

(No Model.)

2 Sheets—Sheet 1.

G. H. POND.

CONSTRUCTION OF THE HULLS OF VESSELS, &c.

No. 321,450.

Patented July 7. 1885.

Fig:1.

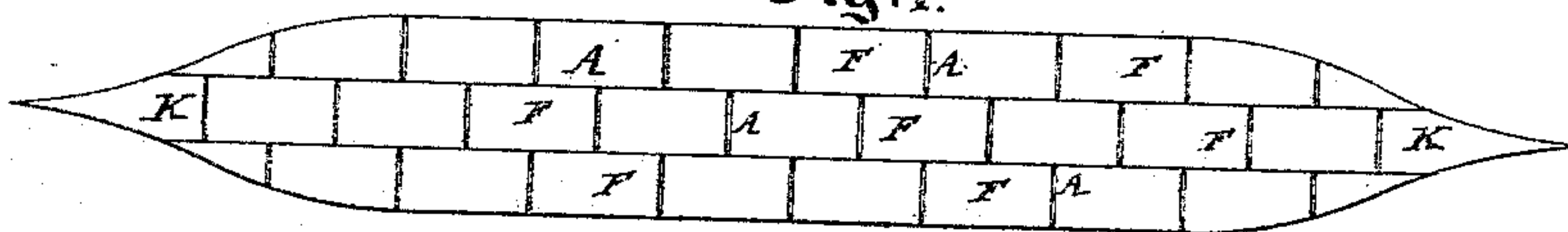


Fig:2.

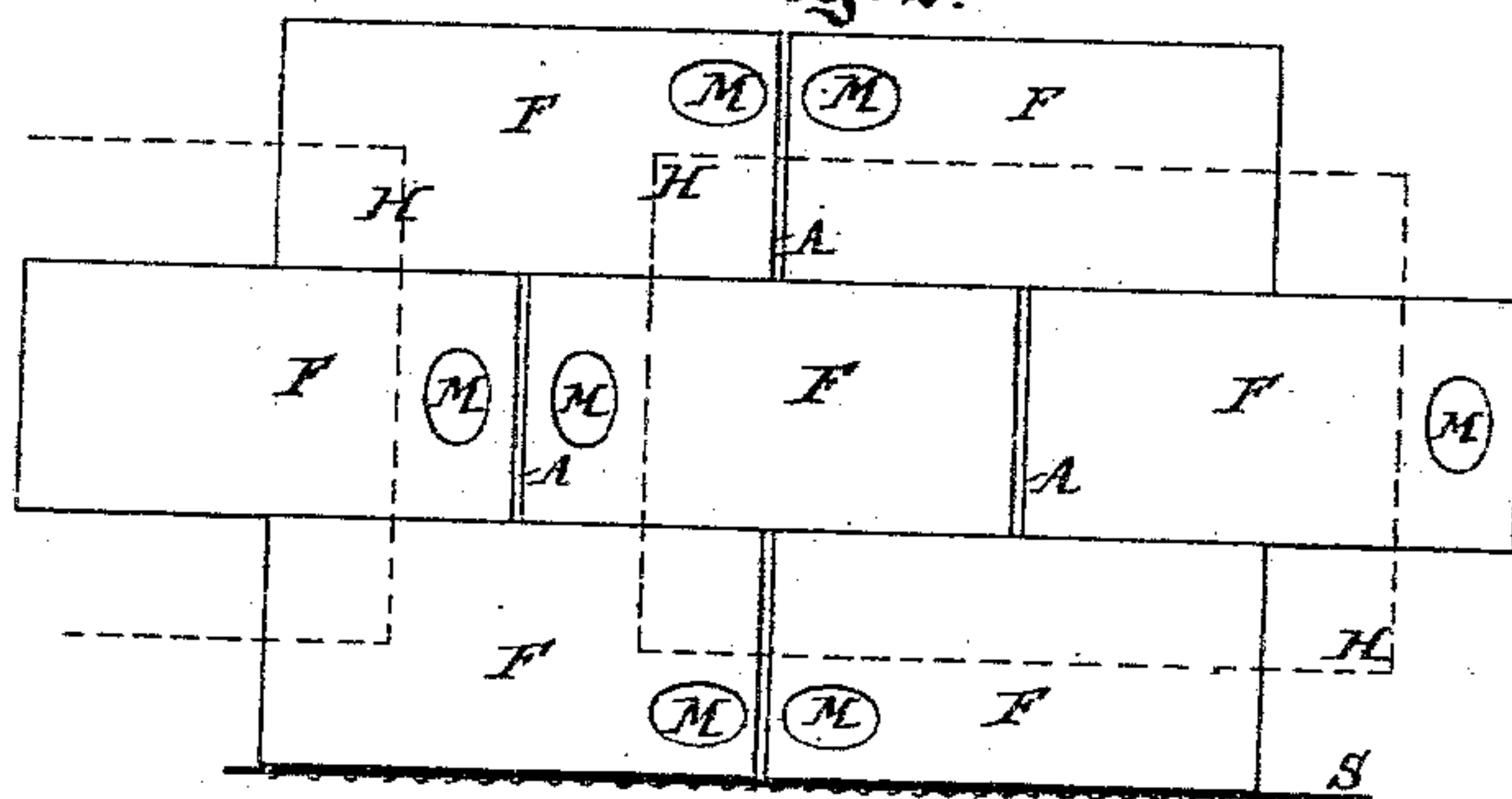
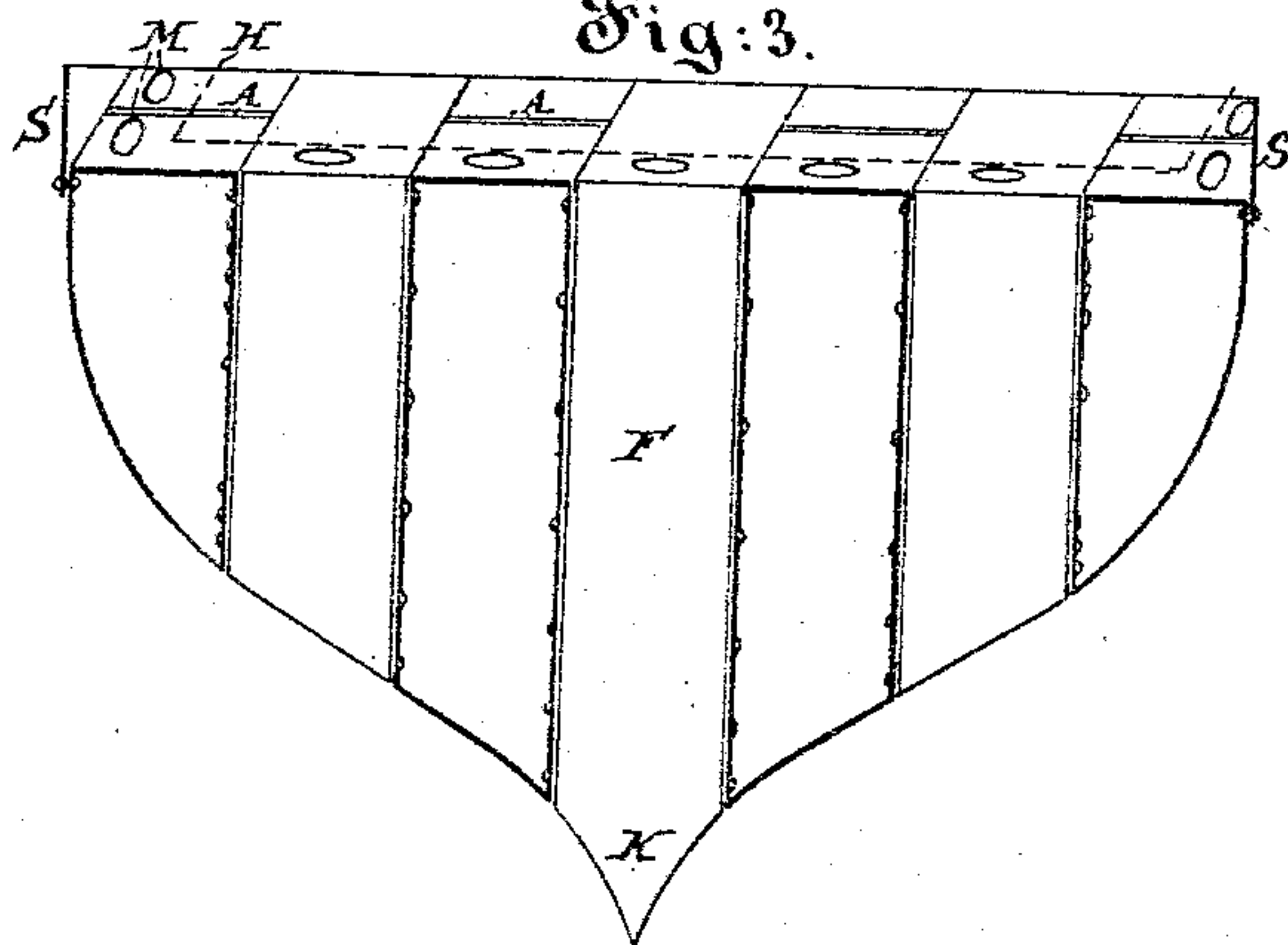


Fig:3.



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Fig. 4.

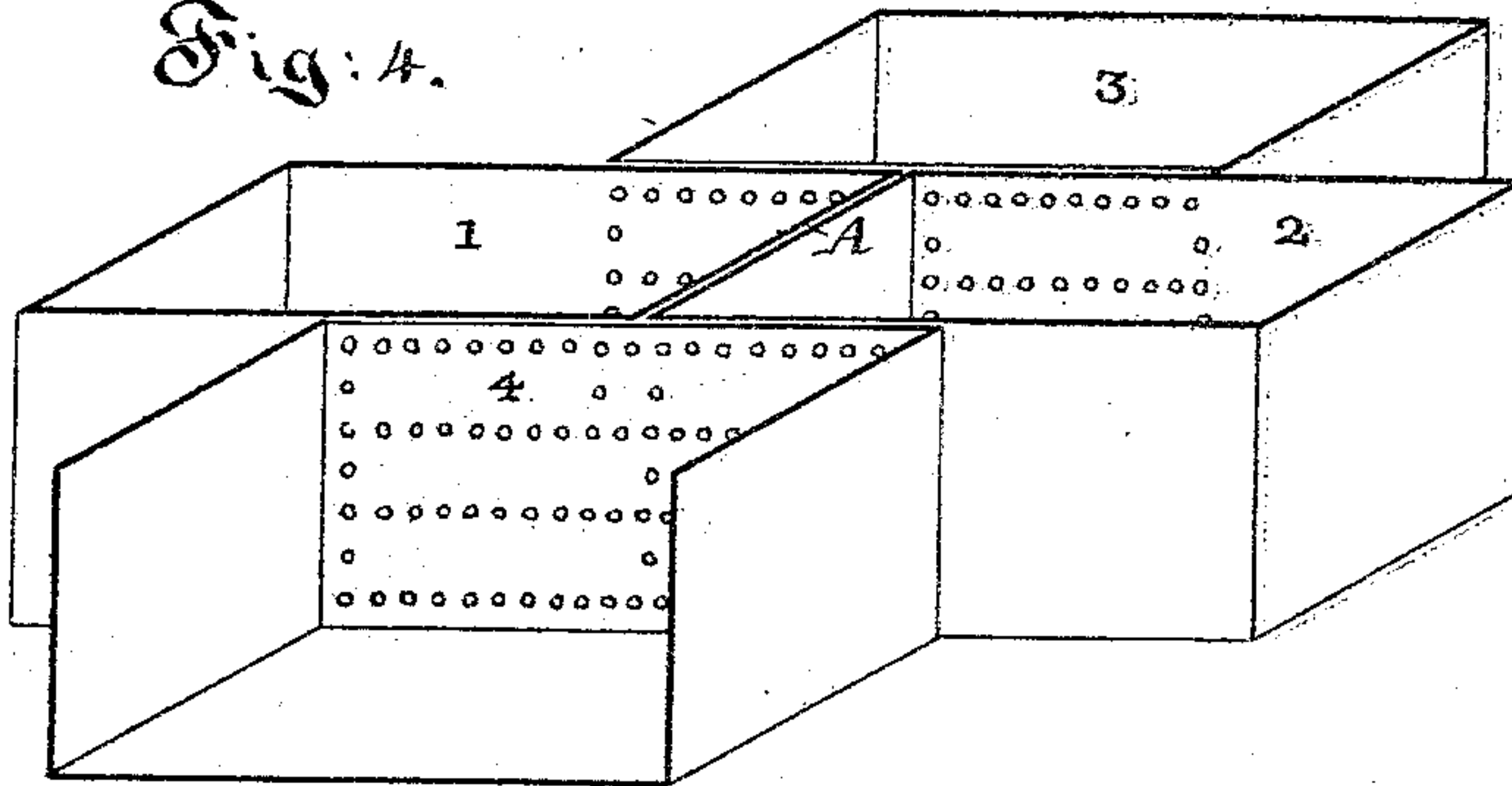


Fig. 5.

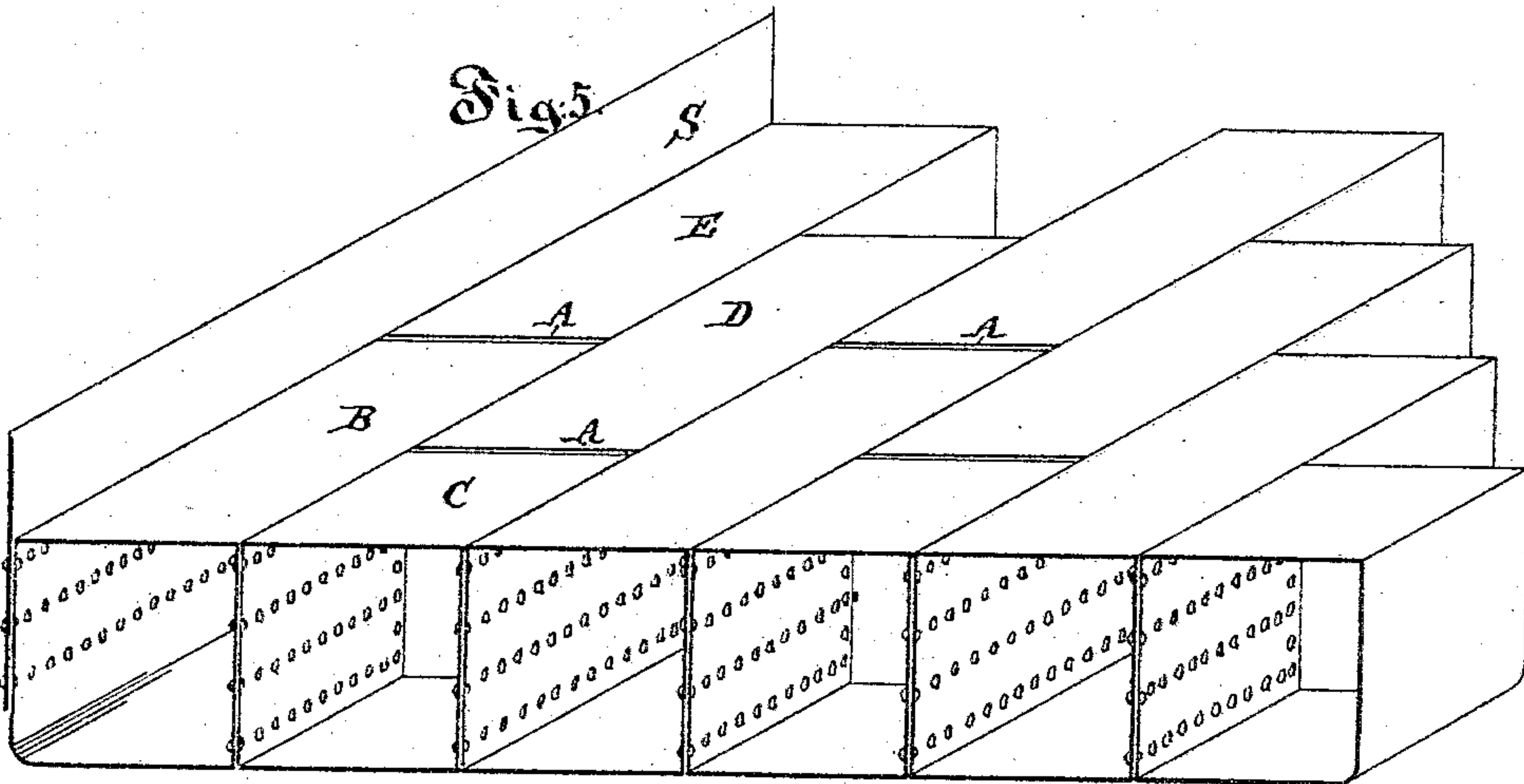
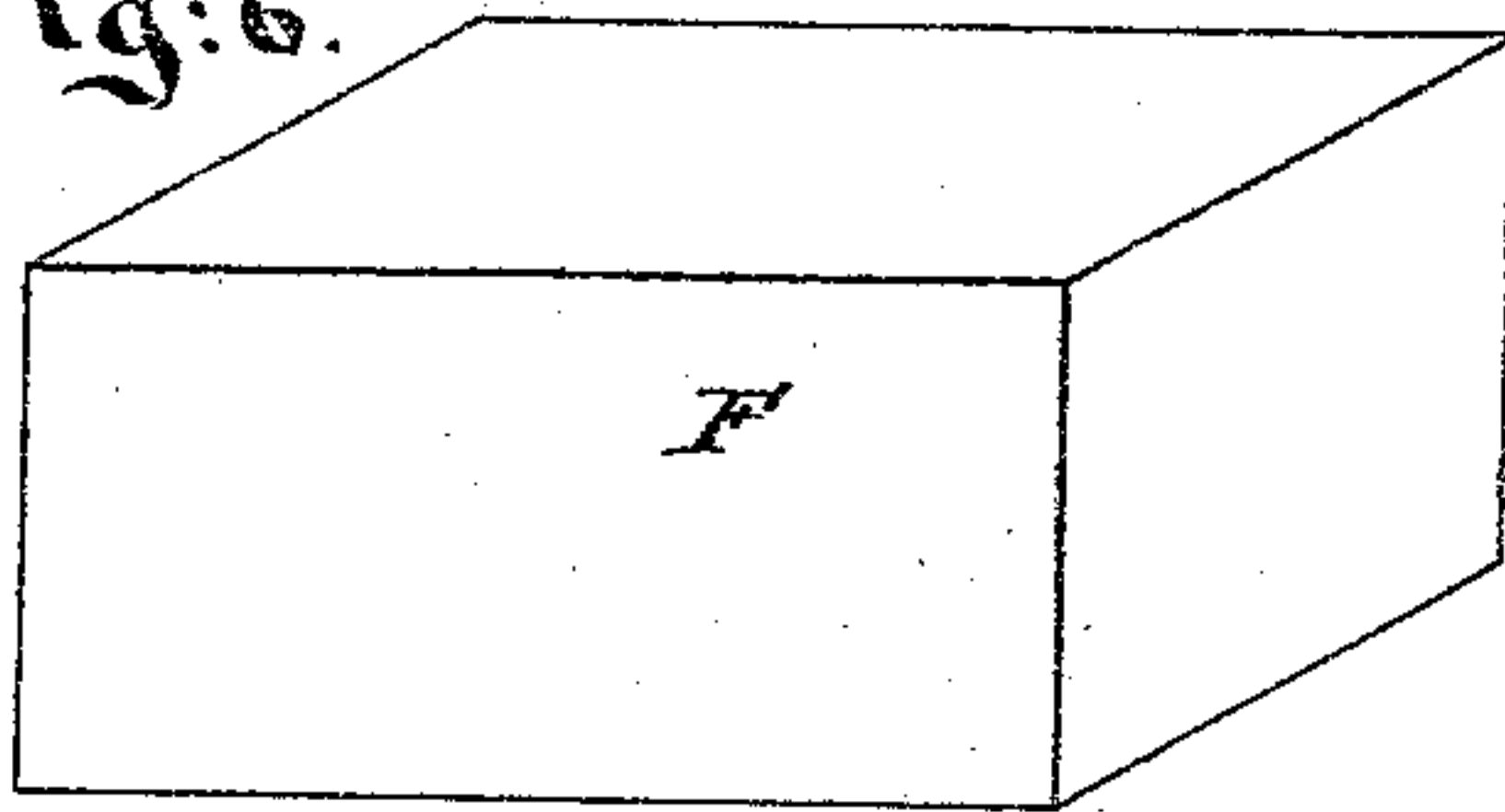


Fig. 6.



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UNITED STATES PATENT OFFICE.

GOLDSBURY H. POND, OF NEW YORK, N. Y.

CONSTRUCTION OF THE HULLS OF VESSELS, &c.

SPECIFICATION forming part of Letters Patent No. 321,450, dated July 7, 1885.

Application filed March 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, GOLDSBURY H. POND, residing at New York, county and State of New York, have invented a new and useful
5 Mode of Constructing the Hulls of Boats and Vessels, called the "sectional safety-hulls," of which the following is a specification.

My invention relates to the building of hulls of boats, ships, and other vessels in sections,
10 so as to combine extraordinary strength and lightness of the hulls with extraordinary buoyancy, and to lessen the friction of the boat in passing through the water.

The object of my invention is to give the
15 materials of which the hulls are constructed the strongest form possible, to resist with safety any strain coming in any direction against them without the use of either a keel, a frame, ribs, braces, or deck-beams in their construction;
20 also, to give the hull of a boat or vessel the quality of being able to float in case of any accident that can happen to a vessel upon the water, rendering it impossible for the hull of a vessel built of these sections to founder at
25 sea, or be sunk by any collision, or by running onto rocks, or to be materially damaged by fire; also, to obviate the shifting of cargo at sea by having the internal arrangements such that each section must receive its own cargo
30 entirely separate from any other section, making it an impossibility for it to change its position by the motion of the hull; also, to make the hull of a vessel of sections that will be absolutely safe for passengers and crew while at
35 sea; also, to make a great saving in the expense of constructing the hulls of boats, ships, and other vessels; also, to arrange the sections in the hull of a boat or vessel, so that when the boat is in motion it will draw in air through
40 the open spaces between the ends of the sections under the bottom of the boat automatically and continuously, lessening the friction of the water against the bottom and decreasing the resistance of the vessel to the propelling power. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view of the bottom of a boat showing the arrangement of the sections F and
50 the air-spaces A between the ends of the sections. Fig. 2 is a view of the deck or top of a series of sections, showing the air-spaces be-

tween the sections, the arrangement of the hatchways M for each separate section, and the position of the upper works by the dotted
55 lines H, so as to give open gangways for working at the hatchways in taking in and discharging cargo. Fig. 3 is a view of a midship section of an ocean steamer made of sections of varying shapes. Fig. 4 is a perspective
60 view of four sections, with the top and side taken off, showing how the sections are riveted or bolted together and how the air-space between the ends is formed. Fig. 5 is a perspective view of the deck-floor and cross-
65 section midship of a river steamer or inland vessel that carries all the freight and passengers above the deck-line. The sections have no openings or hatches, and are always air
70 and water tight. It also shows the manner of riveting or bolting the sections together. Fig. 6 is a perspective view of a single section, of which the "midship" of a river boat or vessel for inland navigation is mostly composed.

I make the sections F, composing the mid-
75 ship section of a boat, mainly in the form of a parallelogram. (Shown in Figs. 1, 2, 4, 5, and 6.) At the stem and stern, as in K, Fig. 1, and at the point on the bottom K, Fig. 3, or
80 when the sides are formed to "lines," the sections can be made into the shape required to fill the place. The sections F are all made air and water tight. Where hatchways are
85 required, as in sea-going vessels, they are made oval in shape, as illustrated at M, Figs. 2 and 3, and large enough to receive and discharge cargo. The covers of these hatchways bolt
90 down solid onto a rubber-ring packing, so as to be air and water tight at all times during the voyage. After the sections are made they are
95 arranged on a floor, as shown in Figs. 4 and 5, the sides fitting closely together. They are then riveted or bolted, as in Figs. 4 and 5, the ends of two sections abutting nearly against each other but not quite, an opening being left between
100 them, as at A, Figs. 2, 3, 4, and 5, of about one-quarter of an inch for the air-space. The sections 1 and 2, Fig. 4, are riveted to the side of the section 3, and the sections B and E to the side of D, Fig. 5, and so on, breaking
joints all through the hull of the vessel. Through the spaces A, between the ends of the sections F, air is drawn in under the boat, when in motion, in the same manner that a

stream of water running rapidly through a pipe will take air in through a small opening made through the side of the pipe at the proper angle to the line of motion, instead of discharging water through the opening. When the boat or vessel made of these sections, with the air-spaces, is in motion, it is the same as though the water under the boat was passing rapidly across the air-spaces A, taking a layer of air with it through these spaces under the boat, each air-space adding to the volume of air, the amount of air drawn under the bottom increasing as the speed of the boat increases, making the water immediately next the bottom of the boat much less dense by filling it with globules of air and lessening the friction of the water against it, thereby decreasing the resistance of the boat or vessel to the propelling power.

By making the hull of a boat or vessel of these sections much thinner metal can be used in the construction and great strength obtained. The sides of the sections fitting closely to each other, and strongly riveted or bolted together, as shown in Figs. 4 and 5, form a series of sides of the sections running the whole length of the vessel from stem to stern, the ends of the sections extending from the bottom to the deck, (as shown at the air-spaces A,) and across the vessel, giving the hull great rigidity and strength. After the sections are all fastened together and the hatches, if any, are bolted on, the hull is air and water tight throughout every section, and if the bottom was knocked out of every one of the sections the air confined within them would float the vessel in perfect safety.

In order to sink a vessel made of these sections, more than half of them must be entirely destroyed, which could not occur in any one accident. The sections being air-tight, no fire could occur to damage the vessel or cargo to any great extent within them, as the air would soon be exhausted and the fire would go out.

The cargo stowed in a vessel made of these

sections could not be displaced by the rolling of the vessel or by any motion the wind or the waves could impart to it, as each section would hold its own cargo, and it could not be shifted or moved except in the usual mode of discharging it, entirely obviating the shifting of the cargo at sea, which the ordinary vessel is liable to.

I do not limit myself to any particular form of section, as they can be made to any lines required, as illustrated in Figs. 1 and 3.

I am aware that it is not new to have the hull of a vessel partitioned off into compartments with bulkheads. I do not claim anything within the hull of a vessel made in the old way, with keel, frame, ribs, braces, and deck-beams, or any division called "compartments" in them, or within inclosed cylindrical or other vessels called "life-rafts" and "life-boats;" but

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

1. A hull for vessels formed of air and water tight hollow sections secured together by bolts or rivets passing through their sides, leaving spaces between their contiguous ends through which water may escape from the deck, and through which air is drawn under the vessel when in motion, forming a thin layer of air between the bottom of the boat and the water, relieving the friction of the water on the bottom of the boat in passing through it, substantially as and for the purposes set forth.

2. A boat or vessel composed of hollow blocks or sections secured together at their sides, and having air-spaces at their ends extending from the bottom to the deck, and having the tops of said sections secured thereto by air and water tight joints, whereby the boat or vessel is enabled to float if the bottom be destroyed.

GOLDSBURY H. POND.

Witnesses:

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M. M. BUDLONG.