

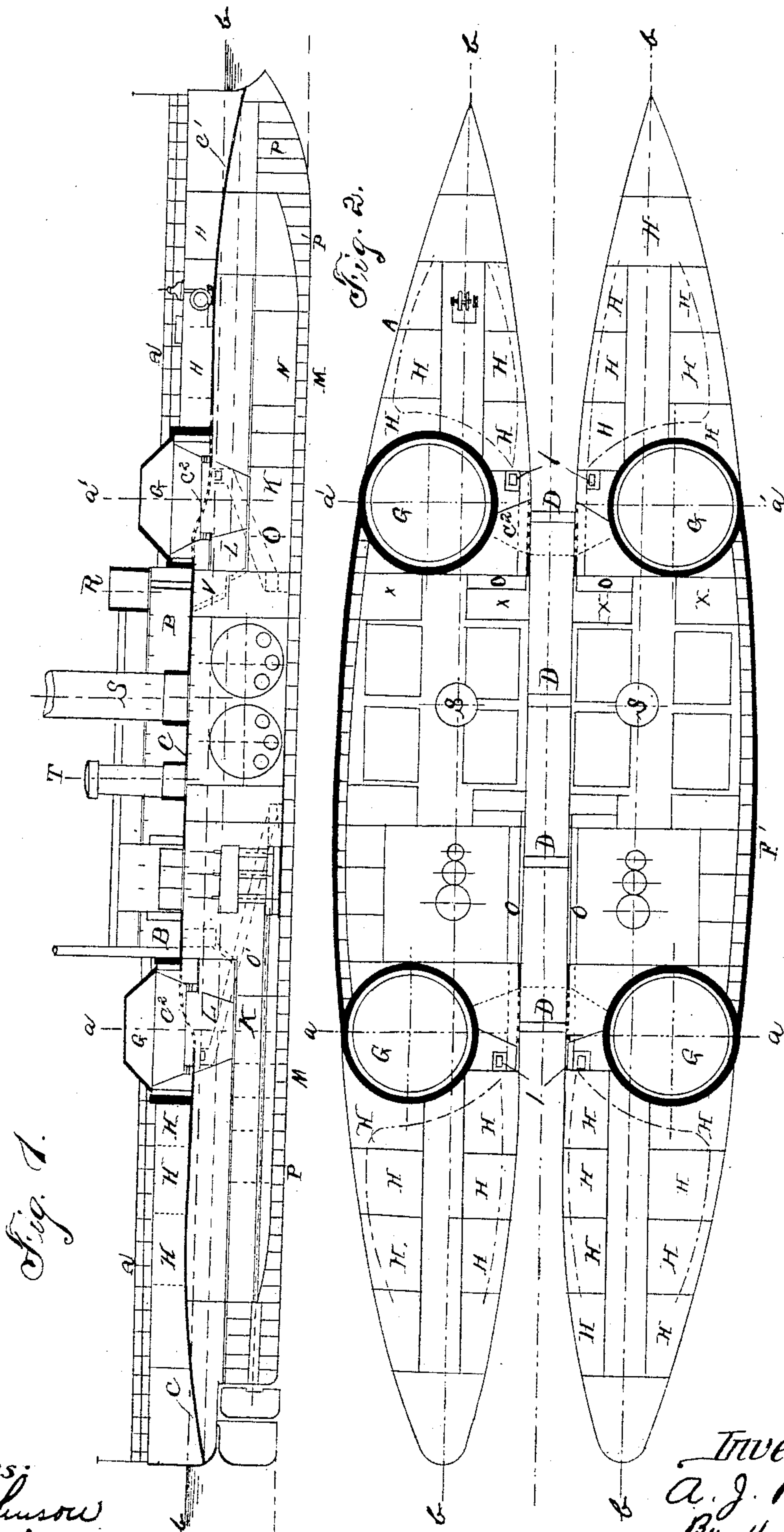
(No Model.)

3 Sheets—Sheet 1.

A. J. PURDY.
SHIP.

No. 441,193.

Patented Nov. 25, 1890..



Witnesses:
O. W. Johnson
J. R. Nottingham

Inventor:
A. J. Purdy
By W. A. Barlett
Atty.

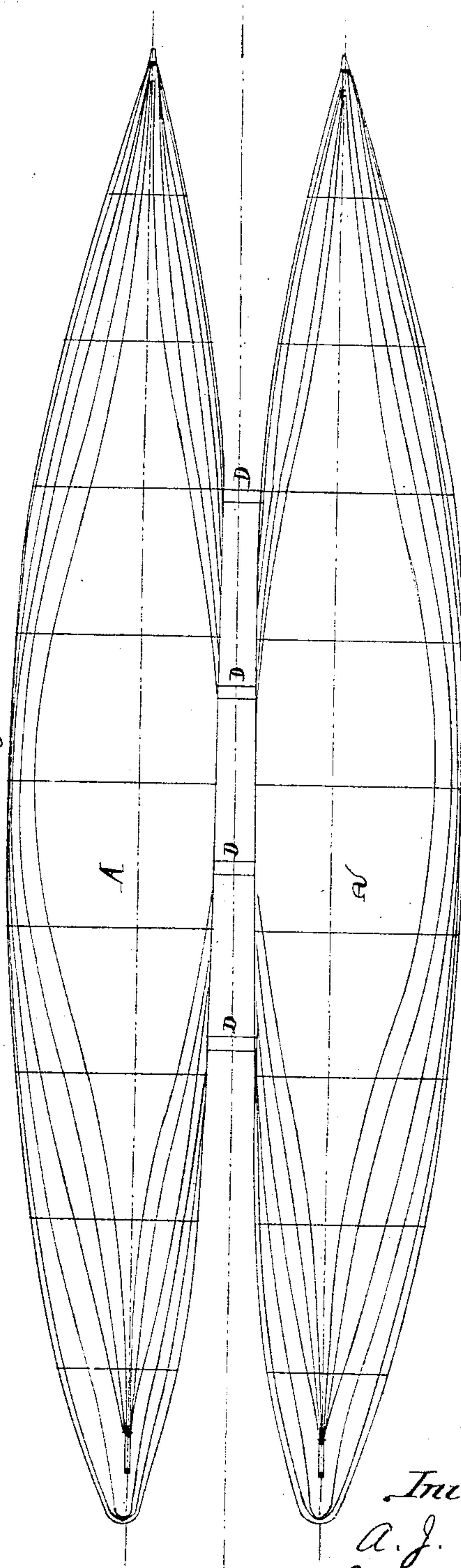
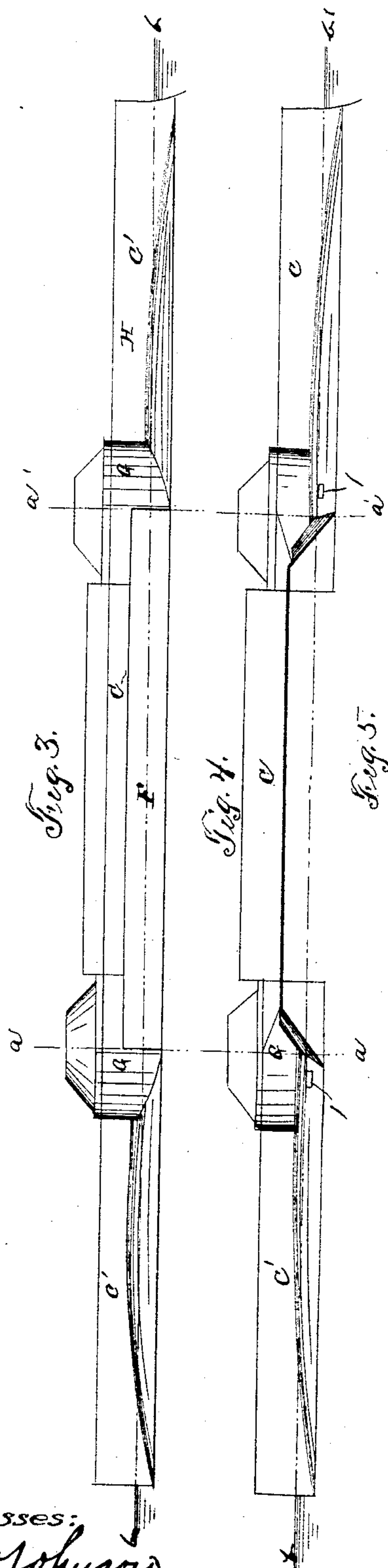
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Fig. 6.

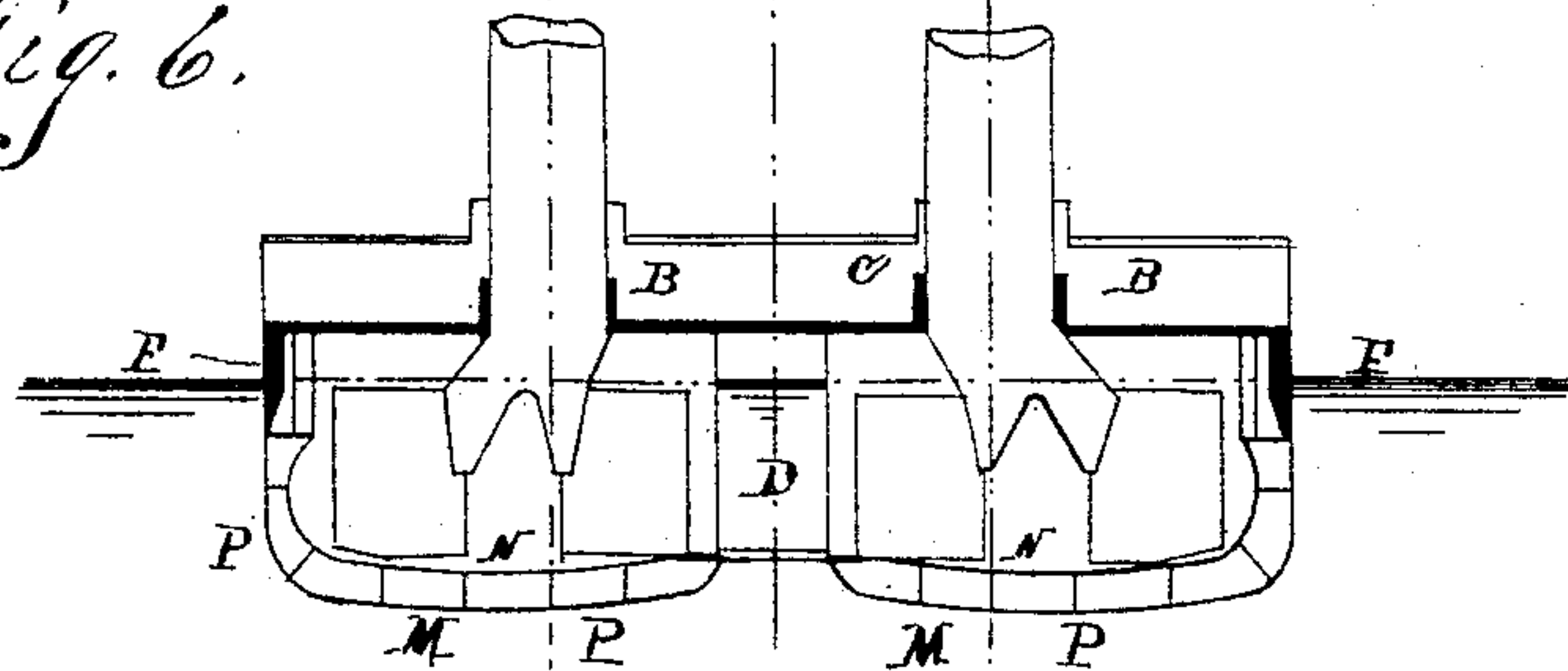


Fig. 7.

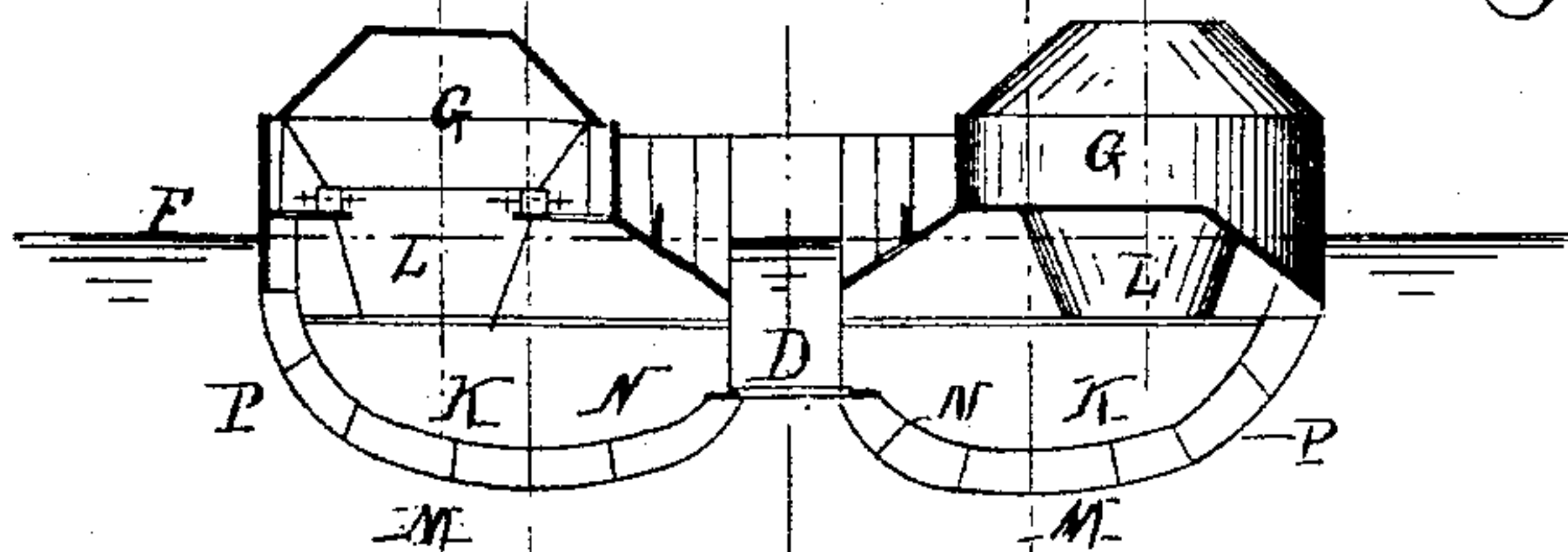


Fig. 8.

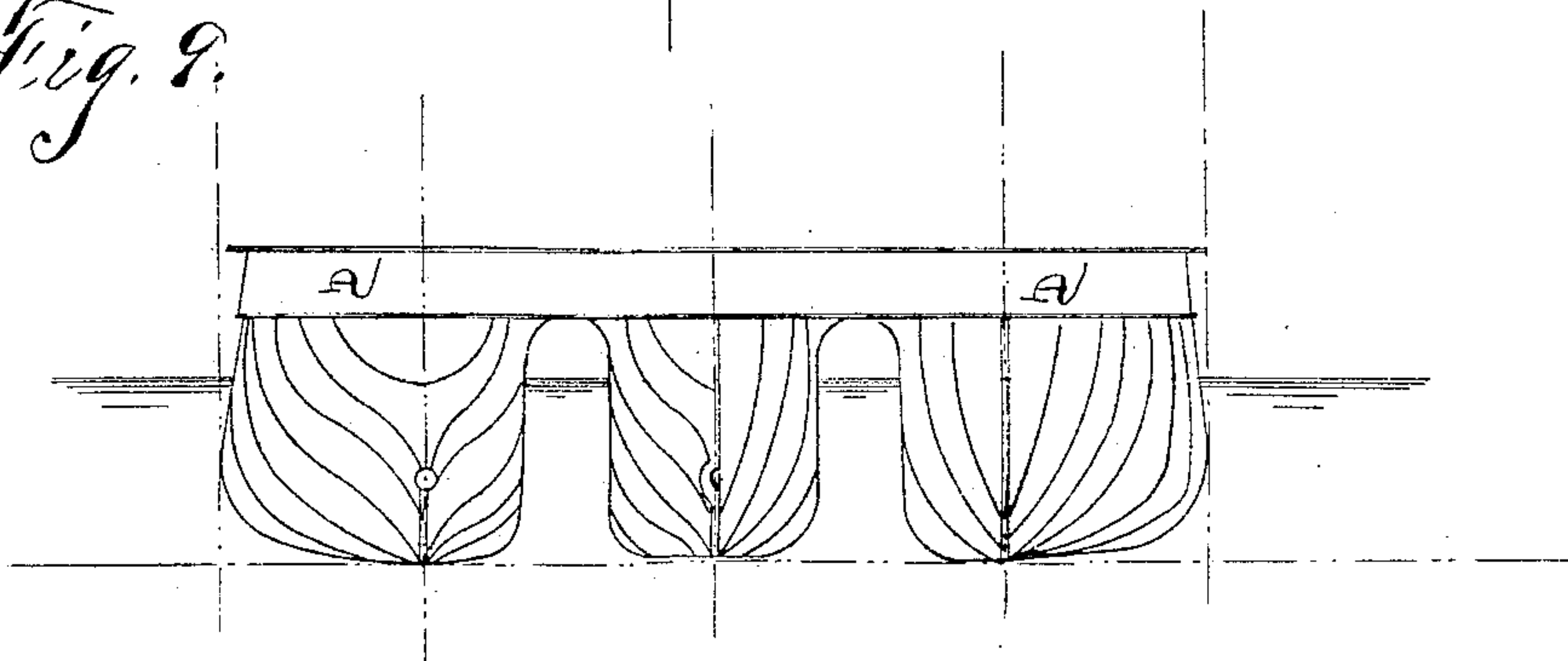
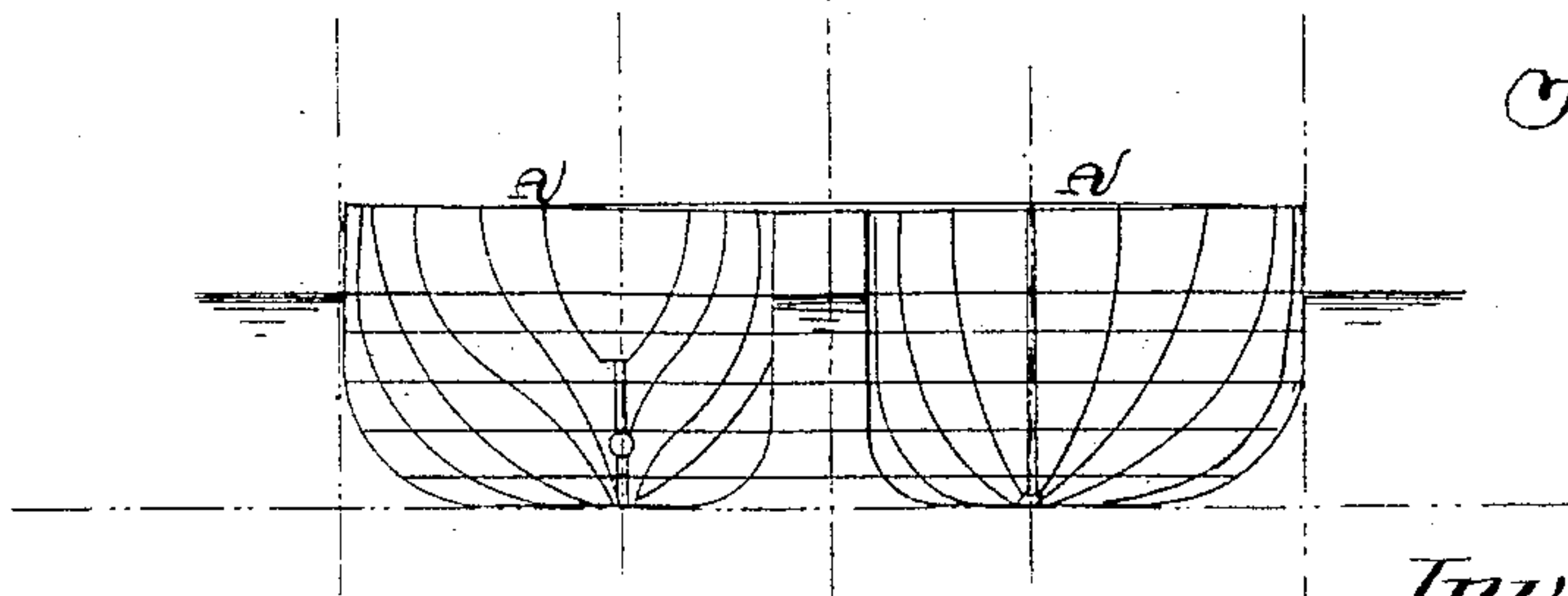


Fig. 9.



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UNITED STATES PATENT OFFICE.

ANDREW J. PURDY, OF WASHINGTON, DISTRICT OF COLUMBIA.

SHIP.

SPECIFICATION forming part of Letters Patent No. 441,193, dated November 25, 1890.

Application filed May 27, 1890. Serial No. 353,354. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. PURDY, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Ships, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to the construction of ships, and is mainly intended to apply to armored vessels of war, although parts of the invention are applicable to other vessels.

The objects of the invention are to improve the construction of twin-hull ships, to arrange side armor and deflective armor advantageously on such ships, to conveniently arrange the coal-bunkers where they will reinforce the armor to some extent, to secure a very stable gun-platform, and to improve various details of the vessel.

Figure 1 is a longitudinal section nearly central of one of the hulls. Fig. 2 is a deck plan, parts being in section, the relation of the twin hulls to each other, and the position of turrets being shown. Fig. 3 is a diagrammatic side elevation of the upper part of one of the hulls, parts being indicated in outline only. Fig. 4 is a similar diagram with side armor omitted, showing position of deflective and protective decks. Lines *a a*, *a' a'*, and *b b* are supposed to be similar in Figs. 1 to 4—that is, these lines designate similar planes in the figures—the lines *a a'* designating cross-sectional planes and *b b* longitudinal planes. Fig. 5 is a sheer draft or diagram showing longitudinal lines complete of both hulls. Fig. 6 is a cross-section amidships through boiler-rooms. Fig. 7 is a cross-section through turrets, one turret being in elevation. Fig. 8 is a sectional diagram of the twin hull, showing front and rear vertical lines complementary to the lines of Fig. 5. Fig. 9 is a sectional diagram of a modification with triple hull, showing lines of the fore section and after section of each hull.

The hulls *A A* are alike and are complementary to each other. The hulls are in effect as if built on usual approved lines for sea-going vessels, curving fore and aft and from keel to deck, but having a midship-section on one side only cut squarely away or flattened on a

line parallel with and about perpendicular to the keel. These flattened sides of the two hulls are next each other. The hulls are connected above the water-line amidships by the protective deck *C* and by the upper works above said deck. Below the water-line the hulls are connected by a number of struts *D D*, which present sharp edges in the direction of movement. The adjacent sides of the hulls at the mid-length section are about vertical and parallel. These vertical sides curve gradually forward and aft into approved curved lines for a sharp hull. (See Fig. 5.) The reduced or flattened sides of the hulls are exactly complementary, and the hulls counterbalance each other. A belt of armor *F* extends along the outer side of each hull, extending vertically from below the water-line to the protective main deck *C*. The armor terminates forward and aft at the turrets *G*, being merged in the walls of the turrets. There are two fixed turrets *G* on each hull extending to the outer side, but not to the inner side, of the hull. The protective deck *C* is about horizontal and extends from turret to turret fore and aft and from one armored belt to the other athwartship. Forward from the rear line of the turrets the protective deck drops to nearly the level of the water-line and is merged with the curved deflective deck *C'*, as indicated by heavy broken lines *C'*, Fig. 1. The after connection of armored decks is substantially similar. The passages through the protective decks are near the turrets, and thus protected by the turrets. The deflective deck *C'* extends forward (or astern) from a turret to the end of the hull, the edges being curved, so as to be below the water-line and to join the double bottom of the hull.

The space within the hull above the curved deflective deck *C'* is divided into suitable compartments *H*, to serve as coal-bunkers. An opening *I* in the deflective deck at the inner side of the turret leads to a coal-chute *O*, which inclines down toward the furnaces. The openings *I* are covered with suitable shutters, when desirable, and coal-bunkers, as *X*, are provided below deck to contain fuel enough to last during an engagement. The openings *I* in the decks are protected from

fire except through a small arc by the turrets. Suitable tramways or trolleys (dotted lines) lead through the coal-bunkers to the mouth of the coal-chutes.

5 The magazines K are directly below the turret, and the passage from the magazine to the turret may be through the circular casing L, which rests on a lower deck or other suitable support and sustains the turret-cover.
10 Ammunition will be carried up from the magazine by power-lifts.

The space below the armored decks is divided into suitable compartments for boiler-rooms, engine-rooms, store-rooms, cabins for
15 crew, &c. The officers' quarters may be above the protective deck C amidships, where the twin hulls are connected.

The double bottoms M and N are connected by plates, forming a large number of watertight compartments. The double bottom extends up to the armored belt on the outer side amidships, but at the inner sides of the hulls may terminate at about the height of the boiler-room floor. (See Fig. 7.) Forward
20 and aft the double bottom should extend as high as the lower edge of the deflective deck.

The coning tower R may be fitted to the port-hull only. Smoke-stack S and ventilating-pipes T should be protected by armor for
25 some distance above deck and by proper gratings.

Each hull will have its complete complement of boilers, engines, and propellers, as if it were a complete ship, but will not need to
30 carry armor on the side toward its twin.

The twin-hull construction described is a compromise between a divided hull, which is well known, and a double symmetrical hull, also well known. The parallel space between
35 the hulls is designed to permit the free flow of water away to the stern, preventing any great accumulation of wave between the hulls and minimizing the strains tending to break the hulls asunder.

40 The hulls described will have moderately-high free boards, giving the ship good sea-going qualities. By reason of the combined-hull construction the ship will have great stability. As each vessel has its own propelling-
45 power, the speed of the ship may be as great as that of any other vessel, while the stability is much greater than that of any vessel with a single hull.

Fig. 9 shows a triple-hull construction, in
50 which a central symmetrical hull having perpendicular sides amidships is connected to two outer hulls having each a flattened inner side. It is apparent that the same general arrangement may be carried to any convenient
55 number of hulls, the sides of the midship-sections being parallel and about vertical, and verging into curved lines forward and aft.

Some of the advantages of my construction are that the deflective decks give practically
60 complete protection, being perforated only at

the coal-chutes. There is little danger that both hulls will be disabled at the same time, and unless one hull be very severely injured the other will furnish excess of buoyancy enough to float her. The ship will be
65 easy and comfortable in all weathers.

I have shown conical covers to the turrets, but make no claim thereto. The guns may be mounted in any suitable manner in the turrets and broadside batteries.

What I claim is—

1. A twin-hull ship having two hulls with the outer sides built on usual lines for sea-going ships curving from stem to stern and from keel to main deck, and having the proximate sides flattened parallel and practically vertical for the mid-length section, but merging into curves approximating the outer curves of the hull fore and aft, the hulls being connected at the flattened portions, substantially as described.

2. A twin-hull ship having adjacent sides of the midship-sections about vertical and parallel and merging with curved lines forward and aft similar to the outer curved lines of the hulls and a protective deck extending over the midship-section of both hulls and the space between said hulls at the midship section, substantially as described.

3. A plurality of hulls having the adjacent sides of midship-sections vertical and parallel and connected by struts below and a deck above the water-line and merging into curve lines forward and aft and having the outer or weather sides of the hulls on usual lines curving from stem to stern and from keel to deck, the parts combined substantially as described.

4. A twin-hull ship having the outer sides of the hulls built on curve lines from stem to stern and from keel to deck and the inner sides built on similar lines save at the mid-section, where the sides are vertical and parallel, a deck extending over and connecting both hulls above the water-line, and struts connecting the hulls below the water-line, substantially as described.

5. A twin-hull ship having two turrets on each hull, said turrets being connected by an armored belt extending along the outer side of each hull from turret to turret, substantially as described.

6. A twin-hull ship having two turrets on each hull, said turrets being connected by an armored belt at the outer side of each hull, and a protective deck between the turrets extending over both hulls, substantially as described.

7. The combination of the twin hulls, two turrets on each hull, side armor extending from turret to turret at the outer sides of the hulls, a protective deck reaching from armor to armor and from turret to turret, and deflective decks on each hull forward and abaft the turrets.

5 8. A twin-hull ship having a midship-section provided with a horizontal protective deck, a belt of armor at the side of each hull, a turret in which the armor is merged forward, and a curved deflective deck forward of the turret and at a lower level than the horizontal deck, into which deck the horizontal deck is merged by an incline at the side of the turret, substantially as described.

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

ANDREW J. PURDY.

Witnesses:

W. A. BARTLETT,
PHILIP F. LARNER.