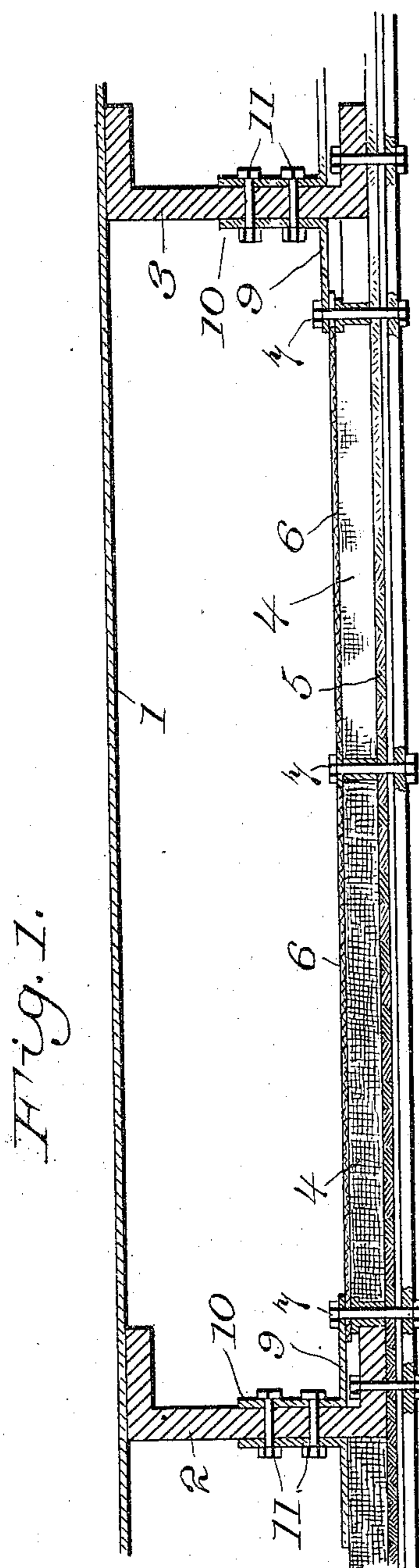
Patented Jan. 9, 1900.

G. P. ERHARD.

INSULATING PANEL FOR WALLS OF SHIPS, &c.

(Application filed May 6, 1899.)

(No Model.)



WITNESSES:

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INSULATING-PANEL FOR WALLS OF SHIPS, &c.

SPECIFICATION forming part of Letters Patent No. 641,198, dated January 9, 1900.

Application filed May 6, 1899. Serial No. 715,885. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. ERHARD, a citizen of the United States of America, and a resident of Elizabeth, county of Union, State of New Jersey, have invented certain new and useful Improvements in Insulating-Panels, of which the following is a specification.

My invention relates to insulation against heat and cold in general; and it more specifically consists of an improved insulating non-frangible panel for use in fitting up buildings and is specially applicable to the fitting of men-of-war and other iron ships.

The modern iron vessel is particularly sensitive in the transmission of heat and cold. In summer it is unendurably hot and in winter it is difficult to warm. For this reason it becomes necessary to have internal fittings of some non-conducting material through which the changes of temperature can be less easily transmitted to the cabins and other compartments of the vessel. In the case of war-ships it is inadvisable to use wood or other materials liable to break or splinter or burn. My invention possesses in a high degree all the advantages and avoids the disadvantages above suggested, being a composite panel of asbestos fire-felt and other materials which is light in weight, absolutely incombustible, the best possible non-conductor of heat, and fibrous or ductile in its nature, so that shot will pass through it without producing any splinters or any fracture outside of the particular perforation made by the missile.

The preferred construction embodying my invention is illustrated in the accompanying sheet of drawings, in which—

Figure 1 is a horizontal section showing a portion of the hull of a vessel and two of the frames thereof with a panel of my invention in position. Fig. 2 is a front elevation of one of such panels. Fig. 3 is a detail of a modification.

Throughout the drawings like reference-figures refer to like parts.

The hull or sheathing of the ship 1 is supported by the steel frames 2 and 3, made in the shape of channel-irons, as shown.

The panel is composed of the sheet of as-

bestos fire-felt 4, having plates or frames of stiff non-combustible material on each side, preferably consisting of the facing 5, of asbestos millboard or other prepared board, and the backing 6, of galvanized wire-cloth. Through these pass a number of tie-bolts 7 7, holding the whole together in a stiff composite panel. In addition thereto and to give greater strength I may employ a metal frame composed of the strips 8 8, (shown in Fig. 2,) which when placed upon the face of the panel may take the form of ornamental moldings or other convenient forms of iron railings. On one or both sides of the panel, preferably on the rear side, these iron frames may take the form of angle-irons or iron knees 9 9, which are attached to the panel by bolts (preferably some of the before-mentioned tie-bolts 7 7) and are so located that their projecting flanges 10 10 will be parallel to the rib-beams of the supporting structure and perforated to admit the passage of bolts 11 11, &c., therethrough. In place of the knees 9 9 yoke-pieces 13 might be substituted, their ends being slotted to receive bolts 7. In this construction the facing-board 5 may be gouged out in the back to fit over the yoke. Bolts 12 12 may also pass through the ornamental molding or iron, through the flange of the channel-beam of the supporting structure, and through the asbestos-prepared board which forms the facing of the panel, the latter being extended, if desirable, in a continuous sheet, so as to overlap from one panel to another, as indicated in Fig. 1.

The operation of my invention is evident from the foregoing description. The parts of the panel being assembled and the angle-irons, knees, or yokes which are to hold the frame having been first attached to the rib-beams of the structure where the structure renders such prior attachment necessary, the panels are put in place and the tie-bolts along the edges fastened in position, or the panel may be built up in position by first putting the backing of wire-cloth or other stiff incombustible material in position, then filling in the sheet of asbestos fire-felt, and finally adding the facing of asbestos-prepared board or other finishing-sheet of some smooth incombustible material and screwing the nuts

onto the tie-bolts to hold the various parts in position.

The advantages of the invention consist in its light weight, toughness, and flexibility, which prevent splintering in the case of a shot passing through, absolute incombustibility in the case of fire, and low conductivity of heat, whereby the external heat of summer is kept out and the internal warmth generated in winter is kept in the compartments of the ship.

It is evident, of course, that various changes could be made in the details of construction shown and in the nature of the materials used so long as the relative arrangement of parts shown in the drawings or the characteristic properties of the materials specified are preserved. Other stiff material might be substituted for the wire-cloth backing, different forms of asbestos filling might be used, and other stiff incombustible plates might be used for the facing. The method of attachment to the rib-beams of the supporting structure might of course be varied to suit the different forms of construction and various arrangements of ornamental moldings on the face might be added; but all these I consider changes in form and not in substance and still within the scope of my invention.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. An insulating-panel for application to walls and partitions composed of a body of

asbestos fire-felt, a backing of wire-cloth and a facing of asbestos millboard. 35

2. An insulating-panel for application to walls and partitions composed of a body of asbestos fire-felt, a backing of wire-cloth and a facing of asbestos millboard, combined with frames of metal strips on either side and bolts passing through said frames and panels. 40

3. An insulating-panel for application to walls and partitions composed of a body of asbestos fire-felt, a backing of wire-cloth and facing of asbestos millboard, combined with frames of metal strips on either side and bolts passing through said frames and panels, together with angle-irons fastened to the edges of the panel and means for attaching same to the supporting structure. 45 50

4. An insulating-panel for application to walls and partitions, composed of a body of asbestos fire-felt, a backing of wire-cloth and a facing of asbestos millboard, combined with frames of metal strips on either side and bolts passing through said frames and panels, the border-strips of the back frame being composed of angle-irons with projecting flanges parallel to the rib-beams of the structure to which the panel is to be attached. 55 60

Signed by me at New York city, New York, this 1st day of April, 1899.

GEORGE P. ERHARD.

Witnesses:

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