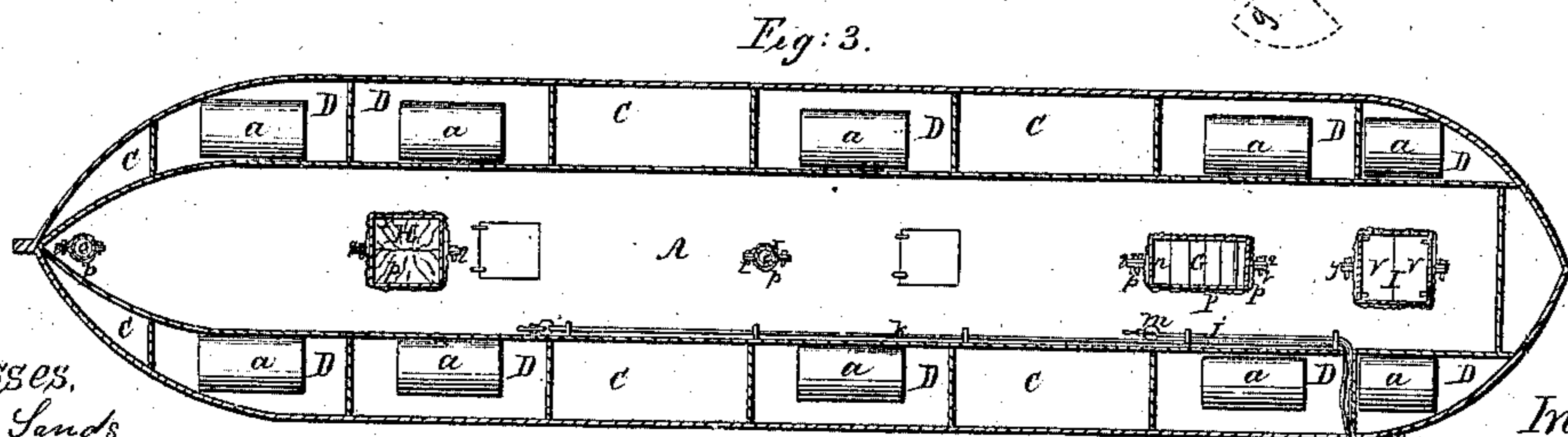
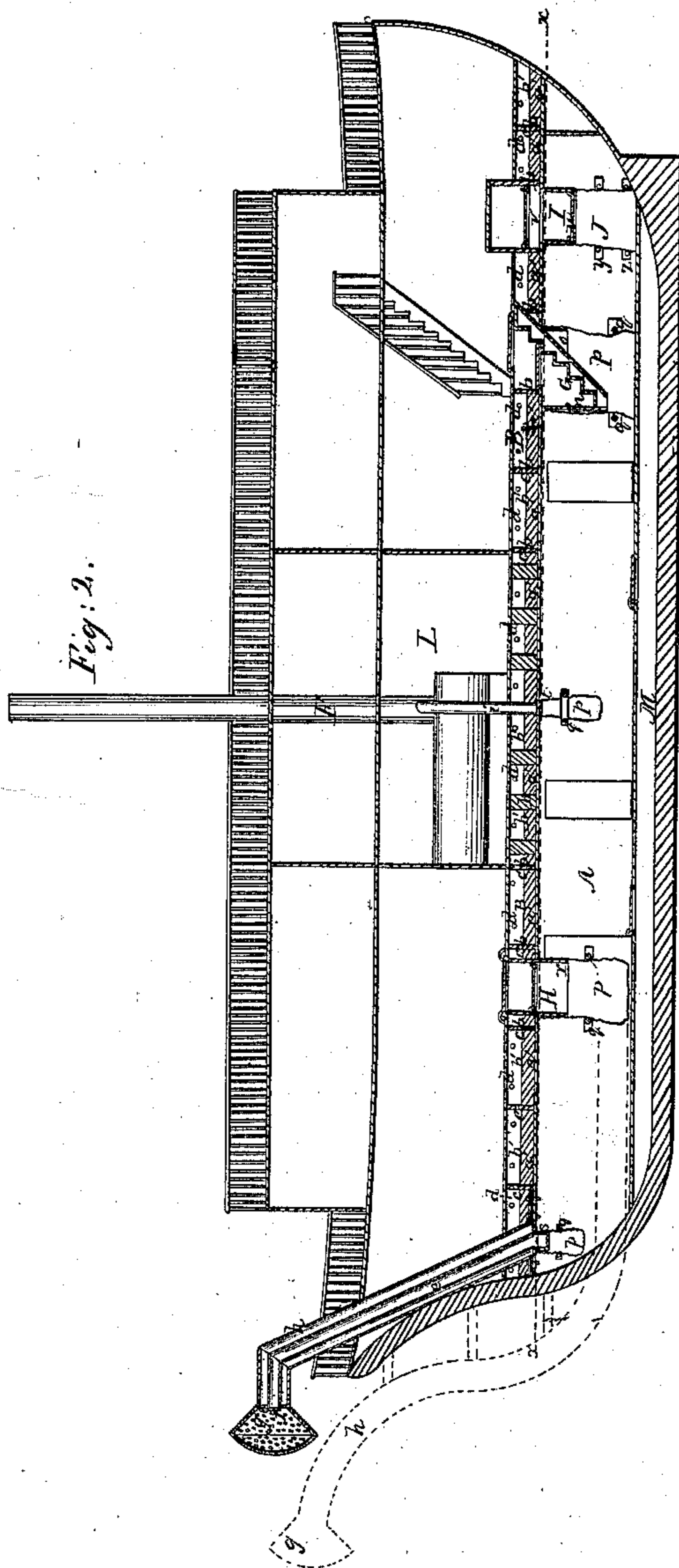
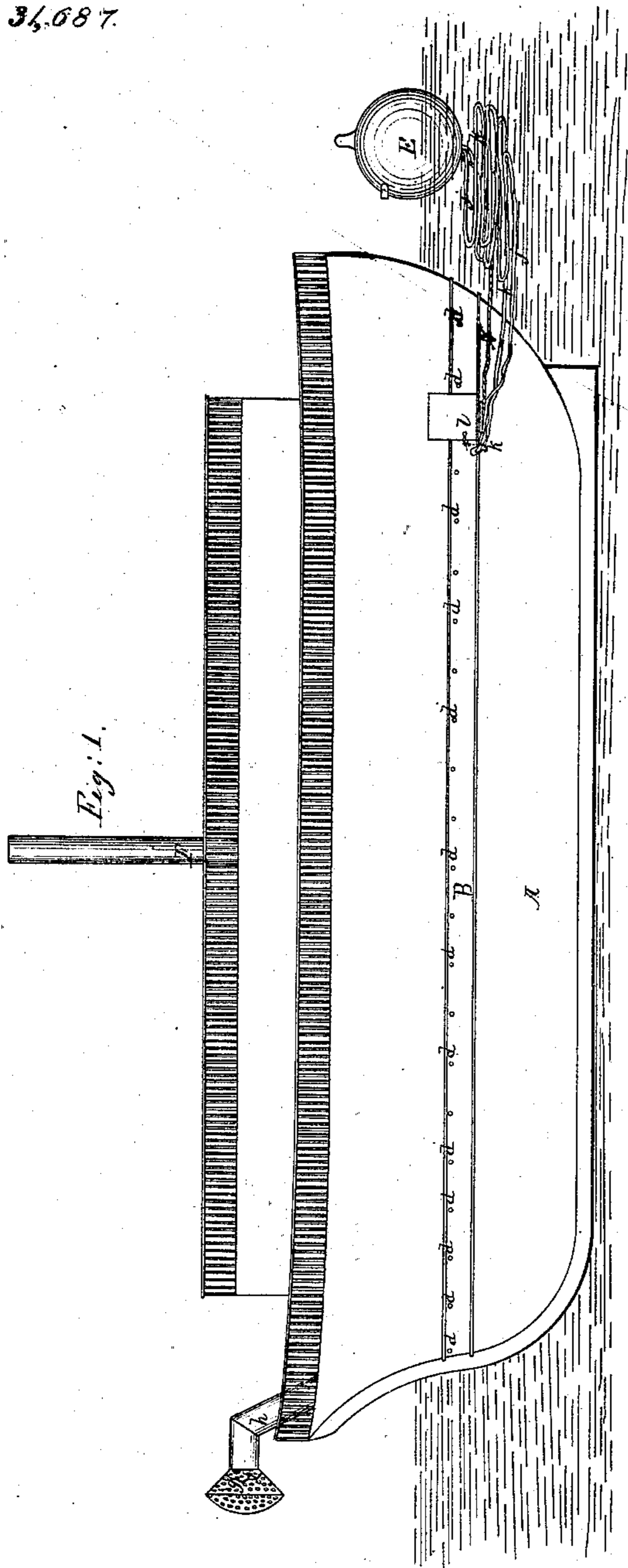


E. S. Willson.
Ship Building.

N^o 683.
34,687.

Patented Mar. 12, 1861.



Witnesses,
McGinnis & Sons
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UNITED STATES PATENT OFFICE.

ETHAN S. WILLSON, OF SARATOGA SPRINGS, NEW YORK.

SAFETY-SHIP.

Specification of Letters Patent No. 31,687, dated March 12, 1861.

To all whom it may concern:

Be it known that I, ETHAN S. WILLSON, of the county of Saratoga and State of New York, have invented a new and Improved
5 Mode of Building a Steamship, Sailship, or other Vessel of Wood or Iron; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, Figure 1,
10 being a side elevation, of a ship provided with the refuge cabin; Fig. 2, a central longitudinal vertical section thereof; Fig. 3, a horizontal section, in the plain; indicated by the line *x x* Fig. 2.

Like letters, designate corresponding parts in all the figures.

The nature of my invention, consists in providing a spacious refuge cabin A, in the
20 lower part of the vessel; built strong and firm, adding great strength to the vessel, and which is completely protected from fire, by a safety section B, for the safety of the passengers and crew; with appended apartments on both sides of the refuge cabin,
25 for the deposit of provisions and the most valuable articles of freight C, and for air sections, in which to deposit portable air boxes *a*. The air boxes are intended to
30 float the vessel, as they are not liable to be split, if the air sections do split, or spring and leak.

The safety section B, is directly over the refuge cabin, and the apartments containing the provisions, the valuable freight, and the air boxes, to protect them from fire, and must be continued the whole length and breadth of the vessel entire, and be built very strong and firm, adding great strength
40 to the vessel, and is composed of two divisions. The first division *a'*, is a bed of cement, made of water lime or plaster of paris, four inches thick, laid on the floor of the safety section entire. The second division *b'*
45 is a bed of water four inches deep, covering the entire surface of the bed of cement, and two feet deep just over the large curb I. The joist *b*, *b*, resting on the floor of the safety section, must have holes *c*, *c*, very
50 near the upper surface of the cement, so the water can circulate freely and evenly throughout the water division *b'*.

The water division, is kept full of water, by the water into which the vessel is
55 launched, circulating through holes *d d*, one inch and a half in diameter, near the top of

the water division, and about four feet distant from each other.

There must be a pipe *e*, six inches in diameter at the bow of the vessel, through
60 which to receive air into the refuge cabin; passing up through some of the apartments, five feet or more above the upper deck, provided with a valve *f*, at the top so attached as to receive air and resist the water, if immersed
65 by the waves. There must be a screen *g*, to prevent the wind from closing the valve. This said pipe must be inclosed, in a large strong castiron pipe *h*, about two feet and a half in diameter, to protect it from the heat,
70 if the vessel should burn. The large castiron pipe *h*, must be bolted fast to the floor of the safety section B, the bolts passing through holes in a flange at the bottom of the pipe; the six inch air pipe *e*, should be
75 copper. The space between the pipes *e h*, must be closed at the top. A variation in the position of this pipe, seen in dotted lines *h'*, is more guarded from the heat, and can be firmly attached to the floor of the refuge
80 cabin.

There must be a pipe *i*, to conduct impure air out of the refuge cabin, into one of the smoke pipes, or some way out of the vessel, and be built firm so as not to fail, if the
85 vessel should burn. The air must be kept circulating through these pipes *e i*, by means of air pumps.

To enable others skilled in the art of building vessels, to make and use my inven-
90 tion, I will proceed to describe its construction, and operation.

I construct my steamship in any of the known forms, with the addition of my arrangement for a refuge cabin A, with ap-
95 pended apartments for the deposit of provisions, freight, and for air sections for the deposit of air-boxes; all of which are protected by a safety section B, and all of which can be built very firm, adding great
100 strength to the common form of steamships. I also build a stairway G, passing from the upper apartments, down through the safety section B, into the refuge cabin, with a door *n*, at the foot of the stairway, to re-
105 sist the water, if the vessel should burn off above, and let the water into the stairway. This lower stairway is built down from the ceiling of the refuge cabin, but not attached to the floor of the cabin, but a space of a
110 foot is left between the lower step, and the floor.

There is a curb attached to the ceiling of the refuge cabin, around the head of the stairway, with an india rubber cloth sack *p*, fixed on to the curb, so that one side of the sack, can be hung up so as not to prevent passing up and down the stairs. This sack is for the purpose of fixing down around the foot of the stairway; and closed by placing the lower end of the sack, between two bars of iron *q*, and putting a screw through each end of the bars, bringing them firmly together for a fastening to the sack, to prevent any leakage, if the door of the stairway should not be perfectly tight. It will be well to have a rope net, attached to the curb, to haul down over the sack, and fasten it by tying it below the end of the sack, to keep the sack from bursting. The freight door *H*, is also provided with a curb *r*, and sack *p*, which is to be kept closed only in time of loading, and unloading the vessel.

There must be one large deep curb *I*, with a door *v* at the top, and a door *u* at the bottom of it, with a long sack *J*, and two clasps or fastenings *y z*, by which means the passengers and crew can get safely out of the refuge cabin, and out of the vessel, (when it is on fire, or after it has been burned, or wrecked by storm); by way of a door *l*, Fig. 1, opening from the water division, through the side of the vessel. Said passengers must go out in small companies, of from two to three at one time; and to get out safe and dry, they must have requisite life preservers. The engine room *L*, is above the safety section, in the center of the vessel.

The siding of the vessel, just under the upper deck or ceiling of the water division *b'*, must be bound with copper or brass plate, laid on between the timbers, which compose the siding, and reach down eight or ten inches, on both sides of the siding, to prevent the siding from burning down, below the upper edge or surface of the water division. If a fire should occur on board, and the vessel is expected to be burned, let the passengers flee to the refuge cabin *A*, but if wreck from other cause should occur, let a part of the crew remain above to manage the vessel. After all have entered the

refuge cabin *A*, let the door *n*, of the stairway *G*, be closed and made fast, and the sack *p*, be closed over the stairway; also let the sacks over the freight door, and over the large curb, be examined and kept tight; and the air pumps attached to the air pipes *e i*, be put in operation. Let some of the crew be appointed to arrange these fixtures. If by burning the vessel should become unevenly balanced, it can be regulated by moving some of the freight in the lower part of the vessel. After the vessel has burned down to the safety section *B*, all the parties in the refuge cabin, may get safely out, by removing the lower fastening *z*, from the long sack *J*, enter said sack to the upper fastening *y*, and replace the fastening *z*, remove the fastening *y*, and pass to the door *u*, of the large curb *I*, and replace the upper fastening *y*, and open the door *u*, and pass up to the door *v*, and close the door *u*, and open the door *v*, and pass up and close the door *v*, and they will find themselves, on top of the wreck, if the ceiling over the water division *b*, of the safety section *B*, has been burned; but if this ceiling has not been burned, they will find themselves in the deep part of the water division, and must pass through the door *l*, of the safety section *B*, and then up the outside of the vessel, to the top. All parties to enter the refuge cabin after the vessel has been burned, can safely, by reversing the process of their coming in, with no inconvenience more than when getting out, with the exception of a small portion of water will have to be received with them; which can be conveniently, by using a tub or some kind of vessel, to hold the water which we cannot avoid thus coming in.

What I claim as my invention and desire to secure by Letters Patent is—

A refuge cabin in combination with the layers of cement and water bed air boxes and device for ventilation, the whole constructed and all its parts arranged substantially as specified.

ETHAN S. WILLSON.

Witnesses:

EDW. F. BROWN,
JNO. W. KENNEDY.