

Collins' Advanced Science Series.

THE MODERN PRACTICE
OF
SHIPBUILDING
IN
IRON AND STEEL.

BY

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VOL. II.—PLATES.

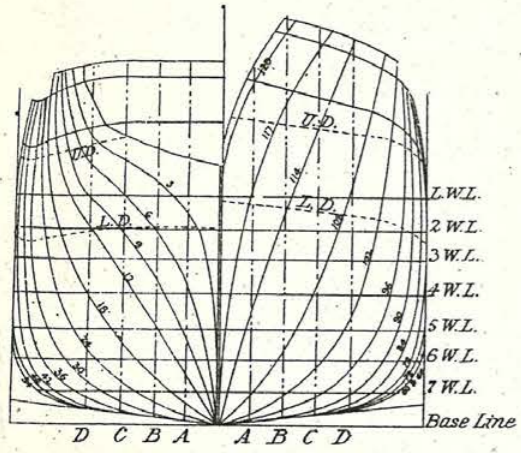
THIRD EDITION—REVISED AND ENLARGED.



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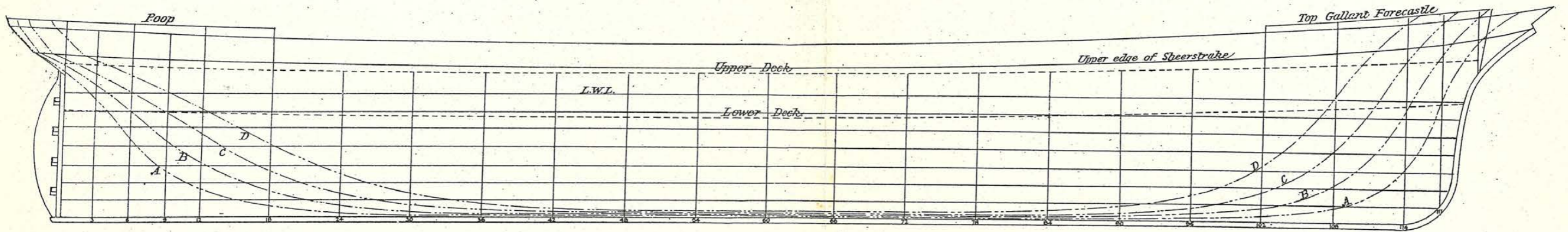
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BODY PLAN.

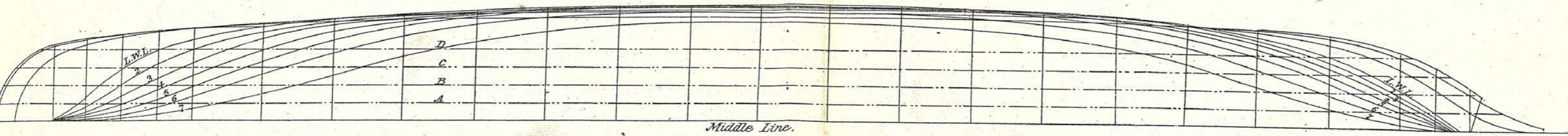


SHEER DRAUGHT OF AN IRON SAILING SHIP.

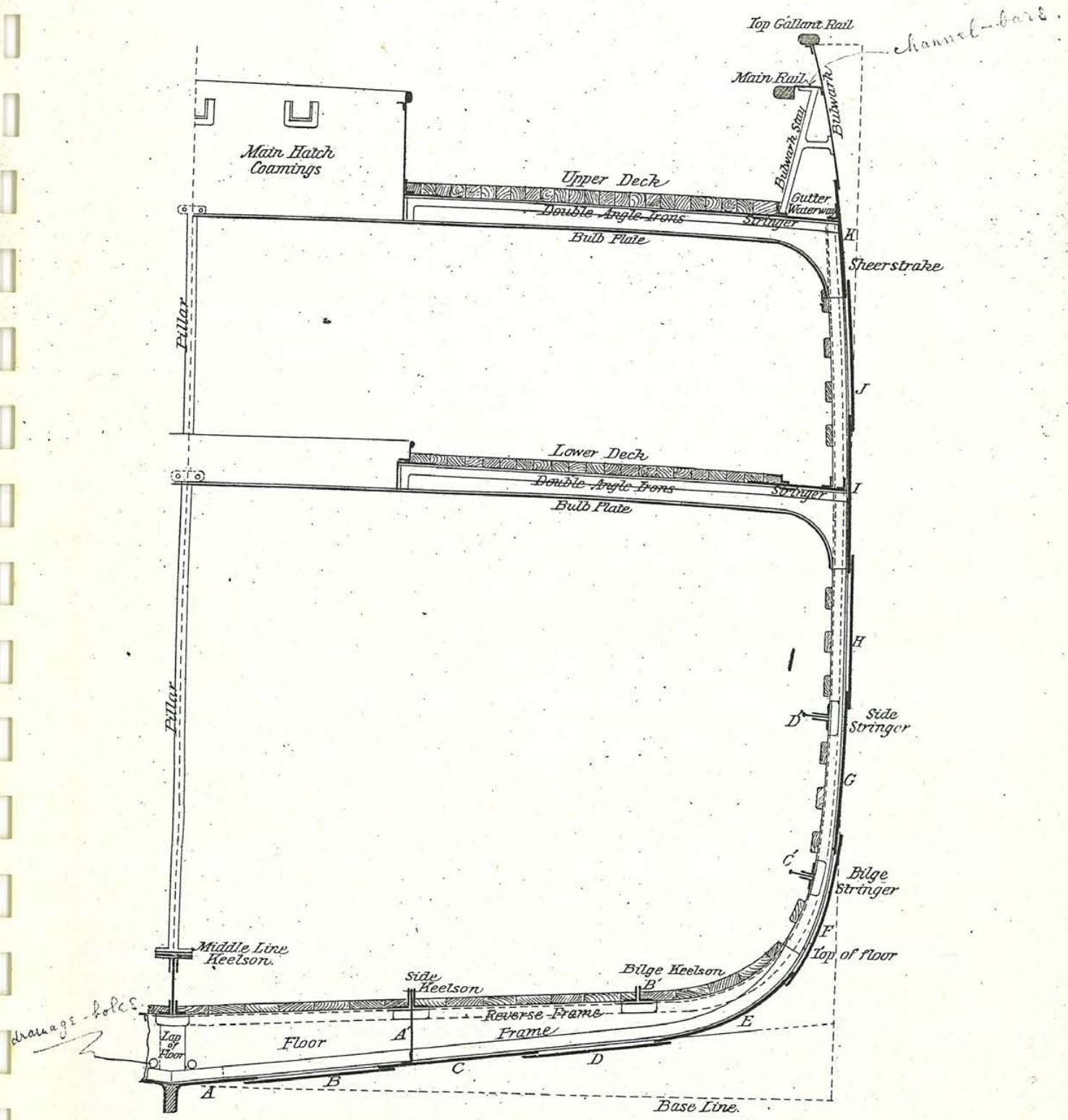
SHEER PLAN.



HALF BREADTH PLAN.



MIDSHIP SECTION OF AN IRON OR STEEL SAILING SHIP.



MIDSHIP SECTION OF STEEL STEAMER (3 DECKED.)
WITH CELLULAR DOUBLE BOTTOM.

SCALE 1/4 INCH = 1 FOOT.

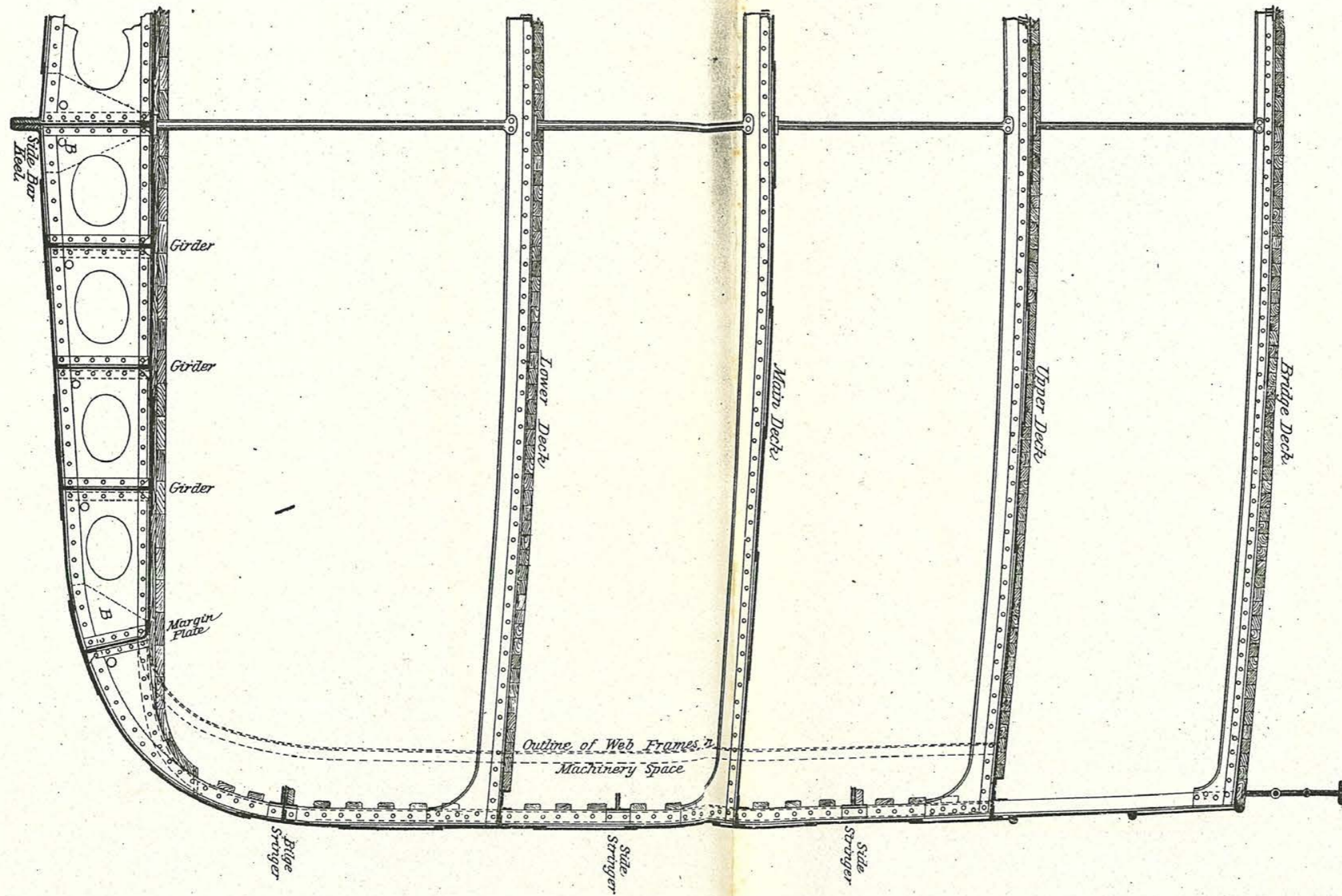


Fig. 1.

MIDSHIP SECTION OF STEEL SPAR DECKED STEAMER.

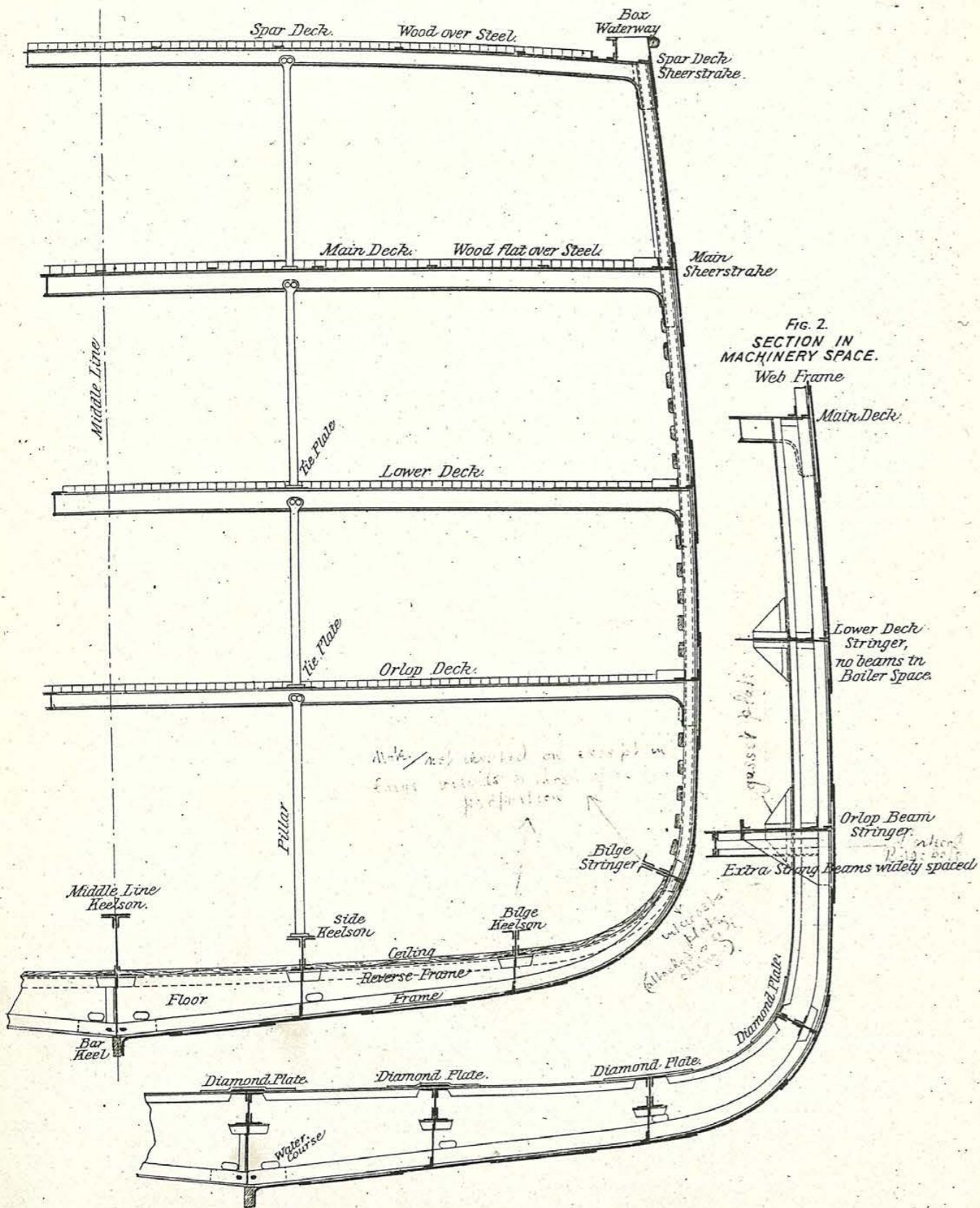
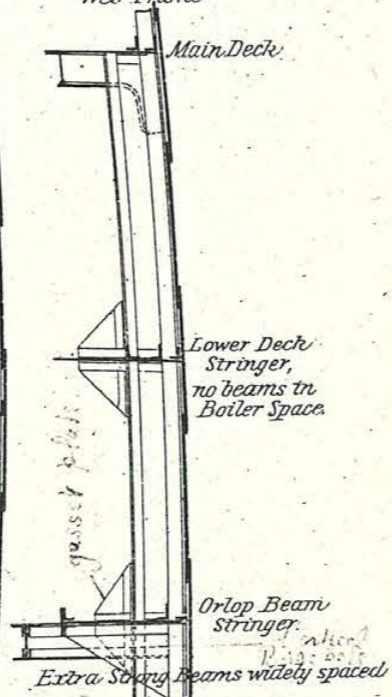
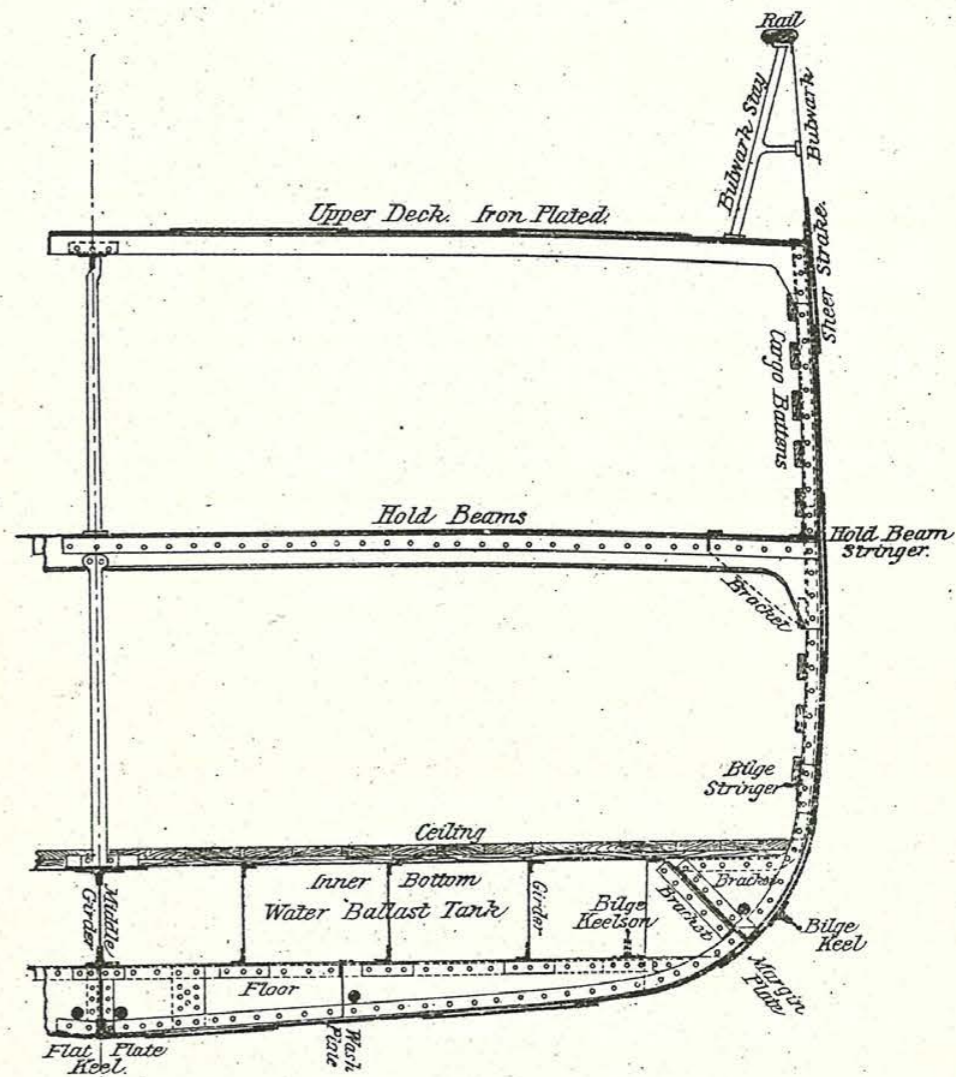


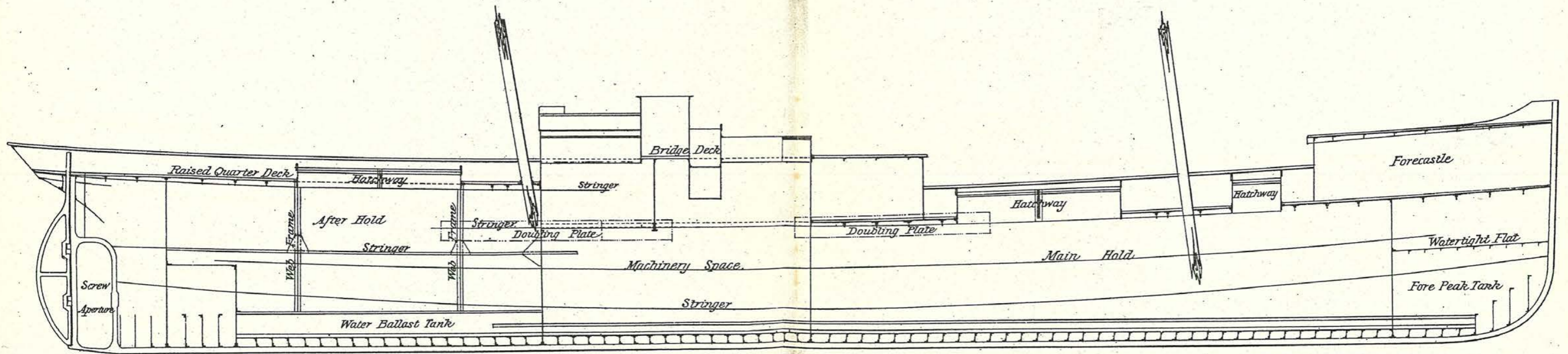
FIG. 2. SECTION IN MACHINERY SPACE. Web Frame



MIDSHIP SECTION OF SMALL CARGO STEAMER.

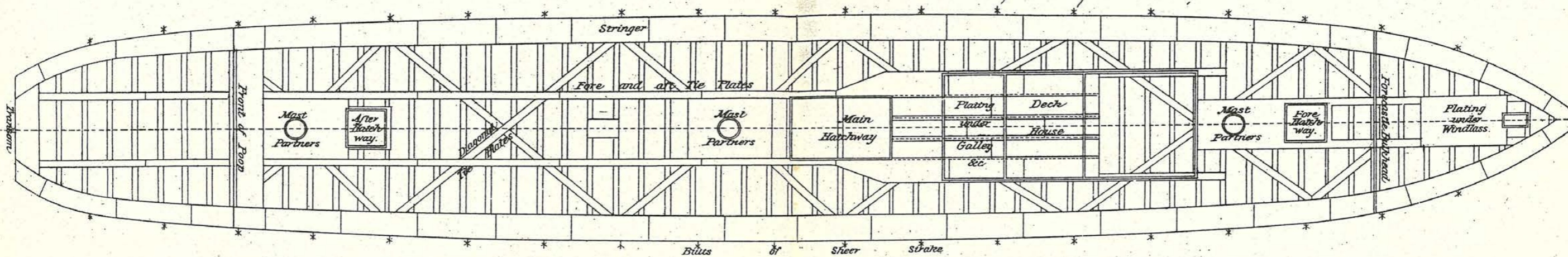


PROFILE OF A SMALL CARGO SCREW STEAMER.



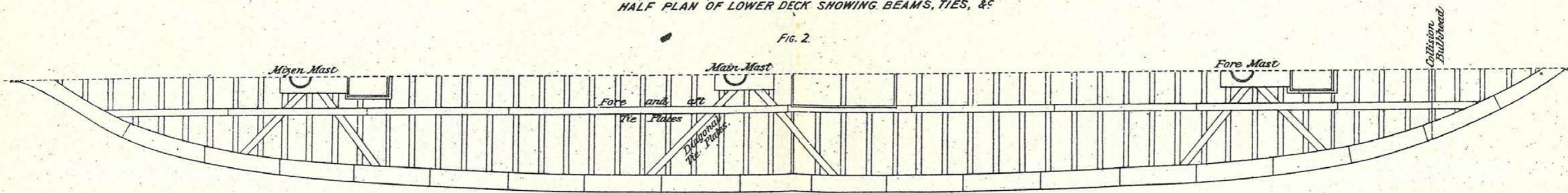
PLAN OF UPPER DECK OF AN IRON OR STEEL SAILING SHIP,
SHOWING BEAMS, STRINGERS, TIE PLATES, &c

Fig. 1.

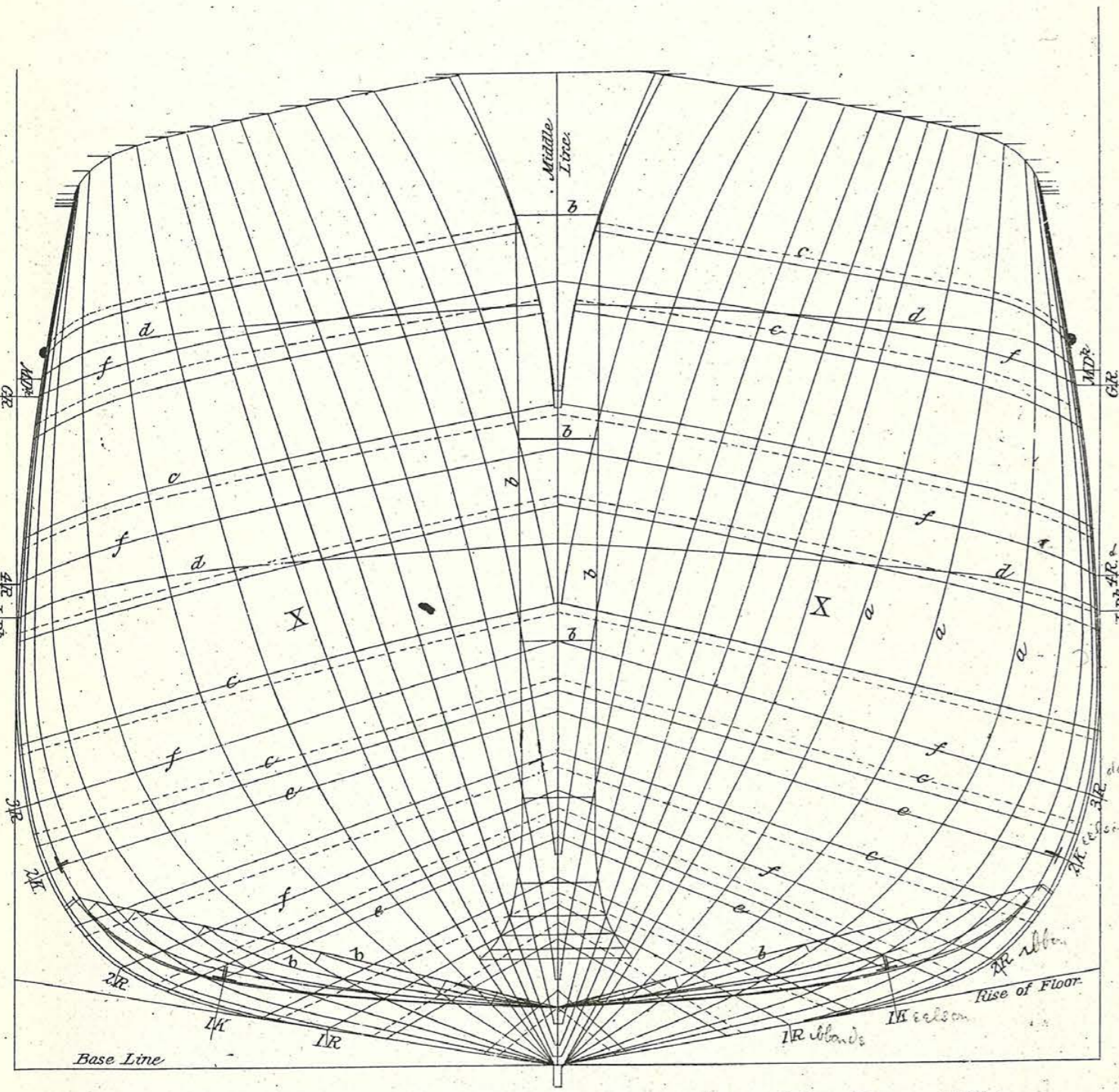


HALF PLAN OF LOWER DECK SHOWING BEAMS, TIES, &c

Fig. 2.



SKETCH OF SCRIVE BOARD FOR FORE BODY.



N.B. To avoid confusion of Lines a great many of the frames are omitted from X to amidships.

SECTIONS OF CENTRE KEELSONS ASSOCIATED WITH BAR KEELS.

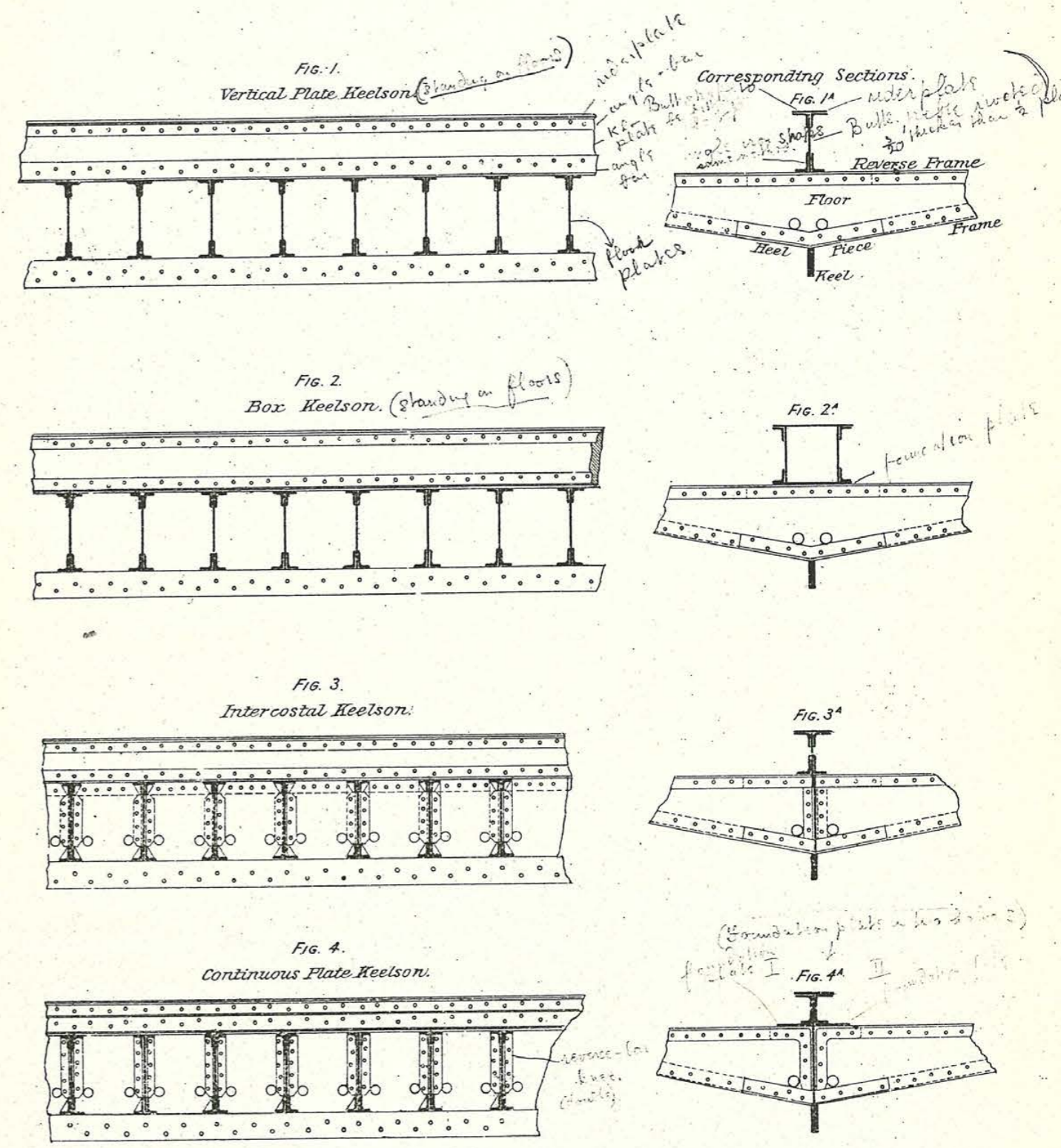


FIG. 1.

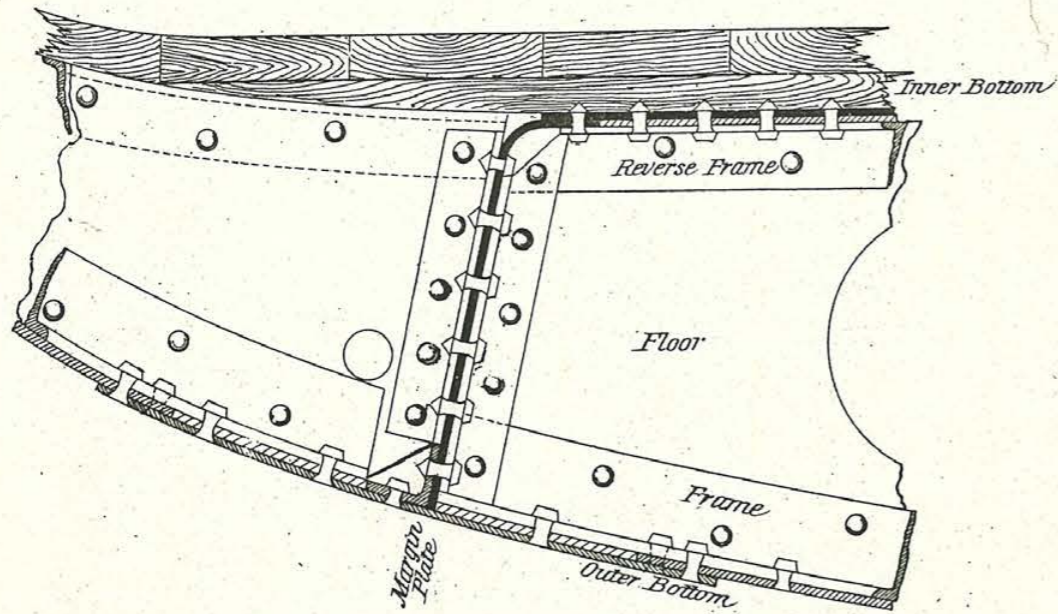
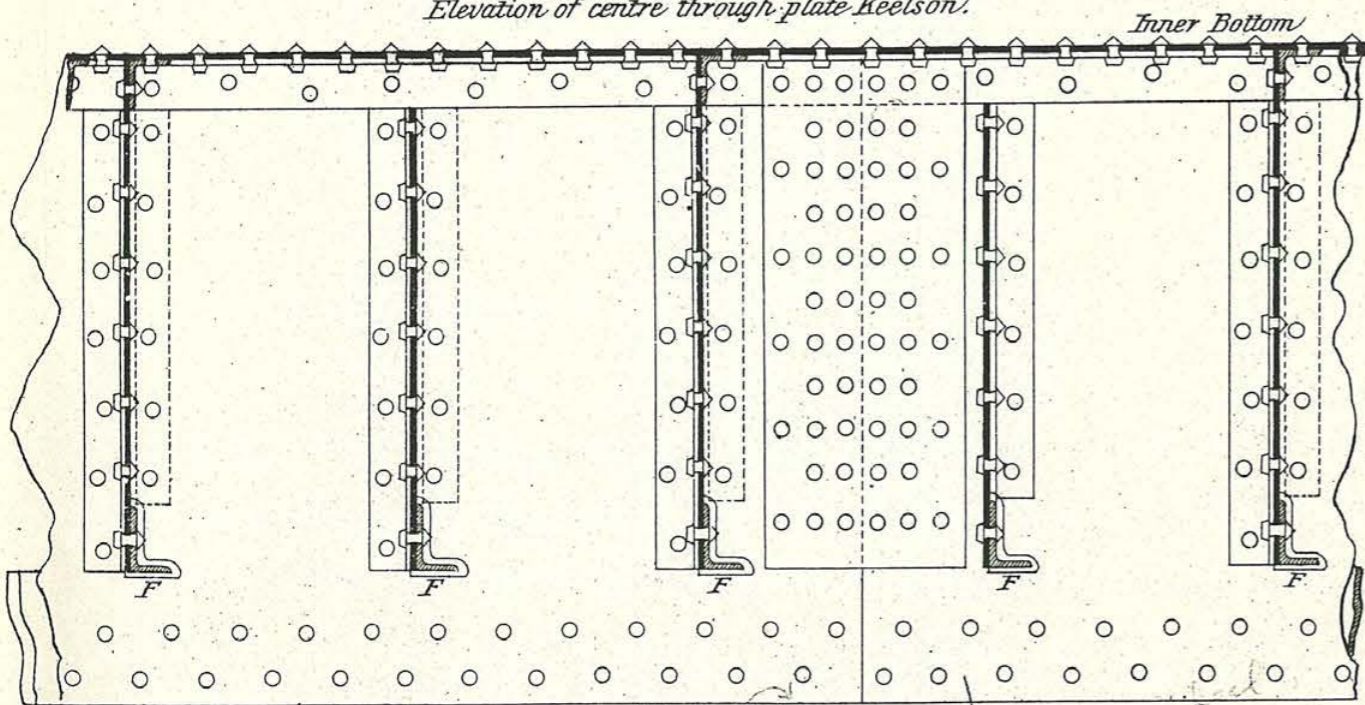


FIG. 2.

Elevation of centre through plate Keelson.

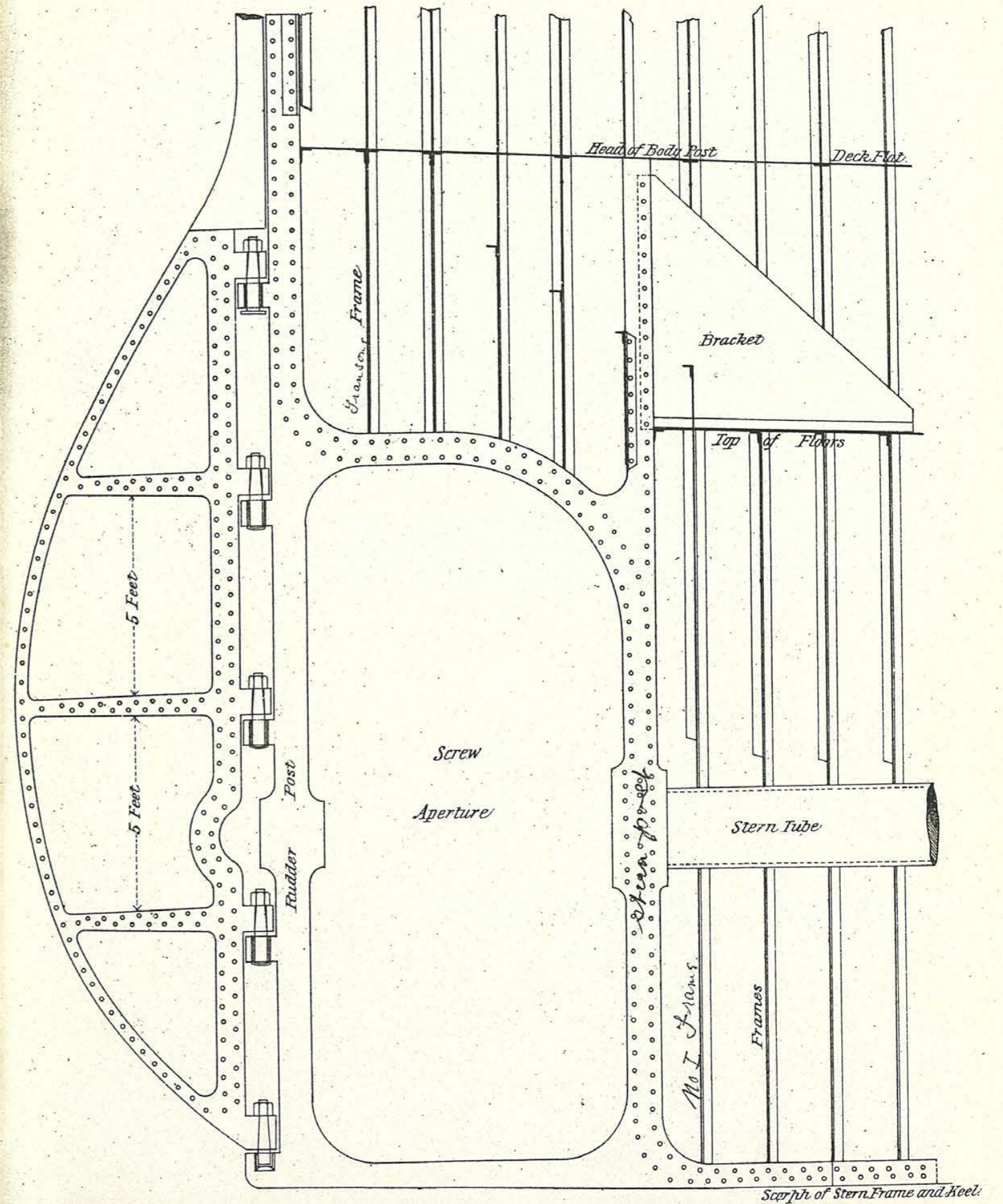


Side bar Keel 4 1/2 to 5 diameters
 one side shown

spacing of rivets to be 5 diameters from centre to centre for (for keels)

size of rivets 1/4 larger than those for 2 quoniam struts
 also 1/4 for keels

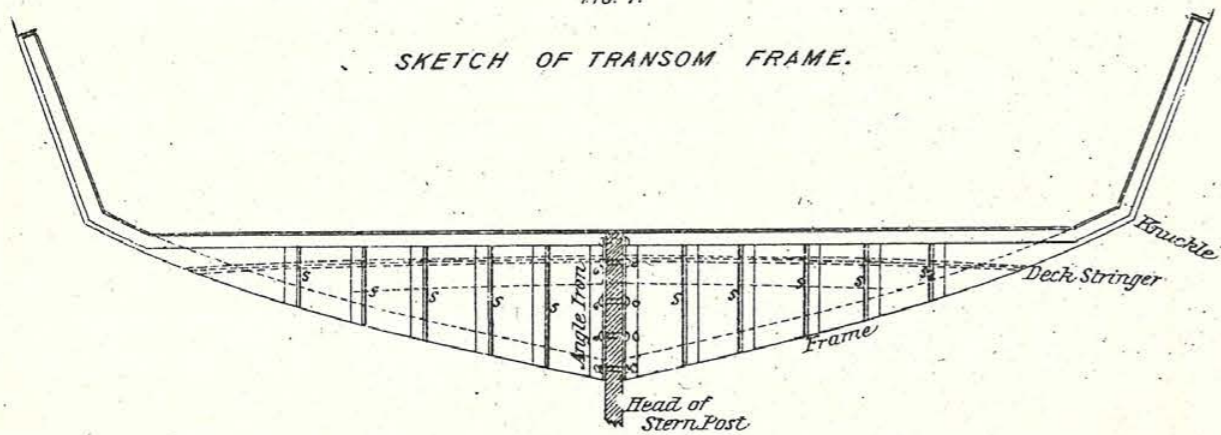
SKETCH SHOWING STERN FRAME, RUDDER, &c. OF SCREW STEAMER,



Sketch of Stern Frame and Keel

FIG. 1.

SKETCH OF TRANSOM FRAME.



SKETCH OF STERN FRAMING

FIG. 2. PLAN.

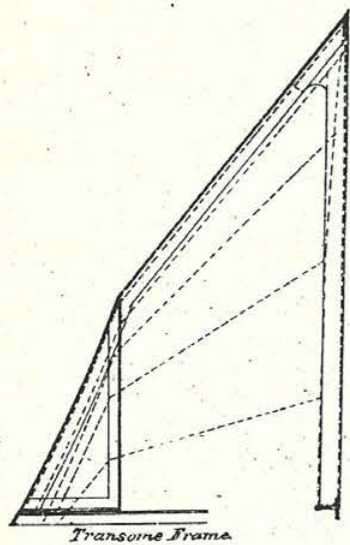
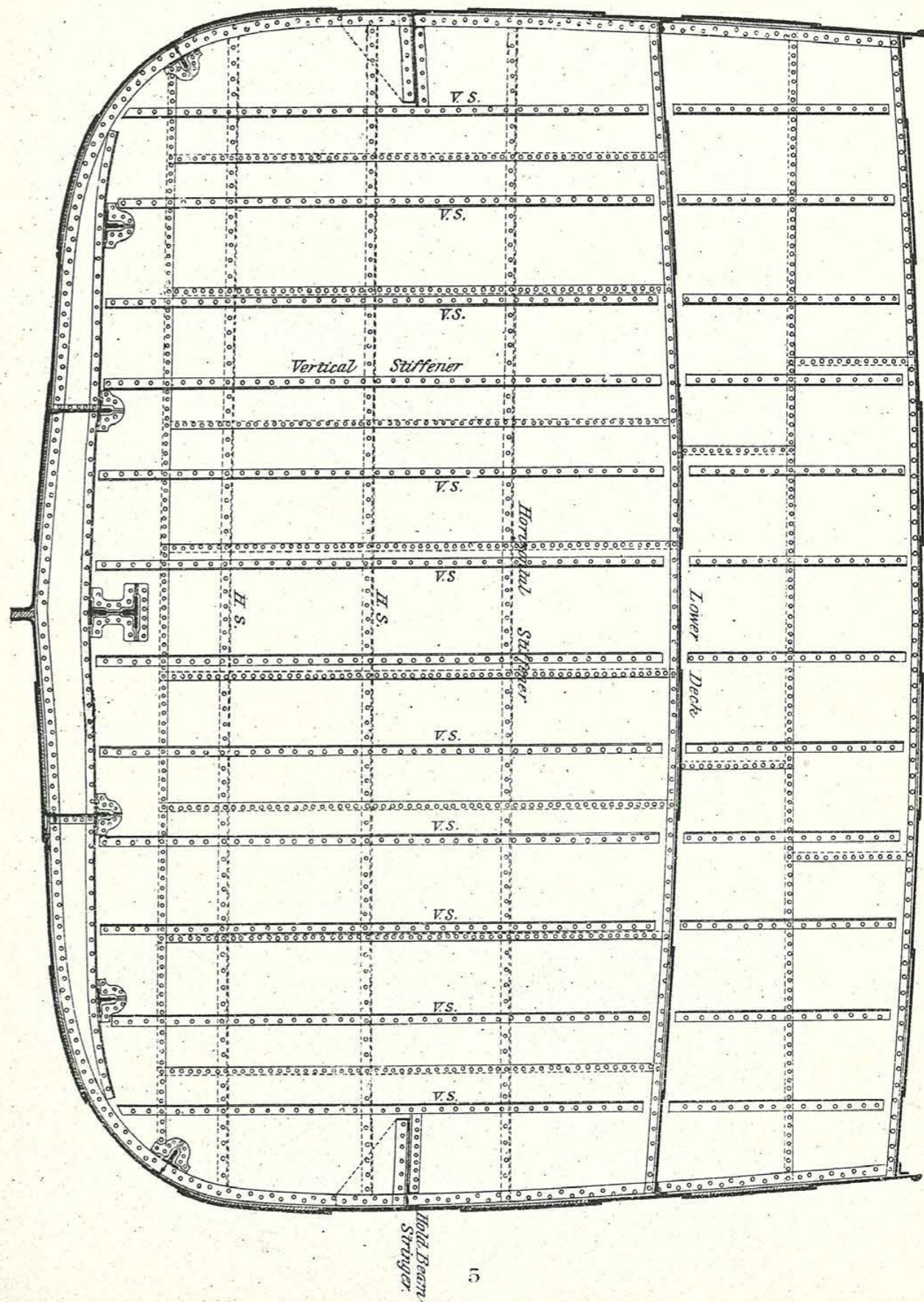
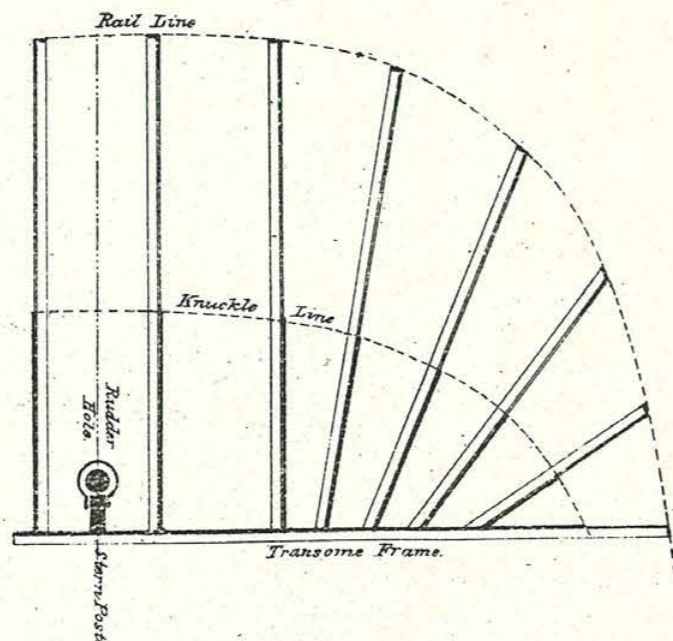


FIG. 3. PLAN.



Ship Construction.

(1.)

The chief objections to floors being lap jointed at the middle line lies first in the likelihood of a break in the transverse strength of the ~~vessel~~ ^{vessel} on account of the frames usually butting there & secondly because of the difficulty & labour necessary to effect an efficient connection with the frames & reverse frames. — By this method 4 thicknesses are required to be rivetted together viz:— on the upper part:— reverse-frames lug-pieces for same, & the double thickness of floors. — on the lower part:— frames, keel-pieces & the two parts of floors again.

The only recommendation is perhaps on account of cheapness & even that is doubtful in consideration of the extra labour required. A better way is to make the connection alternately on each side of the middle line say of about 3 feet away so as to clear the keel pieces to frames.

(11.)

Intercostal keelson with flat-plate keel.



With the ordinary system of transverse framing intercostal keelsons are necessarily fitted between the floors with flat plate keels.

When Lloyds 2nd number is under 13,000 a plate bulb is rivetted to the intercostal plates above the floors (as in sketch) ^{or} the plates being continued for this purpose or else the bulb plate is scored & rivetted between the floors. When the number exceeds 13,000 a ^{continuous} vertical keelson plate with double angles top & bottom is substituted, this being scored & rivetted to the intercostal plates between the floors. (as in sketch) (ii). The intercostal plate is connected to the shell plating by short angle bars which should be turned up against the floor plate in the form of a knee at one end to afford a good connection.

associated

SKETCH OF BENDING SLAB. SHOWING PROCESS OF BENDING AN ANGLE BAR TO ITS REQUIRED FORM THEREON.

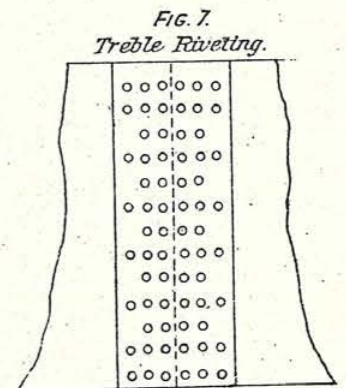
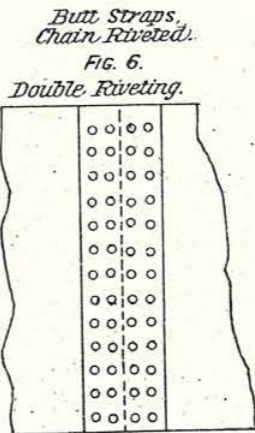
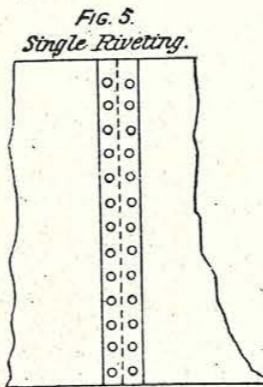
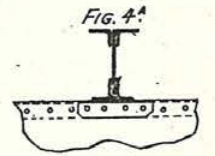
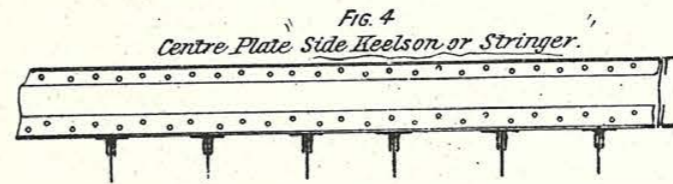
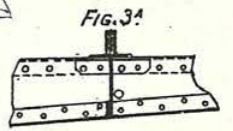
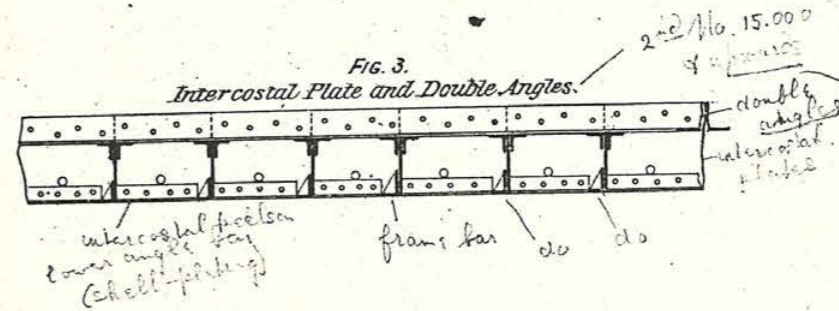
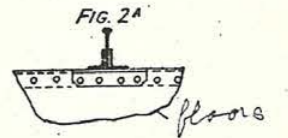
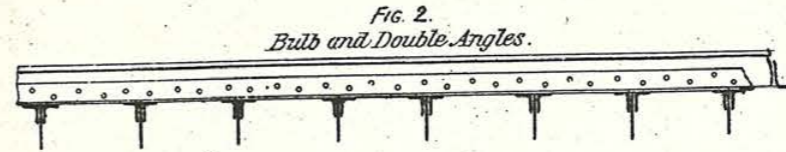
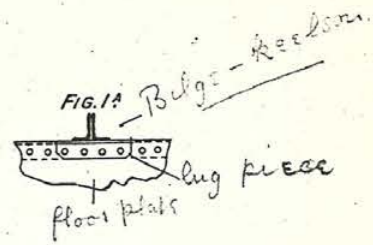
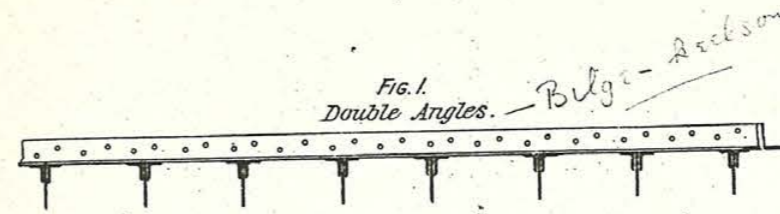
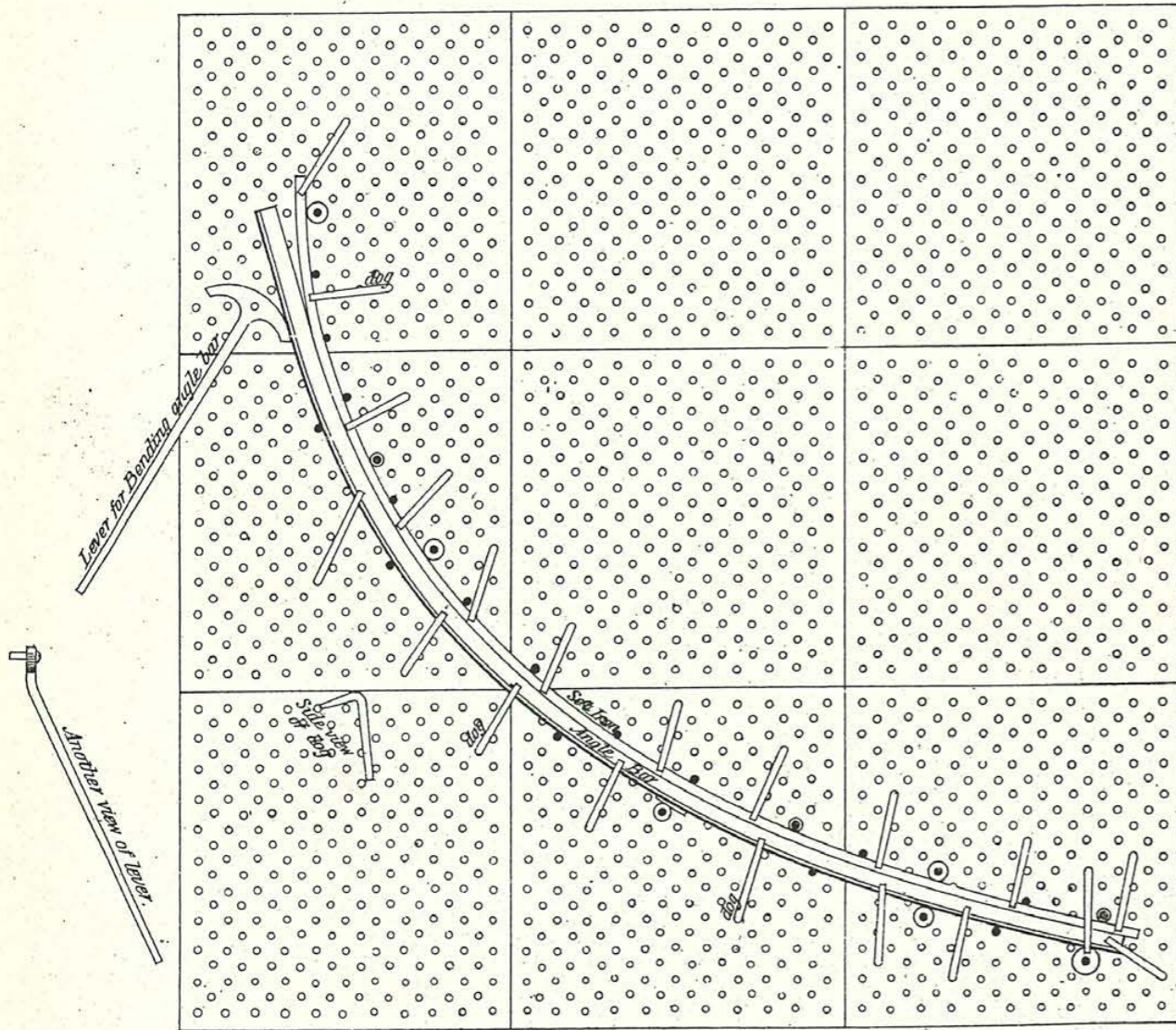


Plate XVI
COLLISION BULKHEAD.

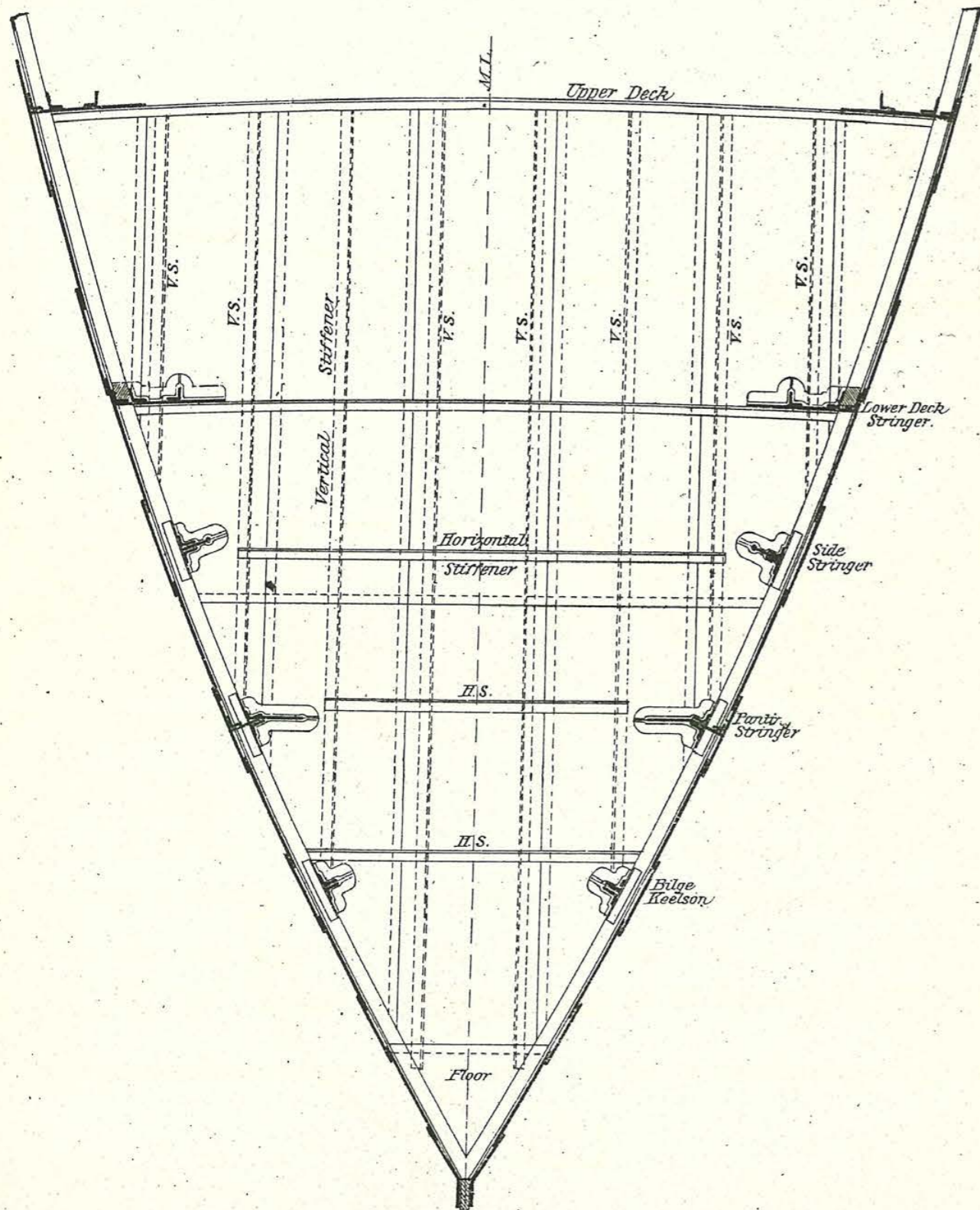
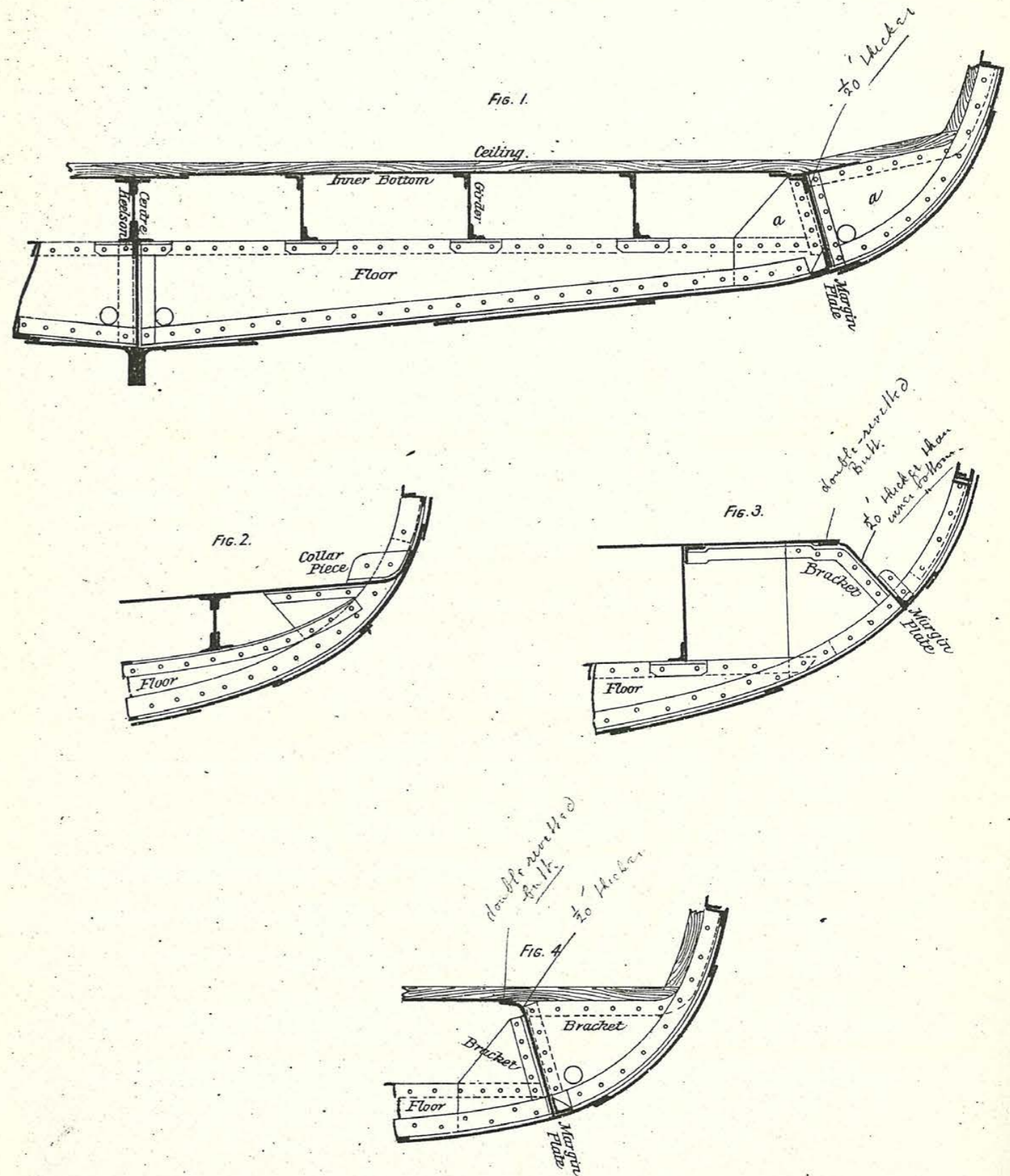
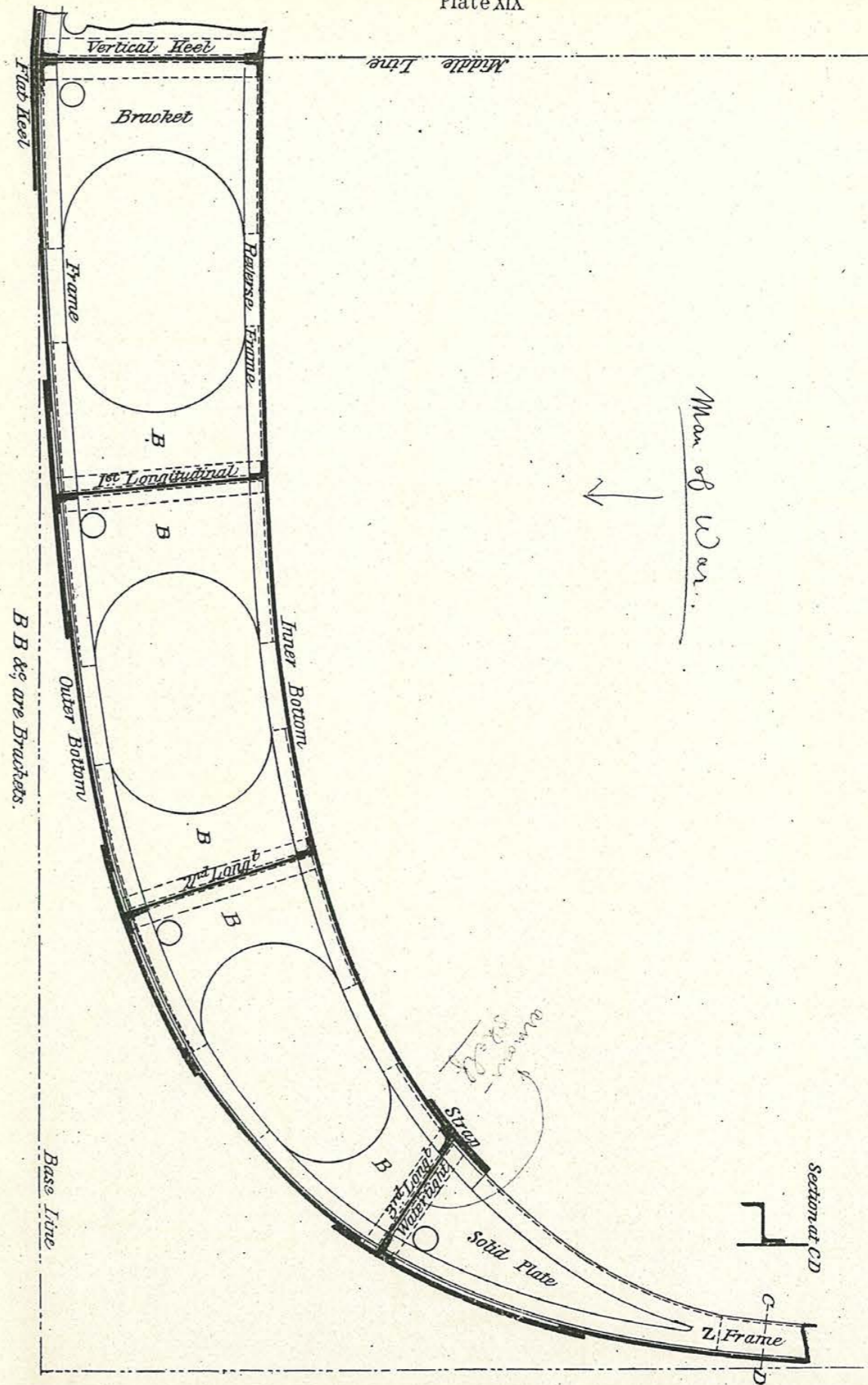
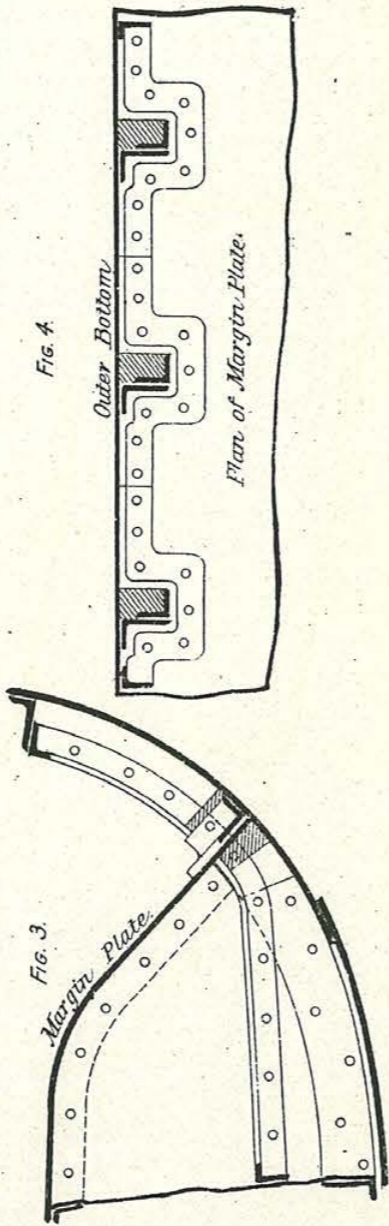
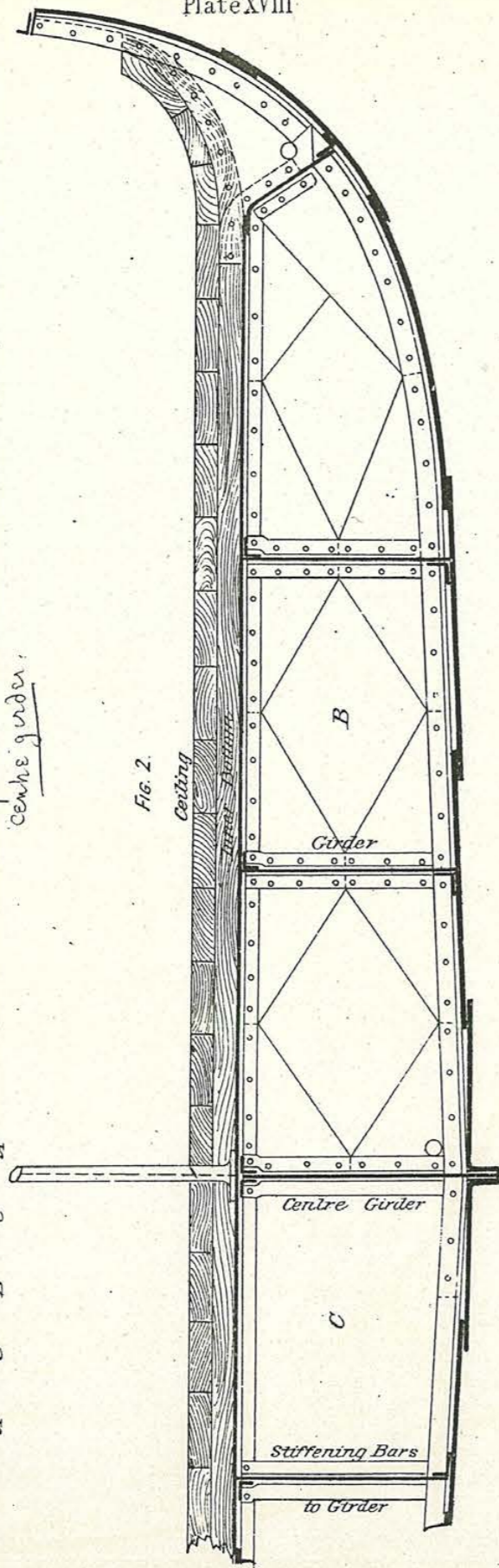
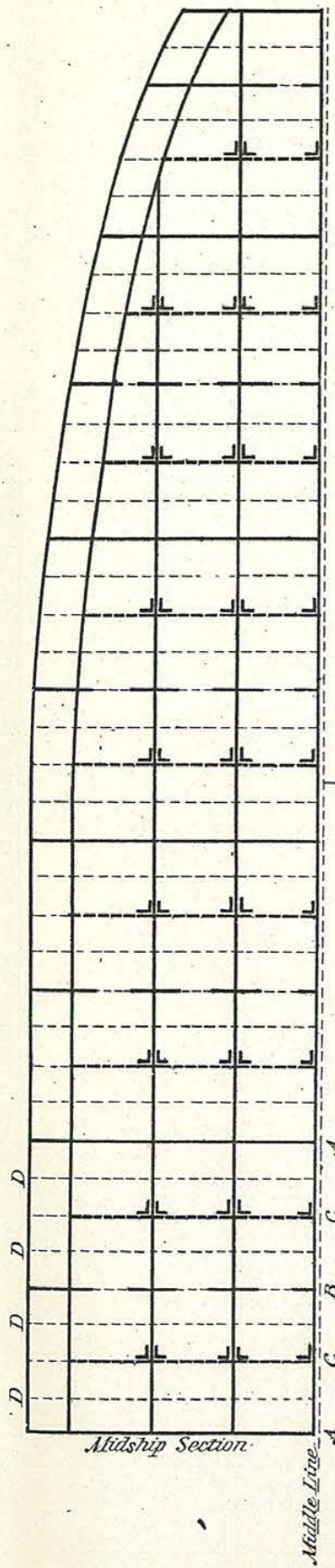


Plate XVII





B B & are Brackets.

Plate XX

Fig. 1.

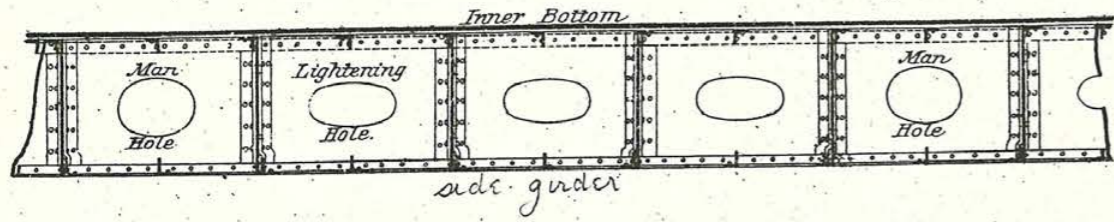


Fig. 2.

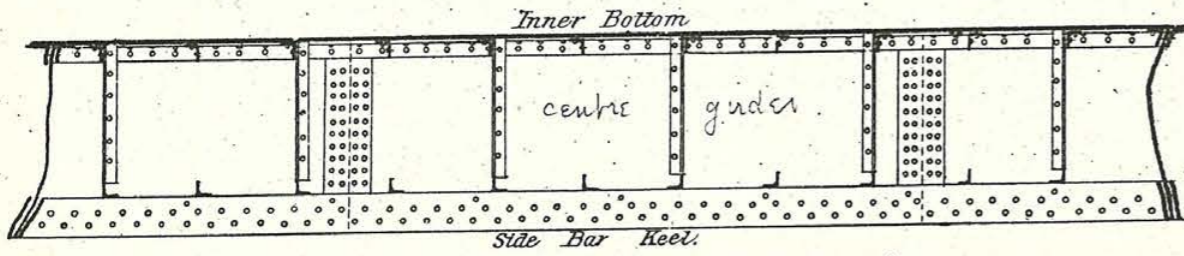


Fig. 3.

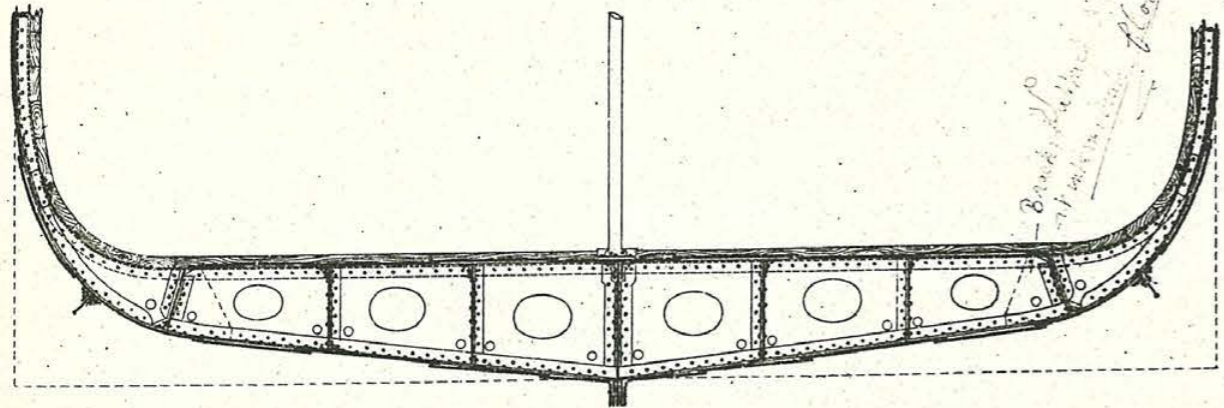
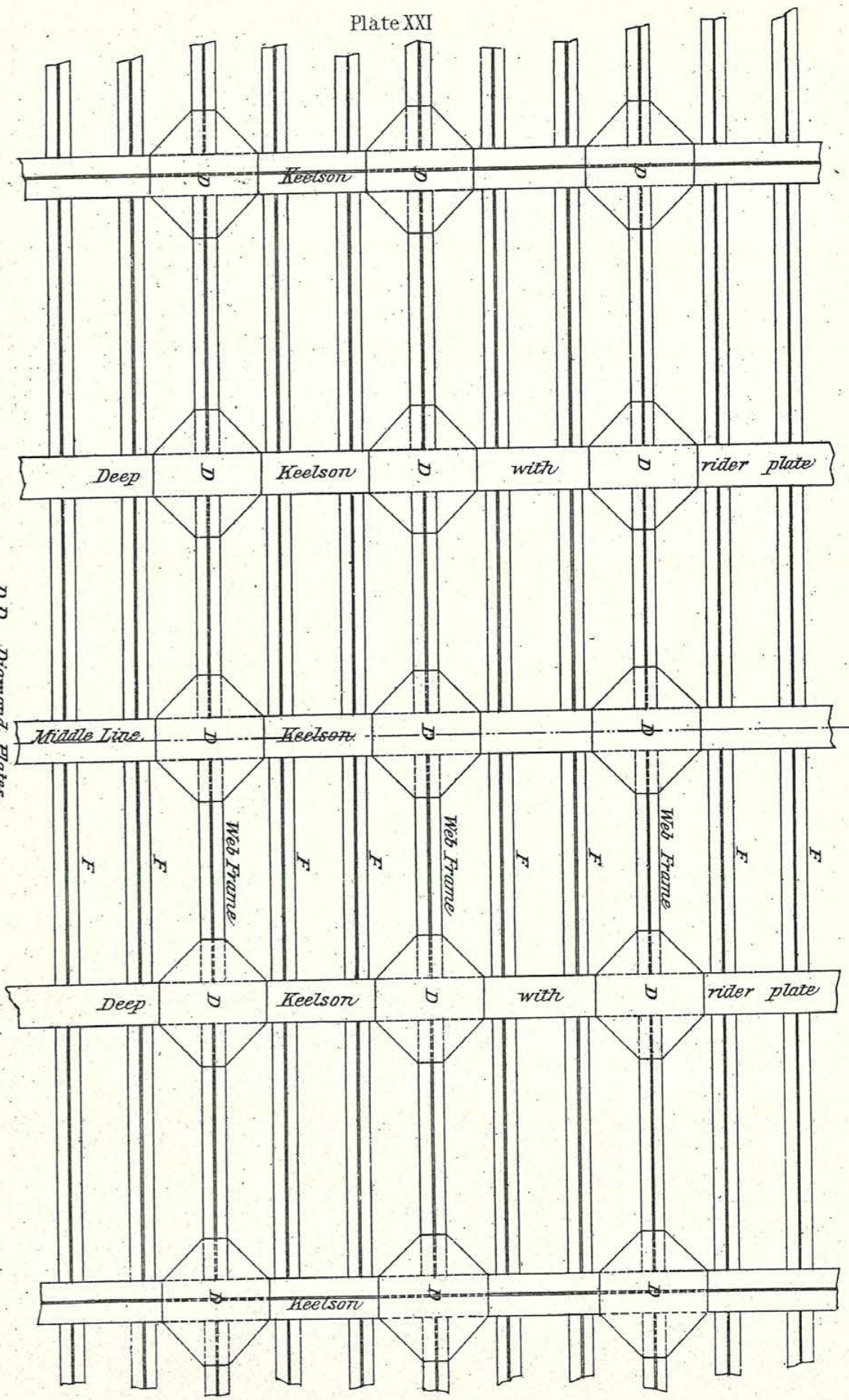


Plate XXI



D D Diamond Plates.
 F F Ordinary Transverse Frames
 or Machinery Space.

Fig. 1.

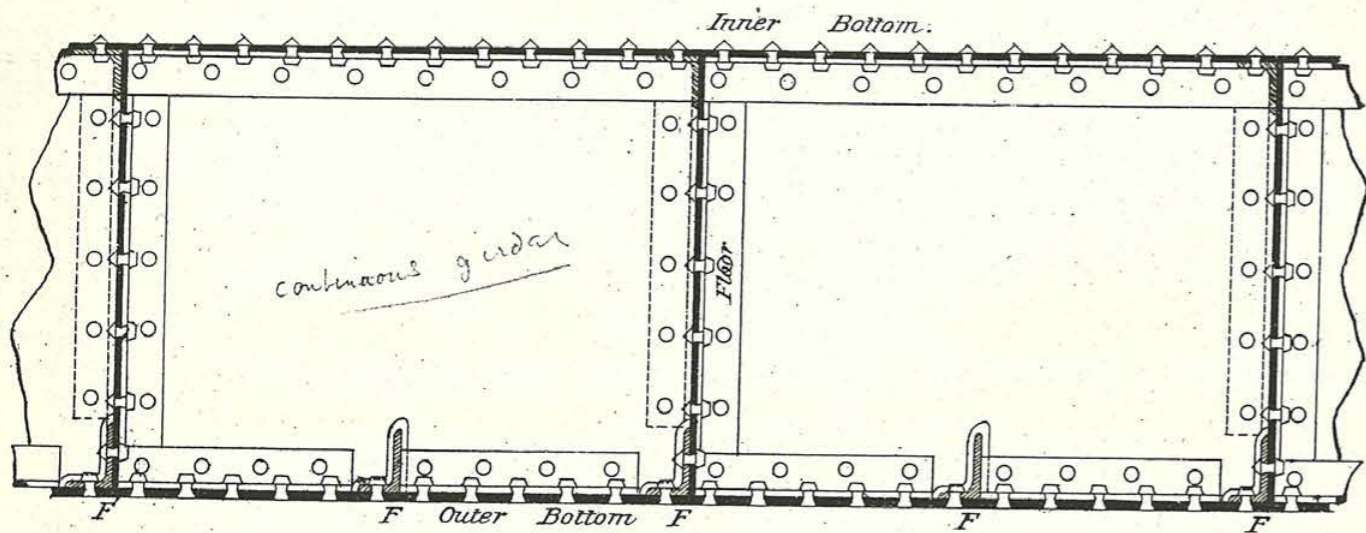


Fig. 2.

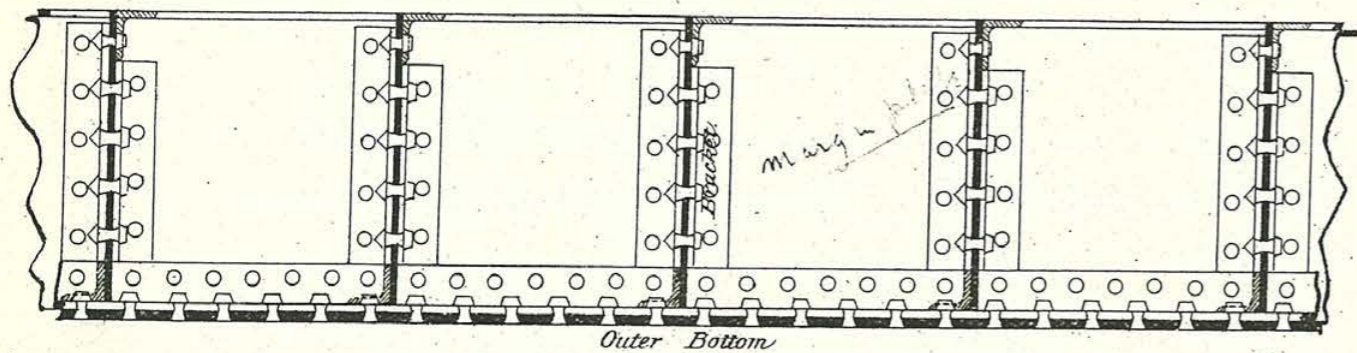


Fig. 1.

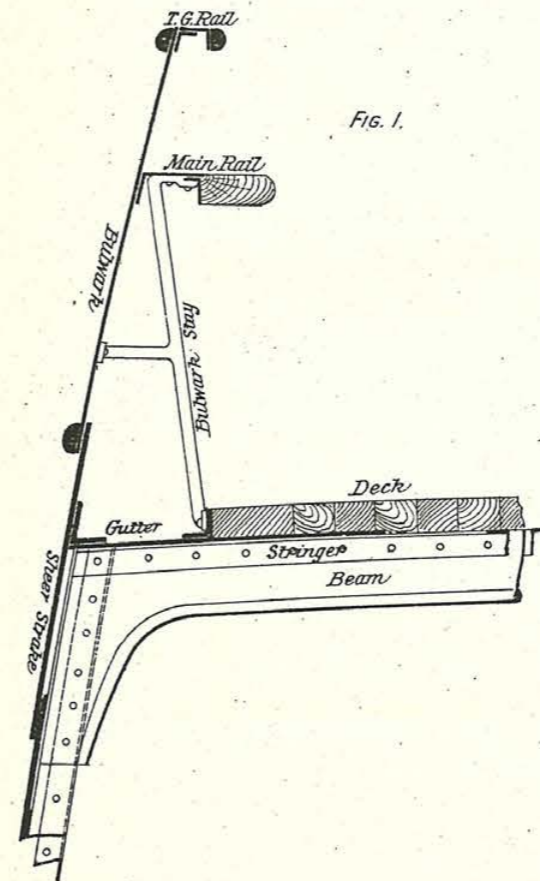


Fig. 2.

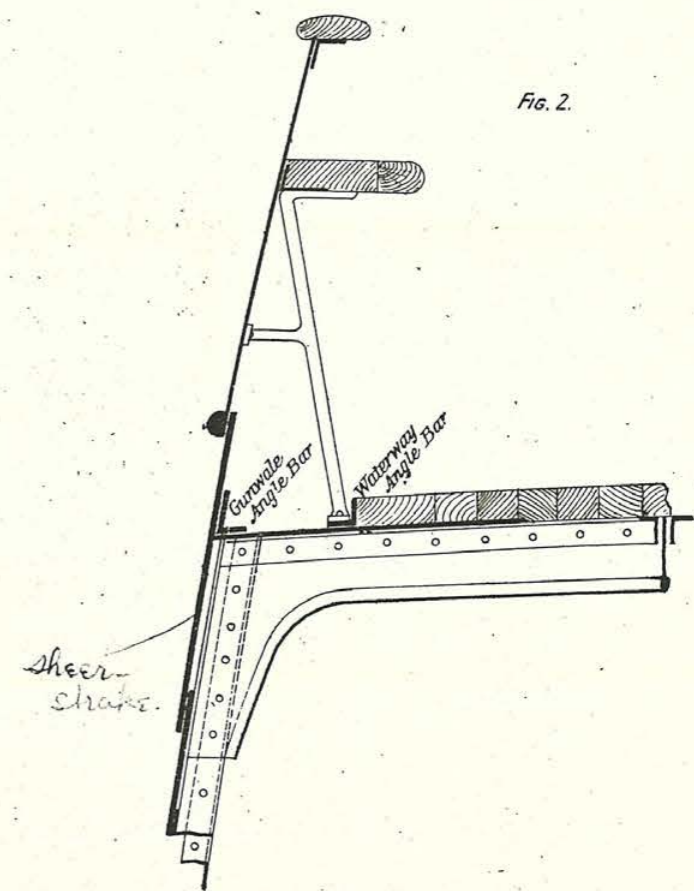
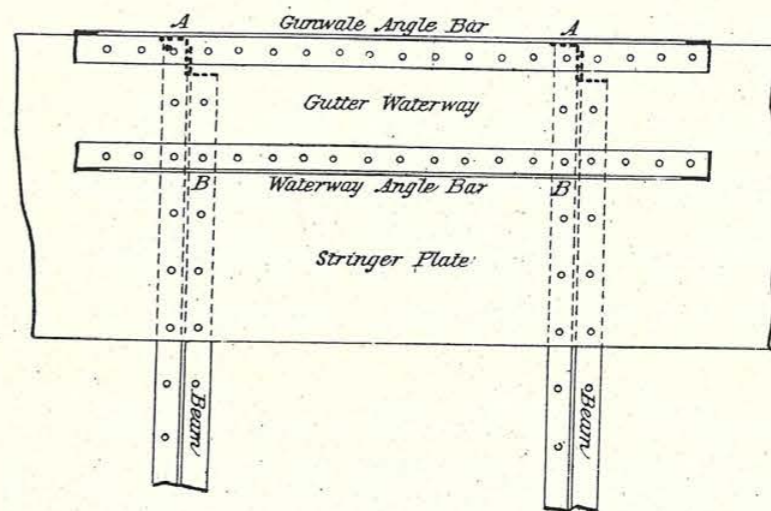


Fig. 3.



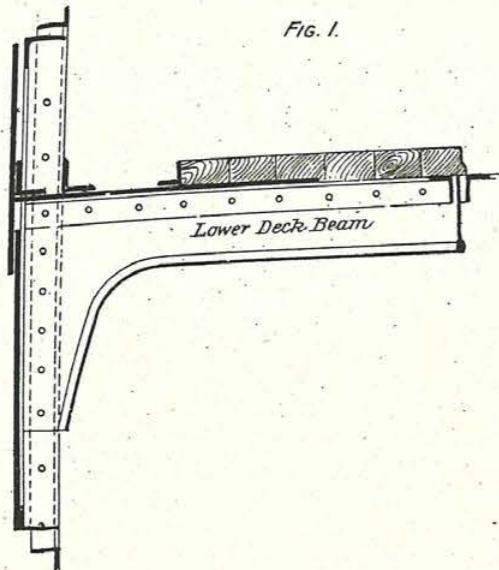


FIG. 1.

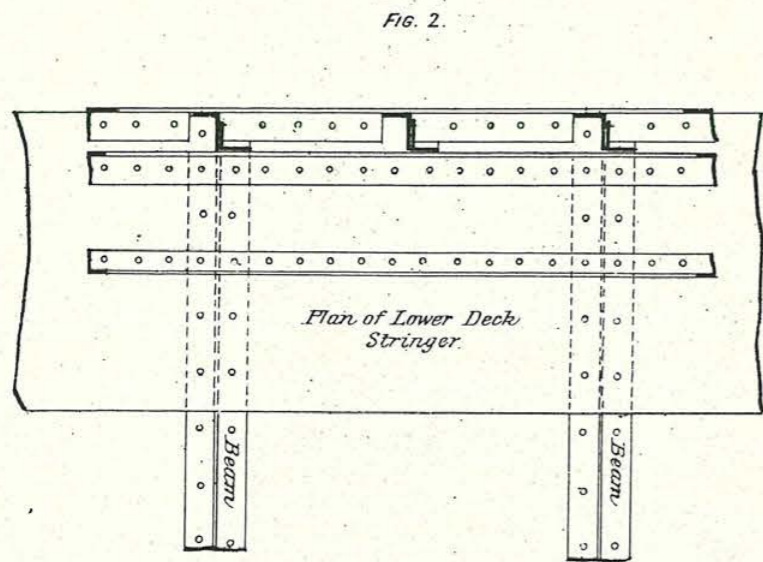
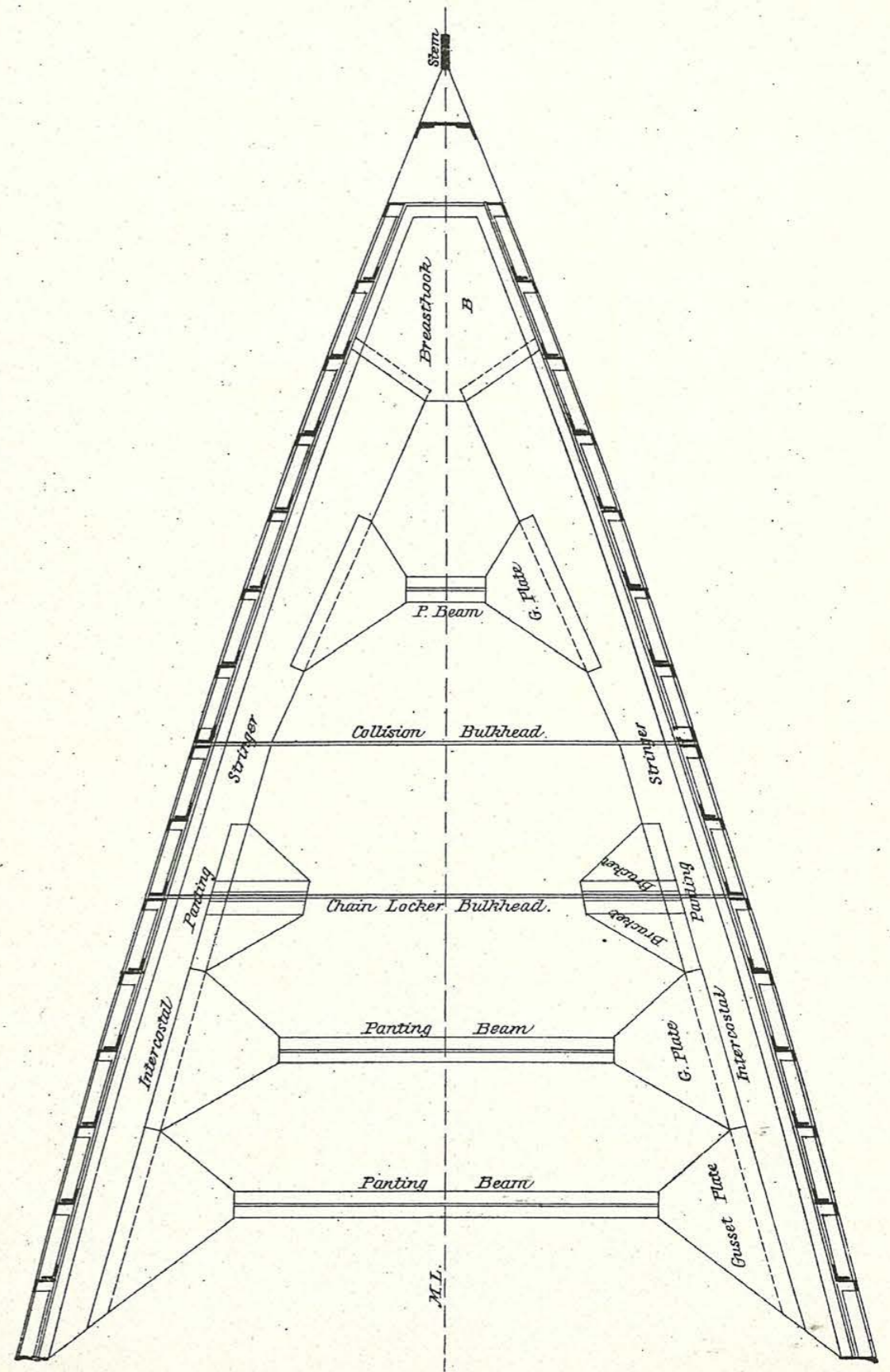


FIG. 2.



M.L.

FIG. 1.
PROFILE.

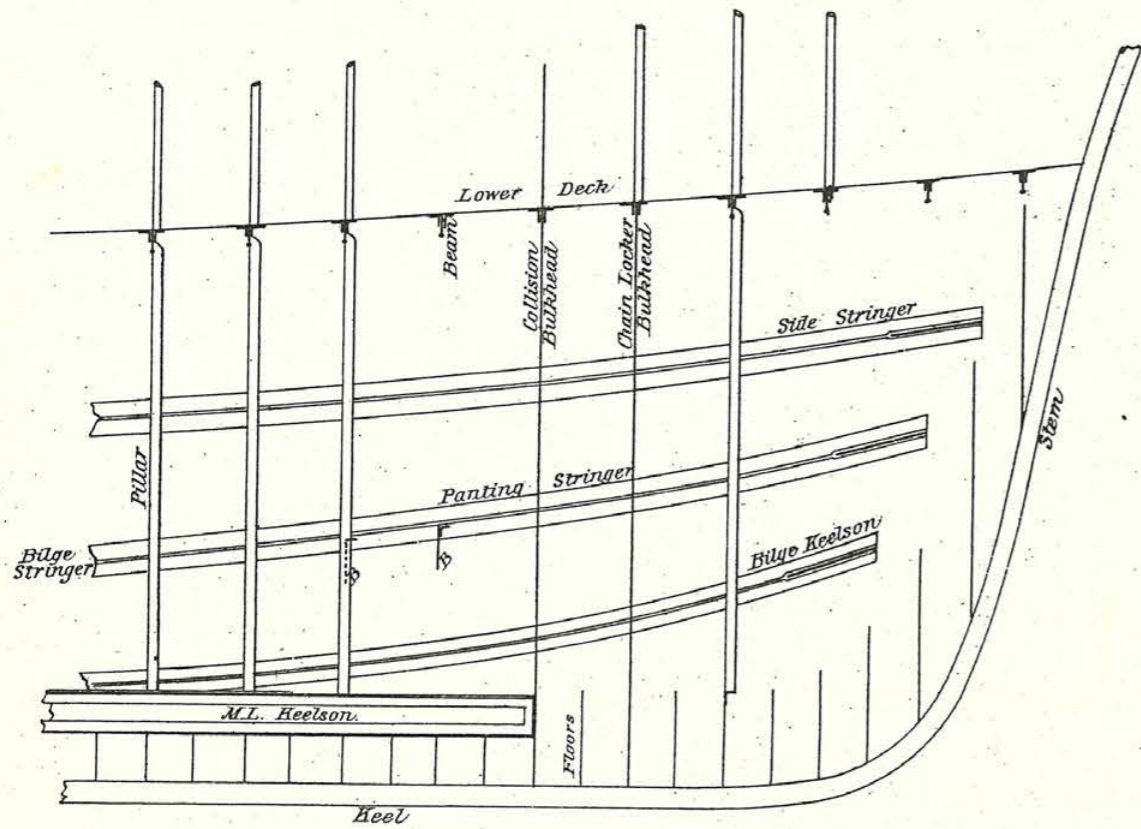


FIG. 2.
PLAN.

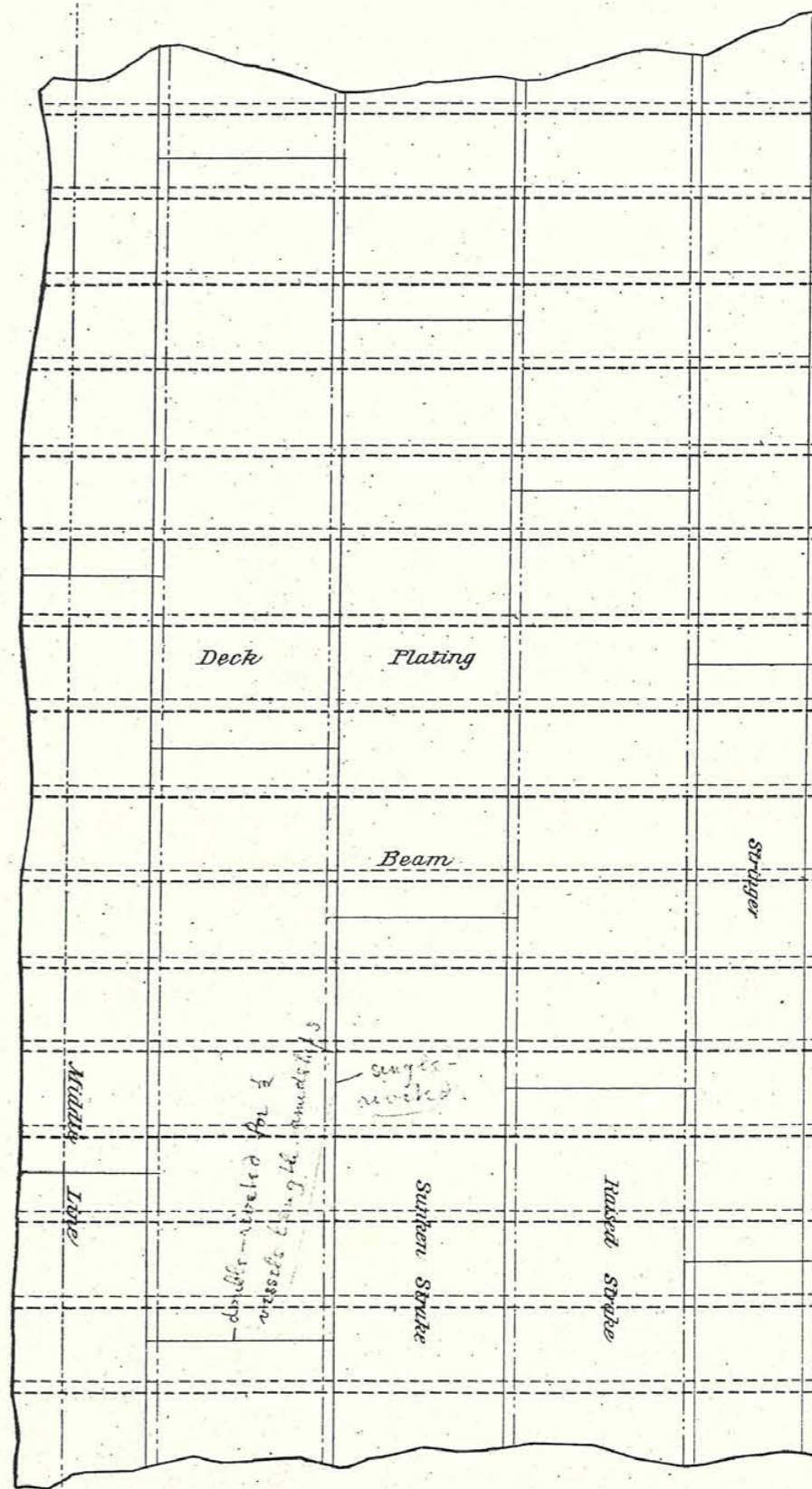
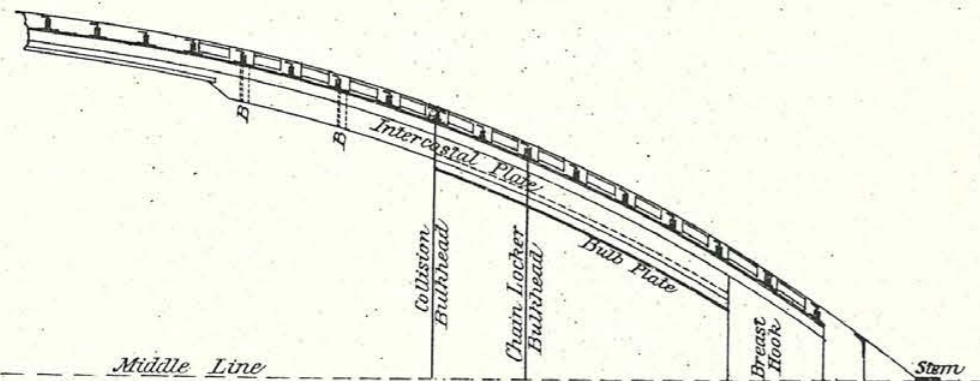


FIG. 2.

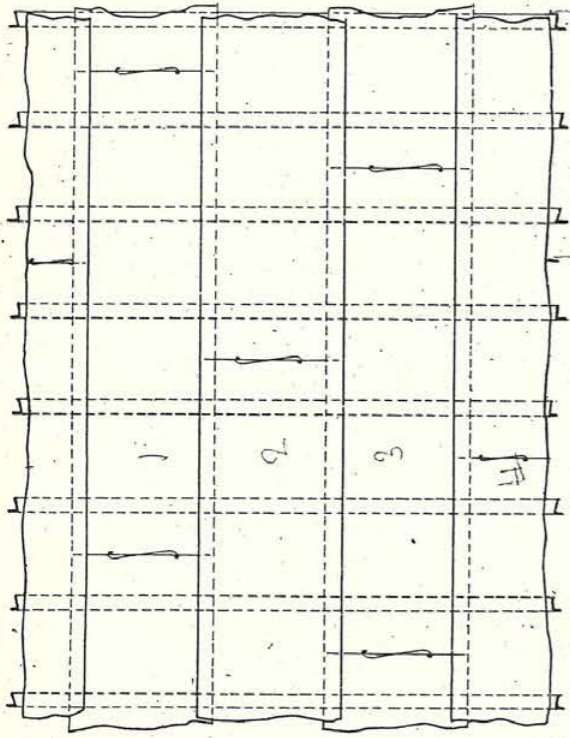


FIG. 4.

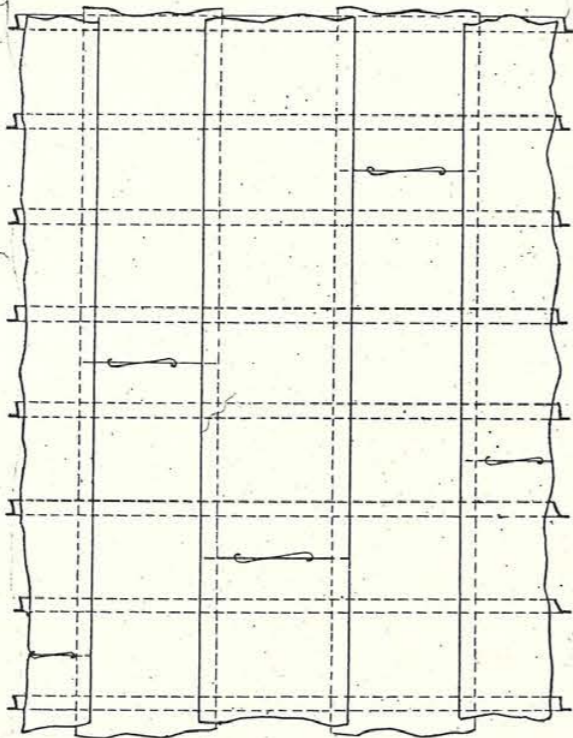


FIG. 1.

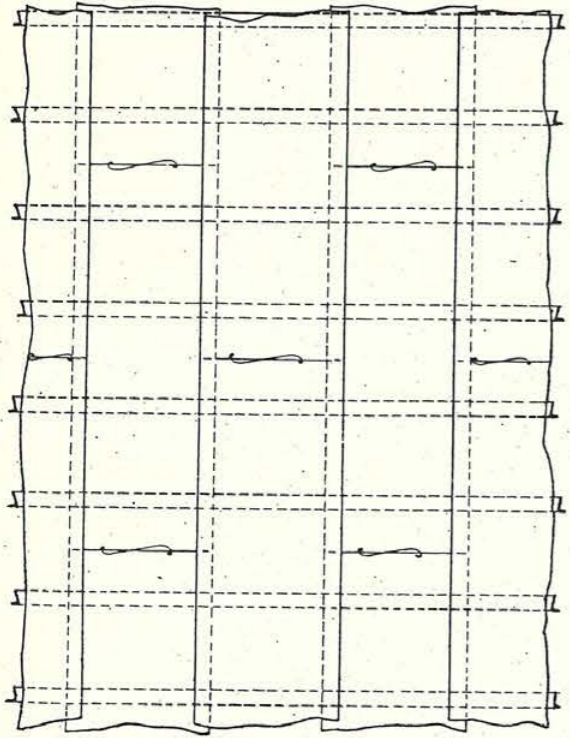
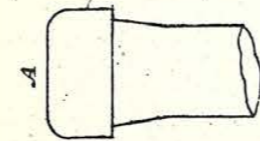
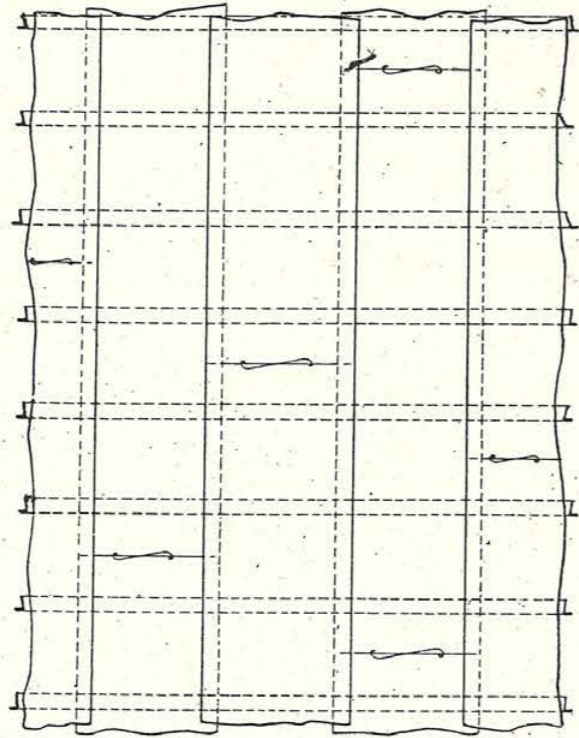
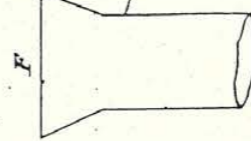


FIG. 3.



ordinary plan shaped



flush



snap-punch

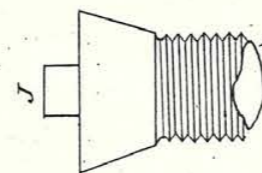
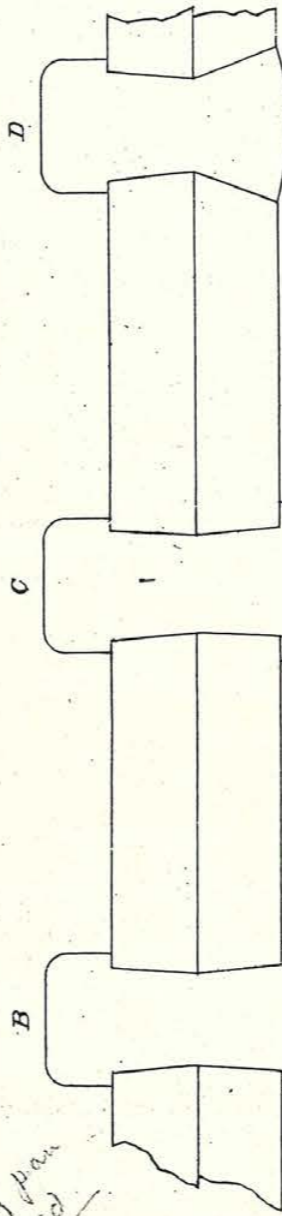


Plate XXIX

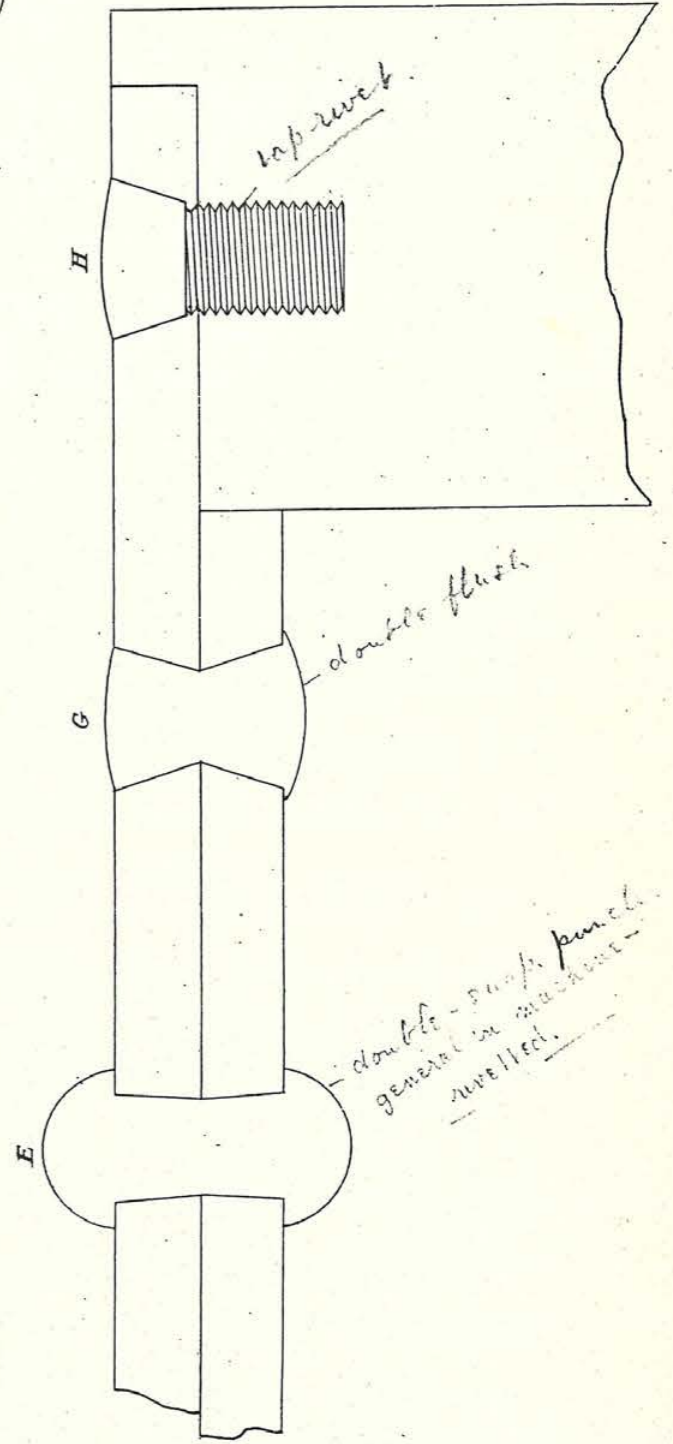
lap-rivet



flush countersunk

snap-punch

Boston punch
Common term for



lap-rivet

double flush

double-snap punch
general in machine-
riveted.

FIG. 1.

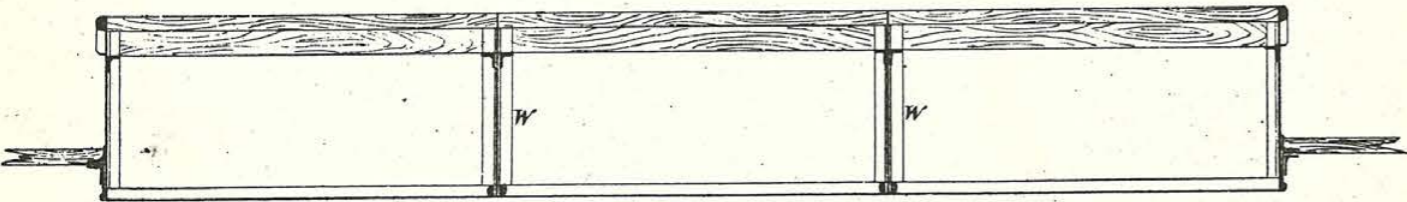


FIG. 2.

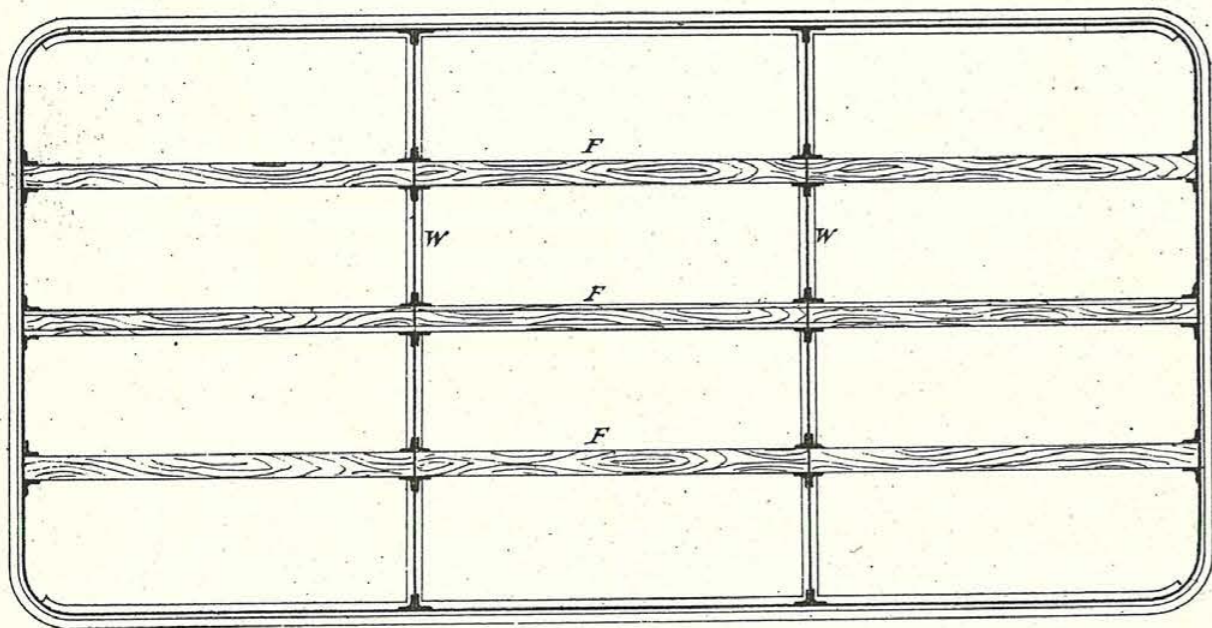


FIG. 3.

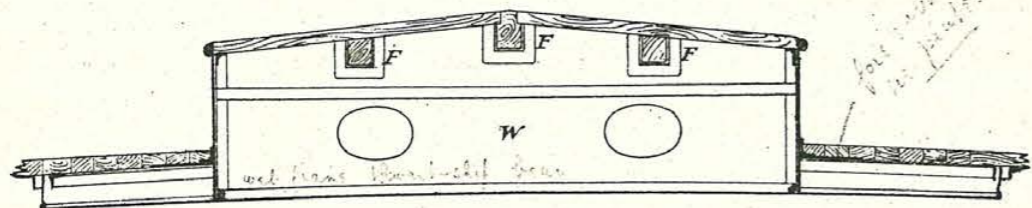


FIG. 1.

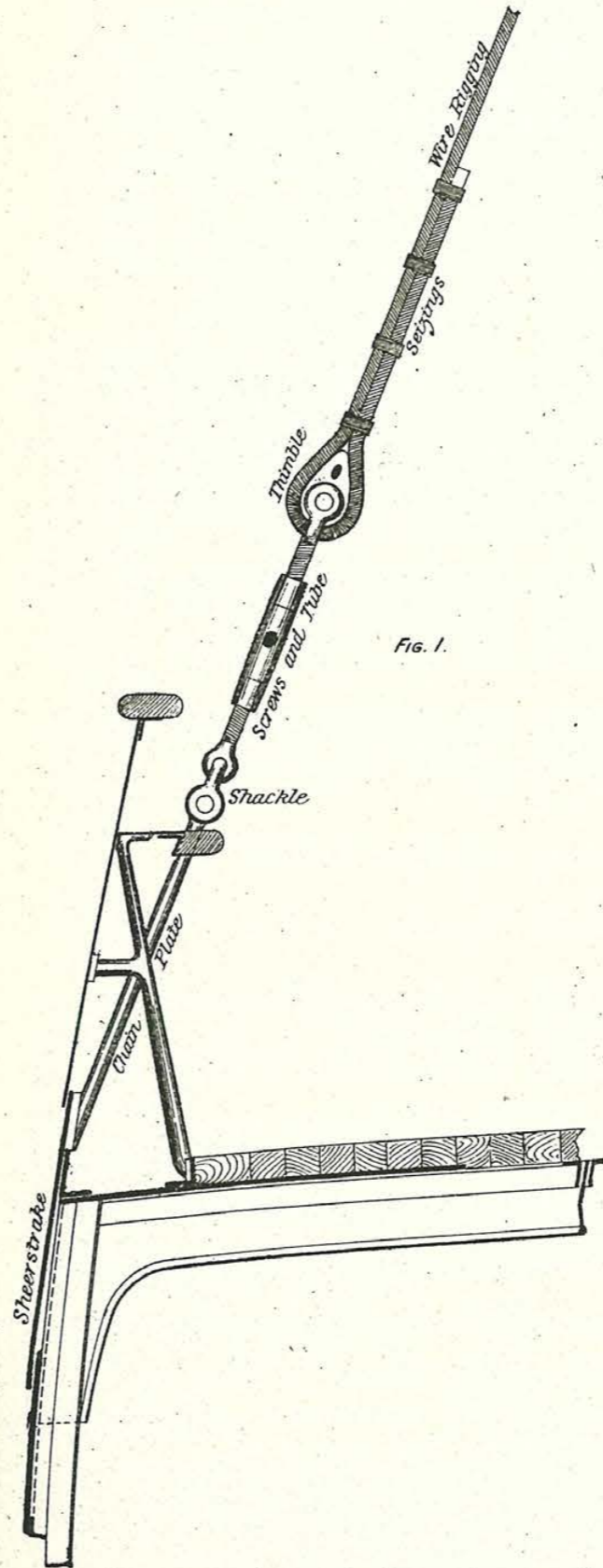
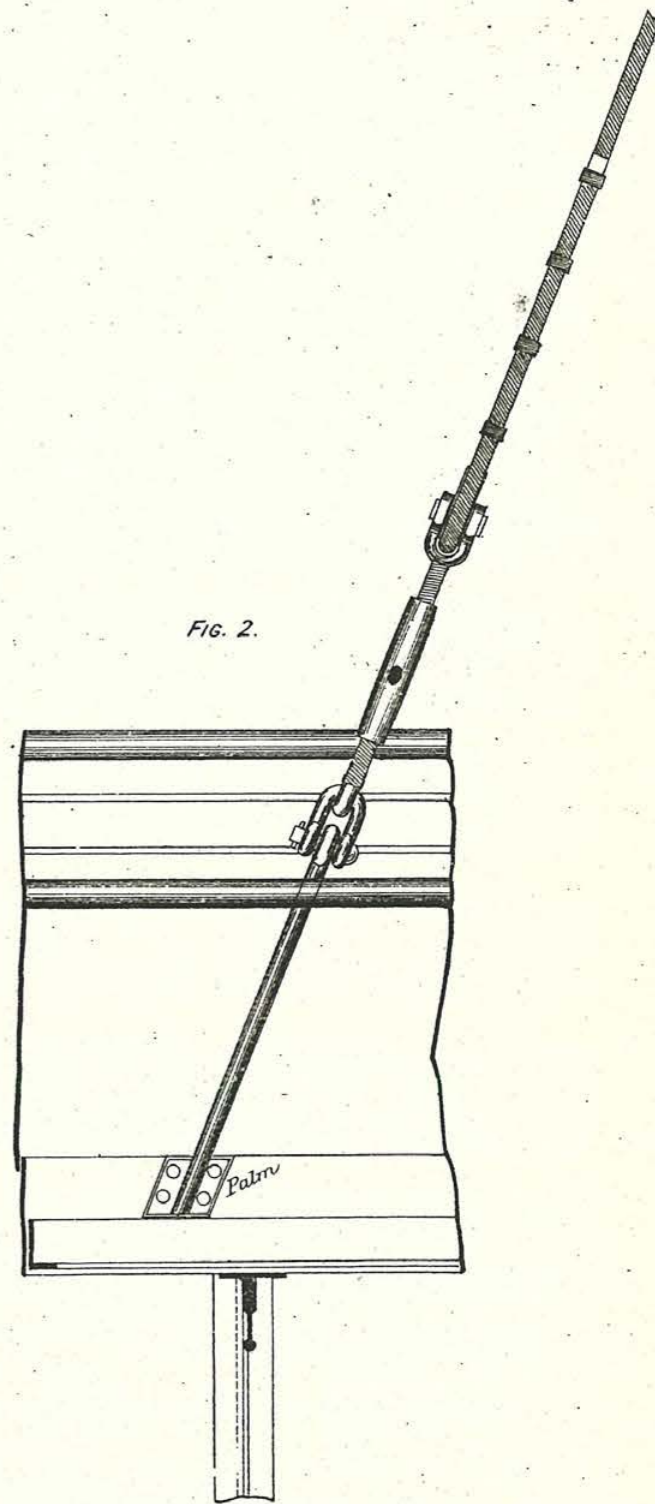
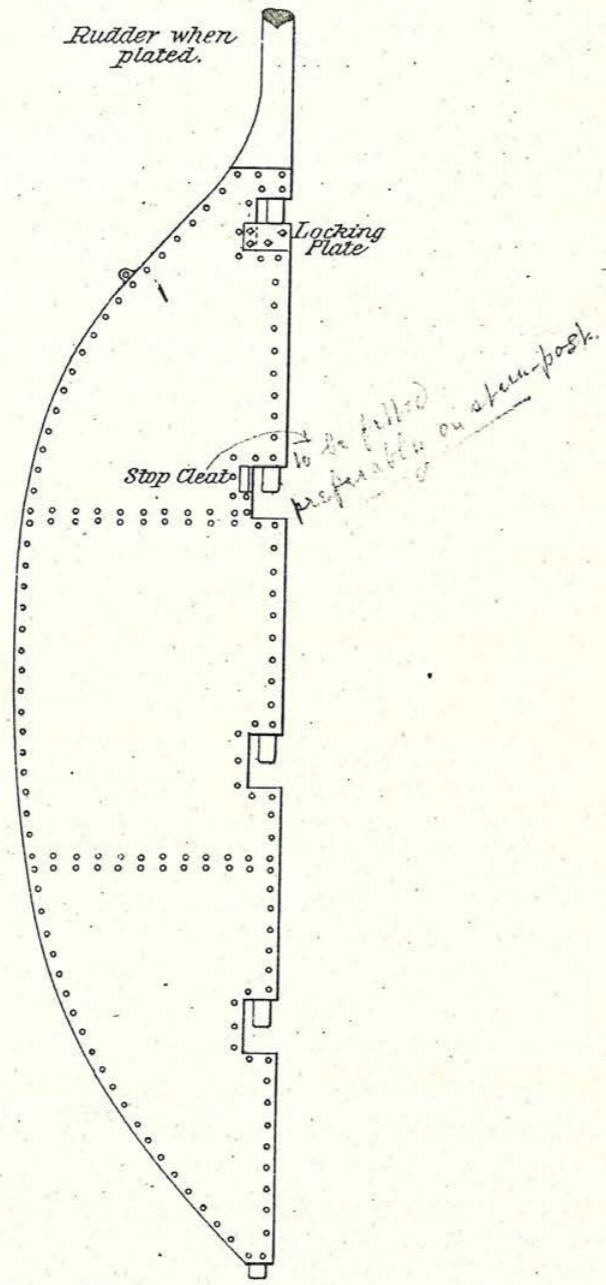
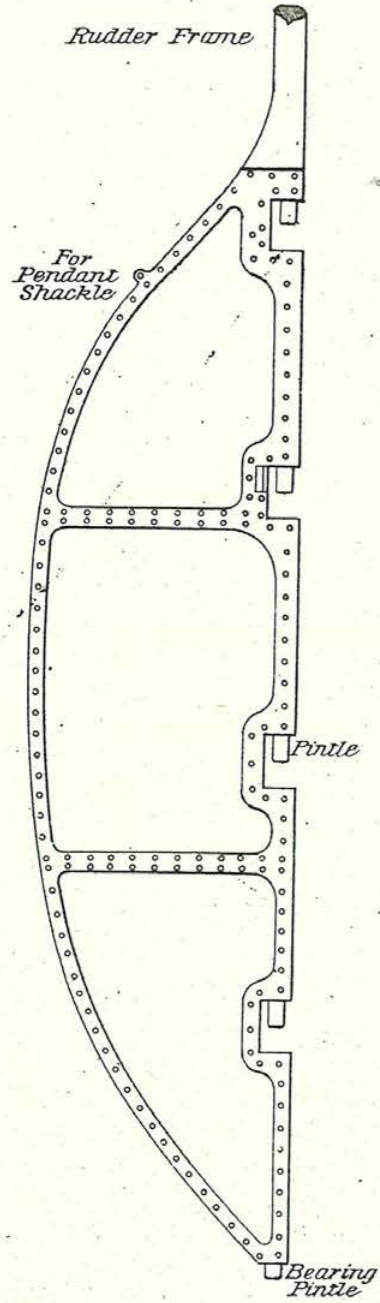


FIG. 2.

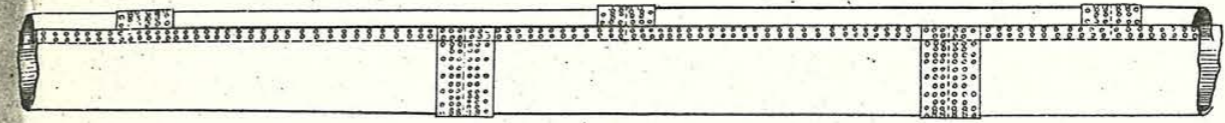




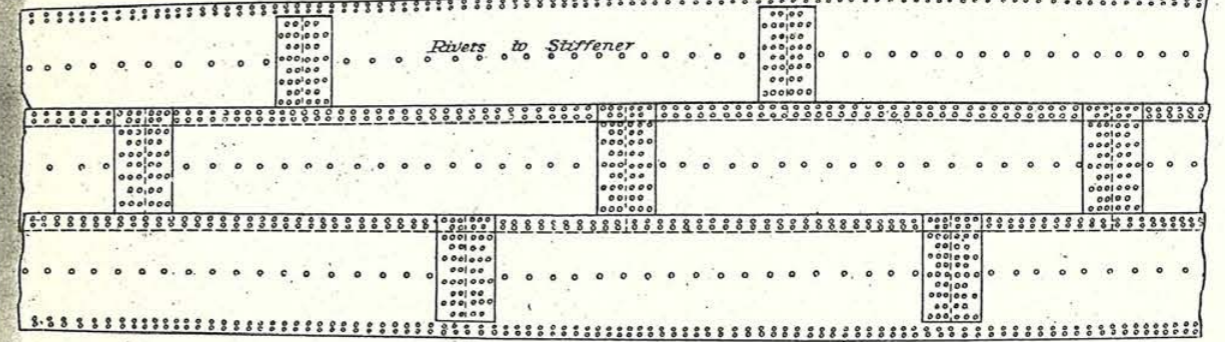
LOWER MAST.

FIG. 1.

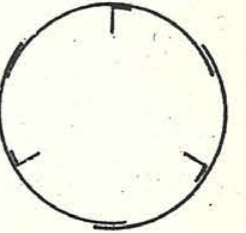
Elevation.



Expanⁿ outside.



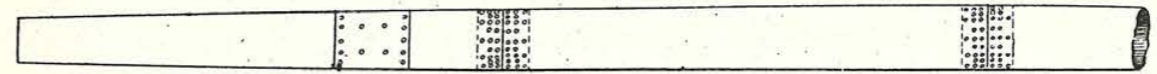
Section.



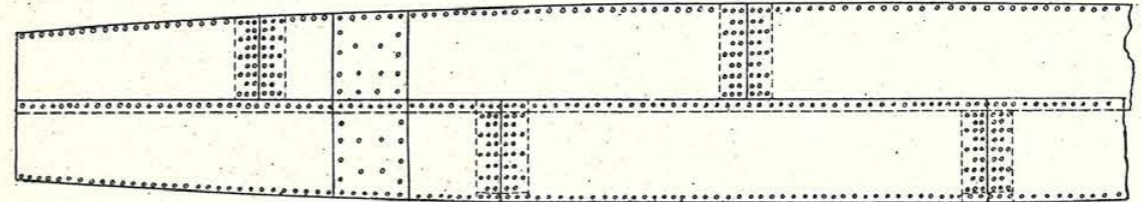
TOPMAST.

FIG. 2.

Elevation.



Expanⁿ outside.



Section.

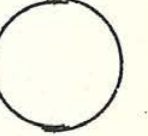
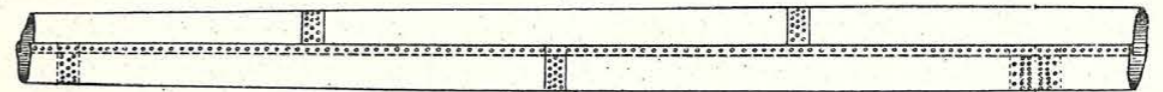


FIG. 3.

YARD.



Section.

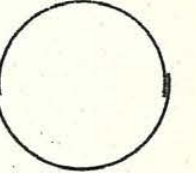
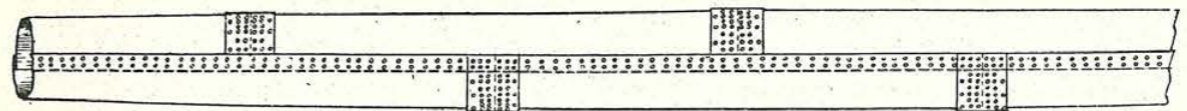
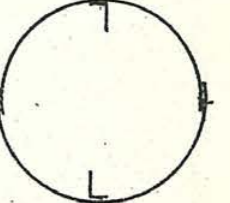


FIG. 4.

BOWSPRIT.



Section.



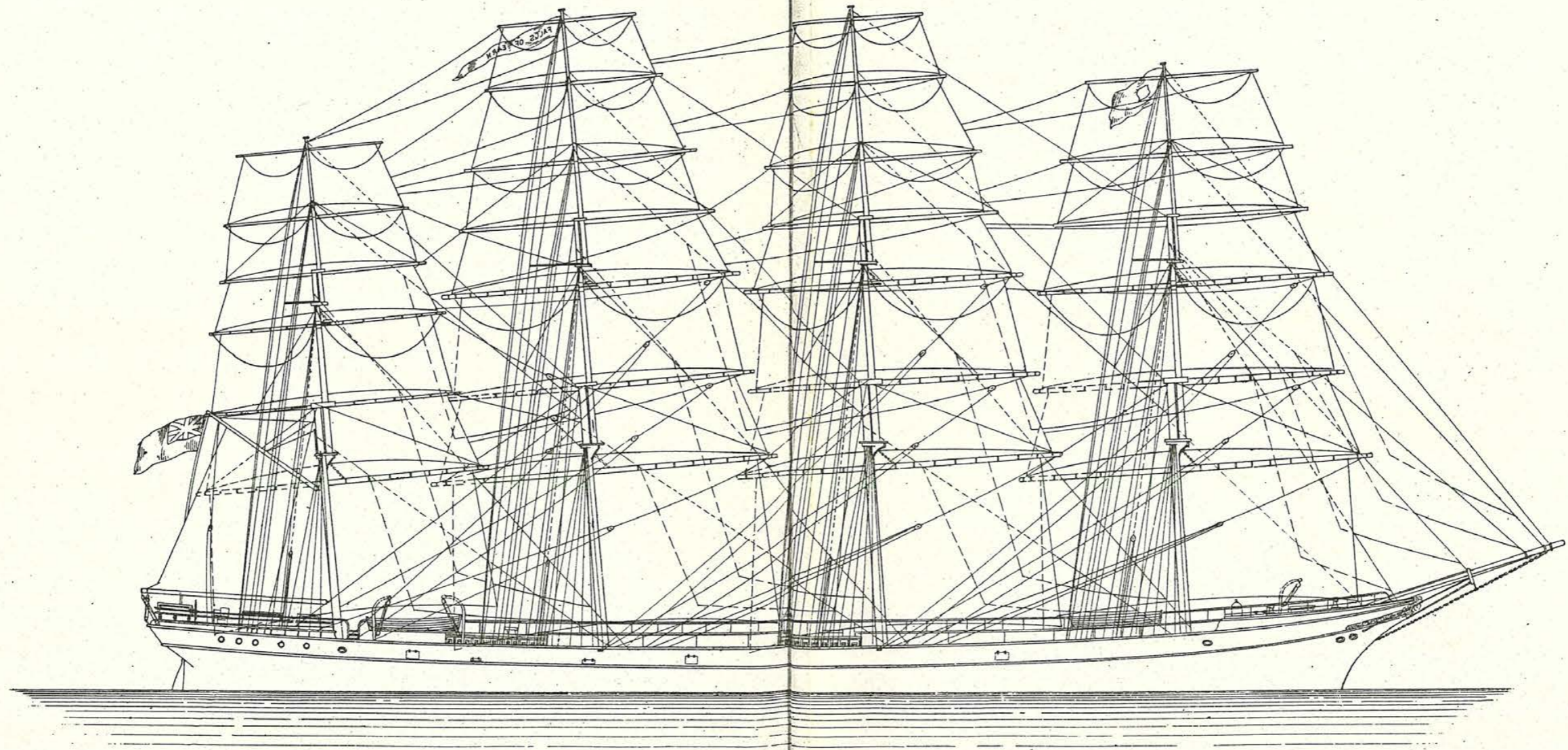


Fig. 1.

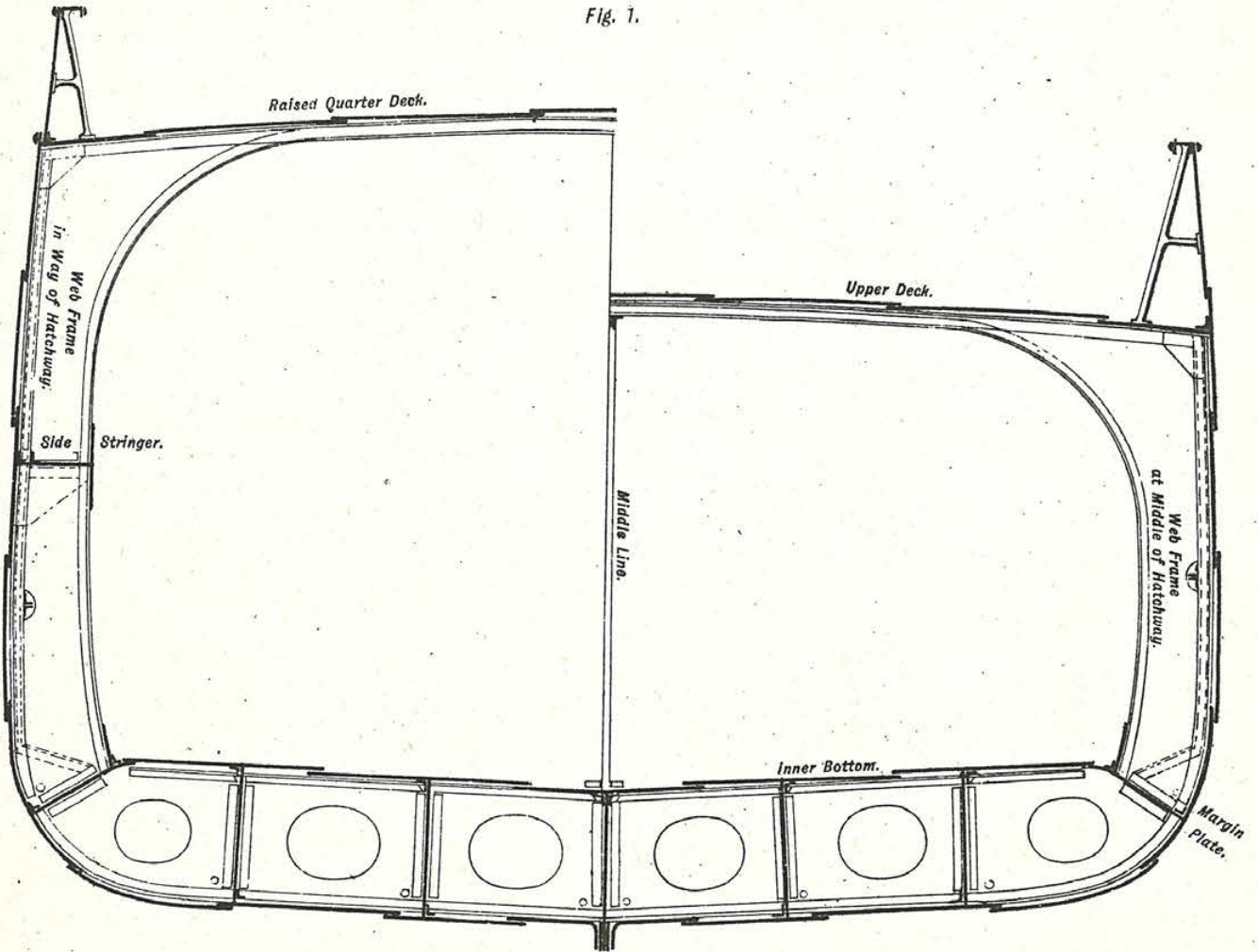
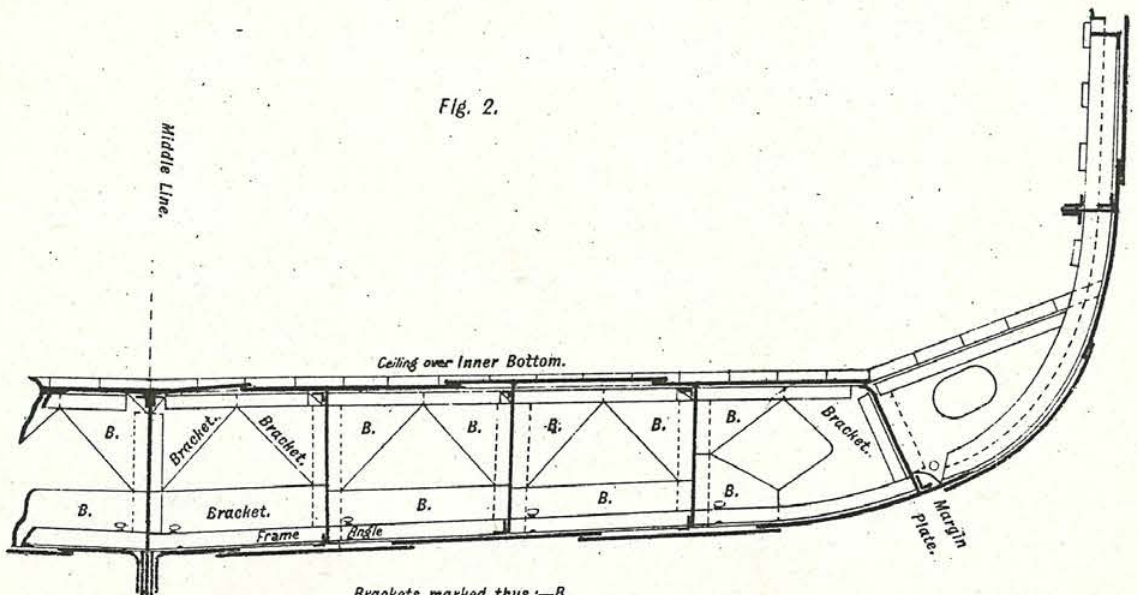


Fig. 2.



Brackets marked thus :-B.

Fig. 1.

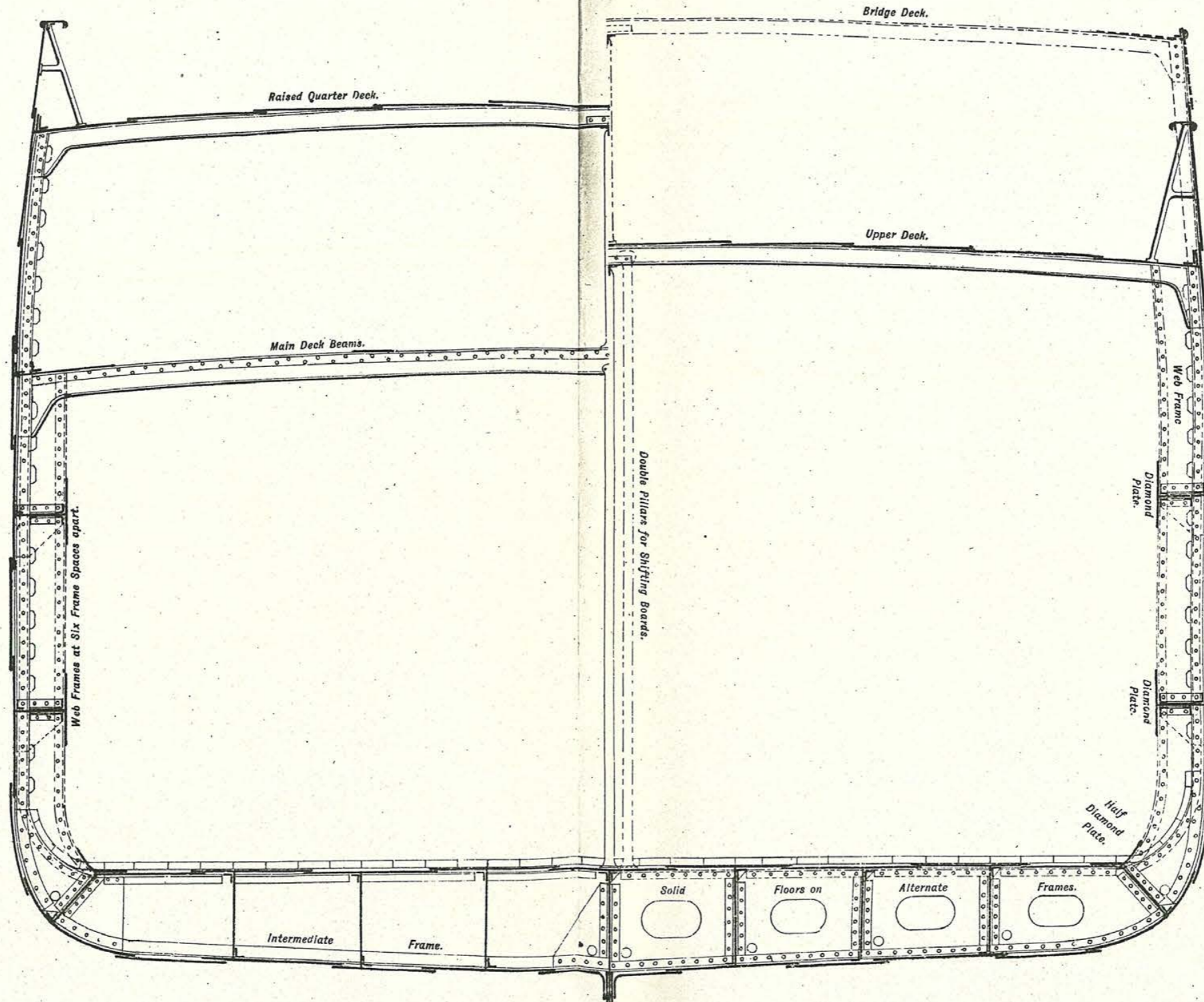


Fig. 3.

Diamond Plate at intersection of Web Frame and Side Stringer.

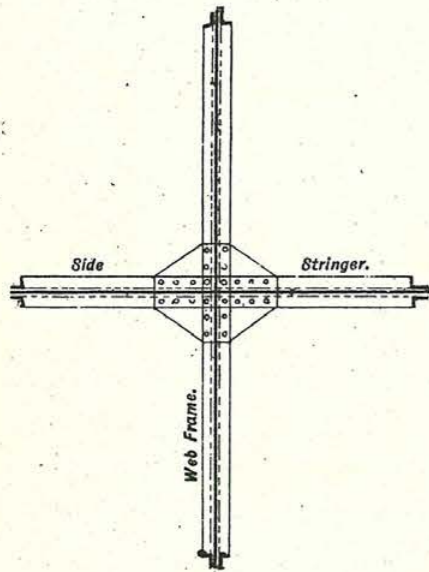
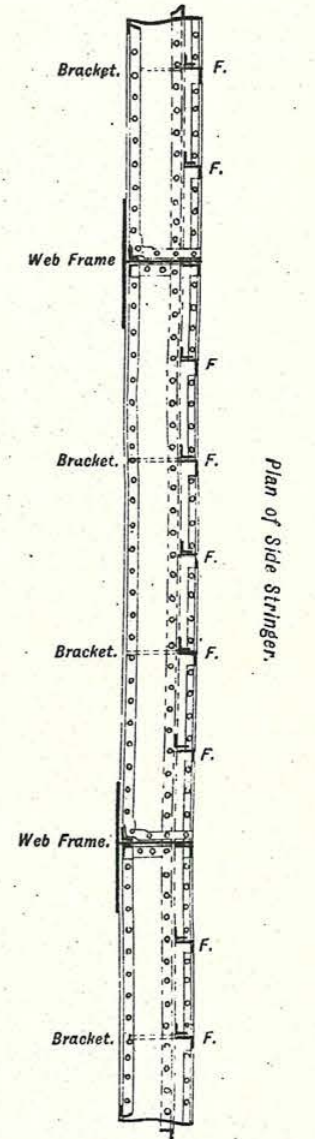


Fig. 2.



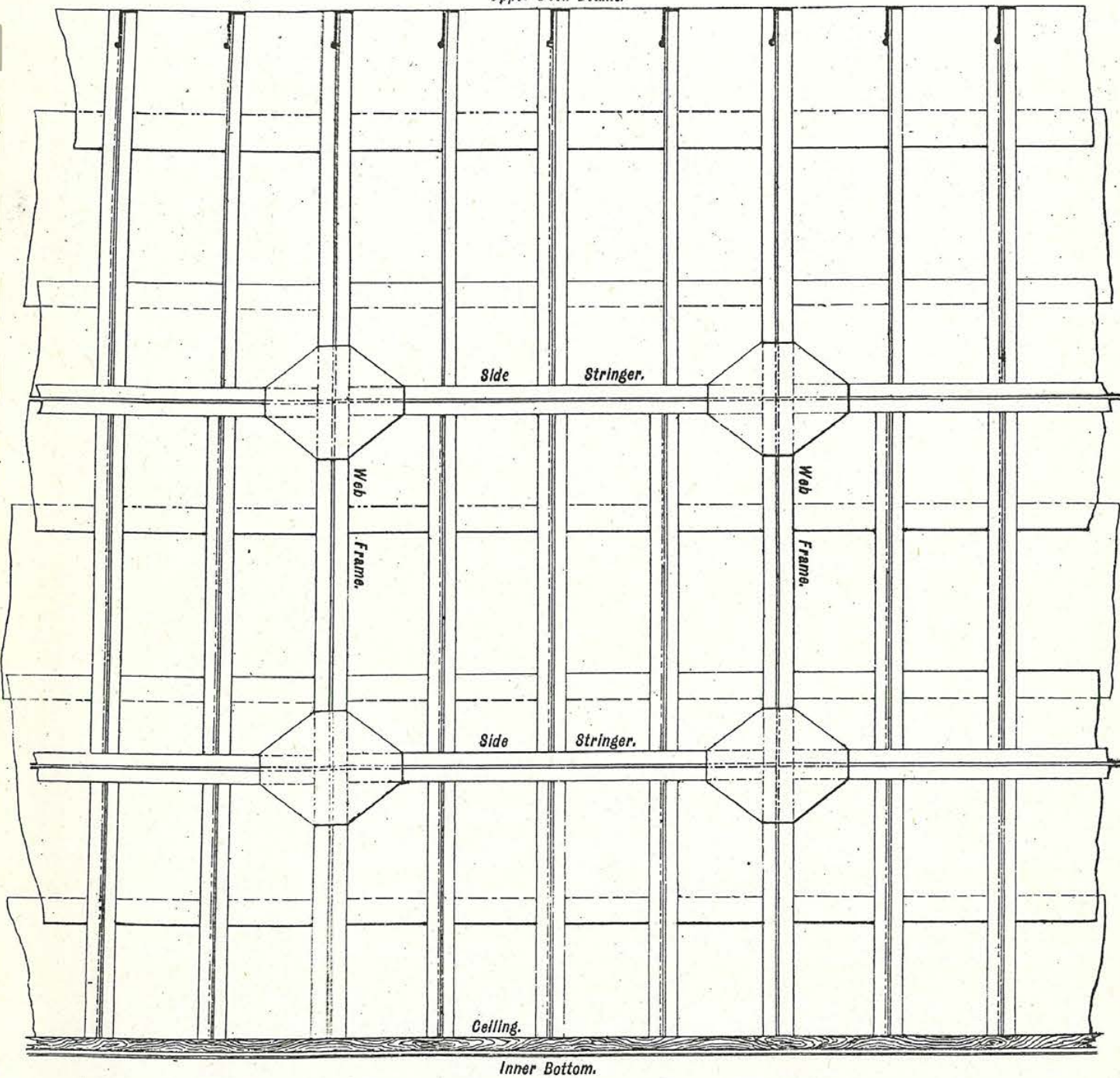
Plan of Side Stringer.

Ordinary Frames marked:—F.

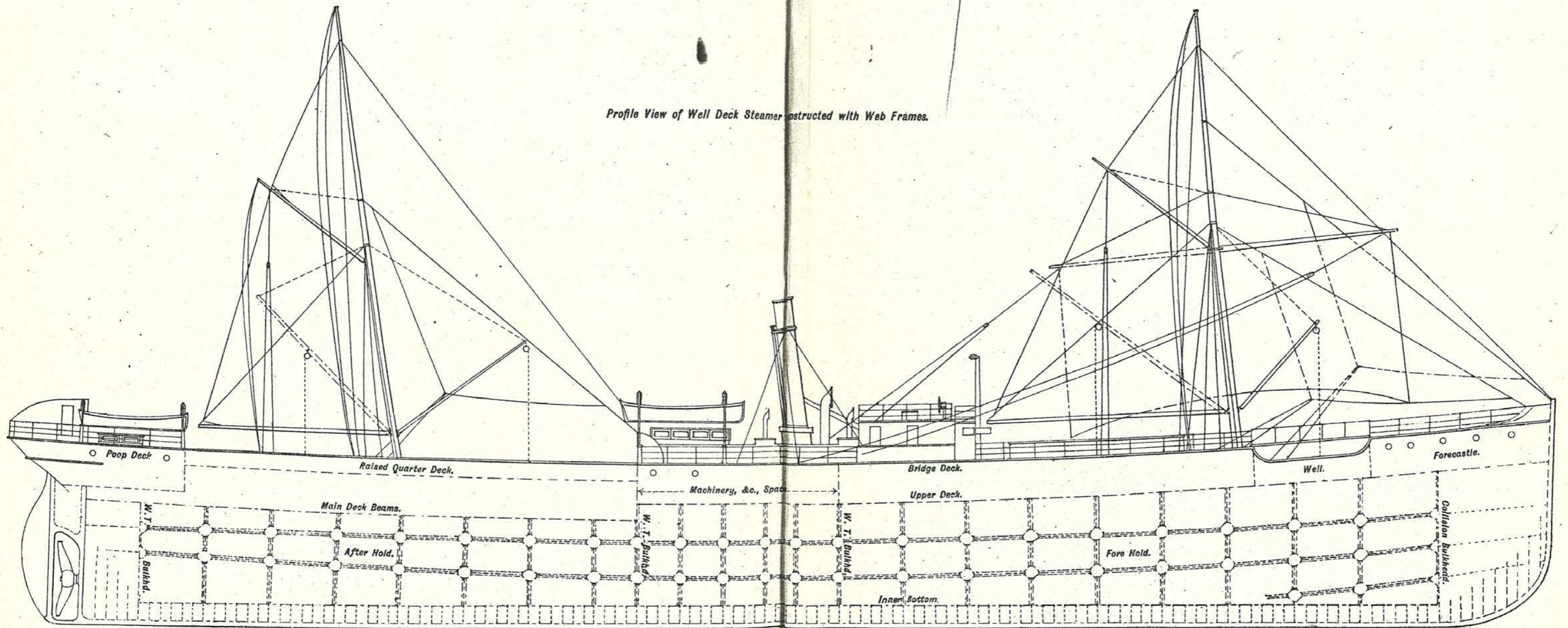
Plate XXXVII

ELEVATIONS. SHOWING WEB FRAMES, &c., IN MACHINERY SPACE.

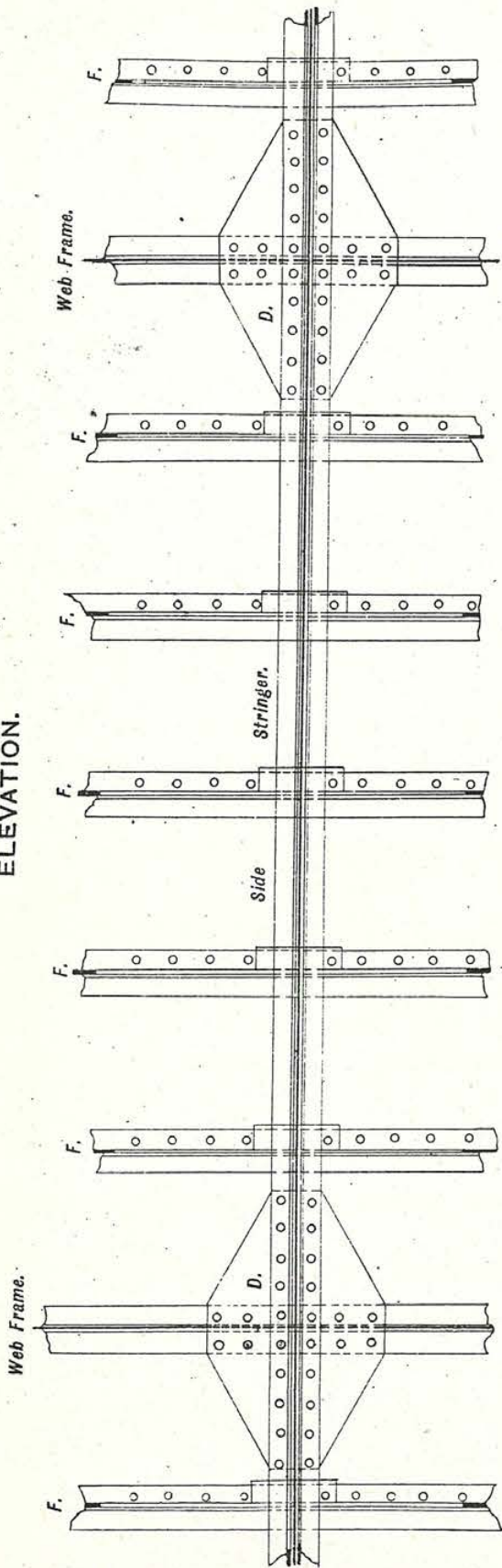
Upper Deck Beams.



Profile View of Well Deck Steamer constructed with Web Frames.



ELEVATION.



F.F. Ordinary Frame.
D.D. Diamond Plates.

PLAN.



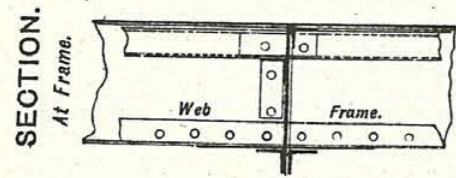
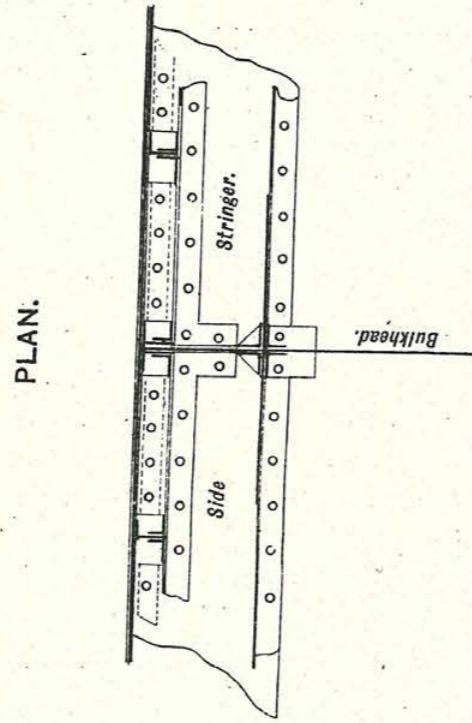
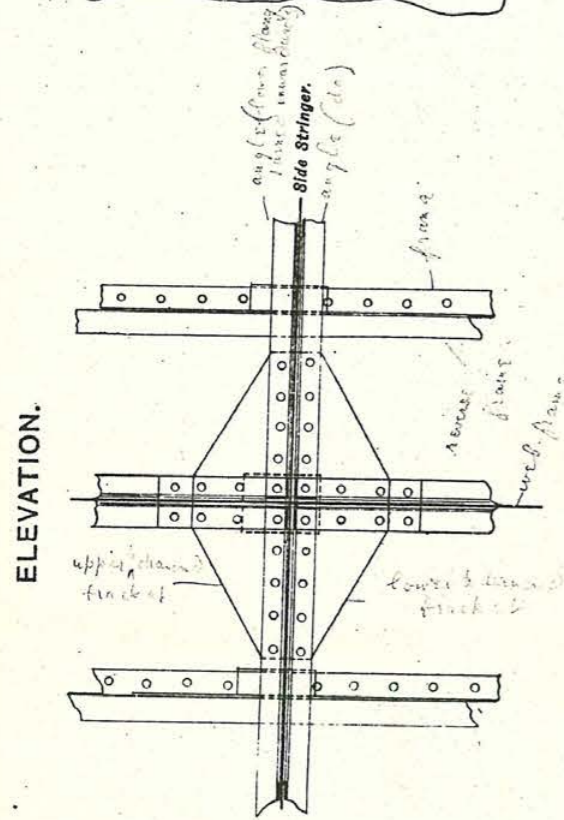
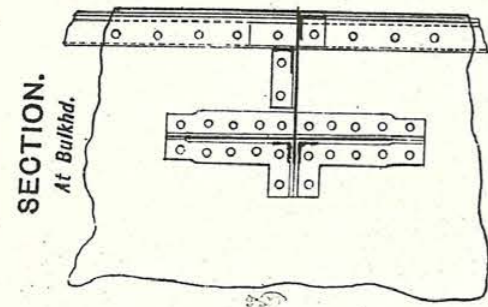


Fig. 2

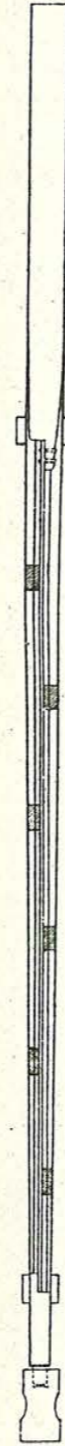


Fig. 1.

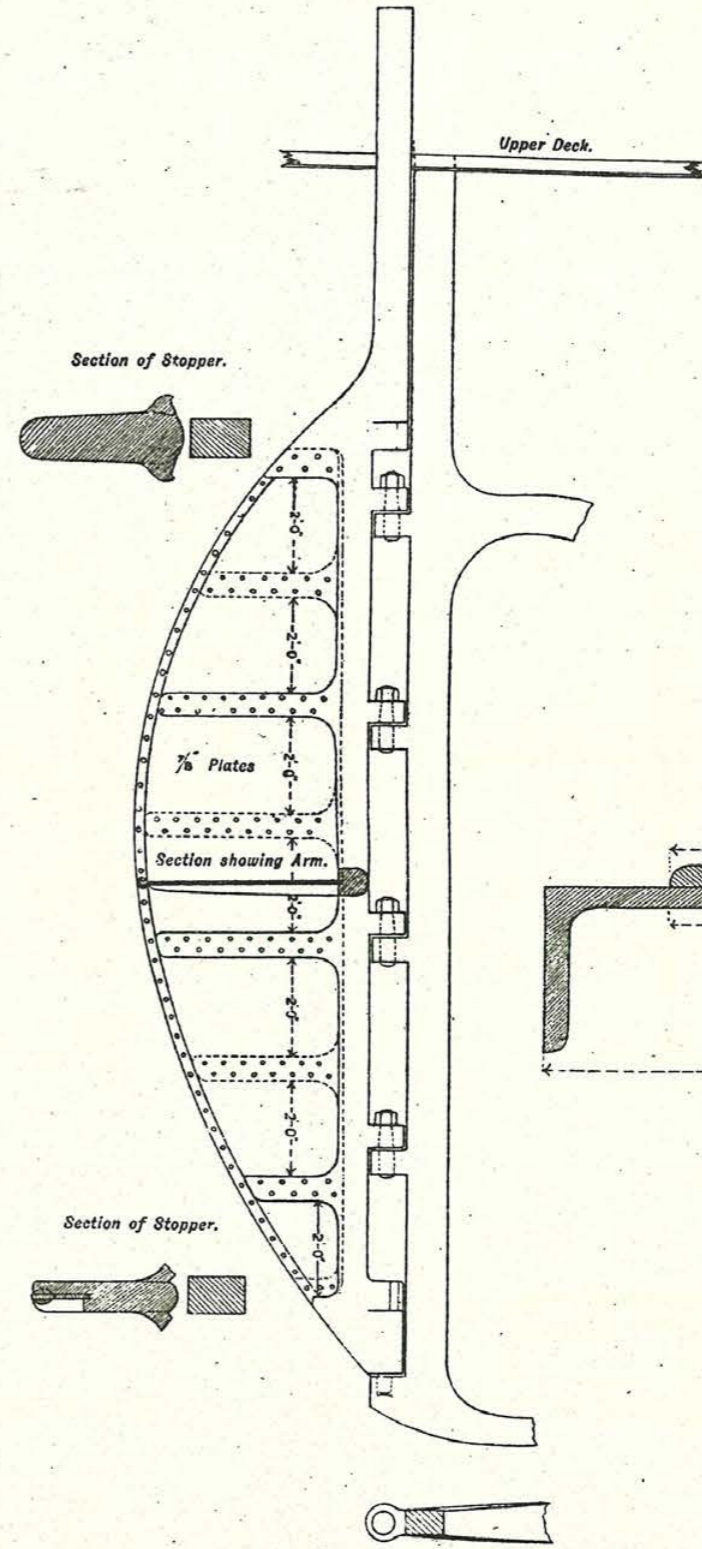
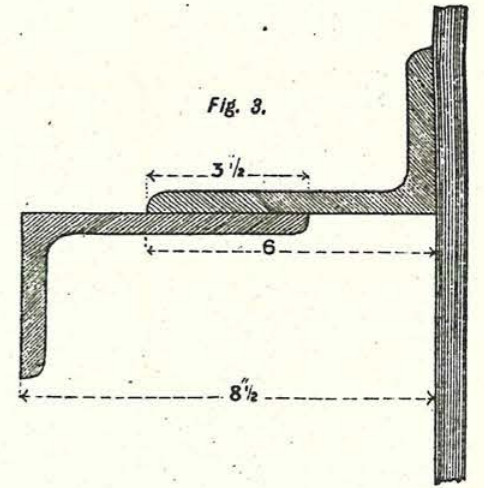
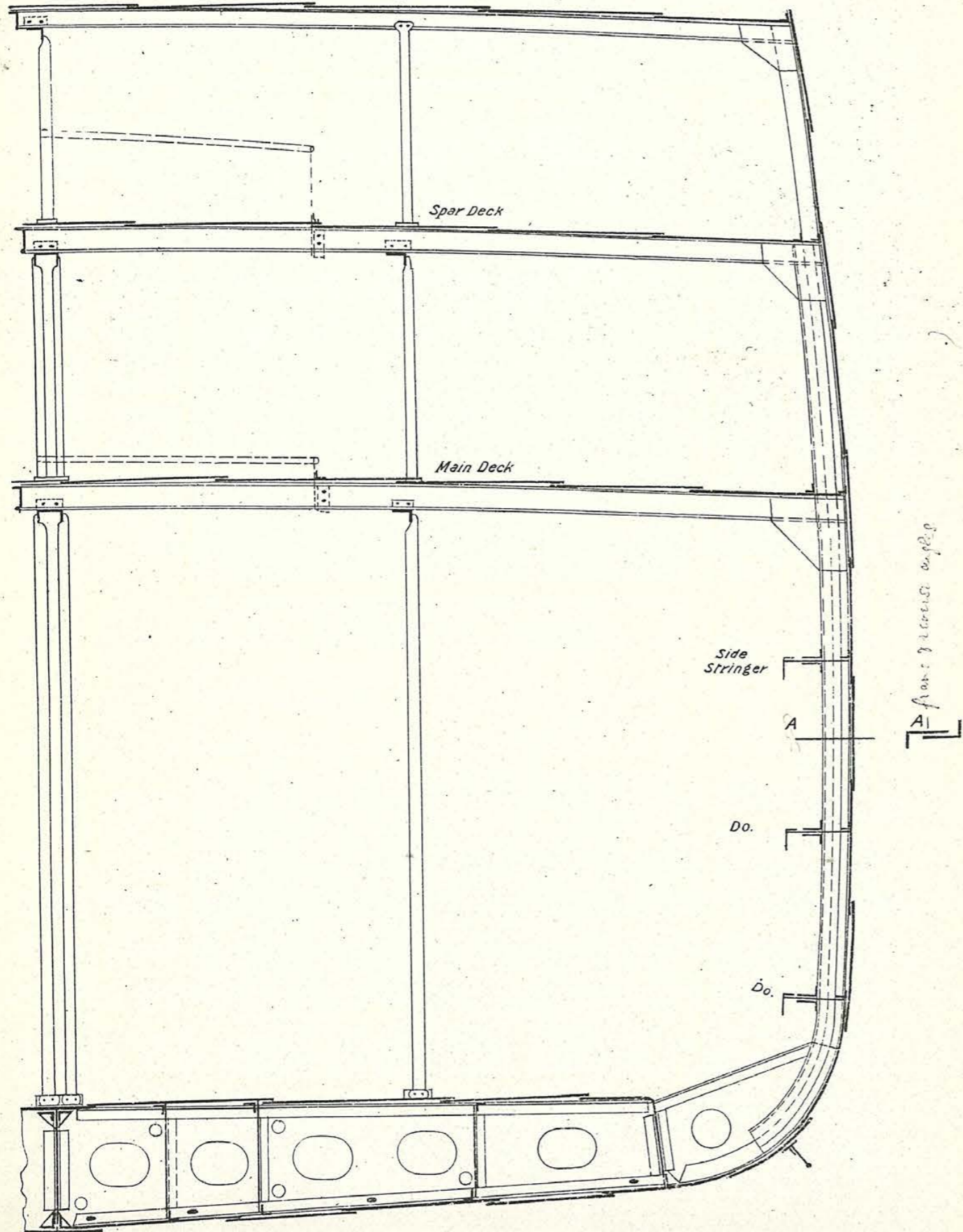


Fig. 3.

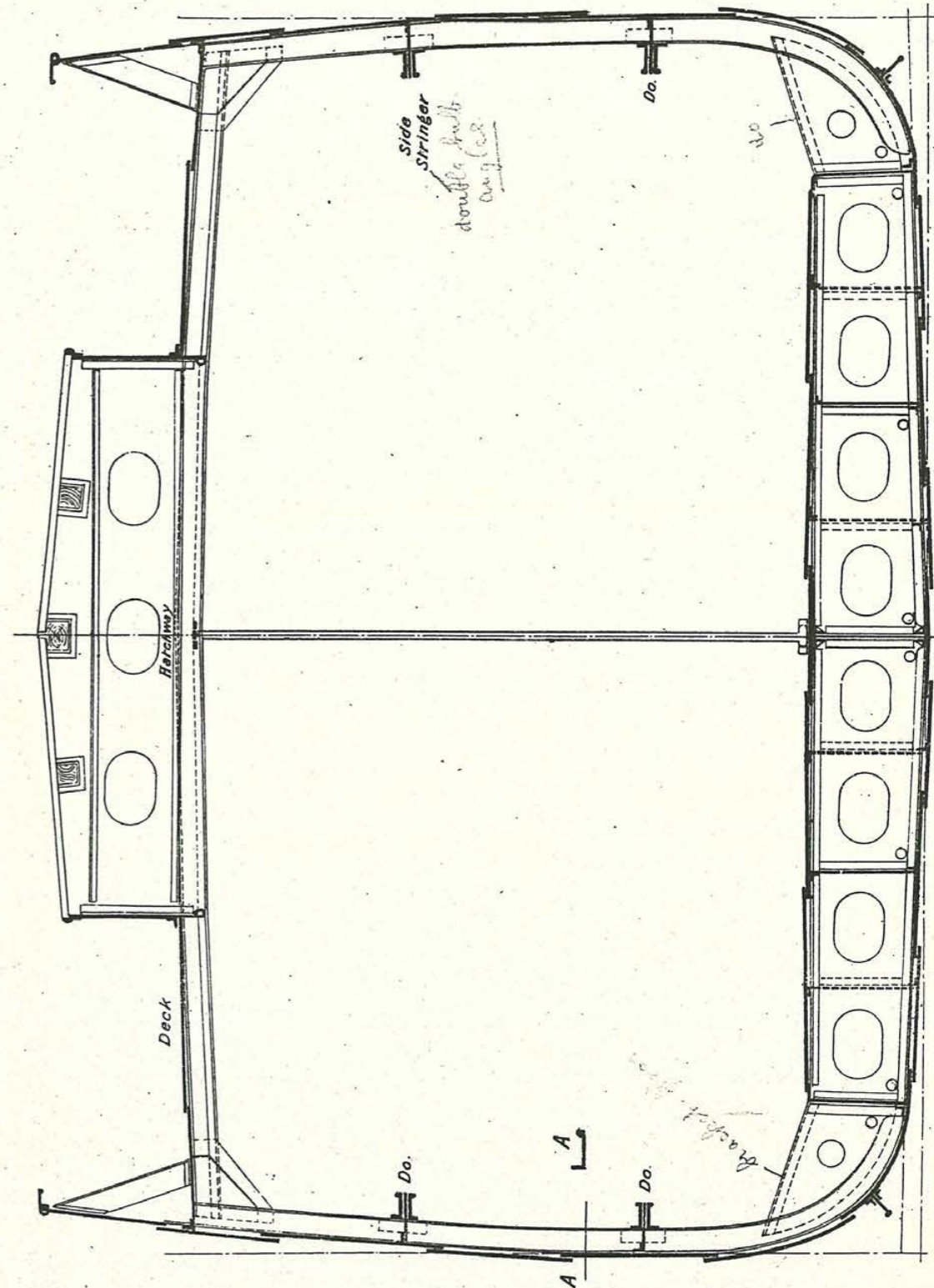


Midship Section of Vessel with Deep Framing
Bridge Deck.

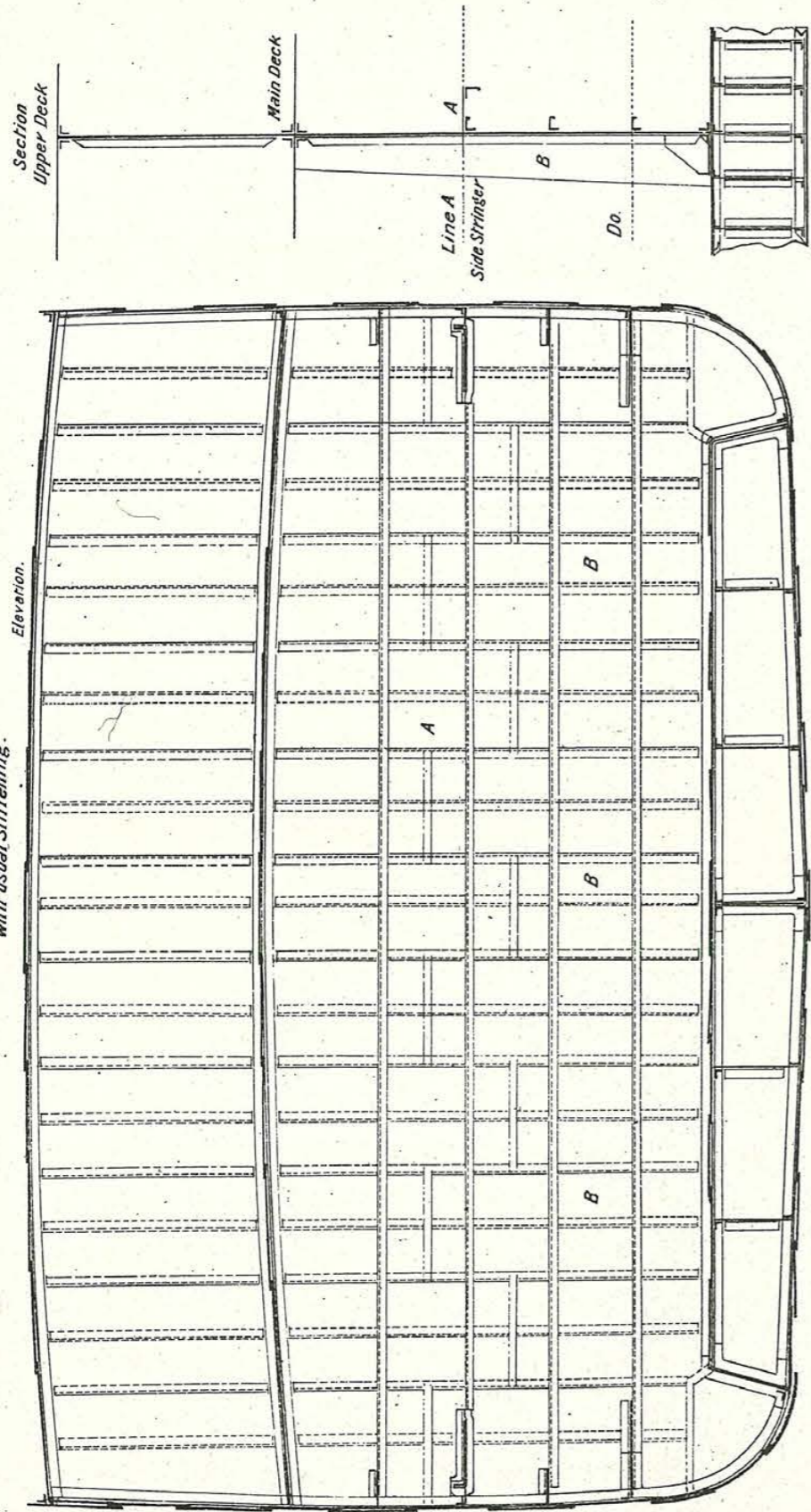


from transverse angle

Midship Section of Vessel with Bulb angle Frames

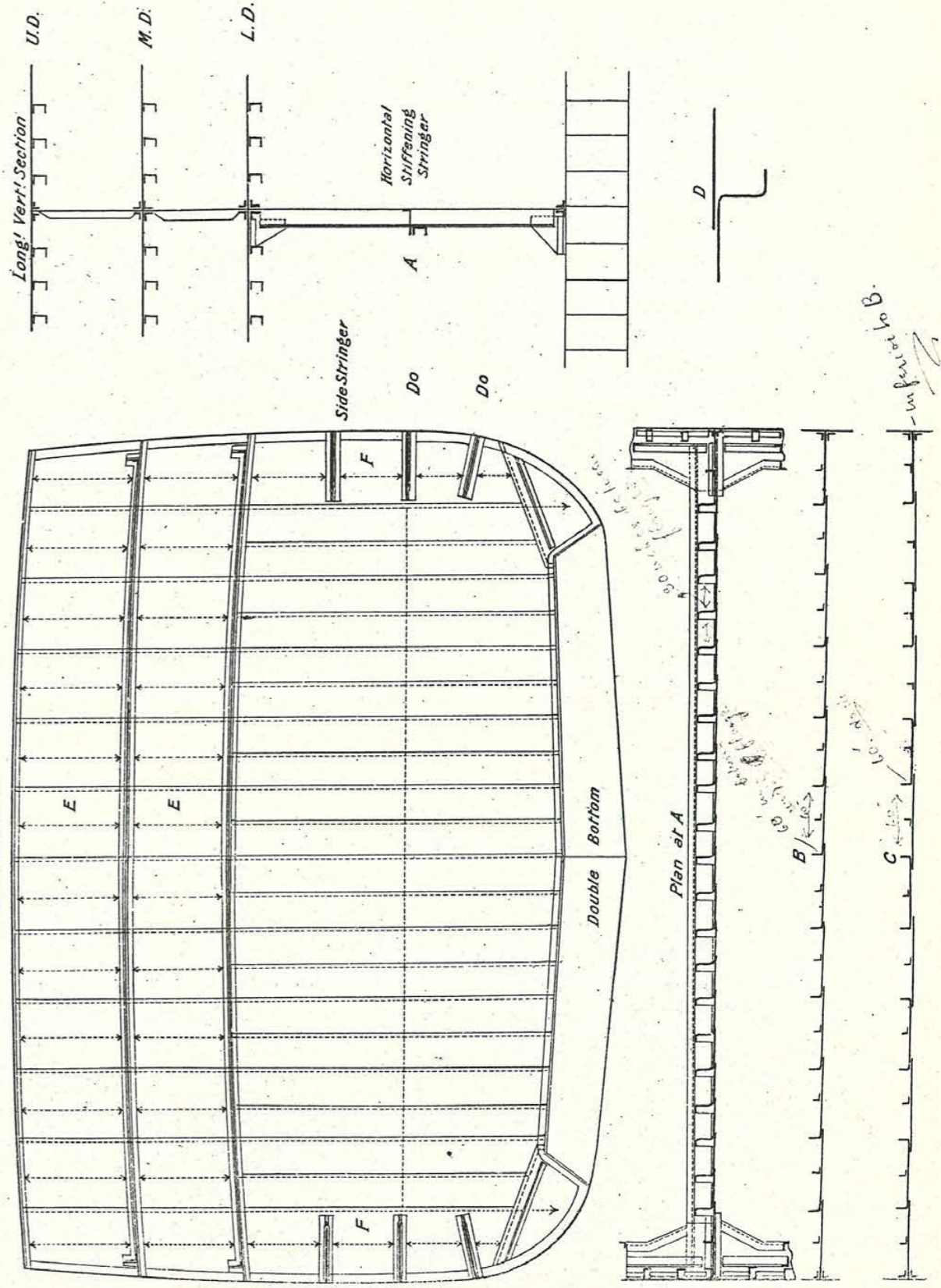


Transverse Watertight Bulkhead, with usual Stiffening.



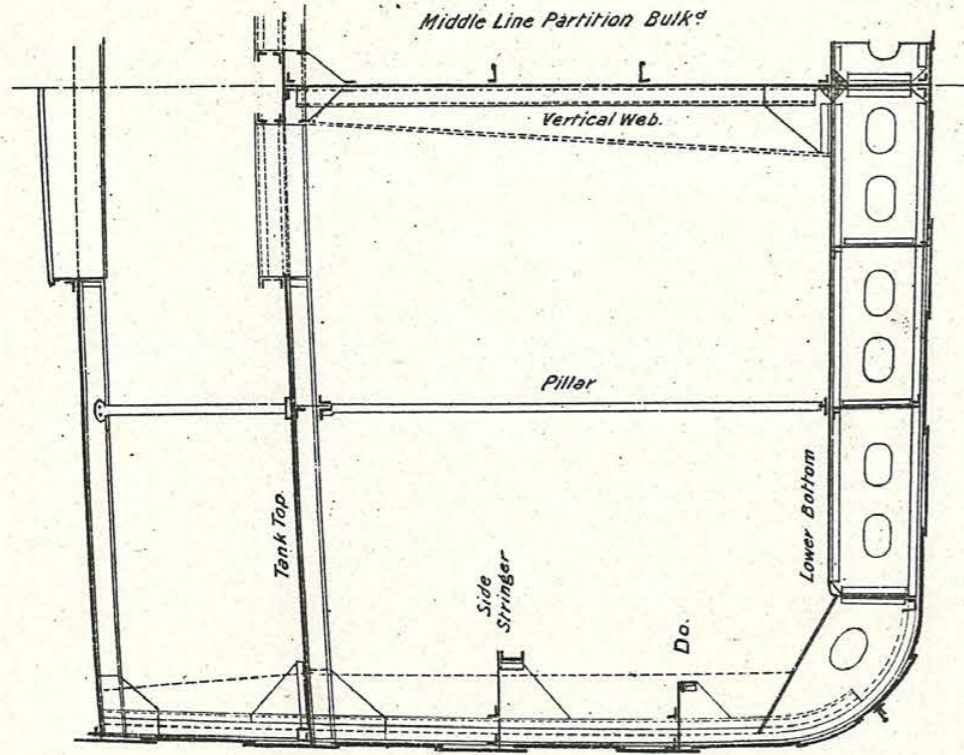
Transverse Watertight Bulkhead with Flanged Stiffening.

ELEVATION.

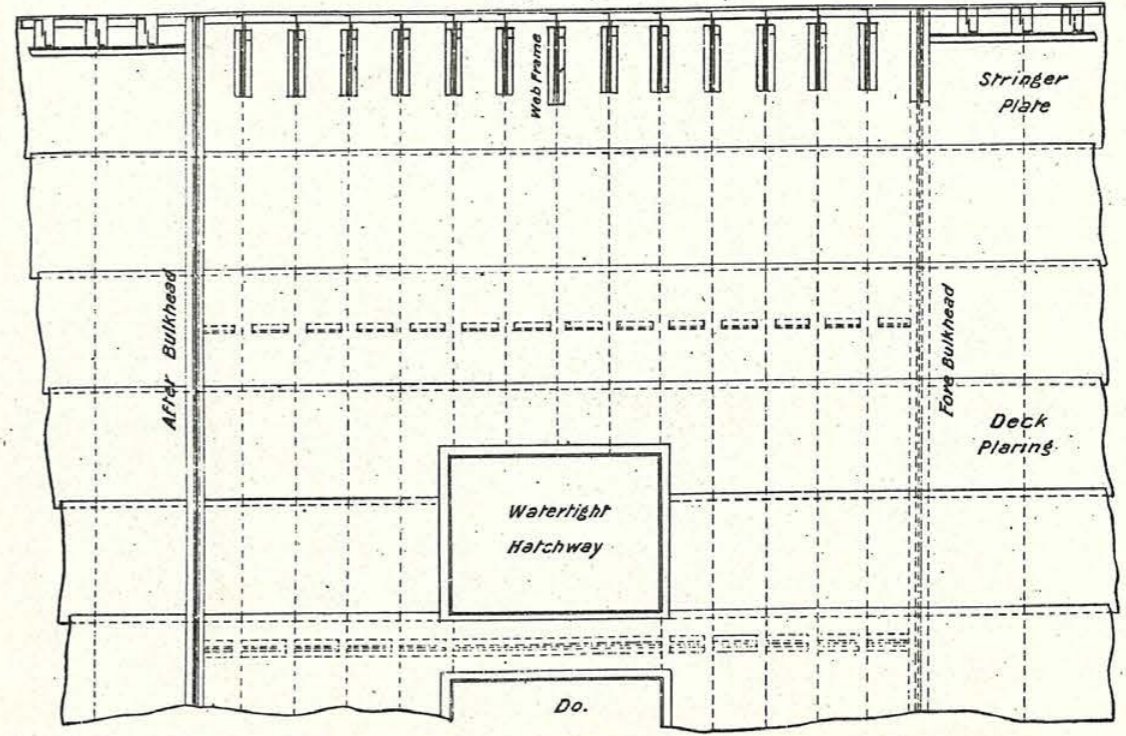


Stiffening of a Midship Deep Tank.

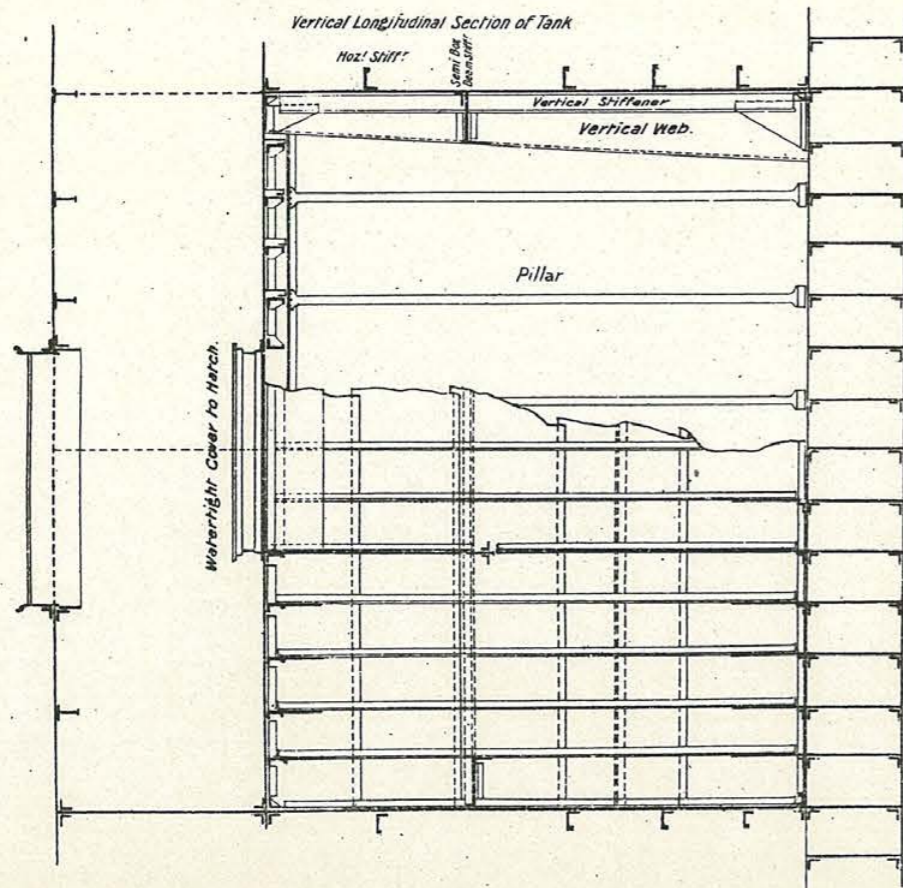
Half Transverse Section through Tank



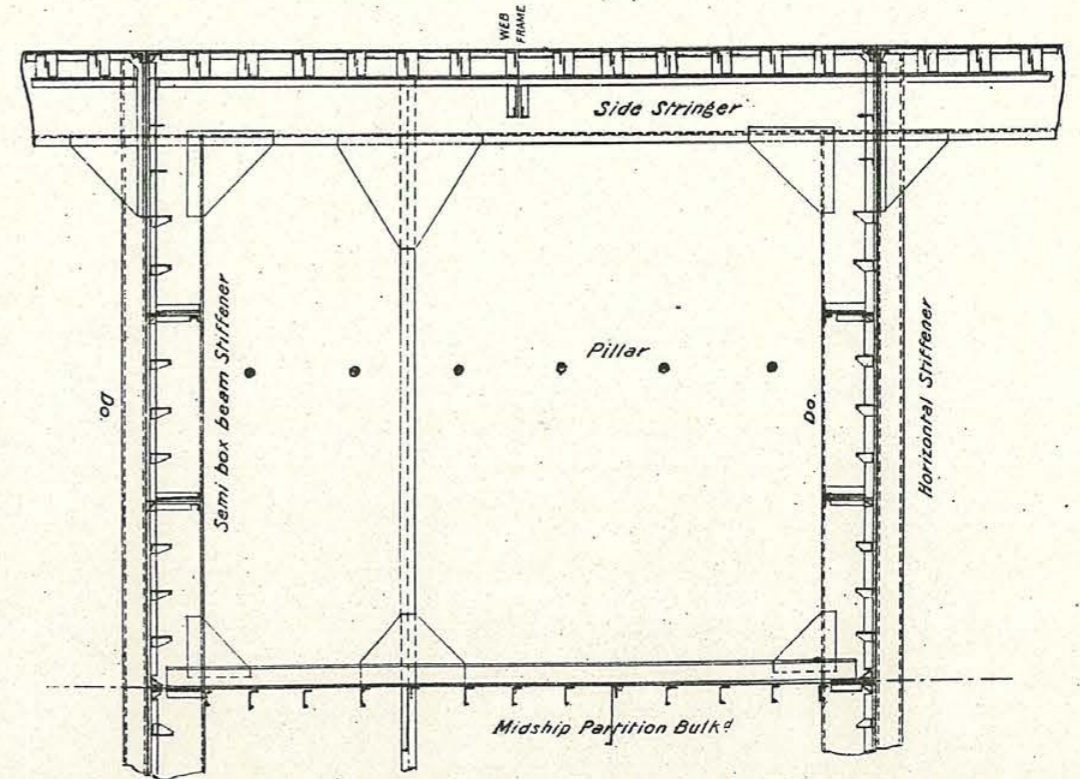
Plan of Top of Deep Tank



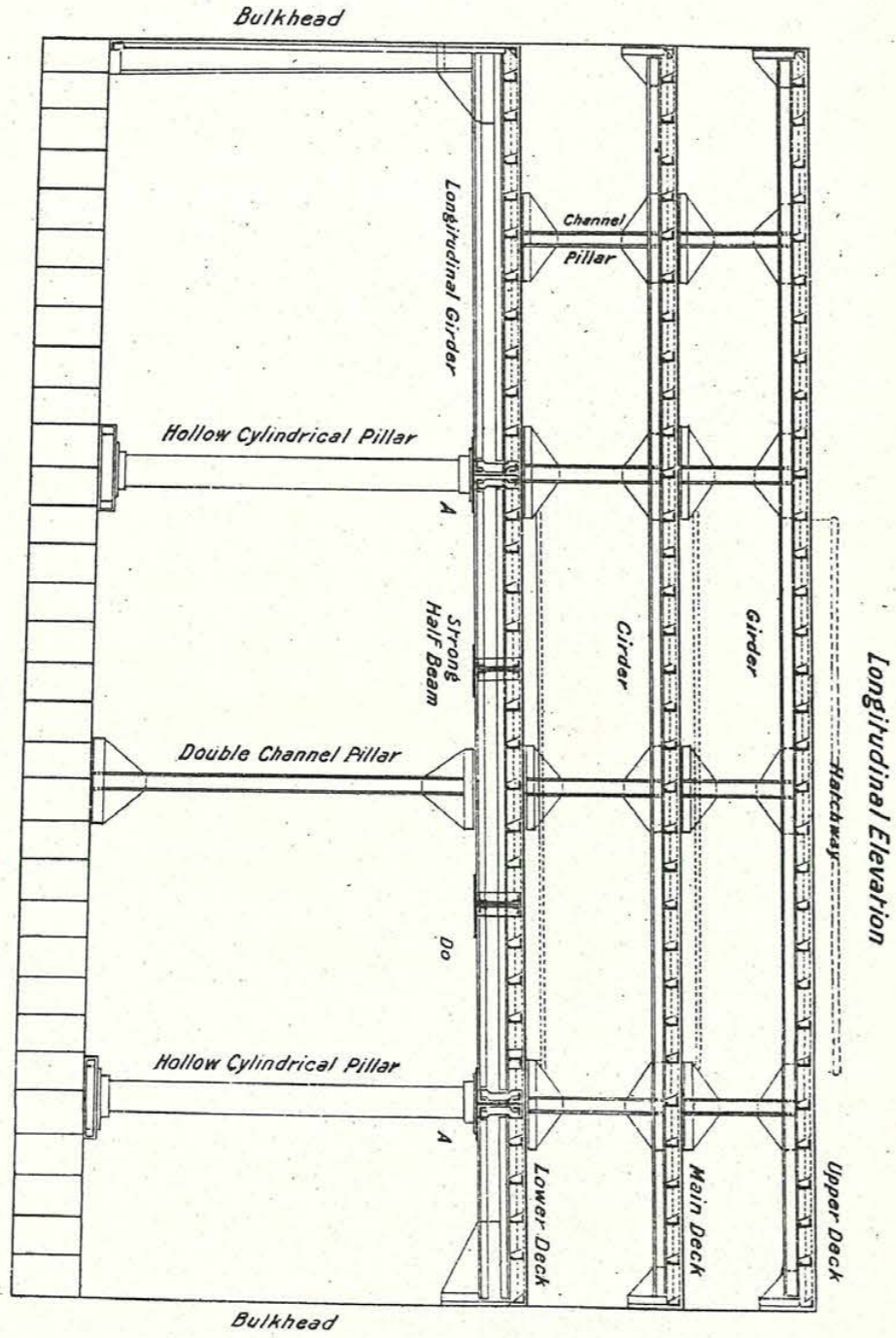
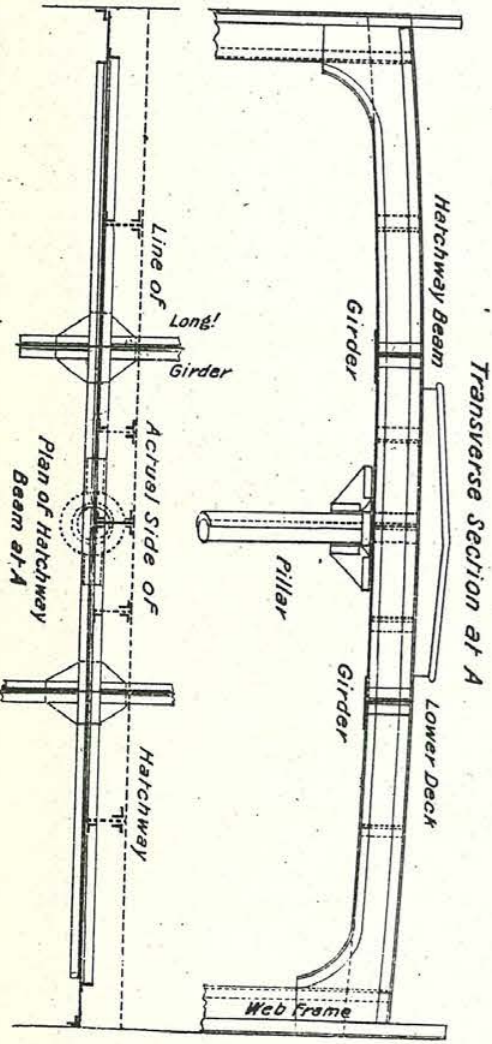
Vertical Longitudinal Section of Tank



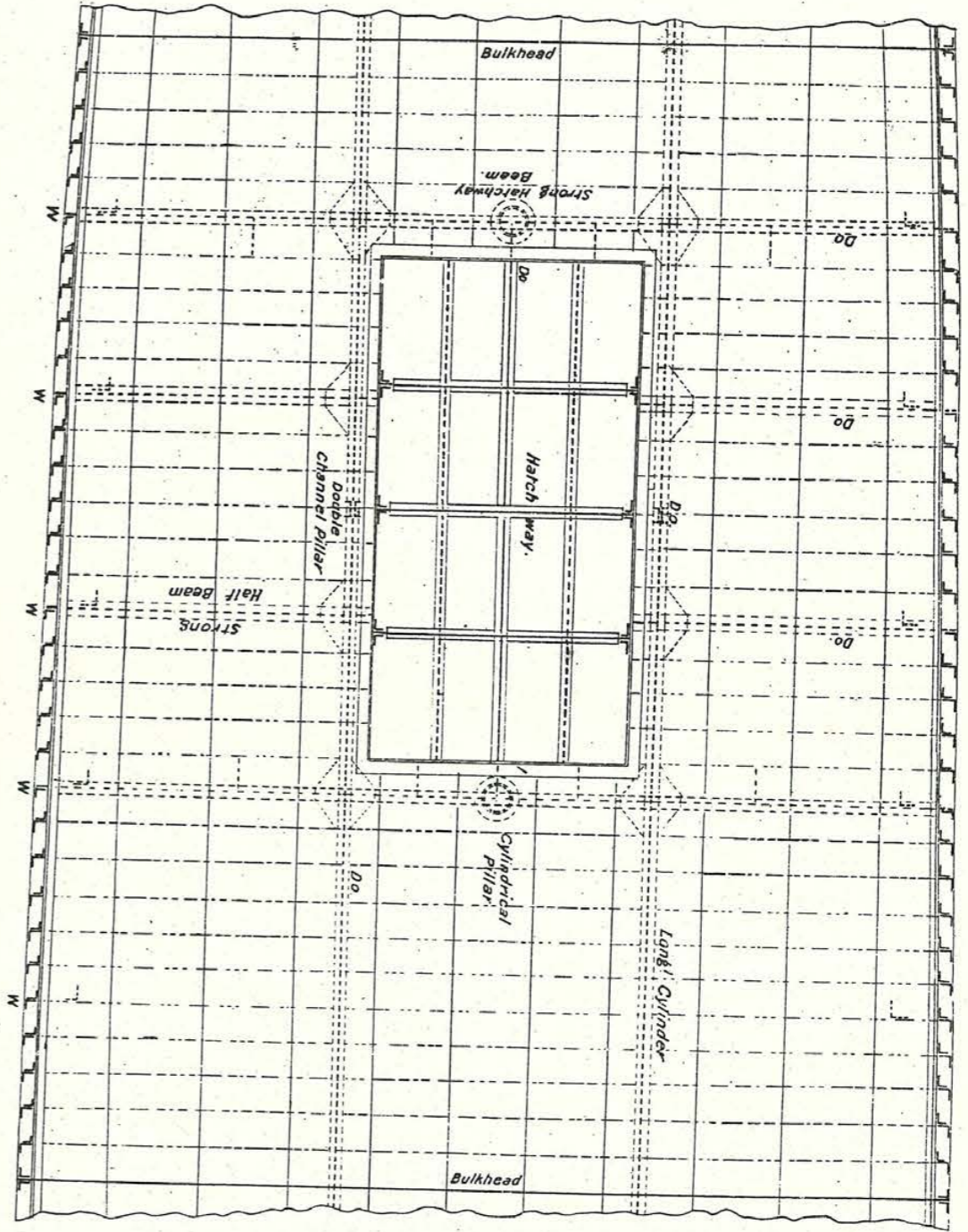
Horizontal Section of Tank at Upper Side Stringer



Arrangement of Massed Pillaring



Longitudinal Elevation



Part Plan of Lower Deck

Single Plate Forged Rudder

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