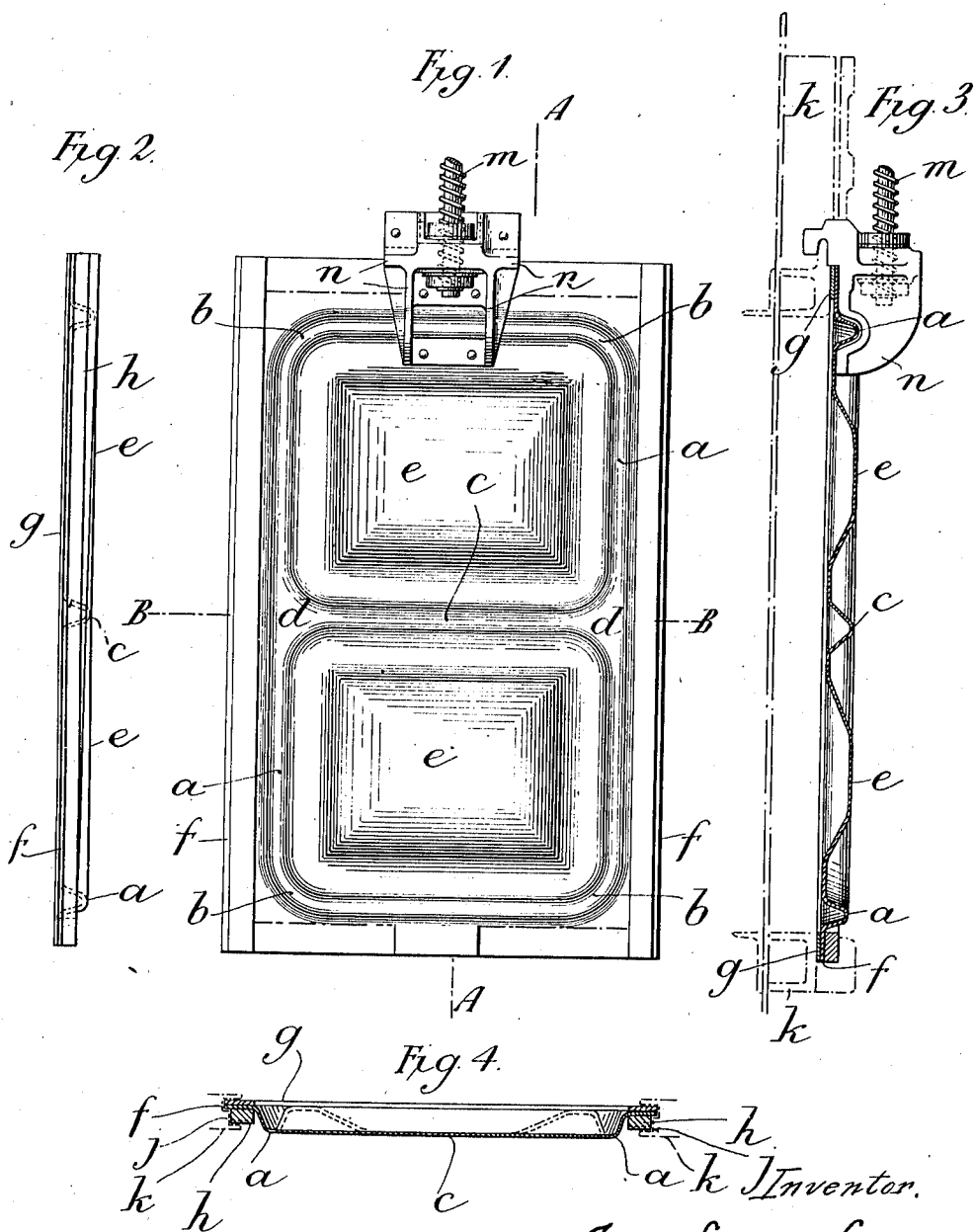




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Fig. 5.

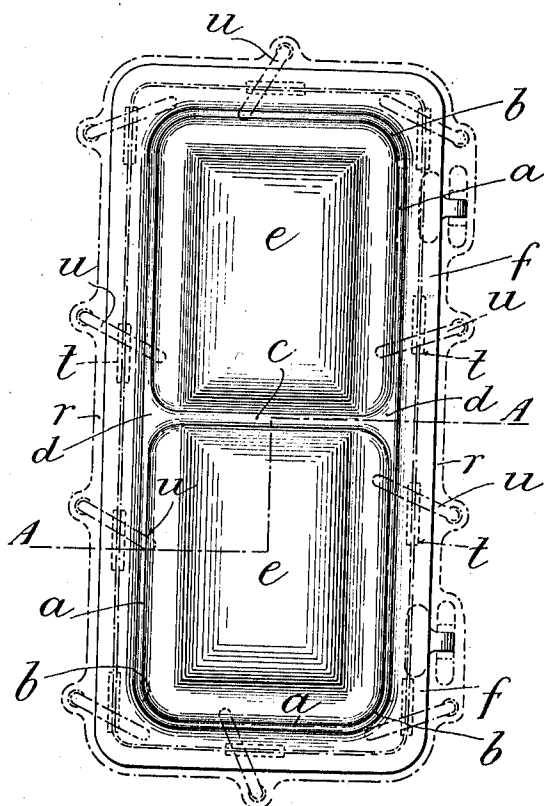
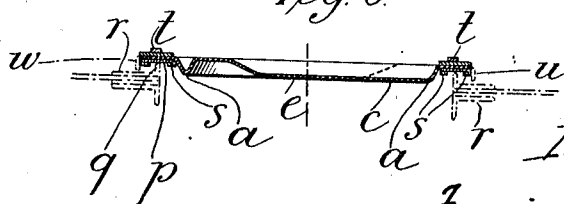


Fig. 6.



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DOOR SUITABLE FOR CLOSING OPENINGS IN SHIPS' BULKHEADS AND OTHER PURPOSES.

APPLICATION FILED NOV. 6, 1908. RENEWED AUG. 9, 1910.

970,838.

Patented Sept. 20, 1910.

3 SHEETS—SHEET 3.

Fig. 7.

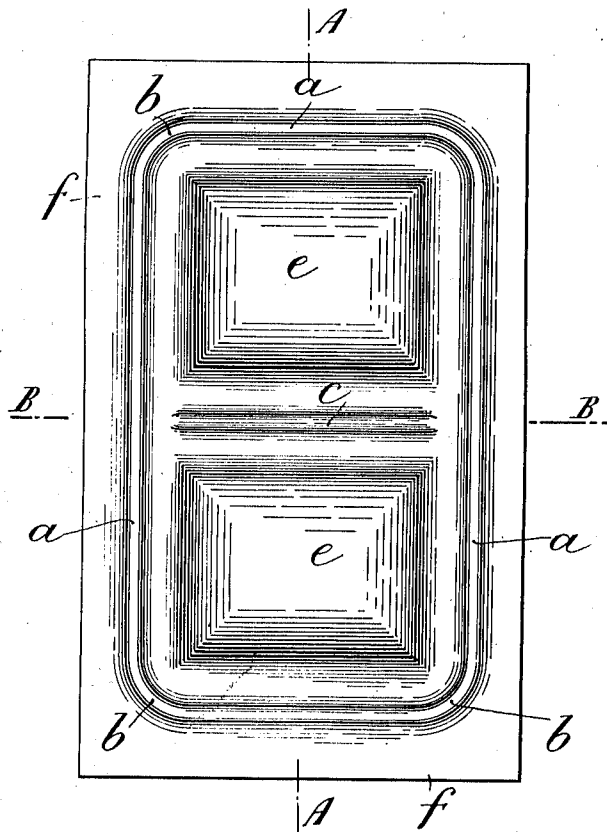


Fig. 8.

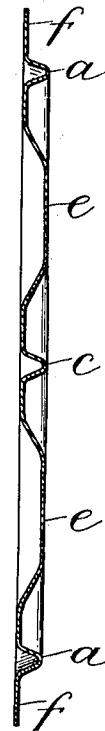
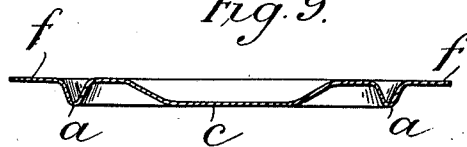


Fig. 9.



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UNITED STATES PATENT OFFICE.

FRANCIS LAWRENCE LANE, OF LEEDS, ENGLAND.

DOOR SUITABLE FOR CLOSING OPENINGS IN SHIPS' BULKHEADS AND OTHER PURPOSES.

970,838.

Specification of Letters Patent. Patented Sept. 20, 1910.

Application filed November 8, 1908, Serial No. 461,377. Renewed August 9, 1910. Serial No. 576,393.

To all whom it may concern:

Be it known that I, FRANCIS LAWRENCE LANE, a subject of the King of Great Britain and Ireland, residing at Leeds, in the county of York, England, have invented Improvements in Doors Suitable for Closing Openings in Ships' Bulkheads and other Purposes, of which the following is a specification.

10 This invention has reference to improvements in pressed steel doors and more particularly watertight doors for ships.

Doors have been made with a dished portion having strengthening corrugations, 15 ridges and furrows or embossments formed in it and a surrounding or marginal plain portion. Doors have also been made with a continuous corrugation or hollow ridge running all around the panel. Now according to this invention, a pressed steel door 20 formed with a continuous strengthening corrugation or hollow ridge around the door at some little distance from its edge has extending across the portion of the door inclosed thereby one or more corrugations or 25 hollow ridges, which merge with or extend into proximity to opposite portions of said continuous surrounding corrugation or hollow ridge and are usually located between 30 dished or embossed parts of the panel.

Figures 1 and 2 show a sliding watertight bulkhead door for a ship, constructed according to this invention, in front elevation and side elevation respectively. Figs. 3 35 and 4 show such door in longitudinal and horizontal sections corresponding to the lines A A' and B B' respectively of Fig. 1. Figs. 5 and 6 are similar views to Figs. 1 and 4 respectively showing a hinged door 40 embodying this invention. Figs. 7, 8 and 9 are similar views to Figs. 1, 3 and 4 respectively, showing a modification.

In the arrangement shown in Figs. 1 to 4 the door comprises a rectangular plate of 45 metal with a continuous corrugation *a* formed in it at some little distance from its edges, the main portions of this corrugation being parallel to the edges of the door, the corners *b* of the corrugation being curved 50 and the opposite vertical side portions of said corrugation having merged into them a transverse corrugation *c*, the end portions *d* of which are widened out where they merge with the continuous surrounding cor- 55 rugation *a*. The two parts of the door thus

inclosed are or may be formed by pressing with two dished or embossed parts *e*, that are usually rectangular and have flat inclined side walls. The plain marginal portion *f* of the door, outside the continuous 60 surrounding corrugation, has, in the case of a watertight bulkhead door, a gun metal facing strip *g* secured to one side, (usually that from which the metal is pressed) and to the other side on each longitudinal edge a taper 65 strip *h* to fit corresponding grooves *j* on the bulkhead *k*. The screw *m* for operating the door engages a nut fixed in a bracket *n* that is attached to the upper part of the door.

In the case of the hinged door shown in 70 Figs. 5 and 6, an india rubber or like seating strip *p* adapted to seat against a projecting flange *q* on the door frame *r* is secured to one side of the flat marginal portion *f* by means of metal strips *s* laid on the 75 edges of the strip *p* and riveted to the door, and to the other side wedge pieces *t* are riveted in the wake of the clamping handles or cleats *u*.

In some cases, as indicated in dotted lines 80 in Fig. 6, doors as described may be formed around their edge with a marginal flange *w*, which in the case of a hinged door may extend around the seating strip *p*. Instead of the transverse corrugation or corrugations 85 *c* merging with opposite portions of the continuous surrounding corrugation *a*, it or they may terminate some little distance within said corrugation so that the walls of the transverse and continuous surrounding 90 corrugations are quite independent.

Figs. 7, 8 and 9 are similar views to Figs. 1, 3 and 4 respectively, illustrating a door 95 formed with a continuous corrugation *a* and with a transverse corrugation *c* terminating some little distance within the corrugation *a*.

What I claim is:—

1. A pressed steel door formed of one piece with a continuous strengthening corrugation or hollow ridge around the door at 100 some little distance from its edge, the portion of the door inclosed thereby having extending across it another corrugation or hollow ridge.

2. A pressed steel door formed with a continuous strengthening corrugation or hollow 105 ridge around the door at some little distance from its edge, the portion of the door inclosed thereby having extending across it another corrugation or hollow ridge, which 110

merge with opposite portions of said continuous surrounding corrugation.

3. A pressed steel door formed with a continuous strengthening corrugation or hollow ridge around the door at some little distance from its edge, the portion of the door inclosed thereby having extending across it another corrugation or hollow ridge, which are located between dished or embossed parts of the panel and merge with opposite portions of said continuous surrounding corrugation.

4. A pressed steel door formed with a continuous strengthening corrugation the main portions of which are parallel to the edges of the door and the corners of which are curved, opposite side portions of said corrugation having merged into them the widened out end portions of a transverse corrugation.

5. A pressed steel door constructed of a rectangular plate of metal and formed with

a continuous strengthening corrugation or hollow ridge around the door at some little distance from its edge, the portion of the door inclosed thereby having extending across it another corrugation or hollow ridge that merges into said continuous corrugation.

6. A pressed steel door having a flat marginal portion and formed with a continuous strengthening corrugation or hollow ridge around the door at some little distance from its edge, the portion of the door inclosed thereby having extending across it another corrugation or hollow ridge that merges into said continuous corrugation.

Signed at Leeds England this 23d day of October 1908.

FRANCIS LAWRENCE LANE.

Witnesses:

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