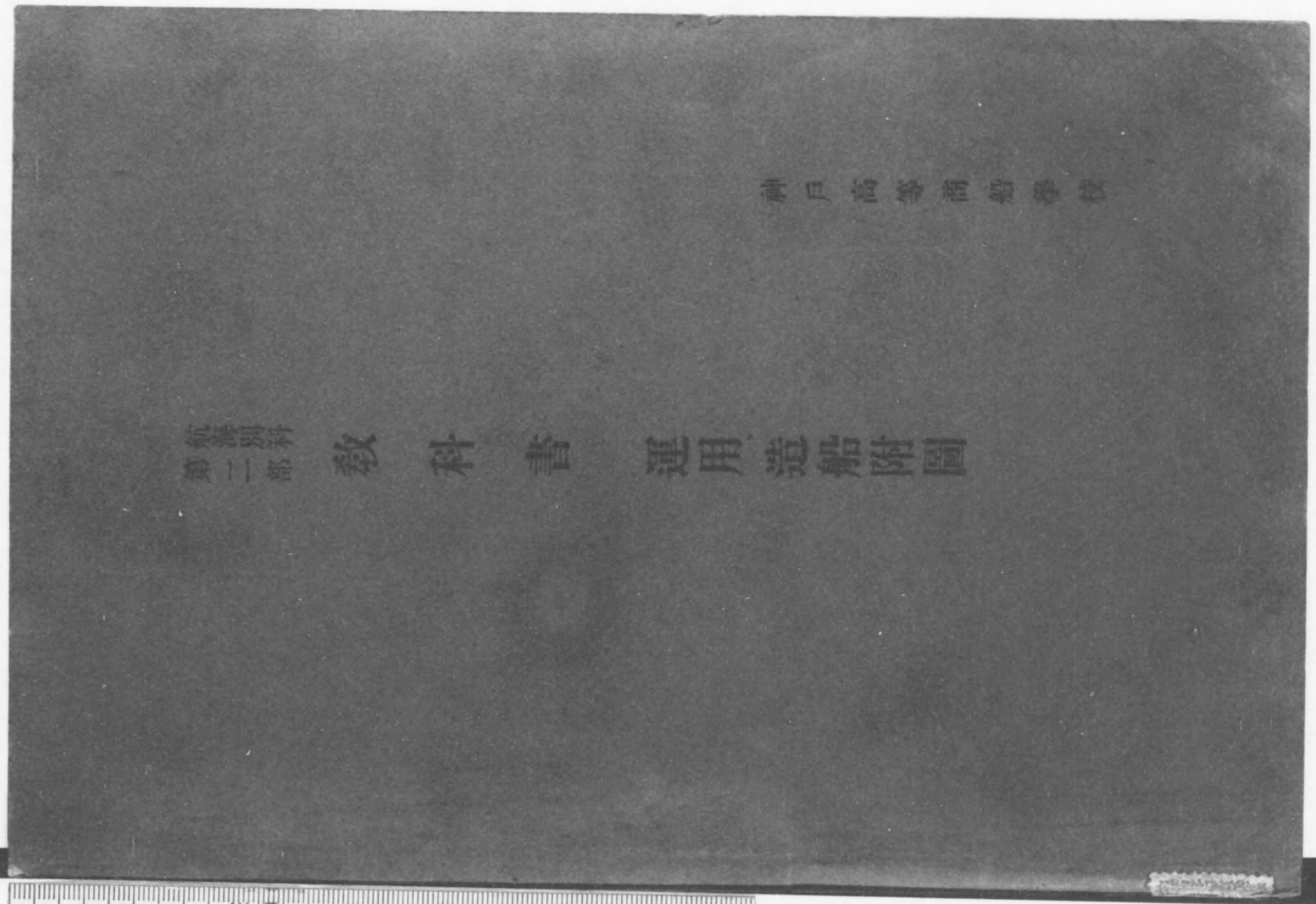


航海別科
第二部

教科書

運用、造船附圖

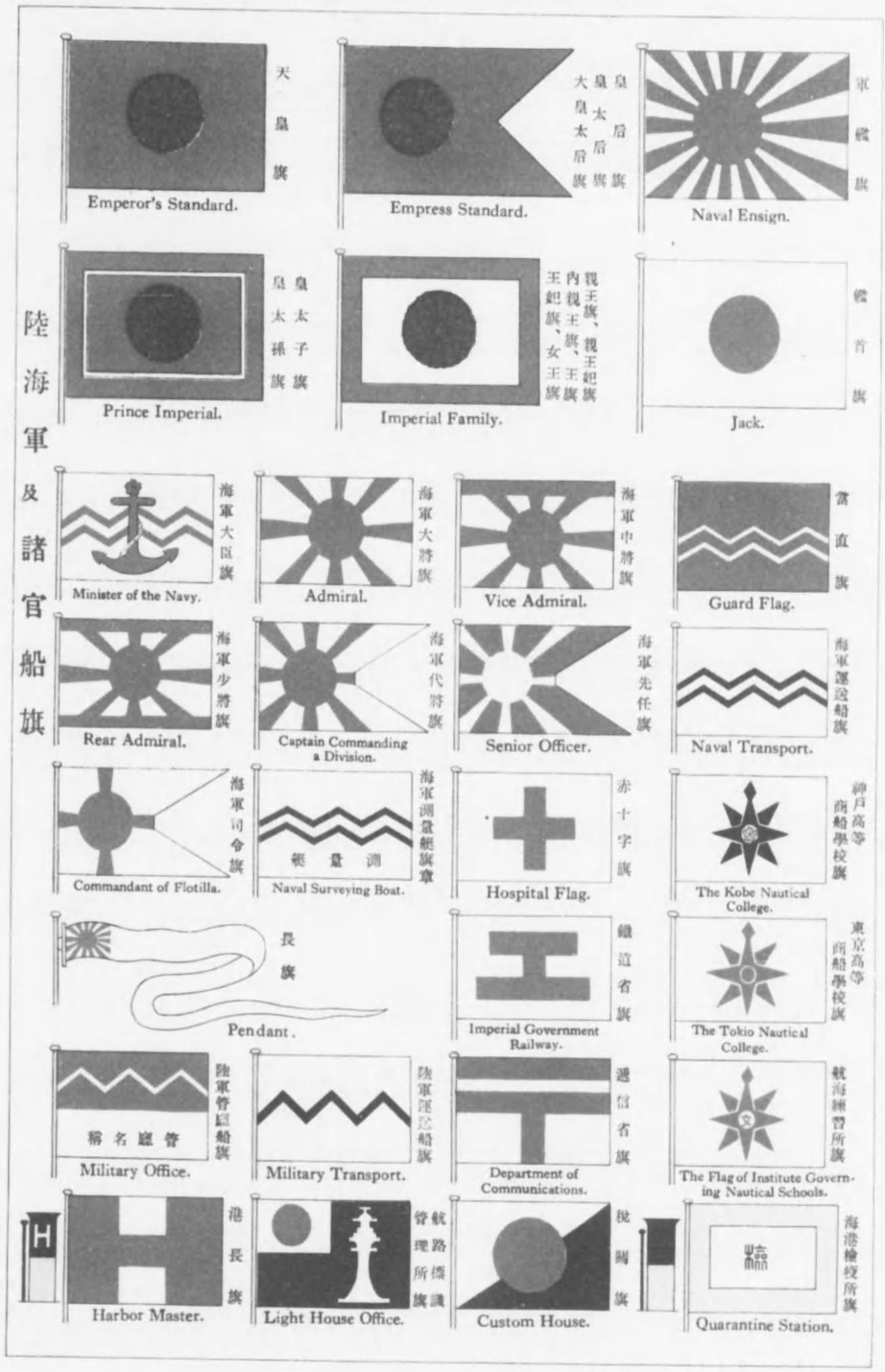
神戸高等商船學校

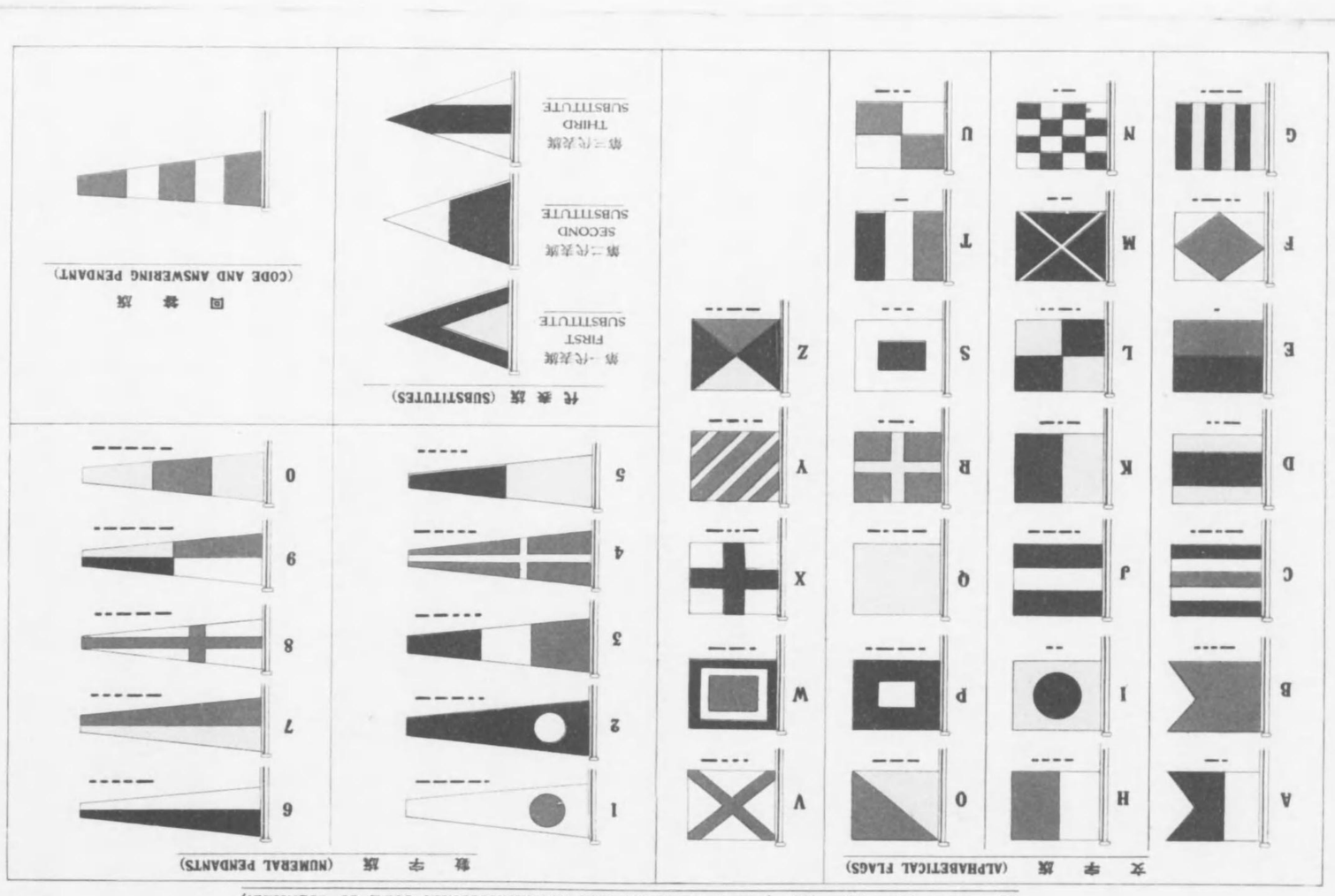
教科書
運用、造船附圖

神戸高等商船學校

CONTENTS

Imperial Standard and Other Flags.





國際信號旗 (FLAGS USED IN THE INTERNATIONAL CODE OF SIGNALS.)

PART I

SEAMANSHIP

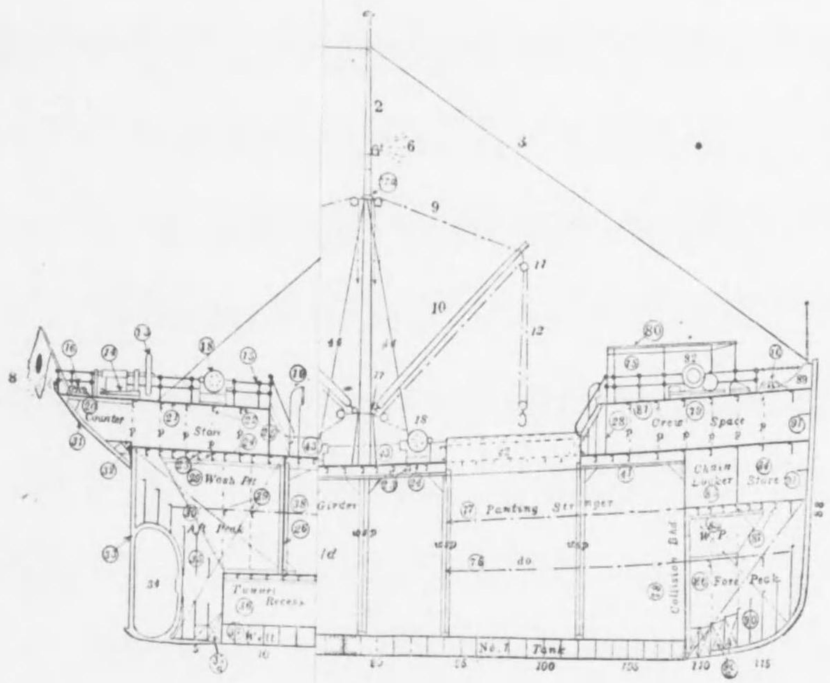
1

CONSTRUCTION PROFILE.

(船體縱斷面圖)

1. Main Mast (正檣)
2. Fore Mast (前檣)
3. Fore Stay (前檣支索)
4. Royal Stay (上檣支索)
5. Back Stay (後檣支索)
6. Head Light (前燈)
7. Mast Light (檣燈)
8. Stern Light (船尾燈)
9. Top Lifting Wire (リフト索)
10. Derrick (デリック)
11. Cargo Block (貨物用滑車)
12. Cargo Wire (貨物索)
13. Hand Steering Gear (手動操舵機)
14. Quadrant Tiller (舵柄弧)
15. Open Rail (欄欄)
16. Fair Lead (フエアー リード)
17. Turn Table (デリック臺)
17a. Out Rigger (リフトの滑車を取付くる臺)
18. Steam Winch (蒸汽揚貨機)
19. Ventilator (通風筒)
20. Counter (船尾突出部)
21. Poop Deck (船尾樓甲板)
22. Poop Deck Beam (船尾樓甲板梁)
23. Upper Deck Beam (上甲板梁)
23a. Upper Deck Half Beam (上甲板の半梁)
24. Upper Deck (上甲板)
25. Poop Front Bulkhead (船尾樓前端隔壁)
26. Aft Peak Bulkhead (船尾隔壁)
27. Bridge Aft Bulkhead (船橋樓後端隔壁)
28. Forecastle Aft Bulkhead (船首樓後端隔壁)
29. Wash Plate in Aft Peak (船尾水艙內の調水板)
30. Aft Peak Tank (船尾水艙)
31. Knuckle (船尾稜角)
32. Transom Floor (船尾肋板)
33. Stern Frame (船尾骨材)
34. Propeller Aparture (推進器の回轉する間隙)
35. Deep Floor in Peak (船尾艙內に於ける深肋板)
35a. Intercostal Centre Girder (斷切中心線桁材)
36. Tunnel Recess (隧道端窪)
37. Tunnel Well (隧道の汚水溜)
38. Panting Stringer (船尾防撓材)
39. Panting Beam (船尾防撓梁)
40. Shaft Tunnel (車軸隧道)
41. Deck Girder (甲板下縱通材)
    Wsp. Wide Spaced Pillar (特設梁柱)
    p. Solid Pillar (中實圓形梁柱)
42. Hatchway (船口)
43. Bulwark (舷檣)
44. Shroud (靜索)
45. Solid Floor in Double Bottom
    (二重底の肋板を有する肋骨或は實體肋板)
46. Skeleton Floor in Double Bottom
    (二重底の肋板を有せざる肋骨或はスケレトン肋板)
47. Thrust Recess (推力軸承窪)
48. Engine Aft Bulkhead (汽機室後端隔壁)
49. Engine Room Well (汽機室汚水溜)
50. Engine Room (汽機室)
51. Feed Water Tank (發罐水艙)
52. Dry Tank (乾艙[平時は空艙として使用し必要に應じては水艙として使用す])
53. Boiler (汽罐)
54. Engine Room Opening (汽機室口)
55. Engine Room Skylight (汽機室口天窓)
56. Engine Room Skylight Cover Rack
    (汽機室口天窓覆掛)
57. Life Boat (救命艇)
58. Boat Davit (端艇鈎)
59. Mess Room (會食室)

60. Galley （賄室）
61. Galley Skylight （賄室天窓）
62. Sanitary Tank （衛生用水槽）
63. Bridge Deck （船橋樓）
64. Extra Strong Beam in Machinery Space （機關室に於ける特設強梁）
65. Funnel （煙突）
66. Derrick Post Ventilator （デリック柱を兼ねた通風筒）
67. Stoke Hold （汽罐前の火夫の立働く所[燃口又は燃床]）
68. Boiler Front Bulkhead （汽罐室前端隔壁）
69. Reserve Bunker （豫備炭庫）
70. Coal Bunker （石炭庫）
71. Saloon （食堂）
72. Captain's Room （船長室）
73. Flying Bridge （航海甲板）
74. Over Bridge Deck （上部船橋樓甲板）
75. Bridge Front Bulkhead （船橋樓前端隔壁）
76. Screen Bulkhead for Reserve Bunker （豫備炭庫仕切隔壁）
77. Panting Stringer （船首防撓材）
78. Collision Bulkhead （船首隔壁）
79. Crew Space （船員室）
80. Awning （覆）
81. Forecastle Deck （船首樓甲板）
82. Steam Windlass （蒸汽揚錨機）
83. Chain Locker （錨鎖庫）
84. Store （倉庫）
85. Wash Plate in Fore Peak Tank （船首水艙内の制水板）
86. Fore Peak Tank （船首水艙）
87. Panting Beam （船首防撓梁）
88. Stem （船首材）
89. Bow Chock （波切板[船首の一番上の小さな外板]）
90. Deep Floor in Peak （船首艙内の深肋板）
90a. Intercoastal Centre Girder （斷切板中心線桁材）
91. Breast Hook （船首肘板）

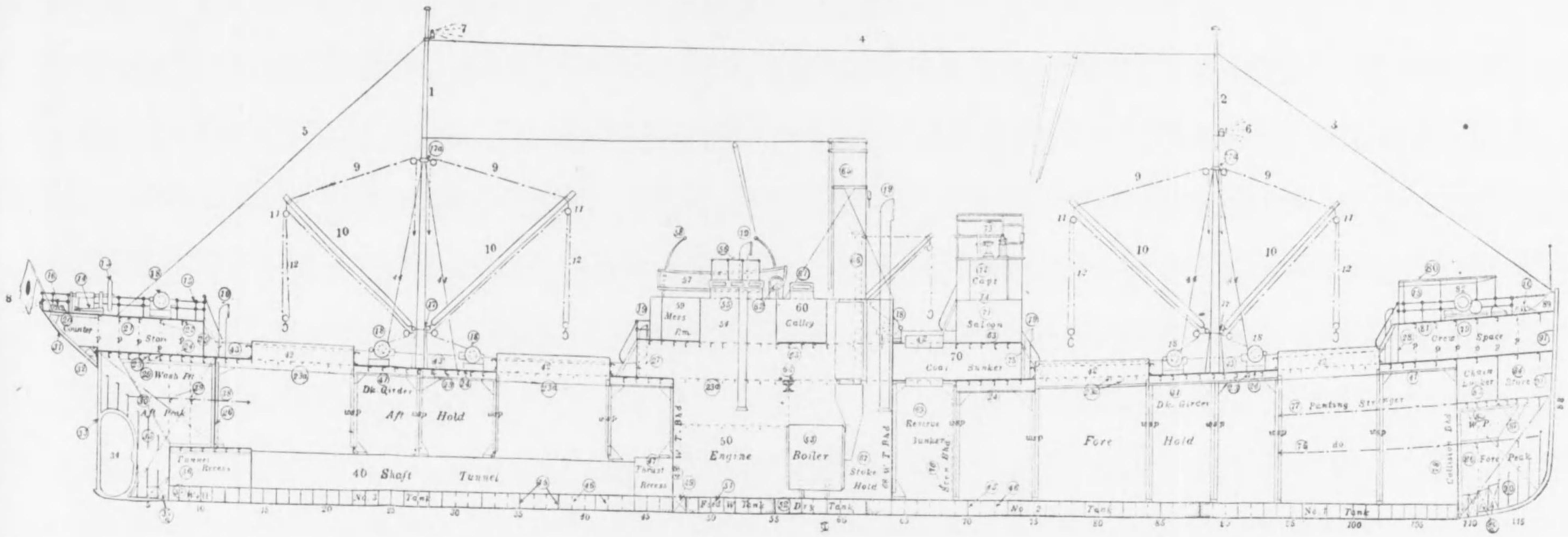


首防撓材)
艏首隔壁)
艙甲板)
揚錨機)
)
ak Tank
(船首水艙内の制水板)
水艙)
撓梁)
首の一番上の小さな外板])
艏首艙内の深肋板)
der (斷切板中心線桁材)
)

1

CONSTRUCTION PROFILE.

(縱　斷　面　圖)



2

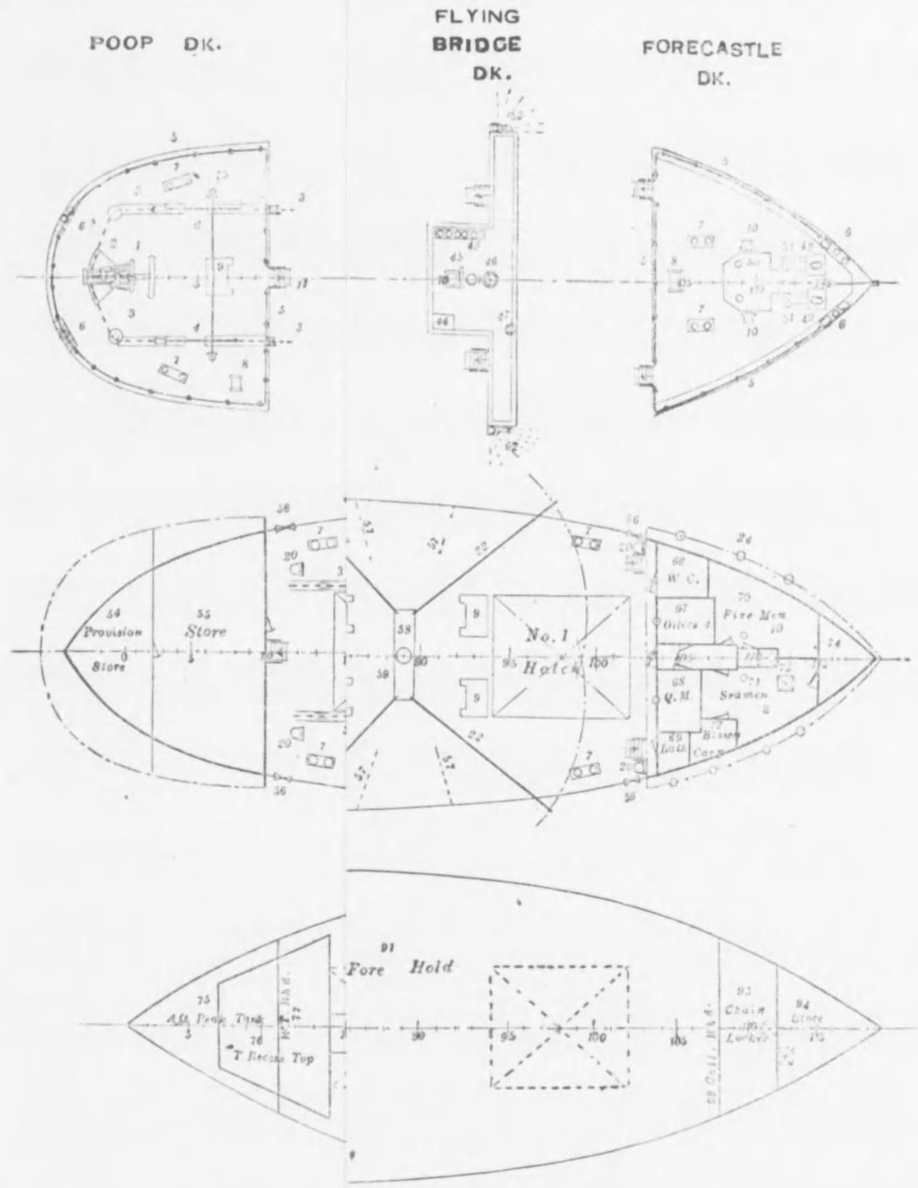
GENERAL ARRANGEMENT. DECK PLAN.

(一般配置圖 [又は艤裝圖]. 甲板平面圖)

Poop Deck (船尾樓甲板)
Boat Deck (端艇甲板)
Bridge Deck (船橋樓甲板)
Over Bridge Deck (上部船橋樓甲板)
Flying Bridge Deck (航海甲板)
Forecastle Deck (船首樓甲板)
Upper Deck (上甲板)
Hold (船艙)
Hatch No. 1 (第一艙口)

1. Hand Steering Gear (手働操舵機)
2. Quadrant Tiller (舵柄弧)
3. Steering Chain (操舵鎖)
4. Steering Rod (操舵棒)
5. Open Rail (欄欄)
6. Fair Lead (フエヤー リード)
7. Bollard (ボラード)
8. Wire Reel (鋼索を捲き付け置く車)
9. Steam Winch (蒸汽揚貨機)
10. Warping End (捲取胴)
11. Life Boat (救命艇)
12. Boat Davit (端艇鈎)
13. Temma (傳馬船)
14. Engine Room Skylight (汽機室天窓)
15. Galley Skylight (賄室天窓)
16. Sanitary Tank (衛生用水槽 [便所等の洗淨用水を貯めおく水槽])
17. Machinery Casing (機關室圍壁)
18. Funnel (煙突)
20. Ventilator (通風筒)
21. Coal Hatch (石炭口)
22. Derrick (デリック)
23. Derrick Post Ventilator (デリックの柱を兼ねた通風筒)
24. Side Light (舷窓)
25. Bath & W.C. (湯殿及便所)
26. Boys & Cooks (給仕及賄方)
27. Spare Room (豫備室)
28. Steward (司厨)
29. Locker (物置)
30. Mess Room (會食室)
31. Engine Opening (汽機室開口)
32. Galley (賄室)
33. Chief Engineer's Cabin (機關長室)
34. First Engineer's Cabin (一等機關士室)
35. Second Engineer's Cabin (二等機關士室)
36. Third Engineer's Cabin (三等機關士室)
37. Pantry (配膳室)
38. Bath & W.C. (湯殿及便所)
39. Saloon (食堂)
40. Second officer's or Second Mate's Cabin (二等運轉士室)
41. Chief Officer's (or Chief Mate's) Cabin (一等運轉士室)
42. Captain's Room (船長室)
43. Chart Room (海圖室)
44. Chart Table (海圖机)
45. Steering Wheel (操舵手輪)
46. Compass (羅針盤)
47. Engine Telegraph (機關室通信器)
48. Backets Rack (桶棚)
49. Hawse Pipe (錨鎖管)
50. Steam Windlass (蒸汽揚錨機)
51. Chain Stopper (錨鎖止め)
52. Side Lamp (舷燈)
53. Accommodation Ladder (舷梯)
54. Provision Store (食品庫)

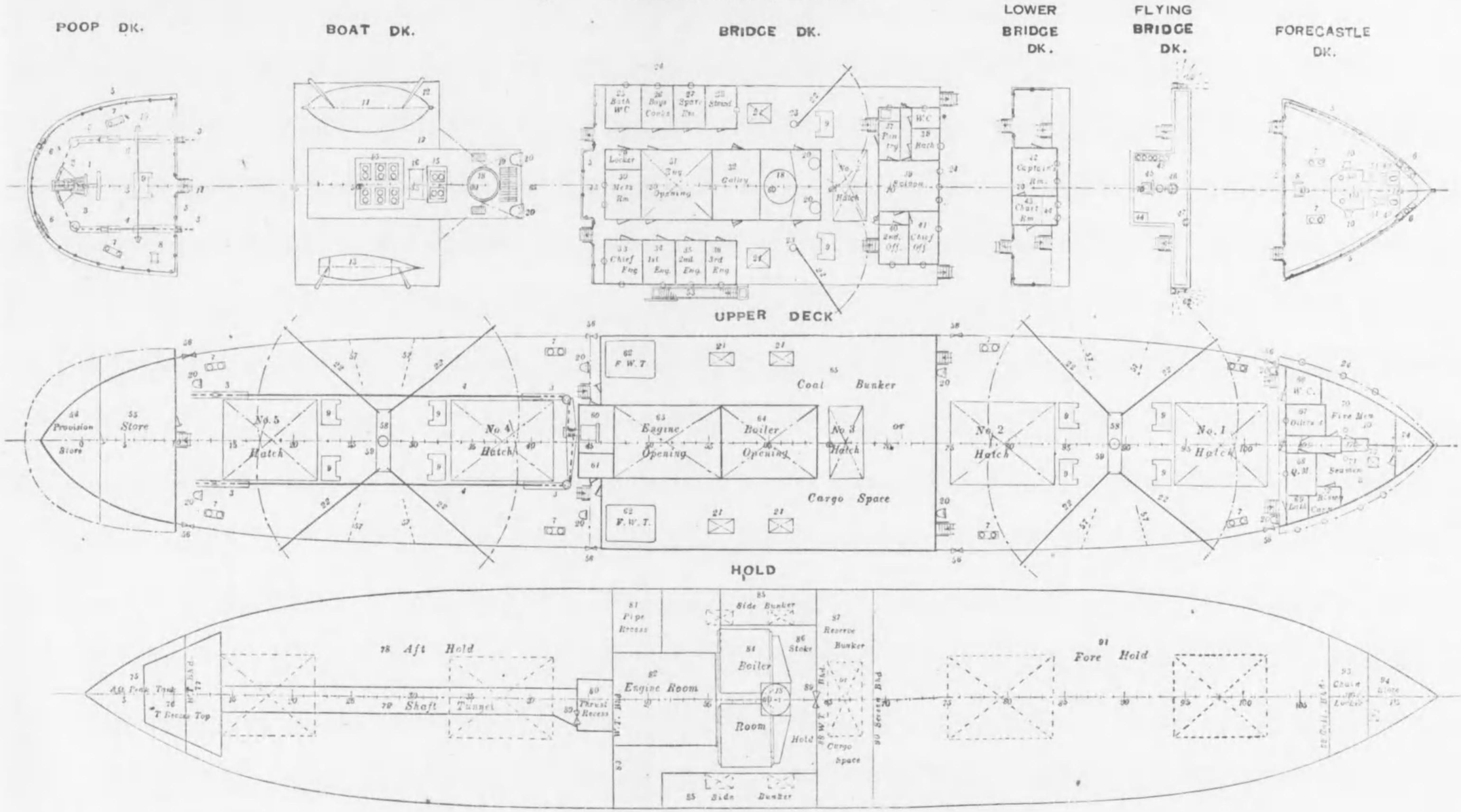
55. Store （倉庫）
56. Freeing Port （排水孔）
57. Shroud （靜索）
58. Derrick Table or Turn Table （デリック臺）
59. Mast （檣）
60. Steering Engine （操舵汽機）
61. Locker （物置）
62. Fresh Water Tank （清水槽）
63. Engine Opening （汽機室口）
64. Boiler Opening （汽罐室口）
65. Coal Bunker or Cargo Space
（石炭庫又は貨物艙[即ち必要に應じて兩方に使用す]）
66. W.C. (Water Closet) （便所）
67. Oilers' (4 Men) Room （油差[四人]室）
68. Quater Masters' (2 Men) Room （舵取[二人]室）
69. Bath （湯殿）
70. Fire Men's (10 Men) Room （火夫[十人]室）
71. Seamen's (8 Men) Room （水夫[八人]室）
72. Boatswain & Carpenter's Room
（水夫長及び木工夫室）
73. Hatch （艙口）
74. Paint Store （ペンキ倉庫）
75. Aft Peak Tank （船尾水艙）
76. Tunnel Recess Top （隧道端室の天井）
77. Aft Peak Bulkhead （船尾隔壁）
78. Aft Hold （後艙）
79. Shaft Tunnel （車軸隧道）
80. Thrust Recess （推力承室）
81. Pipe Recess （パイプ室）
82. Engine Room （汽機室）
83. Engine Aft Bulkhead （汽機室後端隔壁）
84. Boiler Room （汽罐室）
85. Side Bunker （船側石炭庫）
86. Stoke Hold （汽罐の燃床[火夫の立働く場所]）
87. Reserve Bunker or Cargo Space
（豫備炭庫又は貨物艙[必要に應じてどちらにも使用す]）
88. Boiler Front Bulkhead （汽罐室前端隔壁）
89. Sluice Door （支水扉）
90. Screen Balkhead （仕切隔壁）
91. Fore Hold （前艙）
92. Collision Bulkhead （船首隔壁）
93. Chain Locker （錨鎖庫）
94. Store （倉庫）



2

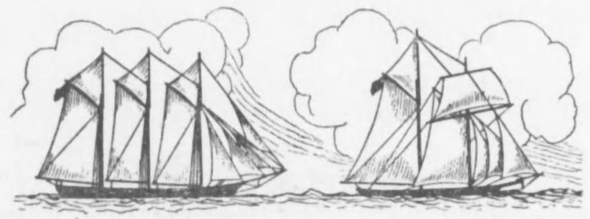
GENERAL ARRANGEMENT, DECK PLAN.

(一般配置圖 [又は艤裝圖]. 甲板平面圖)



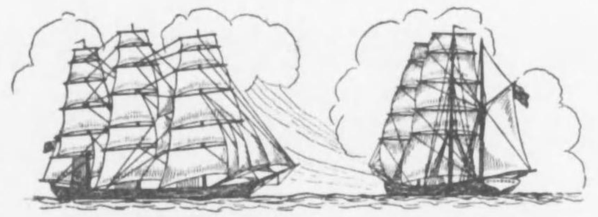
3

KINDS OF SAILING VESSELS BY ITS RIG.



Ship Bark

Barkentine Brig Brigantine



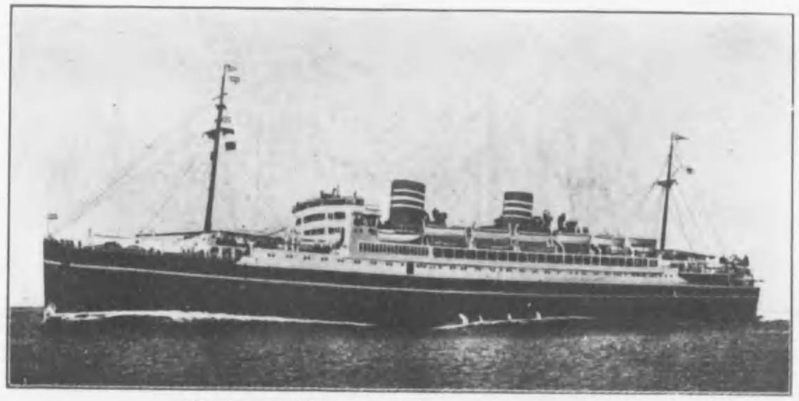
Three Masted Schooner Topsail Schooner

Ketch Yawl Sloop

4

PASSENGER BOAT.

A.

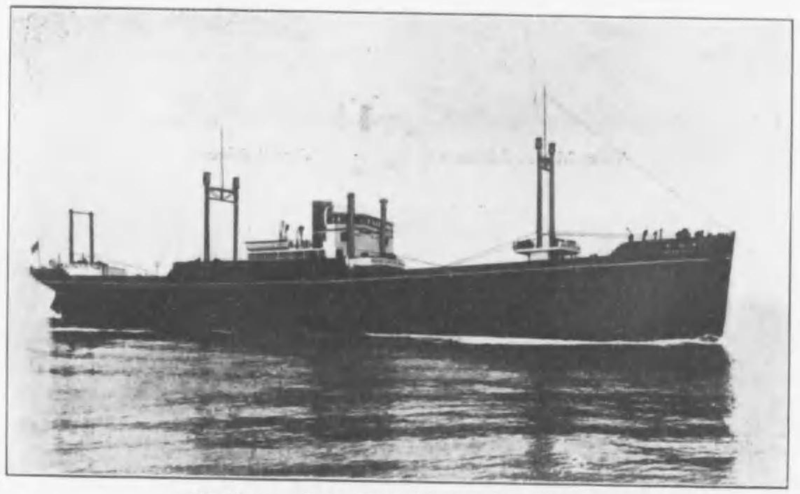


The Japanese Motor Liner **"Asama Maru"** on Trial.

5

CARGO STEAMER.

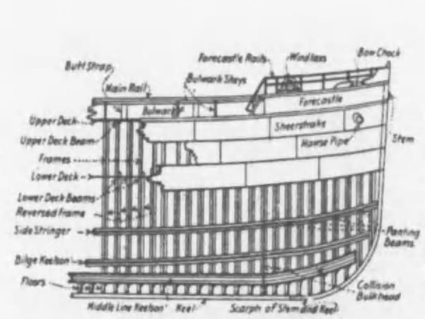
A.



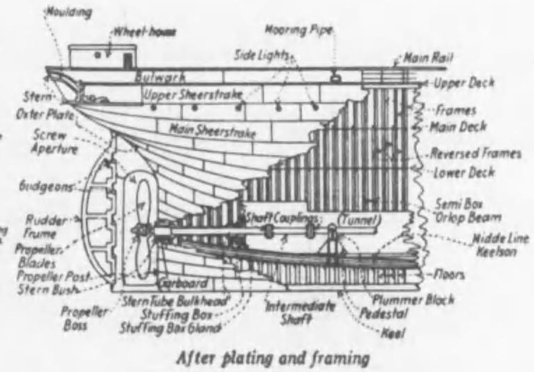
The Japanese Cargo Motor Ship **"Kohwa Maru."**

6

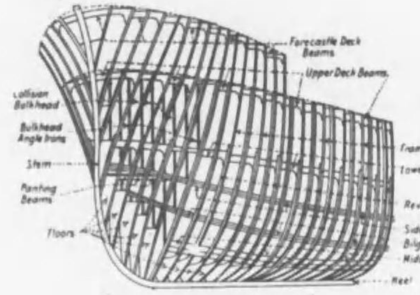
PRINCIPAL FRAMMING OF SHIP.



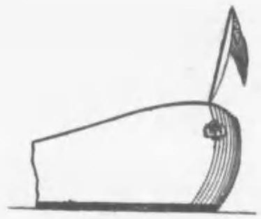
Bow plating frames, etc.



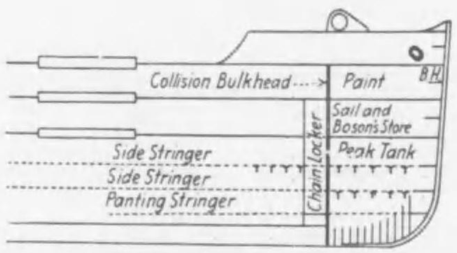
After plating and framing



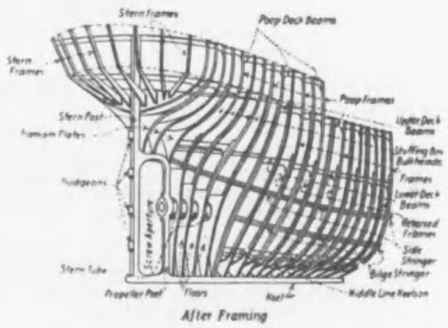
Forward Framing



Cruiser Stern



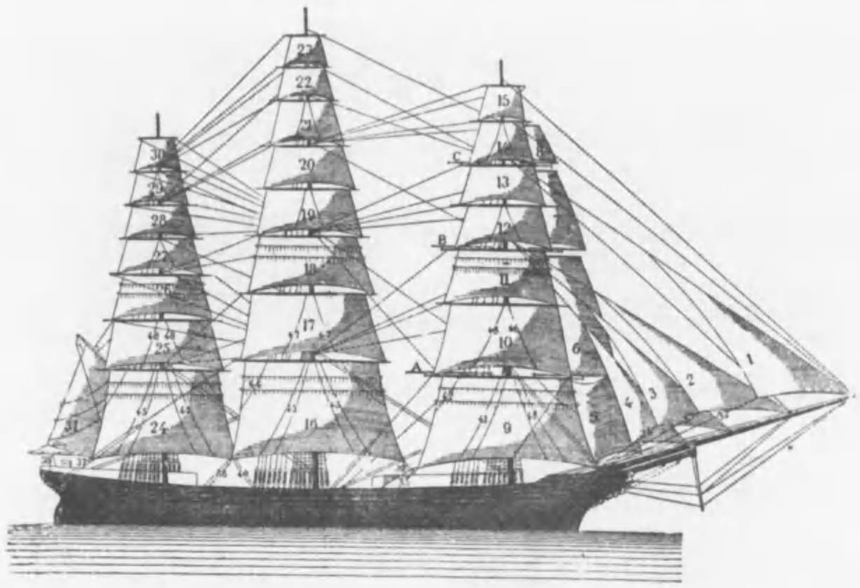
Panting beams shown in cross section



After Framing

7

SHIP; FULL-RIGGED SHIP.



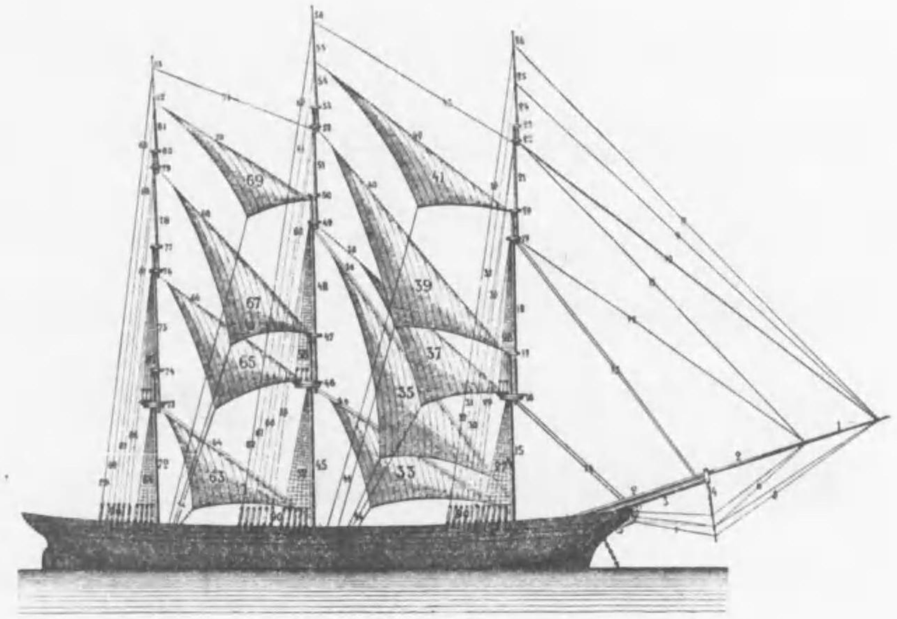
1. Flying jib.
2. Outer jib: Standing jib.
3. Inner jib.
4. Fore topmast staysail.
5. Fore lower studding sail.
6. Fore topmast studding sail.
7. Fore topgallant studding sail.
8. Fore royal studding-sail.
9. Fore sail.
10. Lower fore topsail.
11. Upper fore topsail.
12. Lower fore topgallant sail.
13. Upper fore topgallant sail.
14. Fore royal.
15. Fore skysail.
16. Main sail.
17. Lower main topsail.
18. Upper main topsail.
19. Lower main topgallant sail.
20. Upper main topgallant sail.
21. Main royal.
22. Main skysail.
23. Moon sail.
24. Crossjack.
25. Lower mizzen topsail.
26. Upper mizzen topsail.
27. Lower mizzen topgallant sail.
28. Upper mizzen topgallant sail.
29. Mizzen royal.
30. Mizzen skysail.
31. Spanker.
32. Flying jib sheet.
33. Outer jib sheet.
34. Inner jib sheet.
35. Fore sheet.
36. Main sheet.
37. Crossjack sheet.
38. Spanker sheet.
39. Main tack.
40. Crossjack tack.
41. Fore buntlines.
42. Fore leechline.
43. Main buntlines.
44. Main leechline.
45. Crossjack buntlines.
46. Fore topsail buntlines.
47. Main topsail buntlines.
48. Mizzen topsail buntlines.

A. Fore topmast studding sail boom.
B. Fore topgallant studding sail boom.
C. Fore royal studding sail boom.

8

SHIP SHOWING STAYSAILS,

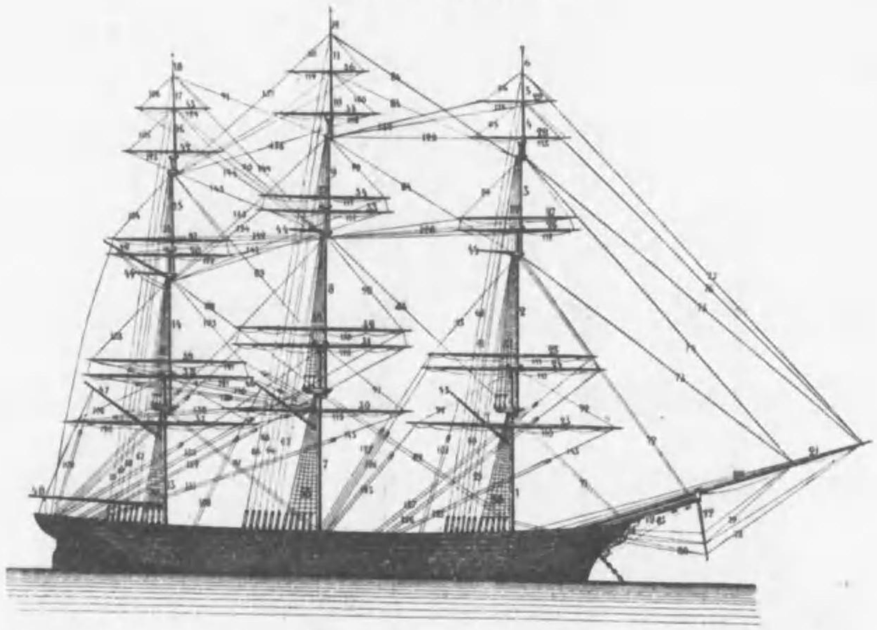
etc.



1. Flying jim boom.
2. Jib boom.
3. Bowsprit.
4. Martingale boom; Martingale; Dolphin striker.
5. Flying jib boom stay; Flying martingale stay.
6. Jib boom stay; Martingale stay.
7. Martingale guys; Martingale back ropes.
8. Fore skysail stay.
9. Fore royal stay.
10. Flying jib stay.
11. Fore topgallant stay.
12. Jib stay.
13. Fore topmast stay.
14. Fore stay.
15. Fore mast.
16. Fore top.
17. Fore mast cap.
18. Fore topmast.
19. Fore topmast crosstrees.
20. Fore topmast cap.
21. Fore topgallant mast.
22. Fore topgallant crosstrees.
23. Fore topgallant cap.
24. Fore royal mast.
25. Fore skysail mast.
26. Fore skysail pole.
27. Fore rigging; Fore lower-rigging.
28. Fore topmast rigging.
29. Fore topmast backstays.
30. Fore topgallant backstays.
31. Fore royal backstay.
32. Fore skysail backstay.
33. Main skysail.
34. Main stay.
35. Main topmast staysail.
36. Main topmast stay.
37. Middle staysail.
38. Middle staysail stay.
39. Main topgallant staysail.
40. Main topgallant stay.
41. Main royal staysail.
42. Main royal stay.
43. Main skysail stay.
44. Staysail sheet.
45. Main mast.
46. Main top.
47. Main mast cap.
48. Main topmast.
49. Main topmast crosstrees.
50. Main topmast cap.
51. Main topgallant mast.
52. Main topgallant crosstrees.
53. Main topgallant mast cap.
54. Main royal mast.
55. Main skysail mast.
56. Main skysail pole.
57. Main rigging; Main lower rigging.
58. Main topmast rigging.
59. Main topmast backstays.
60. Main topgallant backstays.
61. Main royal backstay.
62. Main skysail backstay.
63. Mizzen staysail.
64. Mizzen stay.
65. Mizzen topmast staysail.
66. Mizzen topmast stay.
67. Mizzen topgallant staysail.
68. Mizzen topgallant stay.
69. Mizzen royal staysail.
70. Mizzen royal stay.
71. Mizzen skysail stay.
72. Mizzen mast.
73. Mizzen top.
74. Mizzen mast cap.
75. Mizzen topmast.
76. Mizzen topmast crosstrees.
77. Mizzen topmast cap.
78. Mizzen topgallant mast.
79. Mizzen topgallant crosstrees.
80. Mizzen topgallant mast cap.
81. Mizzen royal mast.
82. Mizzen skysail mast.
83. Mizzen skysail pole.
84. Mizzen rigging; Mizzen lower rigging.
85. Mizzen topmast rigging.
86. Mizzen topmast backstays.
87. Mizzen topgallant backstays.
88. Mizzen royal backstays.
89. Mizzen skysail backstay.
90. Lanyards

9

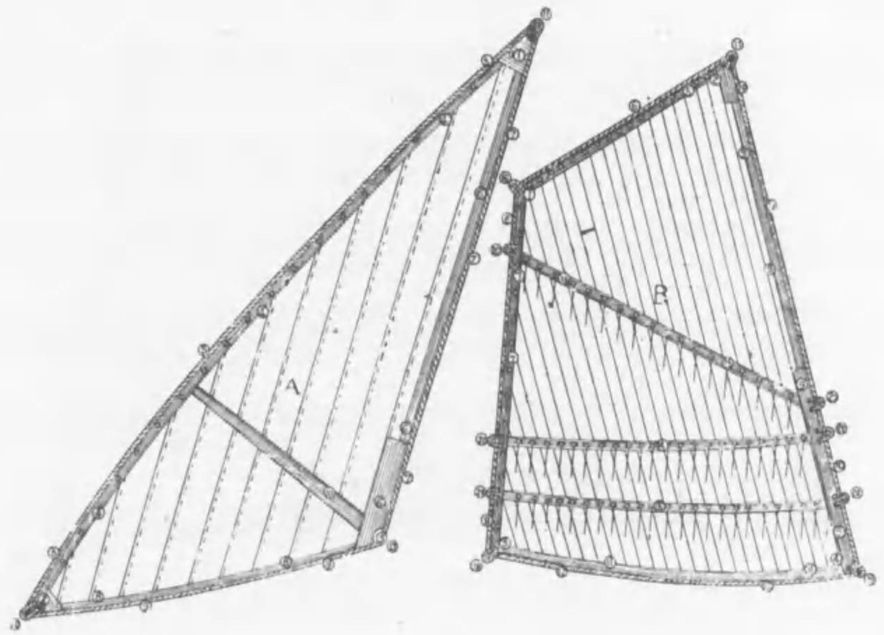
SHIP AT ANCHOR.



1. Fore mast.
2. Fore topmast.
3. Fore topgallant mast.
4. Fore royal mast.
5. Fore skysail mast.
6. Fore skysail pole.
7. Main mast.
8. Main topmast.
9. Main topgallant mast.
10. Main royal mast.
11. Main skysail mast.
12. Main skysail pole.
13. Mizzen mast.
14. Mizzen topmast.
15. Mizzen topgallant mast.
16. Mizzen royal mast.
17. Mizzen skysail mast.
18. Mizzen skysail pole.
19. Bowsprit.
20. Jib boom.
21. Flying jib boom.
22. Martingale boom; Martingale.
23. Fore yard.
24. Lower fore topsail yard.
25. Upper fore topsail yard.
26. Lower fore topgallant yard.
27. Upper fore topgallant yard.
28. Fore royal yard.
29. Fore skysail yard.
30. Main yard.
31. Lower main topsail yard.
32. Upper main topsail yard.
33. Lower main topgallant yard.
34. Upper main topgallant yard.
35. Main royal yard.
36. Main skysail yard.
37. Crossjack yard.
38. Lower mizzen topsail yard.
39. Upper mizzen topsail yard.
40. Lower mizzen topgallant yard.
41. Upper mizzen topgallant yard.
42. Mizzen royal yard.
43. Mizzen skysail yard.
44. Out riggers.
45. Fore gaff; Fore trysail gaff.
46. Main gaff; Main trysail gaff.
47. Spanker gaff.
48. Spanker boom.
49. Monkey gaff.
50. Fore rigging; Fore lower rigging.
51. Fore topmast rigging.
52. Fore topgallant rigging.
53. Main rigging; Main lower rigging.
54. Main topmast rigging.
55. Main topgallant rigging.
56. Mizzen rigging.
57. Mizzen topmast rigging.
58. Mizzen topgallant rigging.
59. Fore topmast backstay.
60. Fore topgallant backstay.
61. Fore royal backstay.
62. Fore skysail backstay.
63. Main topmast backstays.
64. Main topgallant backstays.
65. Main royal backstay.
66. Main skysail backstay.
67. Mizzen topmast backstays.
68. Mizzen topgallant backstays.
69. Mizzen royal backstay.
70. Mizzen skysail backstay.
71. Fore stay.
72. Fore topmast stay.
73. Jib stay.
74. Fore topgallant stay.
75. Flying jib stay.
76. Fore royal stay.
77. Fore skysail stay.
78. Flying jib boom stay.
79. jib boom stay; Martingale stay.
80. Martingale guys.
81. Bobstays.
82. Main stay.
83. Main topmast stay.
84. Main topgallant stay.
85. Main royal stay.
86. Main skysail stay.
87. Mizzen stay.
88. Mizzen topmast stay.
89. Mizzen topgallant stay.
90. Mizzen royal stay.
91. Mizzen skysail stay.
92. Fore lifts.
93. Fore topsail lift.
94. Fore topgallant lift.
95. Fore royal lift.
96. Fore skysail lift.
97. Main lift.
98. Main topsail lift.
99. Main topgallant life.
100. Main royal lift.
101. Main skysail lift.
102. Crossjack lift.
103. Mizzen topsail lifts.
104. Mizzen topgallant lift.
105. Mizzen royal lift.
106. Mizzen skysail lift.
107. Fore vang; Fore trysail vang.
108. Main vang; Main trysail vang.
109. Spanker vang.
110. Fore foot rope.
111. Fore topsail foot rope.
112. Fore topgallant foot rope.
113. Fore royal stay.
114. Fore skysail foot rope.
115. Main foot rope.
116. Main topsail foot rope.
117. Main topgallant foot rope.
118. Main royal foot rope.
119. Main skysail foot rope.
120. Crossjack for rope.
121. Mizzen topsail foot rope.
122. Mizzen topgallant foot rope.
123. Mizzen royal foot rope.
124. Mizzen skysail foot rope.
125. Fore braces.
126. Lower fore topsail braces.
127. Upper fore topsail braces.
128. Lower and Upper fore topgallant braces.
129. Fore royal braces.
130. Fore skysail braces.
131. Main brace.
132. Lower main topsail brace.
133. Upper main topsail brace.
134. Lower main topgallant brace.
135. Upper main topgallant brace.
136. Main royal brace.
137. Main skysail brace.
138. Crossjack brace.
139. Lower mizzen topsail brace.
140. Upper mizzen topsail brace.
141. Lower mizzen topgallant brace.
142. Upper mizzen topgallant brace.
143. Mizzen royal brace.
144. Mizzen skysail brace.
145. Brace pendants.

10

STAYSAIL AND GAFFSAIL.



A. Staysail.

1. Head.
2. Tack.
3. Clew.
4. Fore-leech, Luff.
5. Fore-leech-rope.
6. After-leech.
7. After-leech-rope.
8. Foot.
9. Foot-rope.
10. Girth-band.
11. Head-cringle.
12. Tack-cringle.
13. Clew-cringle.

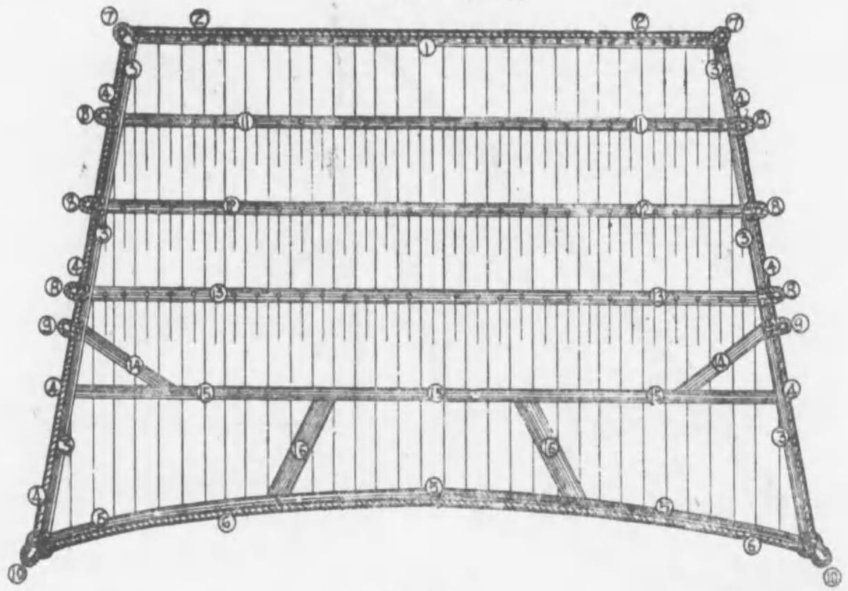
B. Gaffsail.

1. Throat.
2. Peak.
3. Tack.
4. Clew.
5. Head.
6. Head-rope.
7. Fore-leech.
8. Fore-leech-rope.
9. After-leech.
10. After-leech-rope.
11. Foot.
12. Foot-rope.
13. First-reef-band.
14. Second-reef-band.
15. Balance-reef-band.
16. Throat cringle.
17. Peak-cringle.
18. Tack-cringle.
19. Clew-cringle.
20. Reef-cringles.

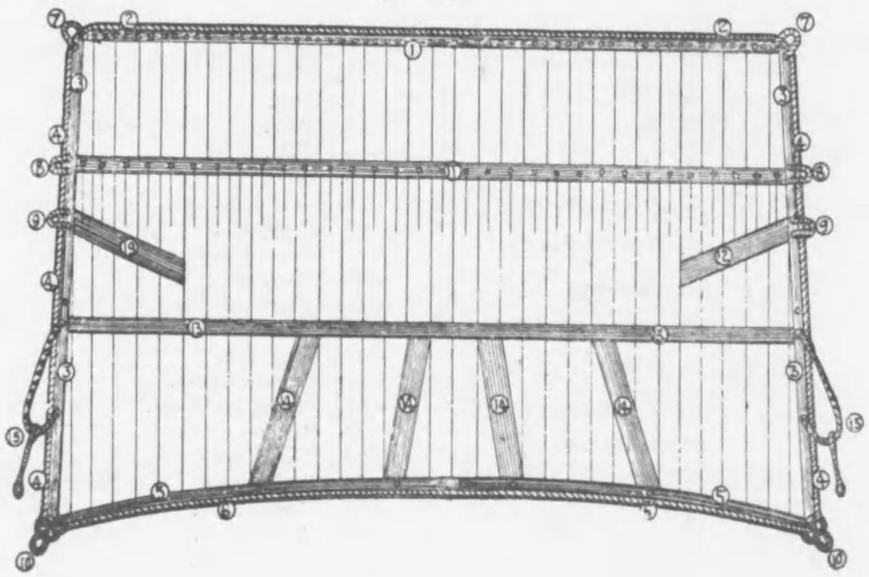
11

SQUARE SAILS.

A (Single Topsail)



B (Course)



SQUARE-SAILS.

A. Single topsail.

1. Head.
2. Head-rope.
3. Leeches.
4. Leech-ropes.
5. Foot.
6. Foot-rope.
7. Earing-cringles.
8. Reef-cringles.
9. Reef-tackle-cringles.
10. Spectacle-cringles.
11. Reef-band (1st reef).
12. Reef-band (2nd reef).
13. Reef-band (3rd reef).
14. Reef-tackle-patches.
15. Middle-band.
16. Bunt-line-clothes.

B. Course.

1. Head.
2. Head-rope.
3. Leeches.
4. Leech-ropes.
5. Foot.
6. Foot-rope.
7. Earing-cringles.
8. Reef-cringles.
9. Reef-tackle-cringles.
10. Spectacle-clews.
11. Reef-band.
12. Reef-tackle-patches.
13. Middle-band.
14. Bunt-line-clothes.
15. Bowline-bridles.

12

ROPE FIBRES.

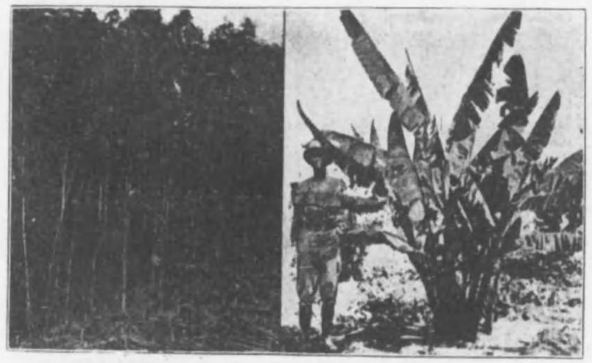


Fig. 1. The Hemp Plant.

Fig. 2. The Abaca Plant. (Manila Fibre).

Fig. 3.
Hemp Fibre.

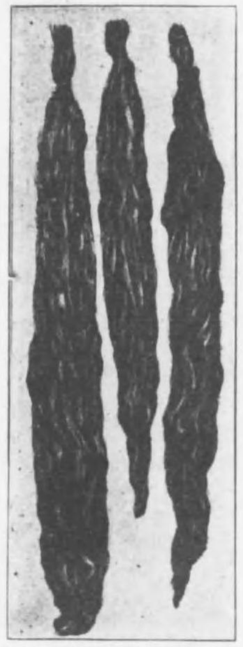


Fig. 4. Manila Fibre.

13

MANILA ROPE.

Fig. 1. Manila Fibre, Baled.

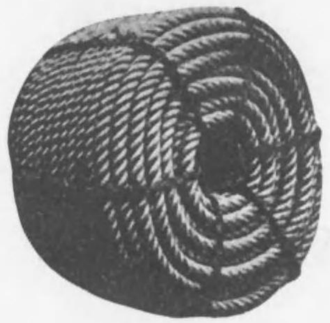


Fig. 2. Rope In Coil.

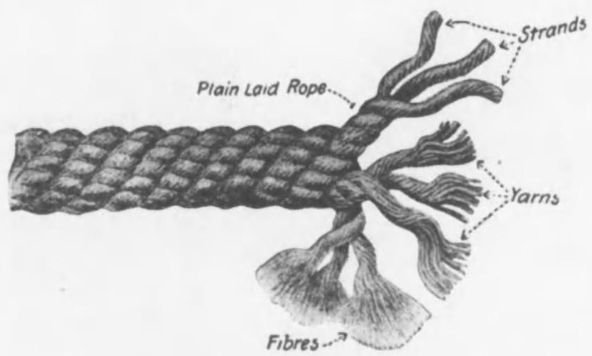
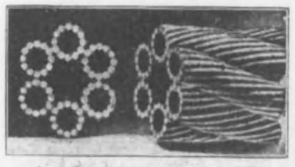


Fig. 3. Manila Rope.

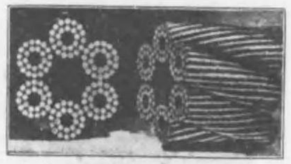
Fig. 4. Cross Section, 3 Strand Rope.

14

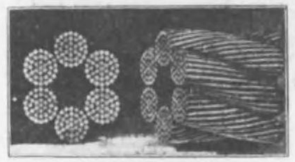
TYPES OF WIRE ROPE.



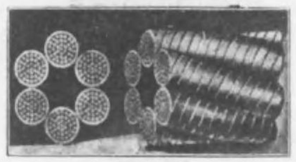
6 Strands of 19 Wires (6×19).



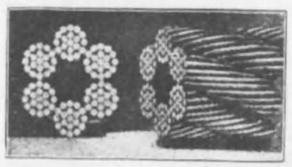
6 Strands of 37 Wires (6×37).



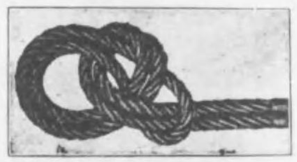
6 Strands of 12 Wires (6×12).



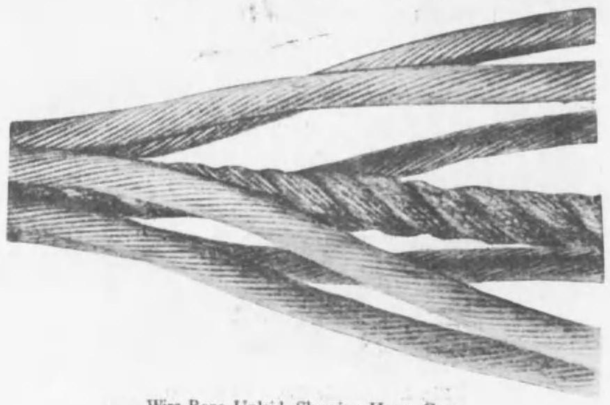
6 Strands of 24 Wires (6×24).



Armored Rope.



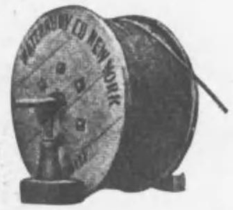
Fibre Clad Rope.



Wire Rope Unlaid, Showing Hemp Core.

15

HANDLING WIRE ROPE.



Right Way.

Wrong Way.

Fig. 1.
To Take Rope From Reel.

Right Way.

Wrong Way.

Fig. 2.
Take Rope From Coil.

An Overworked Rope.

Right Way.

Wrong Way.

Fig. 3.
To Measure Diameter.

Fig. 4.
Right Way (U-bolt on Dead End).

Wrong Way (U-bolt on Tension End).
Wire Rope Clips.

16

KNOTS, HITCH, SPLICE, WHIPPING & ETC.

Fig. 1.
Half hitch.

Fig. 2.
Timber hitch.

Fig. 3.
Two half hitch.

Fig. 4. Half hitch and timber hitch.

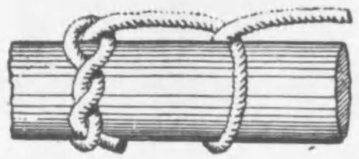


Fig. 5. Clove hitch.

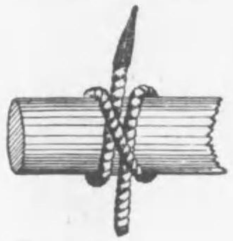


Fig. 6. Roband hitch.

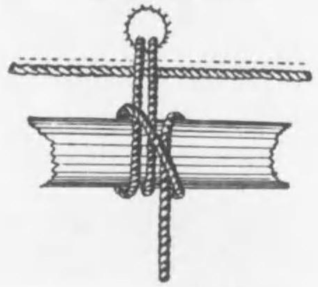
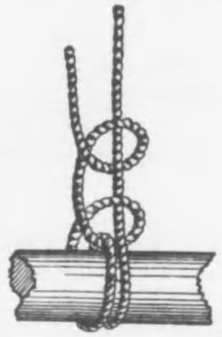


Fig. 7.
Round turn and two half hitch.

Fig. 8.
Fisher man's bend.

Fig. 9.
Fisher man's bend.



17

KNOTS, HITCH, SPLICE, WHIPPING & ETC.

Fig. 1.
Rolling hitch.

Fig. 2.
Single blackwall hitch.

Fig. 3.
Double blackwall hitch.

Fig. 4.
Reef knot.

Fig. 5.
Bowline knot.

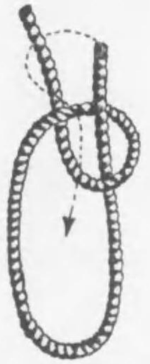


Fig. 6.
Bowline on the bight.

Fig. 7. Manline hitch.

Fig. 8. Sheep shank.

Fig. 9. Reeving fine bend.

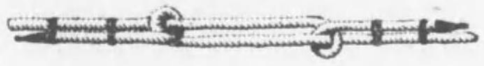


Fig. 10. Swab hitch.

Fig. 11. Overhand knot.

18

KNOTS, HITCH, SPLICE, WHIPPING & ETC.

Fig. 1. Rope yarn knot.

Fig. 2. Wall knot.

Fig. 3. Crown.

Fig. 5. Selvage strop.

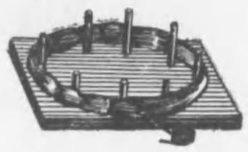


Fig. 4.
Crown and
wall.

Fig. 6. Selvage strop.

Fig. 7. Selvage strop.

Fig. 9. Single sheet bend.

Fig. 10. Double sheet bend.

Fig. 8.
Sling.

Fig. 11.
Double matthew walker knot.

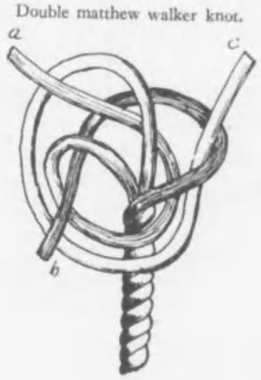


Fig. 12.
English sennit.

Fig. 13.
Round sennit.

19

KNOTS, HITCH, SPLICE, WHIPPING & ETC.

Fig. 1.
Single diamond knot.

Fig. 2.
Single diamond knot.

Fig. 3.
Standing turk's head.

Fig. 4. Paunch mat.

Fig. 5.
Running turk's head.

Fig. 6.
Running turk's head.

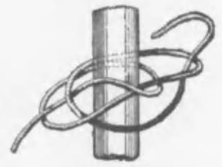


Fig. 7. Running turk's head.

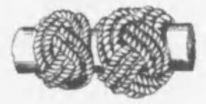
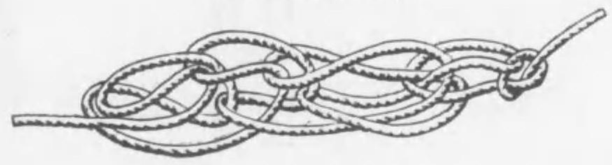


Fig. 8. Double chain knot.



20

KNOTS, HITCH, SPLICE, WHIPPING & ETC.

Fig. 1.
Grafting or pointing.

Fig. 2.
Grafting or poineing.

Fig. 3.
Whipping.

Fig. 4.
Whipping.

Fig. 5—8. Throat seizing or round seizing.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.
Racking seizing.

Fig. 10.
Racking seizing.

Fig. 11.
Racking seizing.

21

KNOTS, HITCH, SPLICE, WHIPPING & ETC.

Fig. 1. Short splice.

Fig. 2. Short splice.

Fig. 3. Short splice.

Fig. 4. Long splice.

Fig. 5. Long splice.

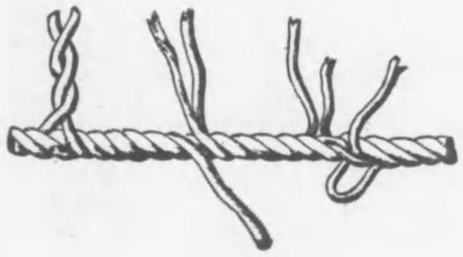


Fig. 6. Eye splice.

Fig. 7. Eye splice.

Fig. 8. Eye splice.

22

KNOTS, HITCH, SPLICE, WHIPPING & ETC.

Fig. 1. Wire splice.

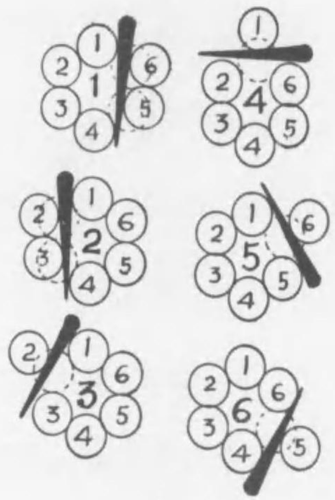


Fig. 2. Wire eye splice.

Fig. 3. Wire eye splice.

Fig. 4. Wire long splice.

Fig. 5. Wire long splice.

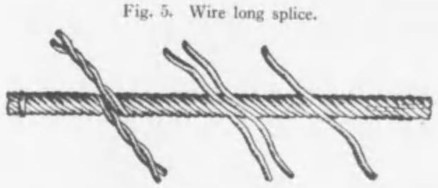


Fig. 6. Wire long splice.

Fig. 7. Wire eye splice.

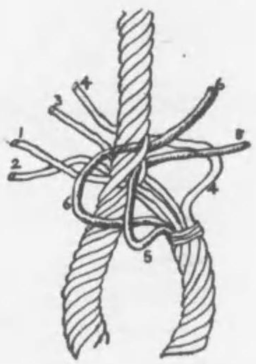


Fig. 8. Wire eye splice.

23

KNOTS, HITCH, SPLICE, WHIPPING & ETC.

Fig. 1.
Stopper.

Fig. 2. Worming.

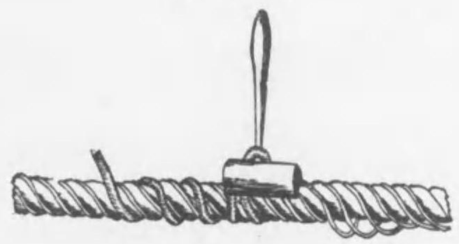


Fig. 3. Parcelling.

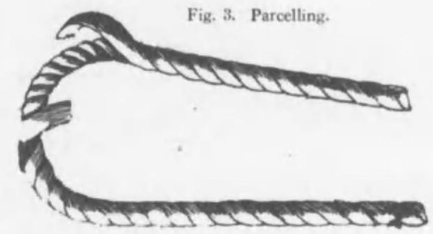


Fig. 4. Serving.

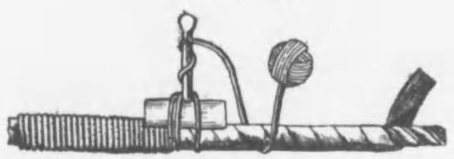


Fig. 7. Fishing.

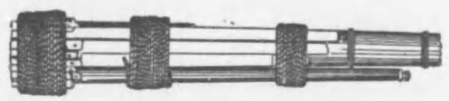


Fig. 6.
Way of belaying
a rope on a cleat.

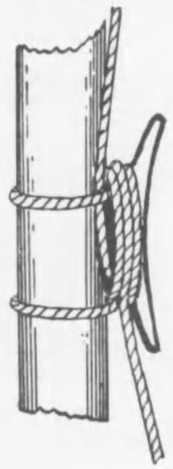
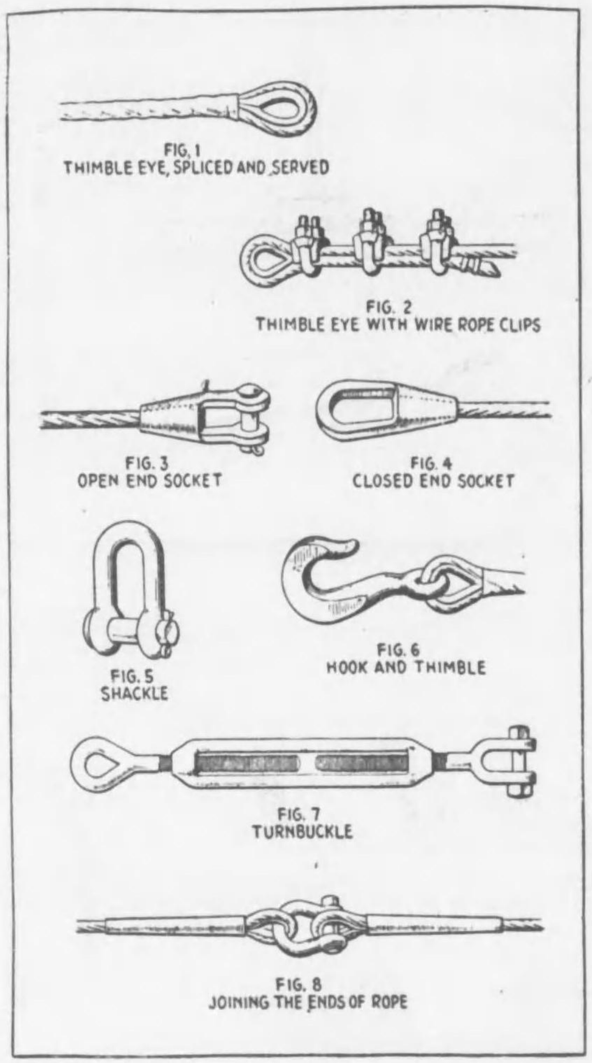


Fig. 5. Wire Grammet.

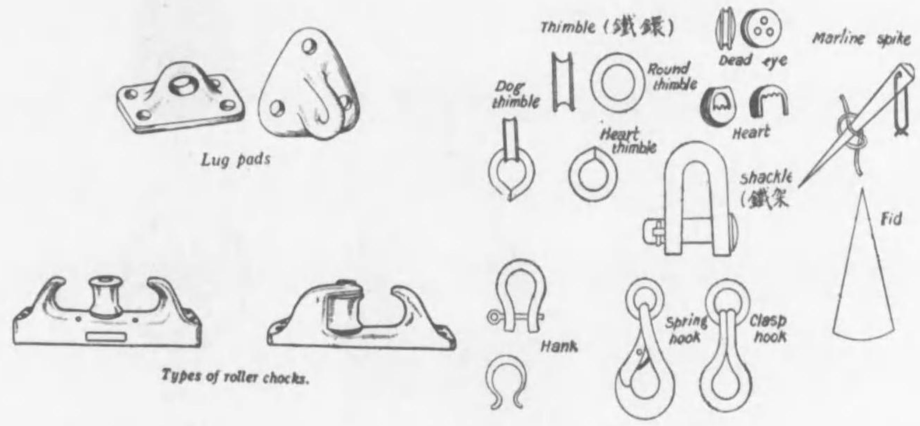
24

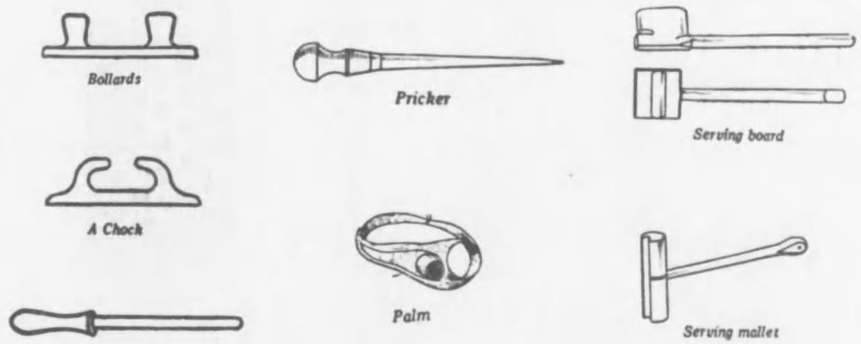
APPLIANCES FOR USE WITH WIRE ROPE.



25

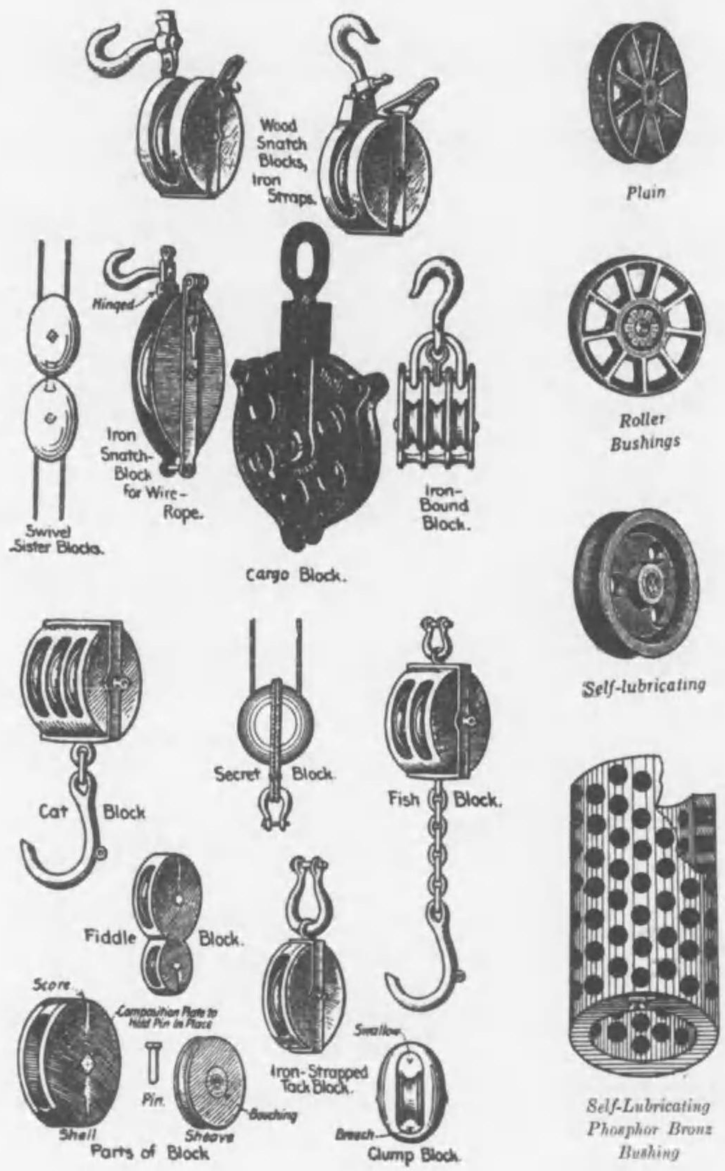
DECK, FITTING AND SANDRIES.





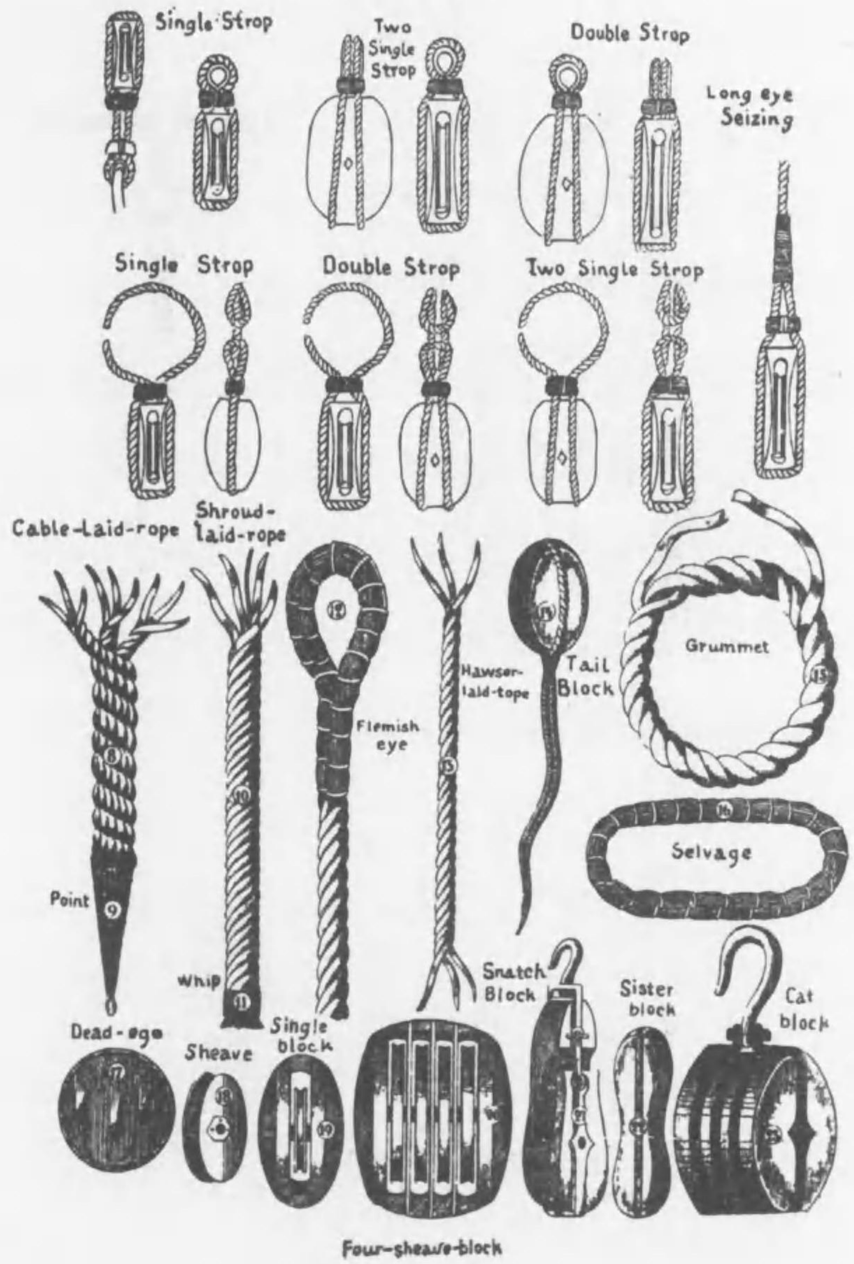
26

BLOCKS.



27

BLOCKS, ETC.



28

GROMMET STRAP.

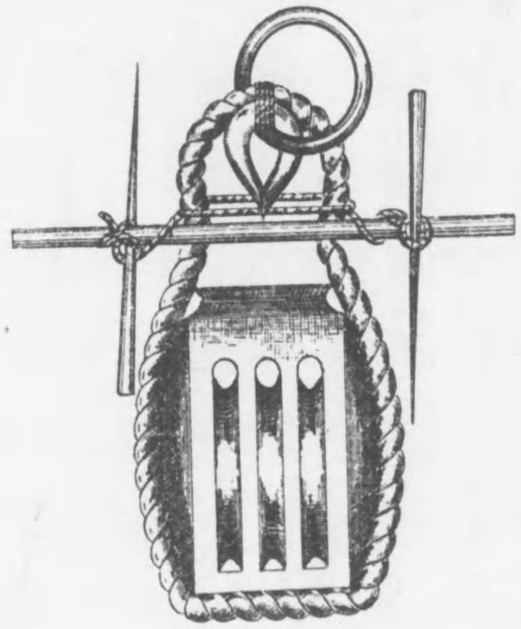


Fig. 1.
Reaving in a purchase block strap with a spanish windlass.

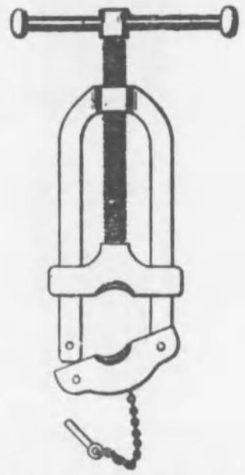


Fig. 2. Rigger's Screw.

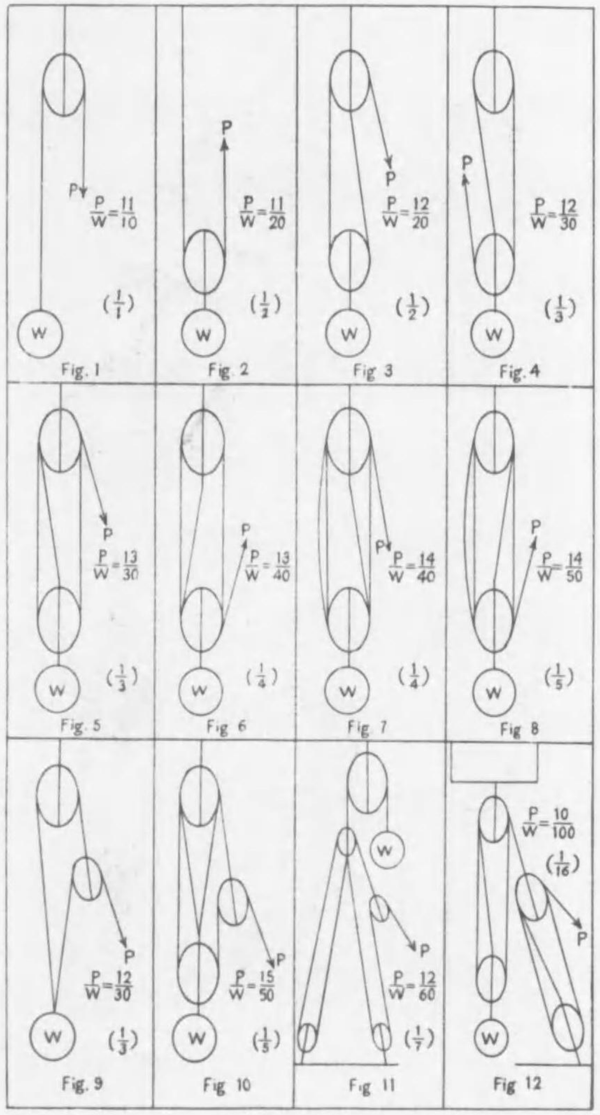
Grommet Strap (2.)

Fig. 3.

Fig. 4. Fig. 5.

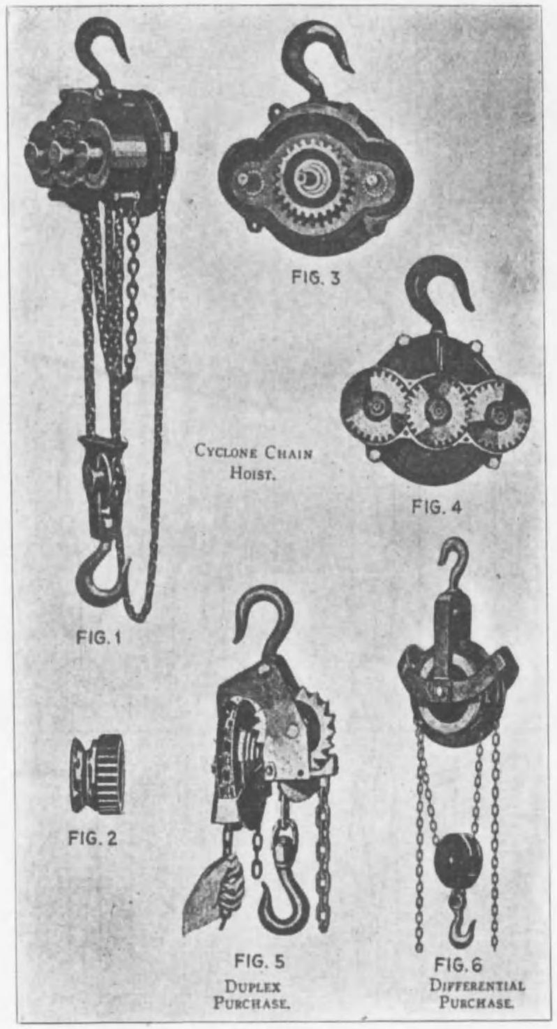
29

TACKLES.



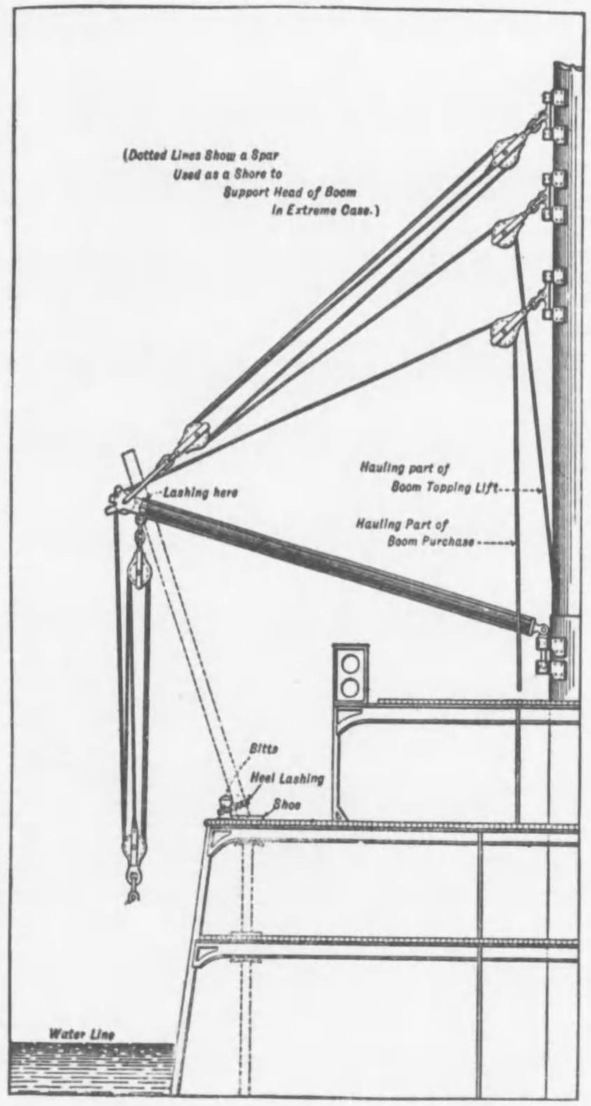
30

MECHANICAL PURCHASES.



31

BOOM FOR HEAVY WEIGHTS.



32

PARBUCKLING.

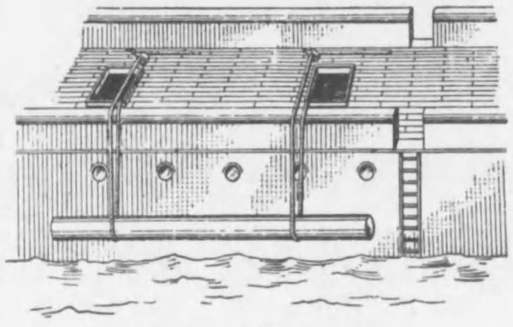


FIG. 1
PARBUCKLING A SPAR ON BOARD SHIP

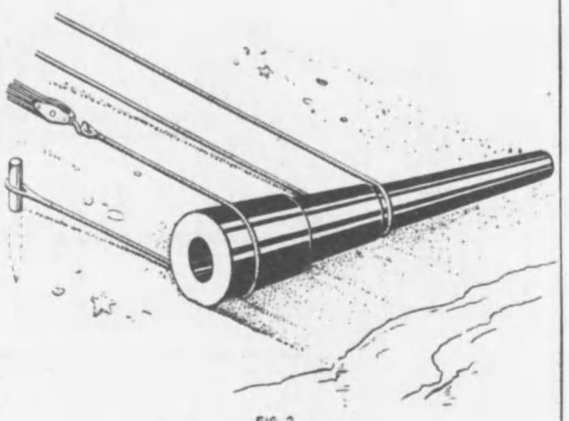
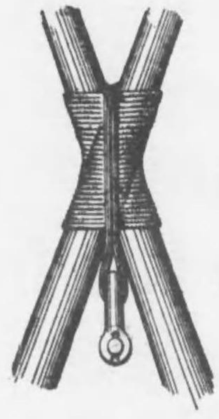


FIG. 2.
PARBUCKLING A GUN UP A BEACH

33

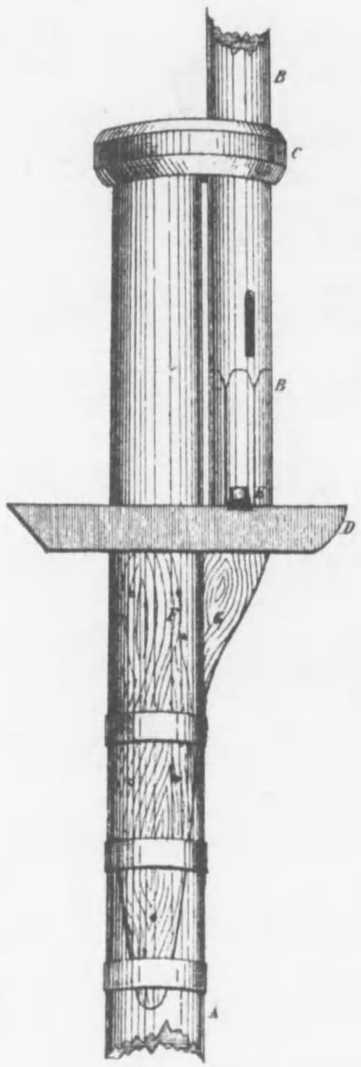
SHEERS FOR HANDLING A HEAVY WEIGHT.



Sheer Head
Lashing.

34

MAST HEAD CAP, TRESTLE TREES, ETC., OF WOODEN VESSEL.

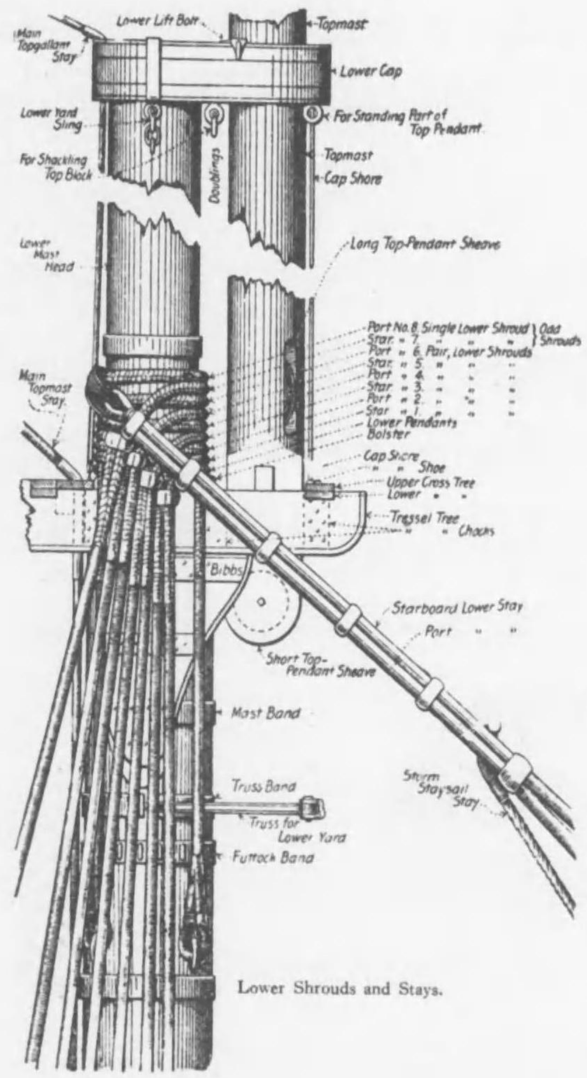


A. Lower mast.
B. Topmast.
C. Cap.
D. Trestle Trees.
E. Fid.
F. & G. Hound and knees on which the Trestle Trees rest.

The method by which the upper lengths of a mast are secured to the lower. (Side view).

35

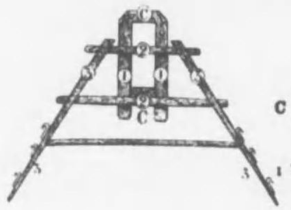
LOWER MAST HEAD.



Lower Shrouds and Stays.

36

PORTION OF A LOWER-MAST, LOWER-RIGGING, TOP, CAP, CROSS-TREES, TRESTLE-TREES, ETC.



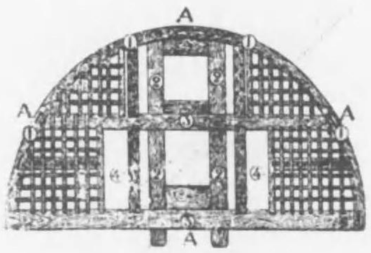
C Trestle-trees;
Cross-trees and Outriggers.

1 Topmast-trestle-trees

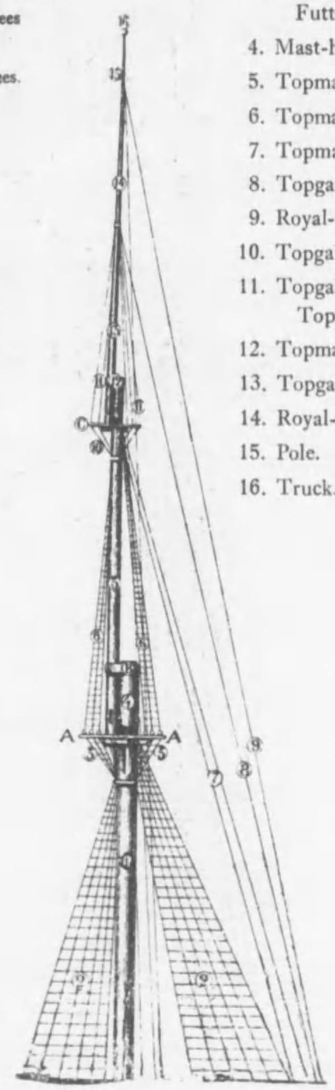
2 Topmast-cross-trees.

3 Outriggers.

B. Cap; Lower-mast-cap.



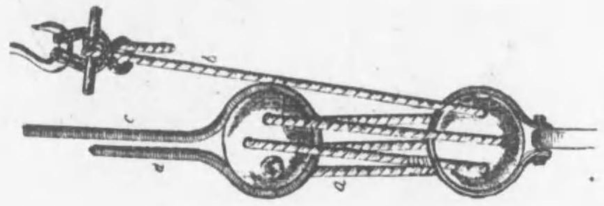
A. Top.
1. Rim.
2. Lower-trestle-trees.
3. Lower-cross-trees.
4. Lubber-holes.



1. Lower-mast.
2. Lower-rigging.
3. Futtock-rigging; Futtock-shrouds.
4. Mast-head.
5. Topmast.
6. Topmast-rigging.
7. Topmast-backstays.
8. Topgallant-backstay.
9. Royal-backstay.
10. Topgallant-futtocks.
11. Topgallant-rigging; Topgallant-shrouds.
12. Topmast-cap.
13. Topgallant-mast.
14. Royal-mast.
15. Pole. Royal-pole.
16. Truck.

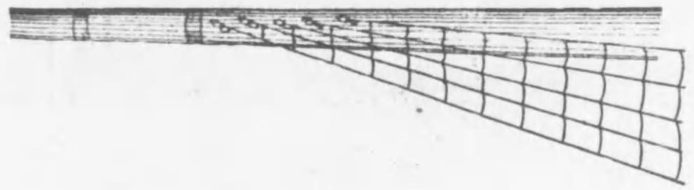
37

RIGGING AND LANYARD.



Reeving A Lanyard.

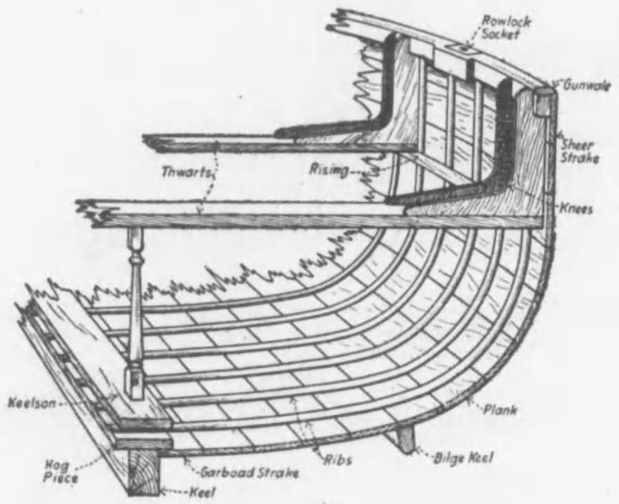
The lanyard is rove with the knot under the end part of the shroud, because the part (a) of the lanyard bears little or no strain in setting up; it and the next part having to be rendered through with a spike. Thus the principal strain is on the part (b), which brings the strain on the standing part of the shroud c, and not on the end part, d, which would probably be spliced in, and thus be the weaker part.



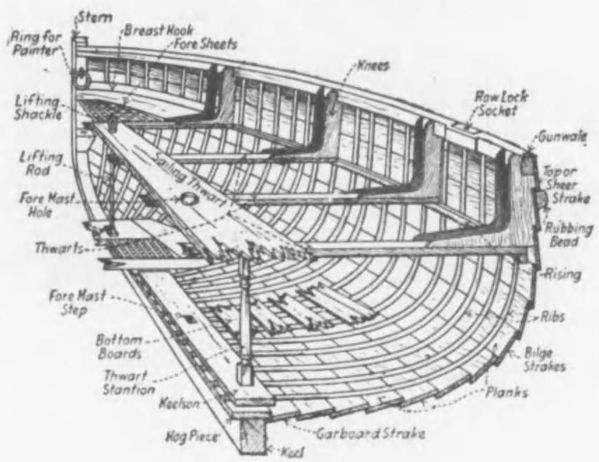
Wire rigging fitted with shackles to masthead.

38

CARVEL BUILT BOAT.

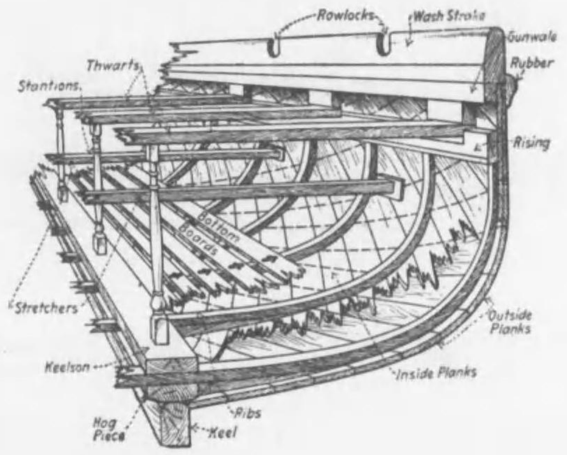


CLINKER BUILT BOAT.

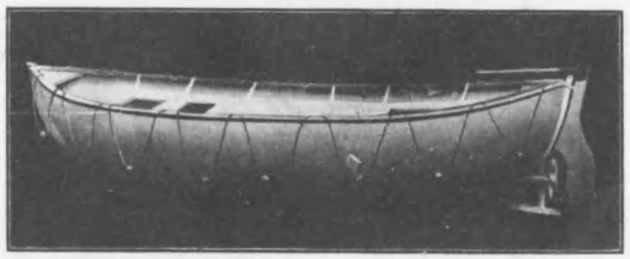


39

DIAGONAL BUILT BOAT.



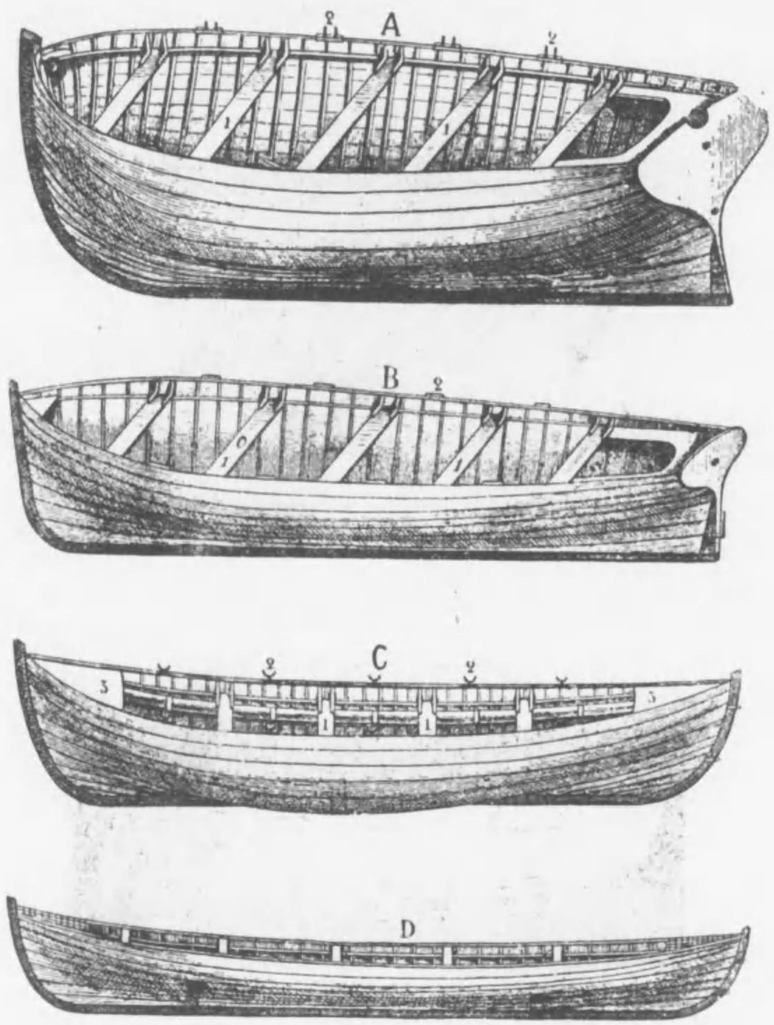
METAL BOAT.



Open steel lifeboat, curved keel, reinforced type, equipped with power.

40

VARIOUS BOATS AND BOAT-GEARS.



A. Long-boat; Launch.
1. Thwarts.
2. Thole-pins.

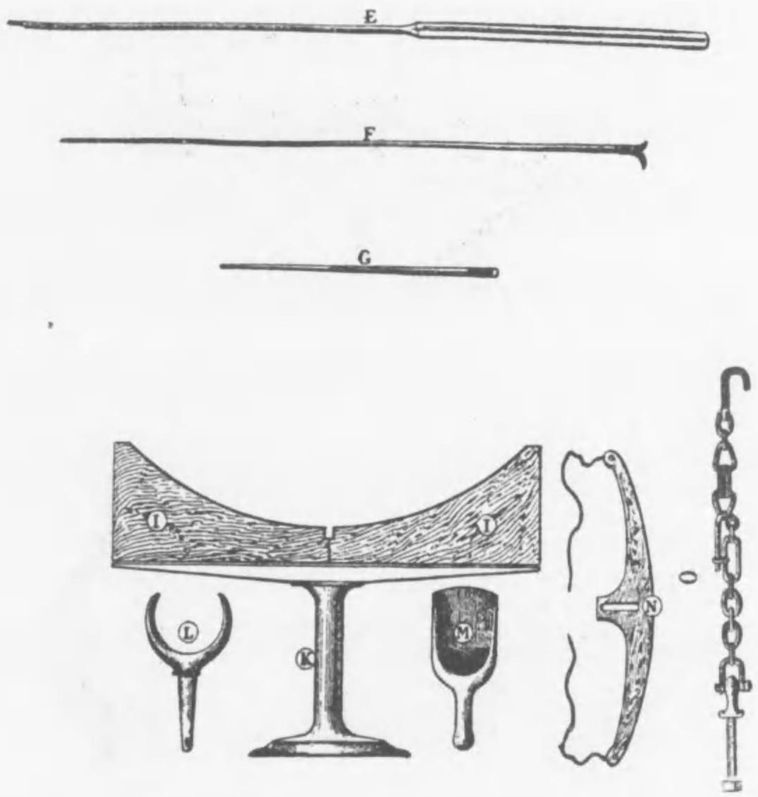
B. Cutter; Pinnace.
1. Thwarts.
2. Thole-pins.

C. Life-boat.
1. Thwarts.
2. Rowlocks.
3. Tanks.

D. Gig.

41

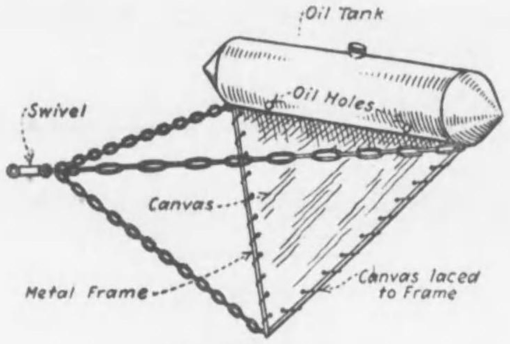
BOAT GEARS.



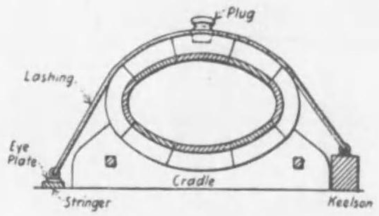
E. Oar; Boat-oar.
F. Boat-hook.
G. Rudder-tiller.
H. Rudder.
I. Boat-chock.
K. Boat-chock-standard.
L. Rowinck.
M. Bailer; Bailer.
N. Yoke; Rudder-yoke.
O. Boat-gripe.

42

BOAT GEARS.

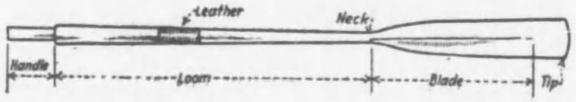


The Rouse Sea Anchor.



Water breaker. Method of carrying.

Canvas oil bag



43

BOAT DAVITS AND CHOCKS.

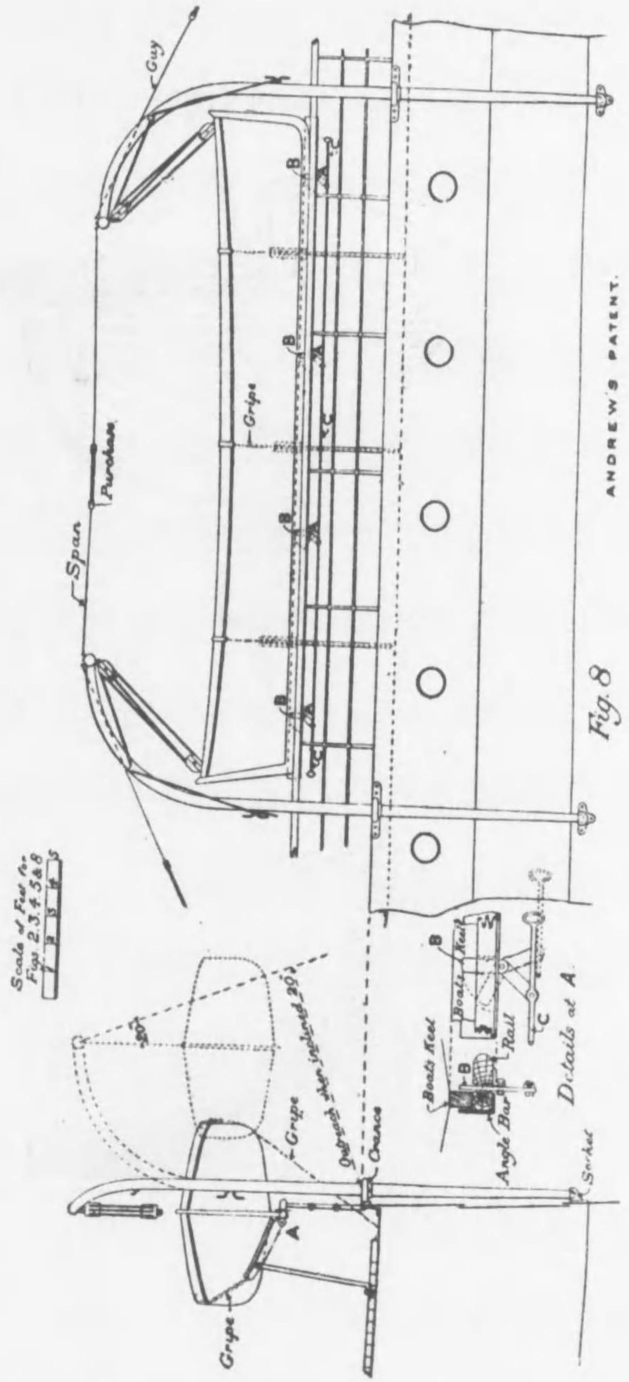


Fig. 8

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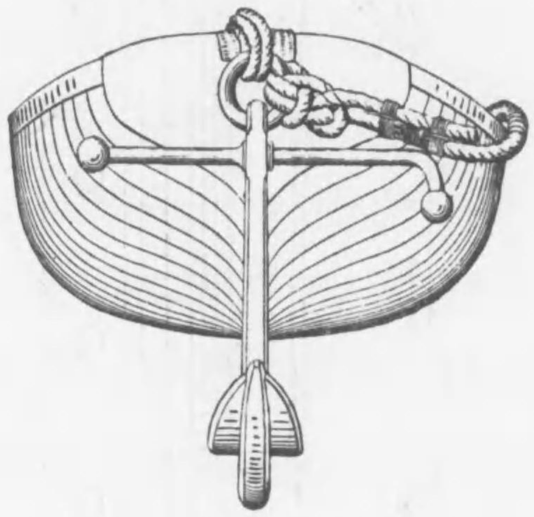
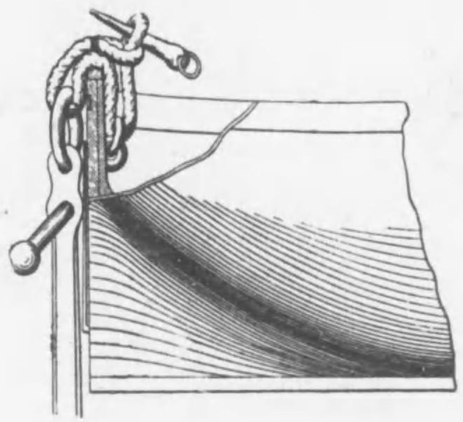
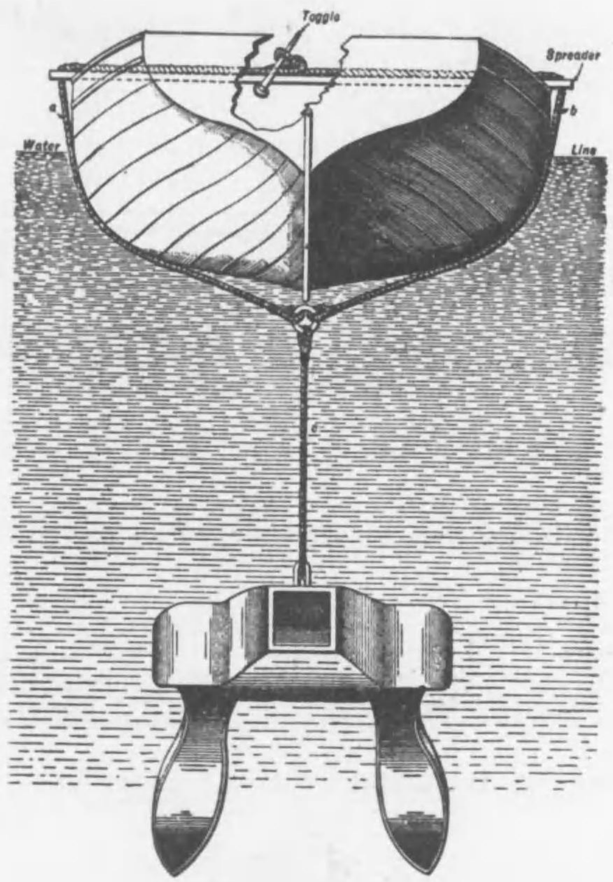
CARRYING A KEDGE WITH A CUTTER.





45

CARRYING OUT AN ANCHOR SLUNG UNDER A BOAT.



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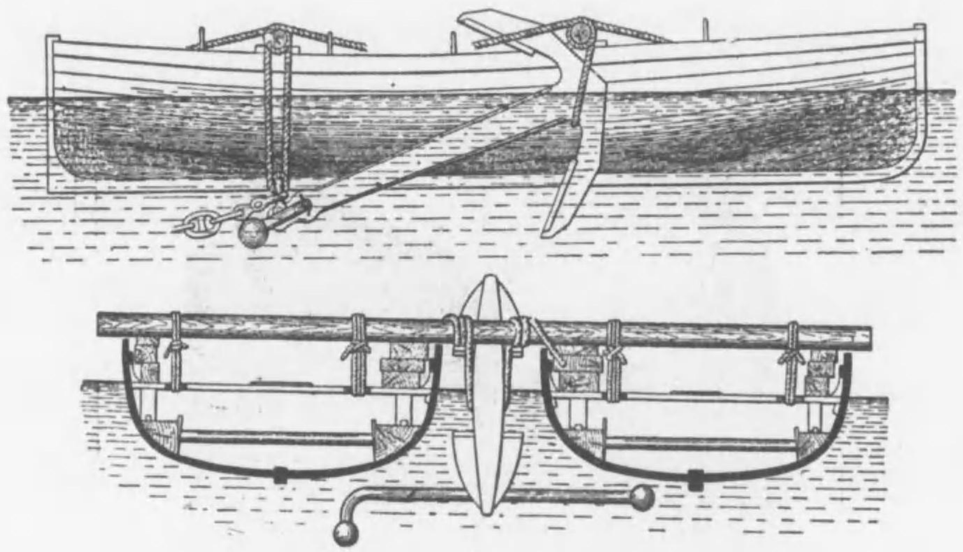
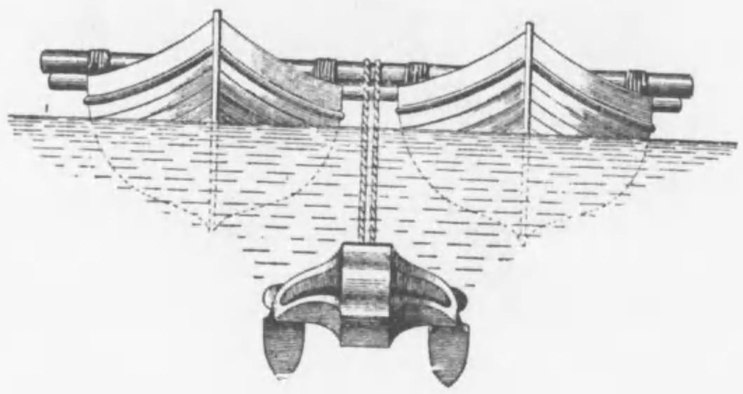
CARRYING OUT AN ANCHOR BETWEEN TWO BOATS.



LAYING OUT A BOWER ANCHOR BETWEEN TWO BOATS.



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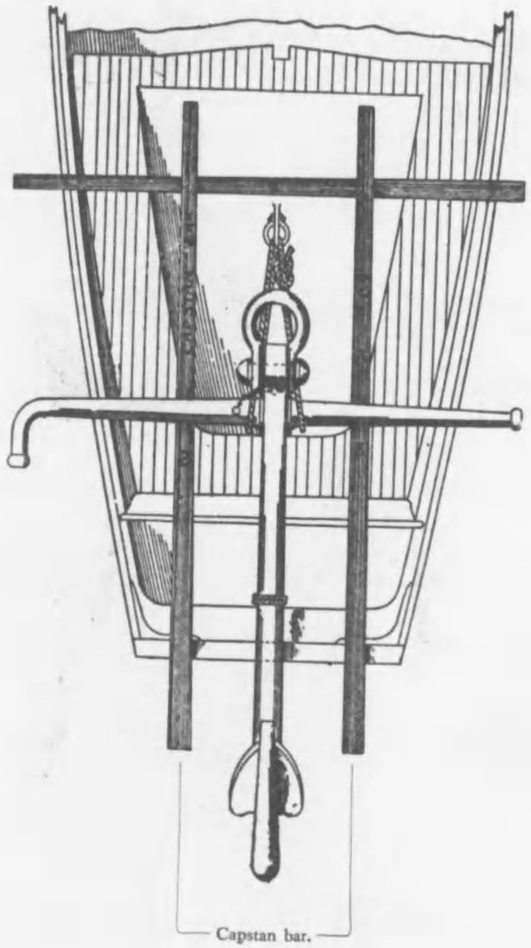
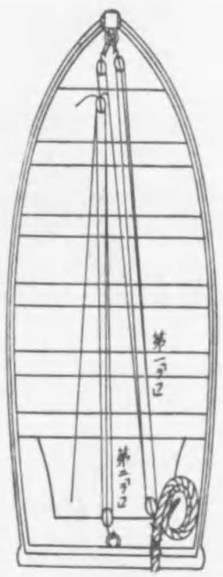
TO LAY OUT AN ADMIRALTY PATTARN.

Stream Anchor.



TO WEIGH AN ANCHOR
BY A BOAT.



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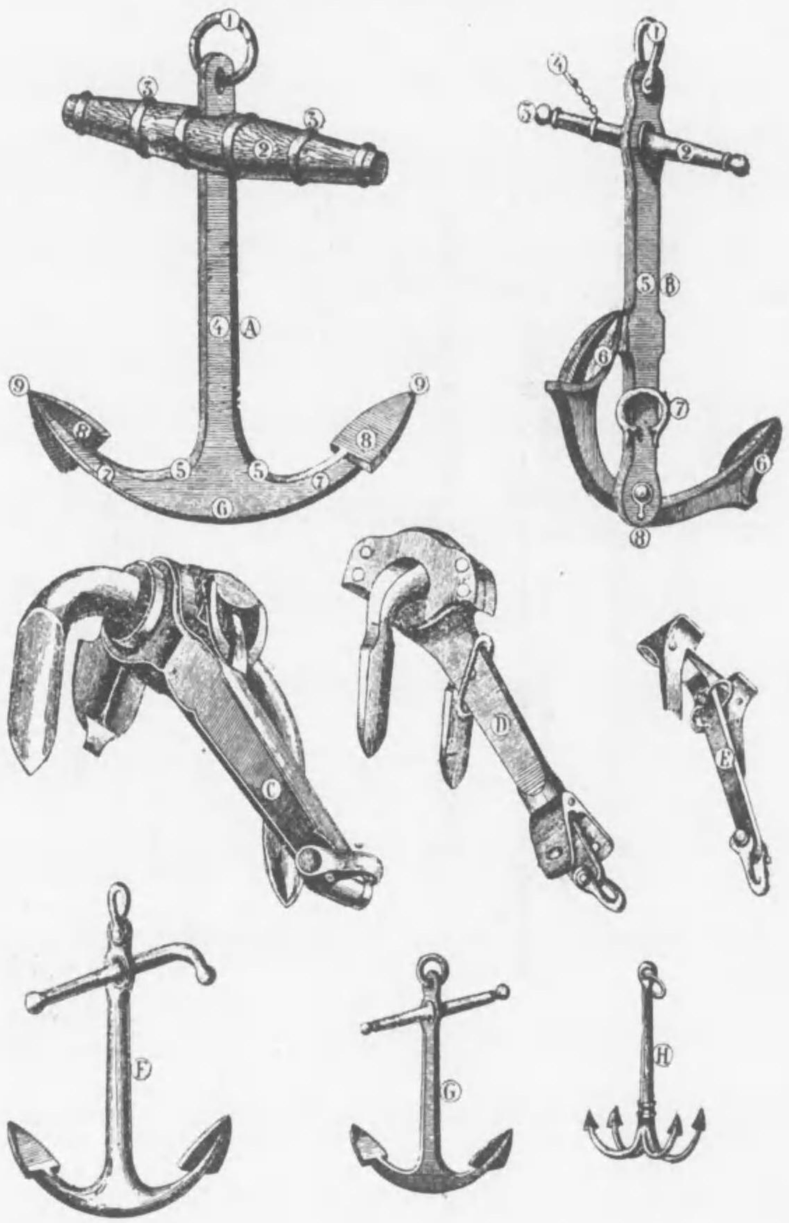
VARIOUS ANCHORS.



VARIOUS ANCHORS.

A. Common Bower.
1. Anchor-ring.
2. Anchor-stock.
3. Anchor-stock hoops.
4. Shank of the Anchor; Shaft of the Anchor.
5. Trend of the Anchor.
6. Crown of the Anchor.
7. Arms of the Anchor.
8. Anchor-flukes Palms of the Anchor.
9. Anchor-bill's; Peas of the Anchor.

B. Patent Bower (Trotman's Anchor).
1. Anchor-ring.
2. Anchor-stock.
3. Nuts of the Anchor-stock.
4. Forelock of the Anchor.
5. Shank of the Anchor; Shaft of the Anchor.
6. Anchor-flukes; Palms of the Anchor.
7. Fish-shackles.
8. Crown of the Anchor.

C. Stockless-Bower (Tyzack's Patent).

D. Stockless-Bower (Martin's Patent).

E. Stockless-Bower (Wasteneys Smith's Patent).

F. Stream; Stream-anchor.

G. Kedge; Kedge-anchor.

H. Grapnel.

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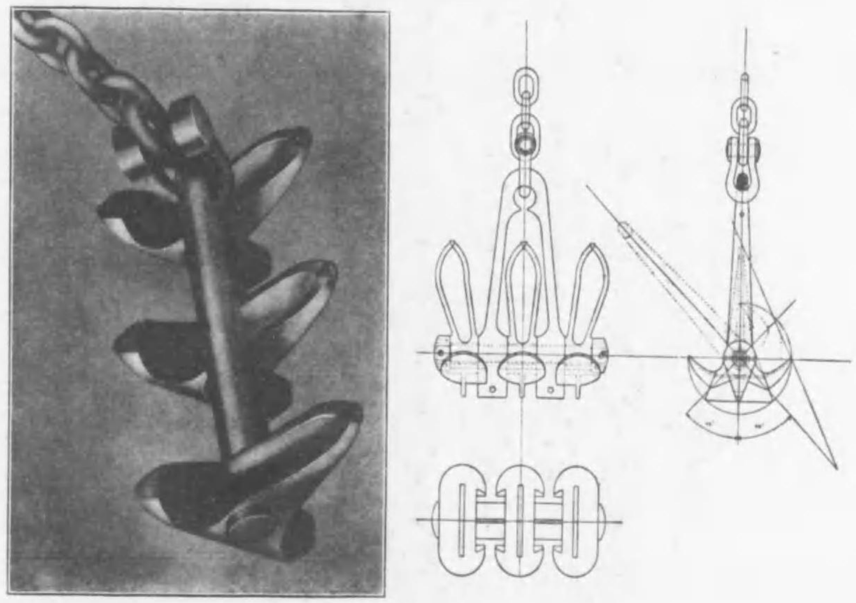
VARIOUS ANCHORS.

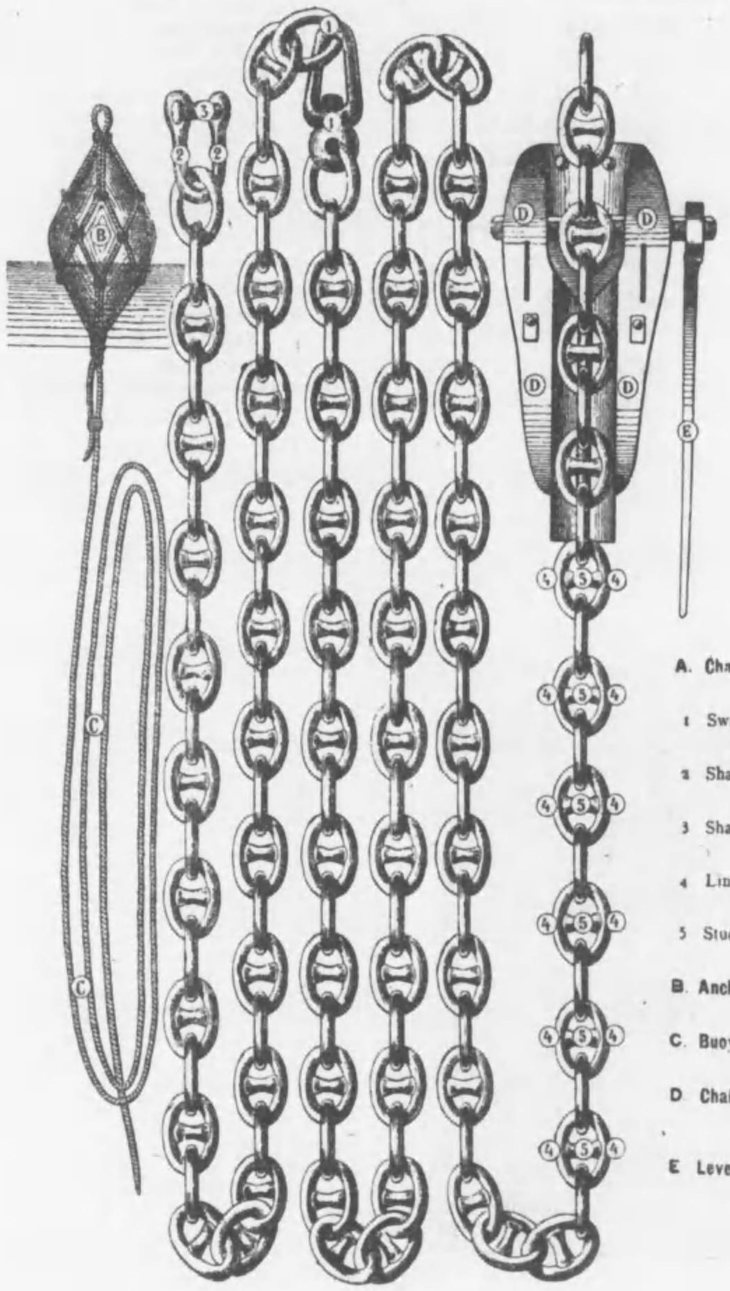


Triple Fluke Anchor.

50

CHAIN-CABLE, ETC.

A.



A. Chain-Cable.

1 Swivel.

2 Shackle.

3 Shackle-bolt

4 Links.

5 Studs.

B. Anchor-buoy.

C. Buoy-rope.

D Chain-Cable Co...

E Lever.

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STOPPERS.

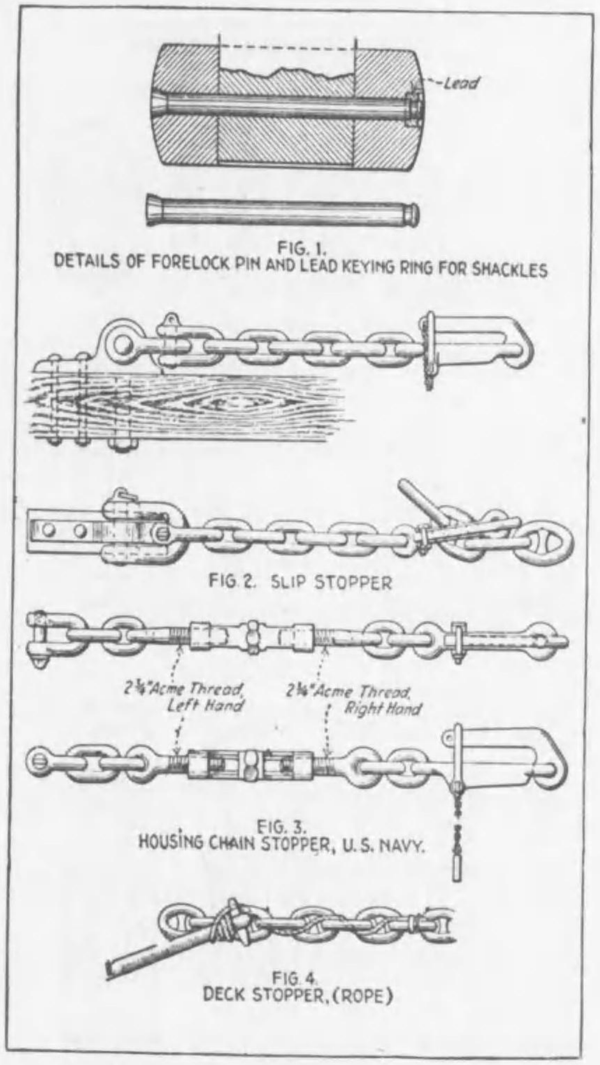

FIG. 1.
DETAILS OF FORELOCK PIN AND LEAD KEYING RING FOR SHACKLES

FIG. 2. SLIP STOPPER

FIG. 3.
HOUSING CHAIN STOPPER, U.S. NAVY.

FIG. 4.
DECK STOPPER, (ROPE)

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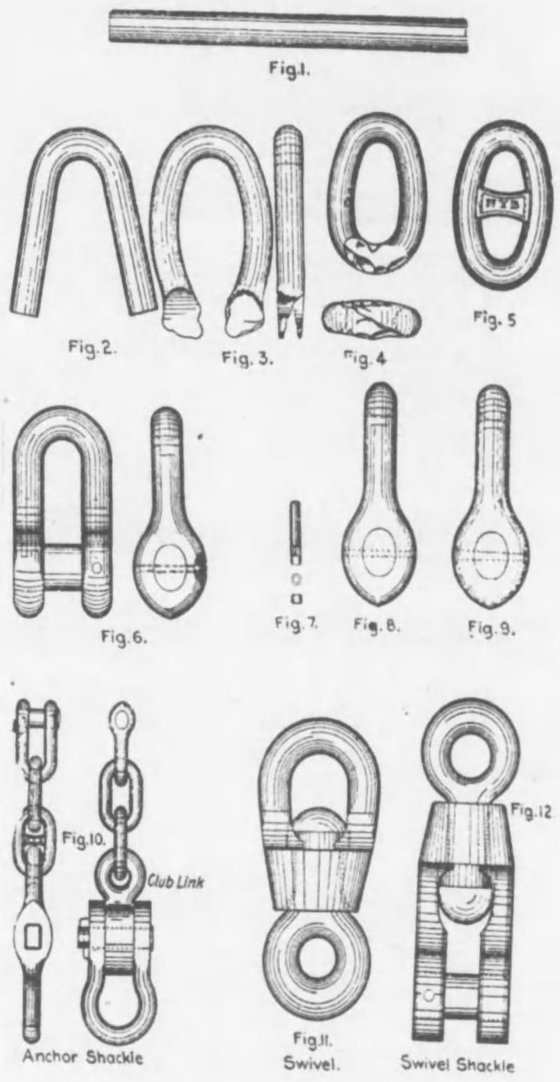
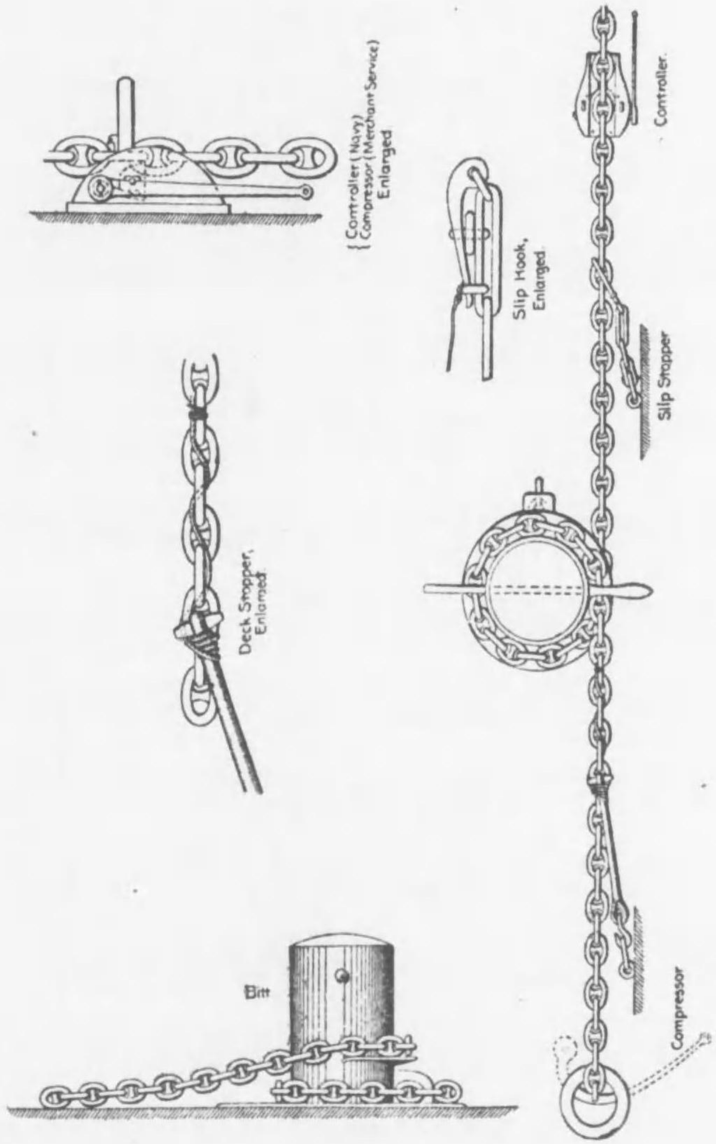
PARTS OF CHAIN CABLE U. S. NAVY.



53

STOPPERS.



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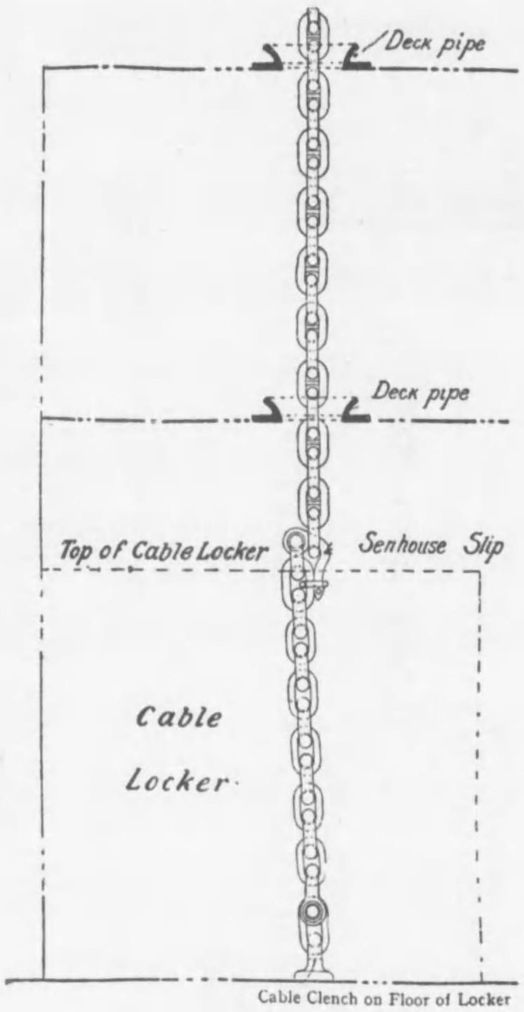
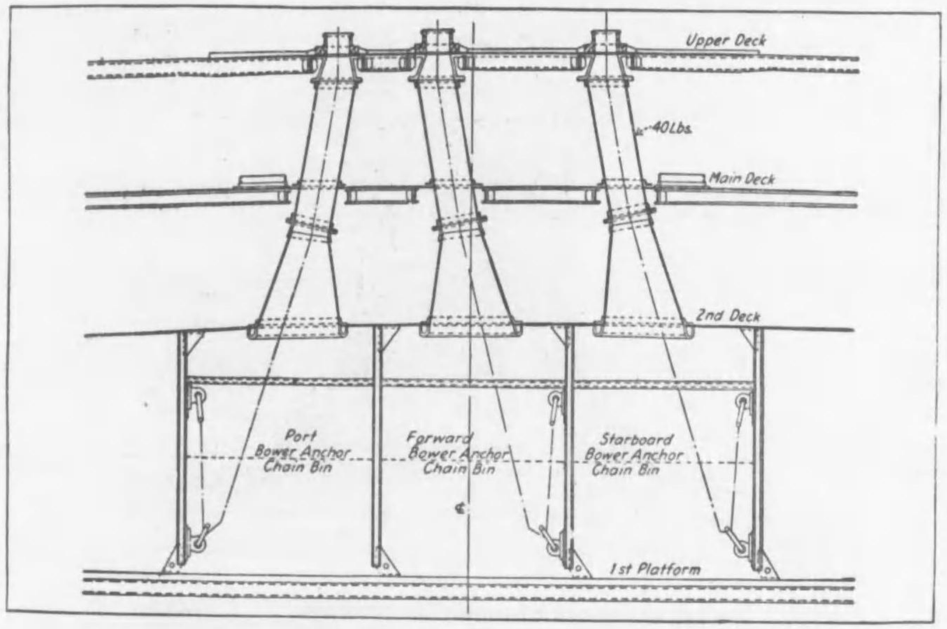
CHAIN LOCKERS (*Small vessels*).



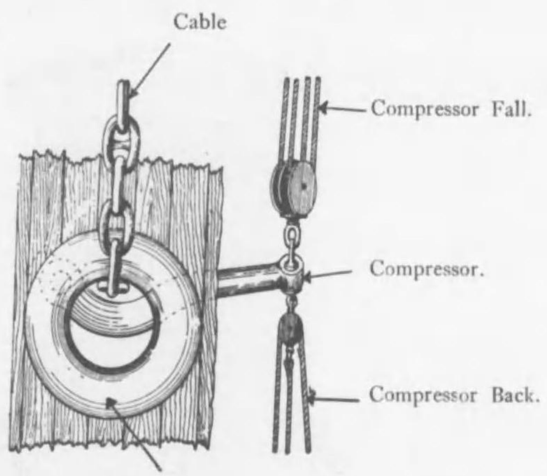
55

CHAIN LOCKERS (*Large vessels*).



CABLE STOPPERS (*Compressor*).

Senhouse Slip.



Chain Pipe.
Naval Pipe and Compressor.

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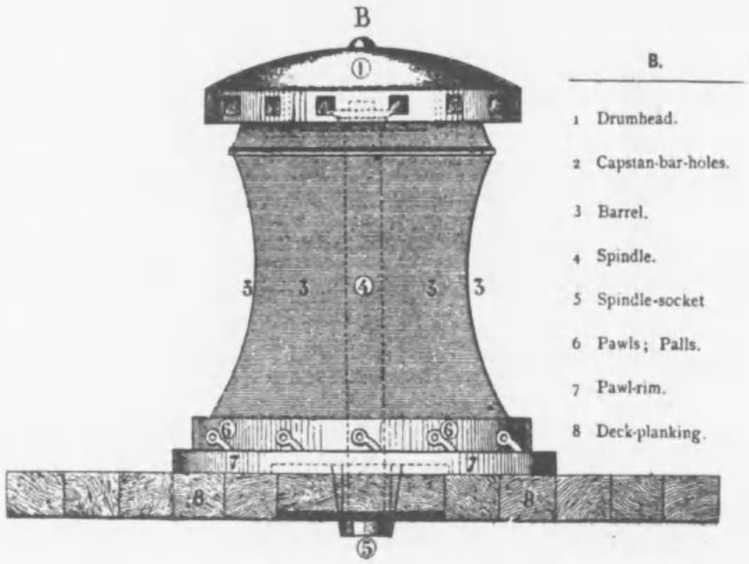
CAPSTANS.

A

A.

1 Drumhead.
2 Capstan-bar-holes.
3 Barrel.
4 Whelps.
5 Whelp-chocks.
6 Pawls; Palls.
7 Pawl-rim.
8 Capstan-partner.
9 Deck-planking.
10 Capstan-bar.

B

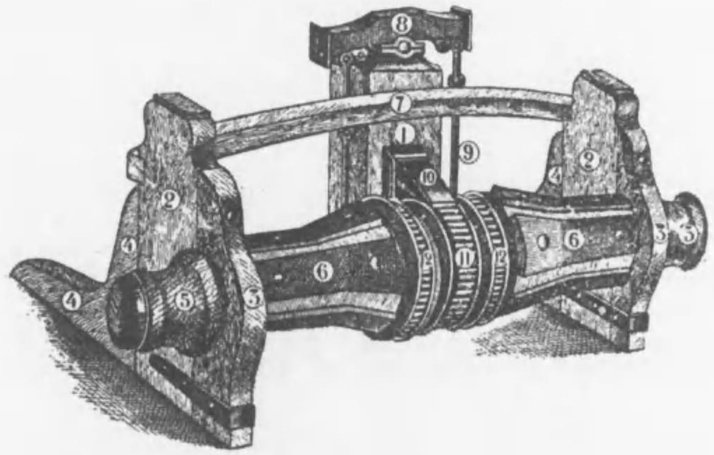


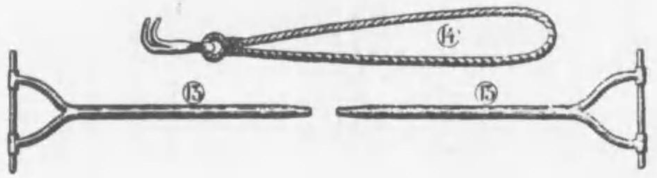
B.

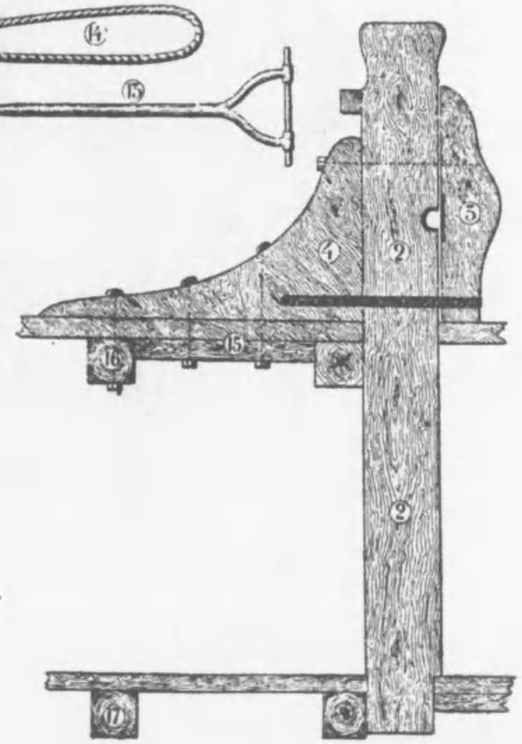
1 Drumhead.
2 Capstan-bar-holes.
3 Barrel.
4 Spindle.
5 Spindle-socket
6 Pawls; Palls.
7 Pawl-rim.
8 Deck-planking.

57

WOODEN WINDLASS.



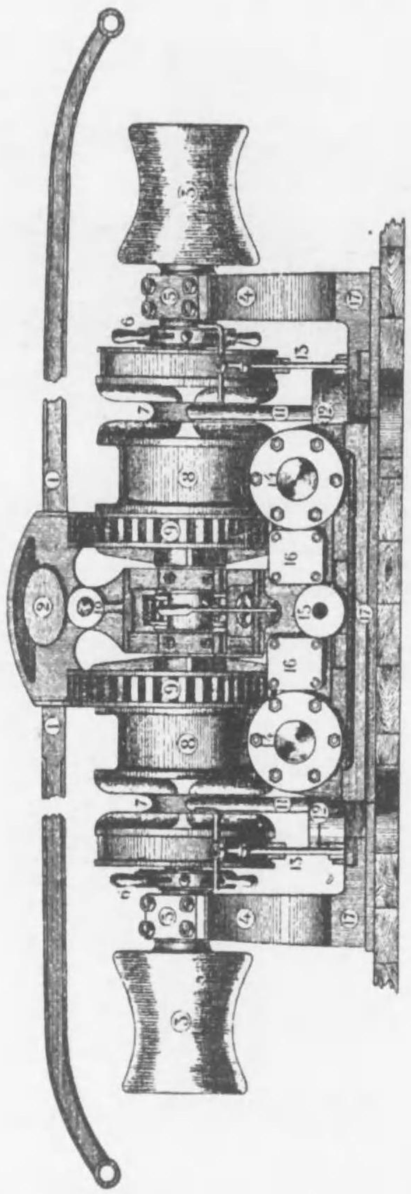




1. Pawl-bitt; Pall-bitt.
2. Carrick-bitts.
3. Cheeks (of Carrick-bitts).
4. Standard-knees (of Carrick-bitts).
5. Warping-ends.
6. Whelps (on Main-piece of Windlass).
7. Strong-back.
8. Crosshead.
9. Purchase-rod.
10. Pawl; Pall.
11. Pawl-rim.
12. Purchase-rims.
13. Hand-levers.
14. Chain-stopper; Claw-stopper.
15. Beam-carling.
16. Upper-deck-beam.
17. Lower-deck-beam.

58

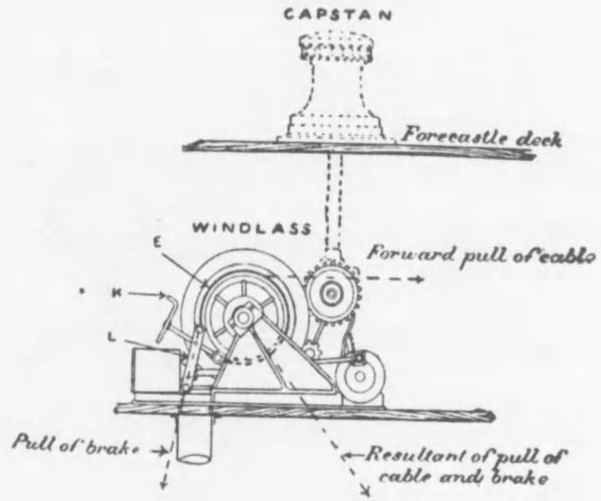
STEAM-WINDLASS.

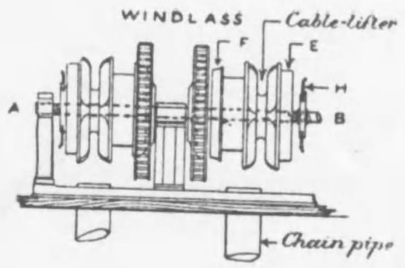


1. Hand-levers.
2. Crosshead.
3. Warping-ends.
4. Side-bitts.
5. Side-bitt-keeps.
6. Screw-brake-nuts.
7. Cable-lifters; Cable-holders.
8. Main-piece (of Windlass).
9. Main-cone-driving-wheels.
10. Crosshead-bracket.
11. Cable-relievers.
12. Chain pipes.
13. Brakes.
14. Cylinders.
15. Steam-pipe-flange.
16. Valve-casings; Steam-chests.
17. Bed-plate; Base-plate.

59

STEAM WINDLASS AND CAPSTAN.





60

FOUL HAWSE BACKING AN ANCHOR.

Cross.

A

Elbow.

B

Round turn.

C

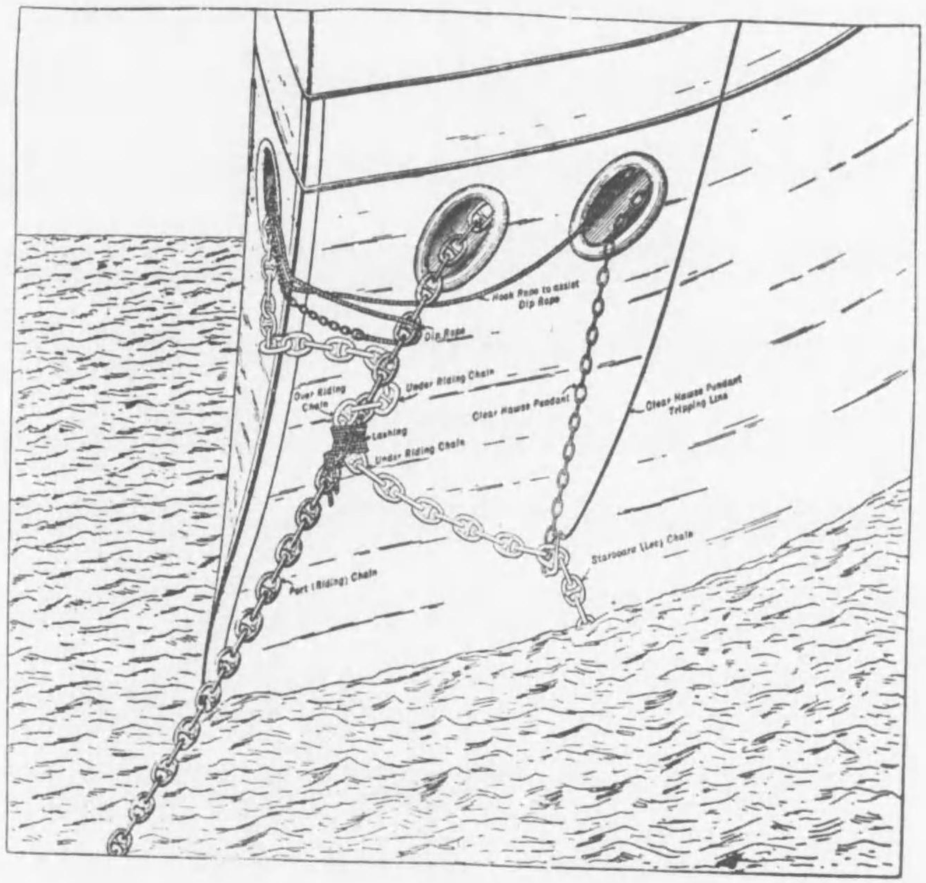
Round turn and elbow.

D

61

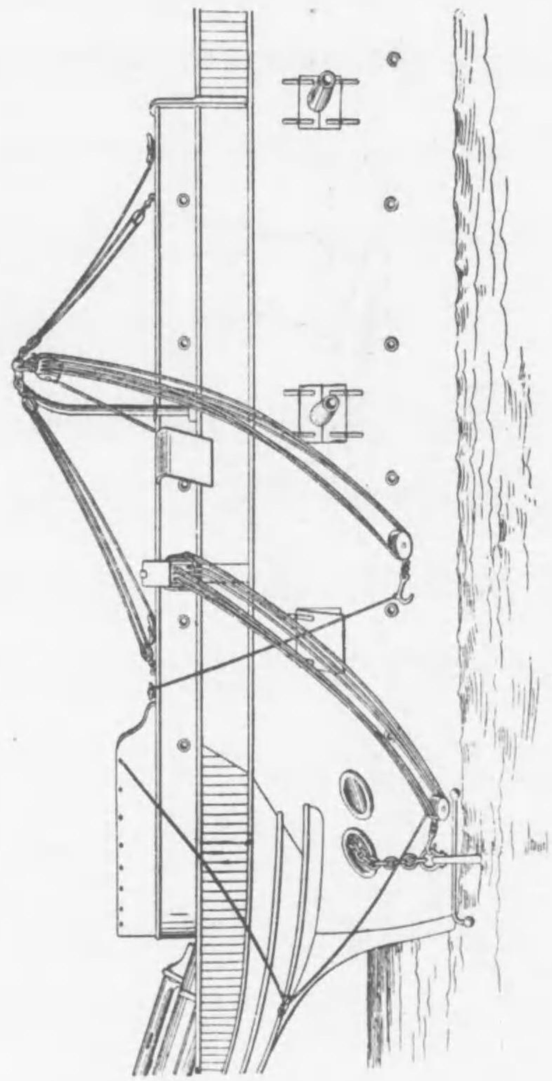
CLEARING HAWSE

BOTH CHAINS ON WEATHERS SIDE OF RAM.



62

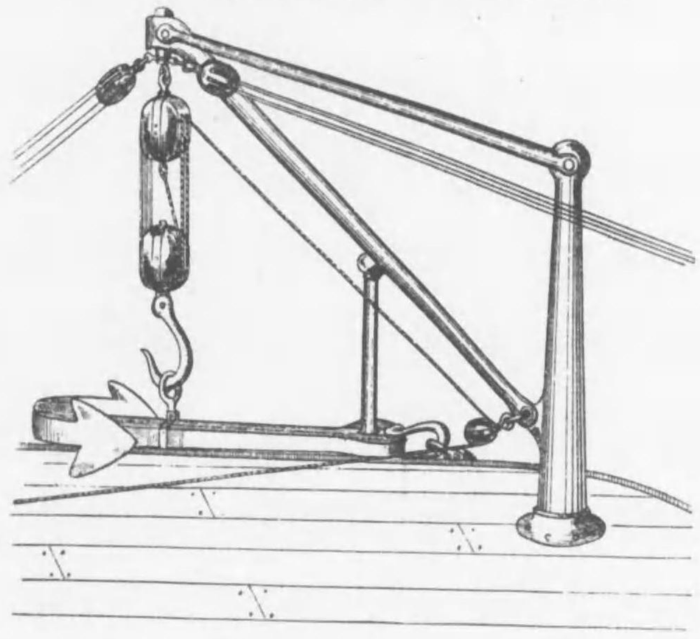
CATTING AND FISHING ANCHOR
IN AN OLD FASHIONED SHIP.



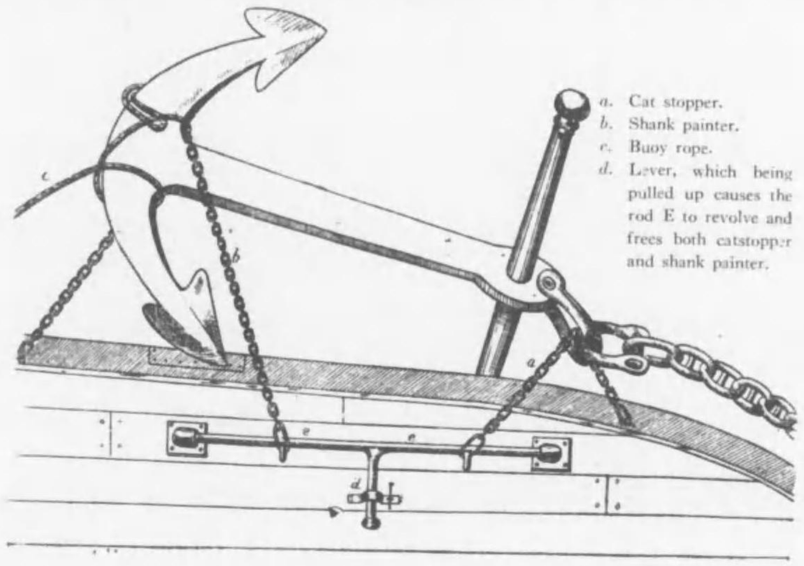
63

ANCHOR STORAGE (*Stocked anchor*).

CRANE FOR CATTING AND FISHING IN ONE OPERATION.

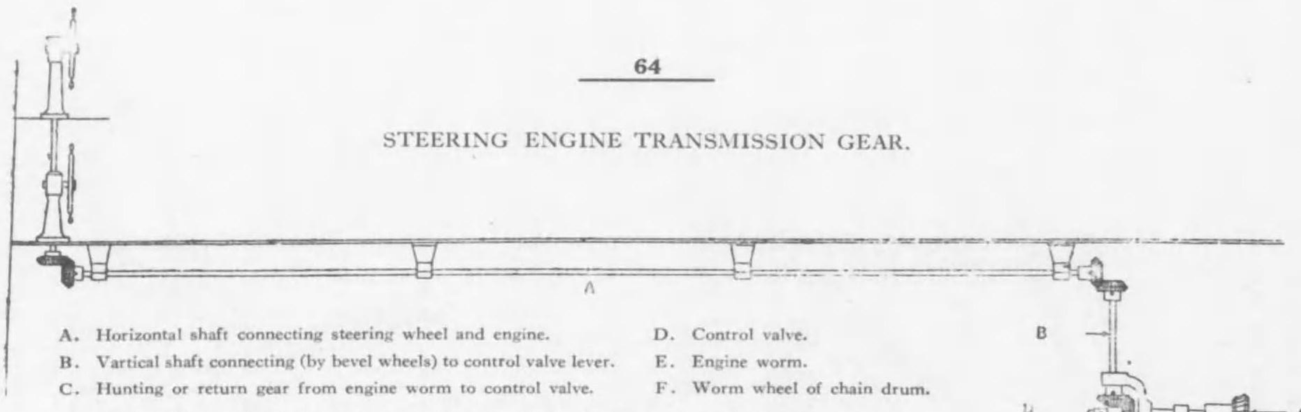


PLAN SHOWING ANCHOR READY FOR LETTING GO. "STOCK AND FLUKE."



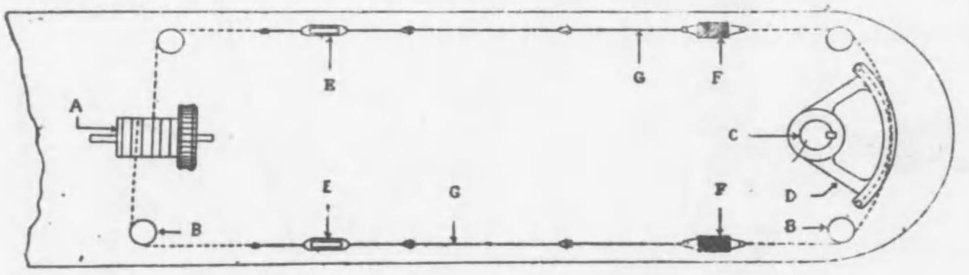
64

STEERING ENGINE TRANSMISSION GEAR.



A. Horizontal shaft connecting steering wheel and engine.
B. Vartical shaft connecting (by bevel wheels) to control valve lever.
C. Hunting or return gear from engine worm to control valve.
D. Control valve.
E. Engine worm.
F. Worm wheel of chain drum.

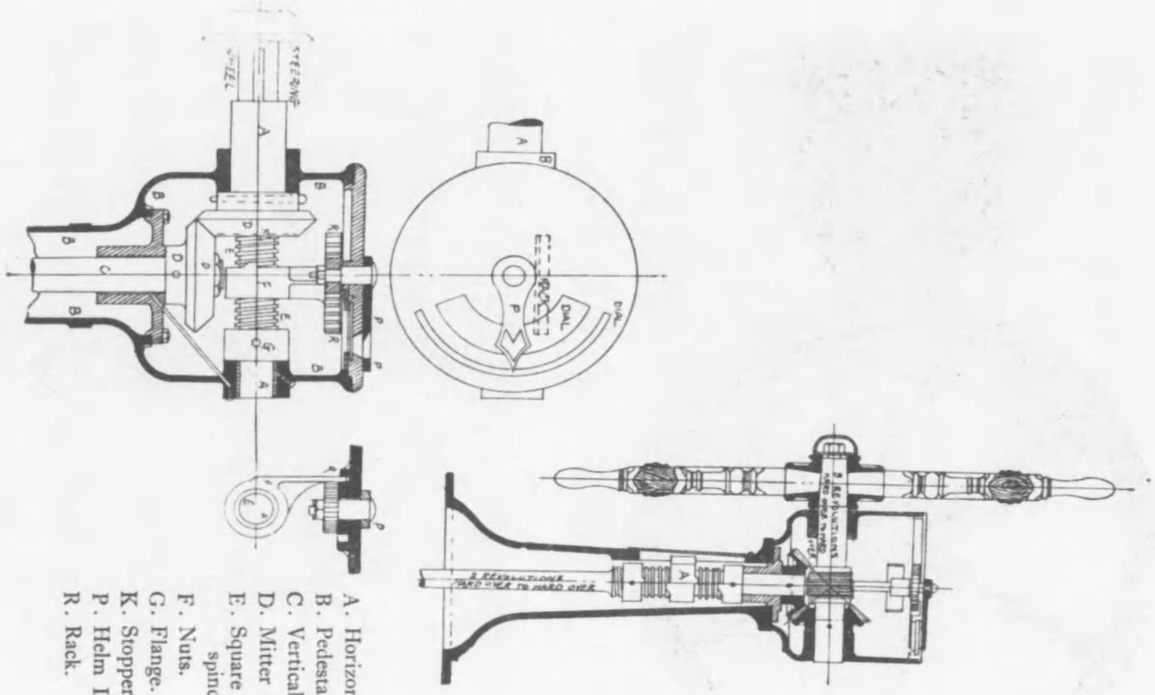
Note.—The small spindle connected to the control valve lever gears into wheels by a screw.



A. Chain drum.
B. Guide pulley.
C. Rudder head.
D. Rudder quadrant.
E. Stretching screws.
F. Springs.
G. Steering rods.

65

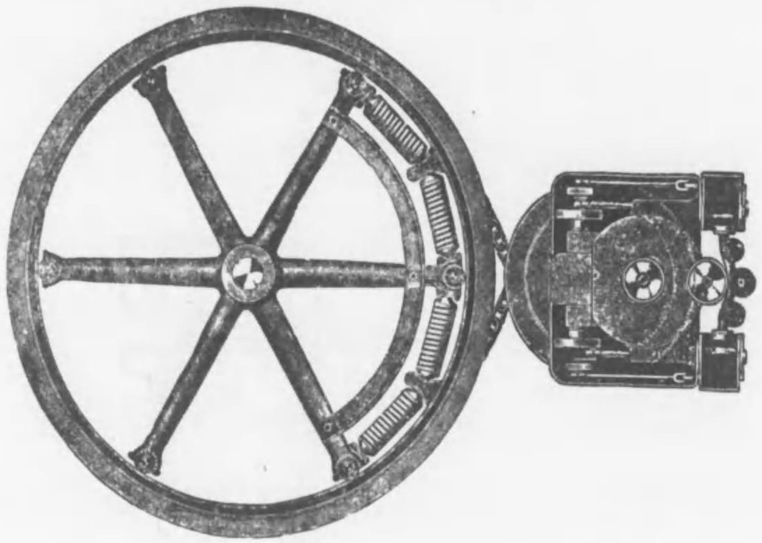
STEAM STEERING PEDESTAL.

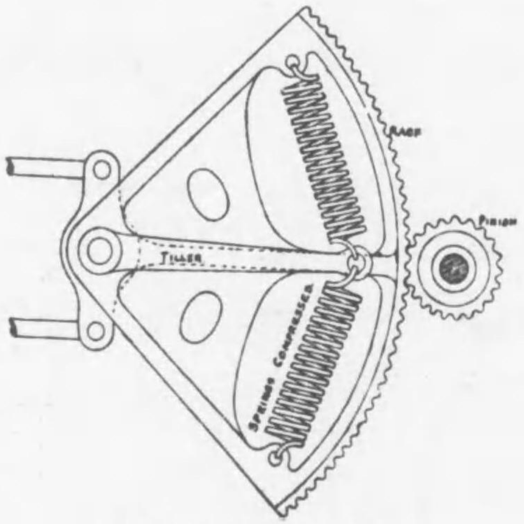


A. Horizontal axis.
B. Pedestal.
C. Vertical axis.
D. Mitter wheel.
E. Square threaded spindle.
F. Nuts.
G. Flange.
K. Stopper.
P. Helm Indicator.
R. Rack.

66

STEAM STEERING GEARS.

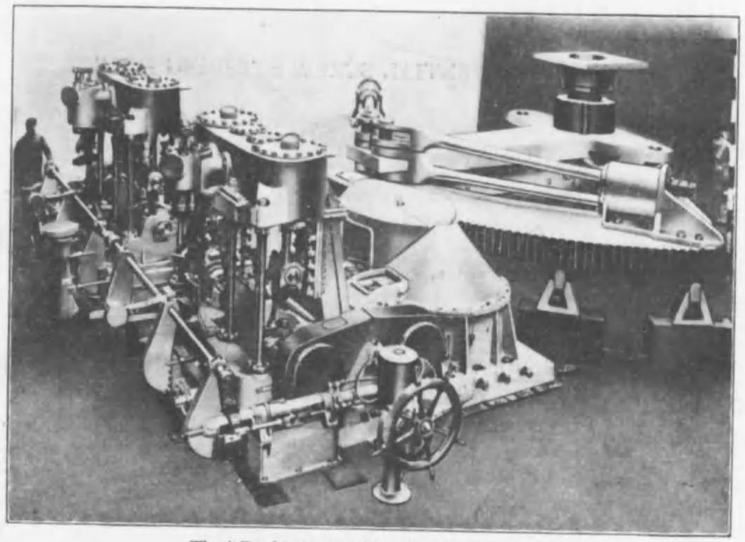




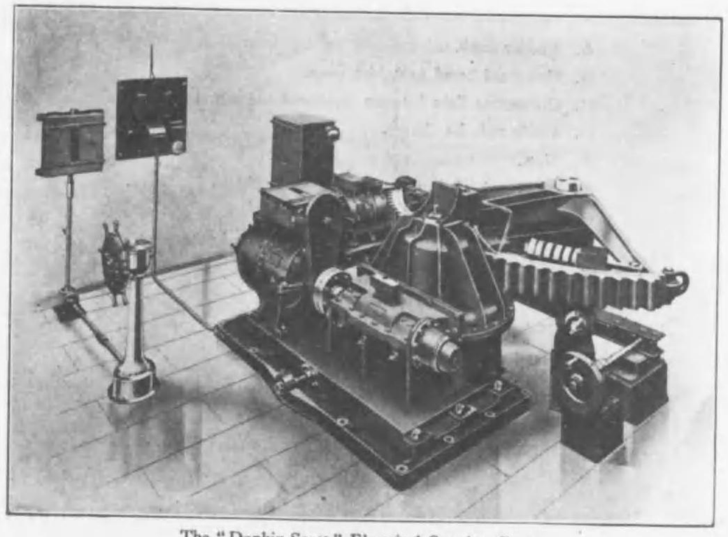
Wilson Pirries Rudder Gear.

67

STEAM STEERING GEAR.



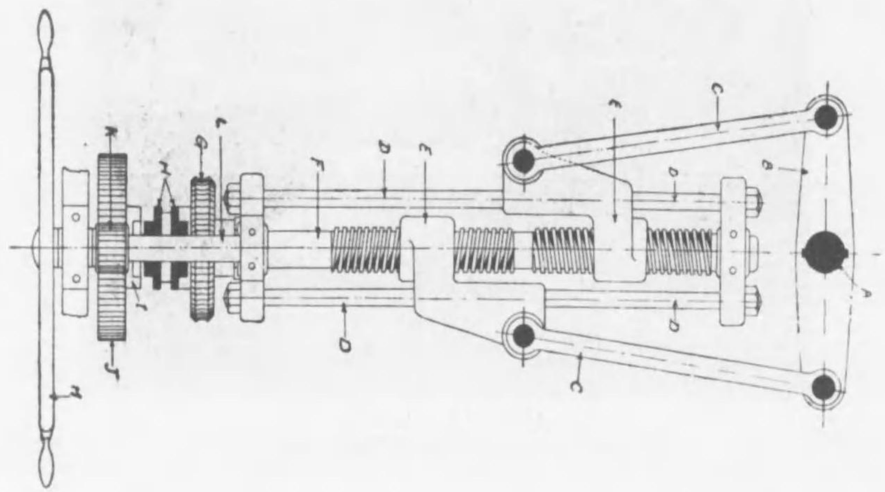
The "Donkin-Scott" Electrical Steering Gear
With Laurence Scott Patent Bridge Control.



The "Donkin-Scott" Electrical Steering Gear.

68

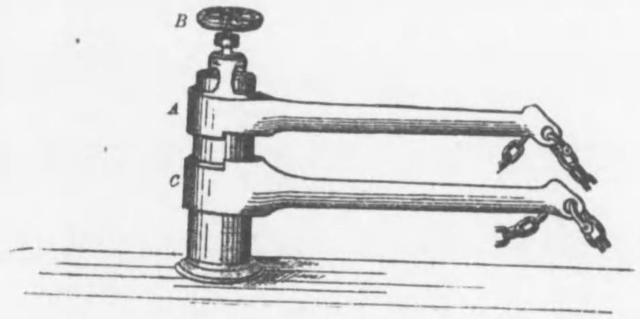
NAPIER'S DIFFERENTIAL SCREW STEERING GEAR.



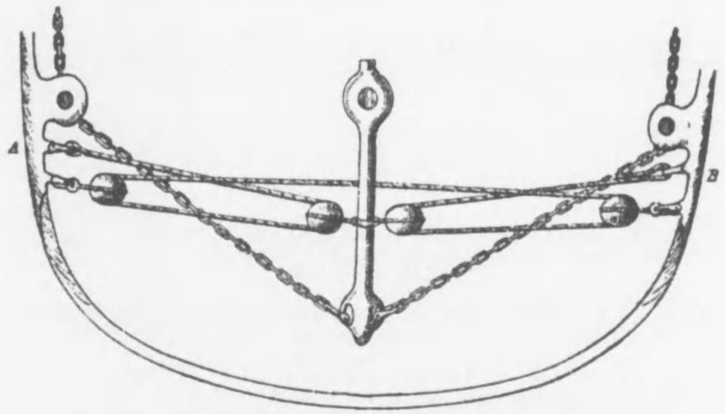
A. Rudder stock.
B. Crosshead keyed to rudder stock.
C. Connecting links between crosshead and nut sleeves.
D. Guide rods for sleeves.
E. Nuts.
F. Right and left hand square threaded spindle.
G. Engine worm wheel fitted loose.
H. Clutch for throwing out gear and putting in the other gear.
I. Clutch recess for hand gear steering.
J. Spur wheel for hand steering.
K. Pinion wheel on hand wheel shaft.
L. Hand wheel spindle.
M. Hand wheel.

69

RESERVE STEERING GEAR.



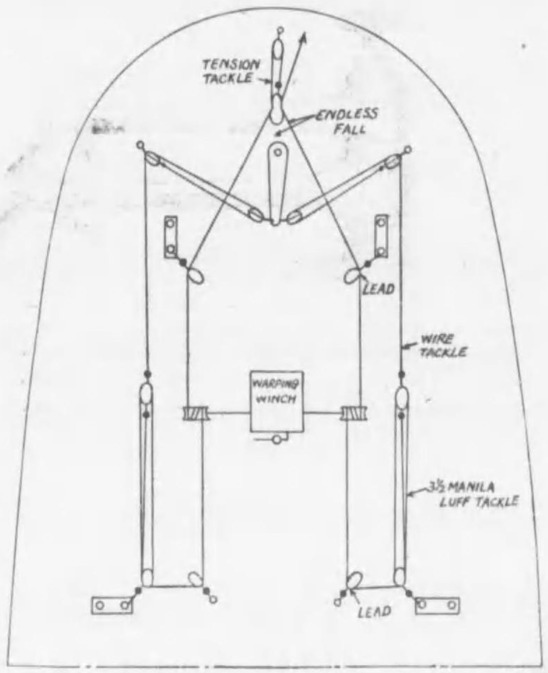
Method of connecting reserve steering gear. The upper tiller A. works up and down on the rudder head by the screw B. and when required is screwed down and ships into clutch on the main tiller.



Endless fall relieving tackle, sometimes called a "kicking tackle." A. Standing part: tackle is set up on the end B. which is then made fast.

70

EMERGENCY HAND GEAR.



EMERGENCY STEERING GEAR.

The following interesting description of the use of a very efficient emergency Steering gear was furnished by S/O B. G. Reaks of the American Steamer West Harshaw, Capt. M. J. Dierlam. On October 11, 1925, at 11.40 a.m. in lat 42° 48'N. long 50° 42'W. While on a voyage from Galveston, Tex, toward Liverpool, England, during heavy weather the worm steering gear frame broke down, totally disabling both steam and hand gear. Wire tackles were attached to the tiller. Manila luff-tackles were secured to the wire and led to the winch, turns being taken in opposite directions around the drumheads. Lead blocks were secured abaft each, with ends of luffs rove through them and bent together, making an endless purchase as shown in the diagram. The tensions tackle was used to take up the slack. The ship was steered in this manner the remainder of the way to Liverpool, a distance of 2,022 miles. This jury steering gear was so efficient that we were seldom more than 4° from the course, and reached port on schedule.

71

BROWN'S PATENT HYDRAULIC STEERING TELEMOTOR.

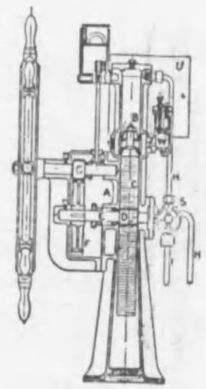


Fig. 1.

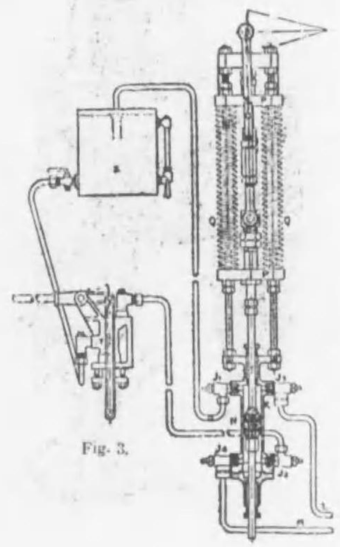
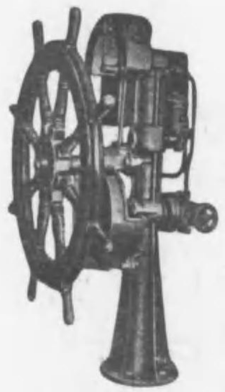


Fig. 3.



A. Cylinder (transmitter).
B. Piston.
C. Rack.
D. Pinion.
E. Axis of Pinion.
F. Wheel (Spur).
G. Pinion.
H I / L M } Pipe to motor telemotor.
K. Motor telemotor or receiver.
N. Piston.
O. Connecting rod.
P P. Cross head.
Q. Centering spring.
S. Mechanical By-pass valve.
U. Replenishing tank.
W. Reducing valve.
X. Tank.
Y. Charging pump.

Fig. 1. shows the vertical section of a pump, A, fitted with the usual piston, B, which is moved up and down by a rack, C, into which gears a pinion, D, the shaft of which is made to revolve by the wheel, F, the pinion, G, and the hand-steering wheel. The cylinder A, when the piston is where shown on the drawing, i.e., in mid-position, admits of a free passage of water above and below the piston, so that there are two cylinders, the upper one and the lower one.

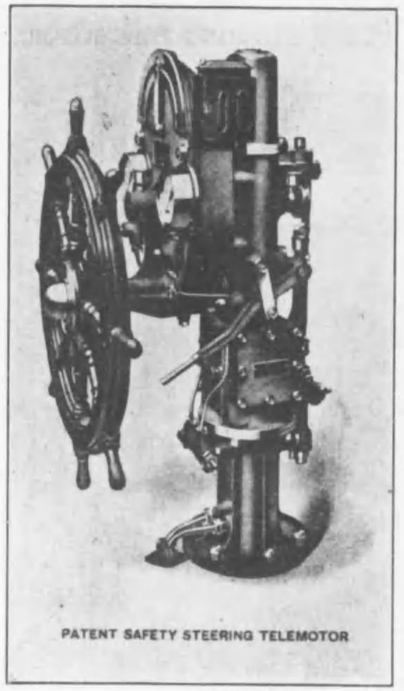
From the by-pass valve, S, which is connected to the top of cylinder by pipe H, and directly to the lower cylinder, two pipes, H and I, Fig. 1, pass and join up to a cylinder K, Fig. 3. These pipes correspond to pipes M and L, Fig. 3. The cylinder K is fitted with a Piston N and with the usual piston rod and connecting link O, which is attached by a lever to the follow-up mechanism of the steering engine. The Piston rod has cross-heads P and P, between which are two spiral springs Q and Q, the object being to cause the piston end to fly into mid gear, unless put out of that position by pressure of water on either side.

As the diameter of the cylinder on the bridge is in every respect the same as that aft, it follows that when the apparatus is fully charged with fluid, any movement of the steering wheel will bring about a similar movement of the aft motor piston and the valve gear of the steering engine. In putting the wheel over, it will be felt to become tensibly stiffer until it is hard over, and on letting it go it will run back of it own accord amid-ship.

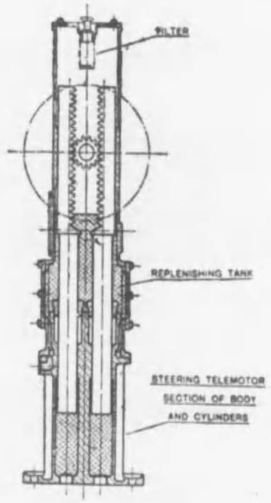
The telemotor on the bridge is fitted with an indicator shown in Fig. 2, which shows the actual position of the helm.

72

MACTAGGART STEERING TELEMOTOR.



PATENT SAFETY STEERING TELEMOTOR



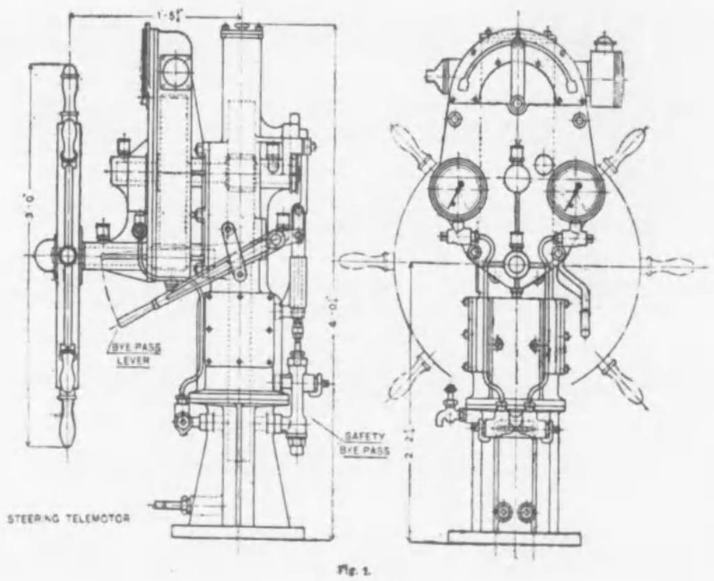
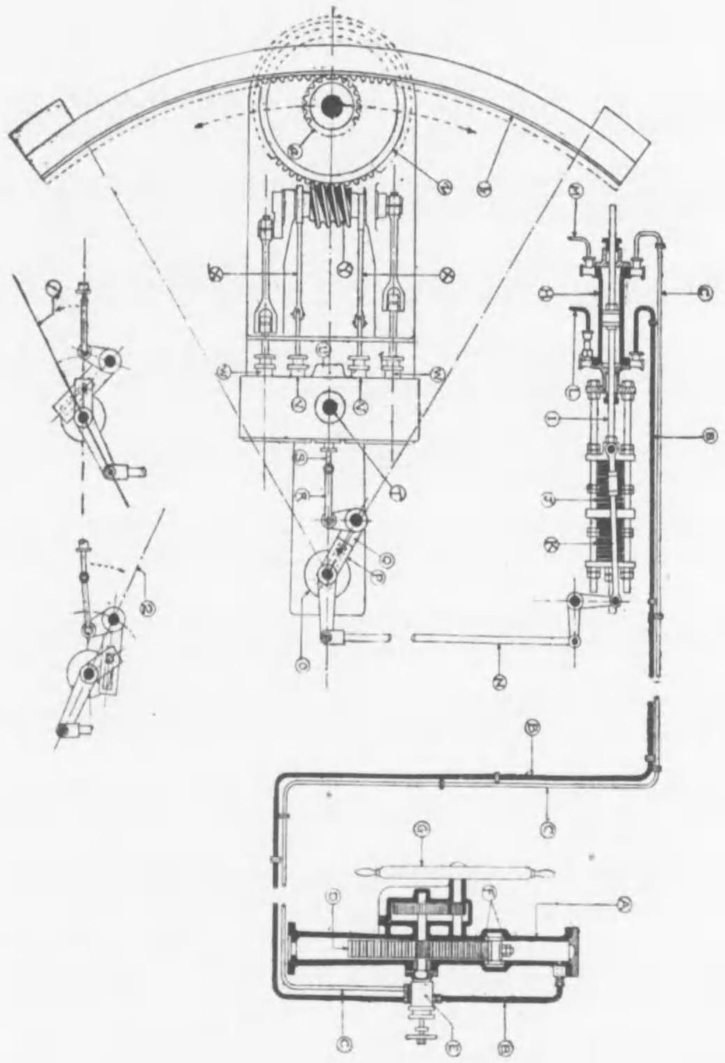


Fig. 1.

Transmitter.

73

GENERAL ARRANGEMENT OF TELEMOTOR.



74

HELE-SHAW MARTINEAU-ELECTRIC, HYDRAULIC STEERING GEAR.

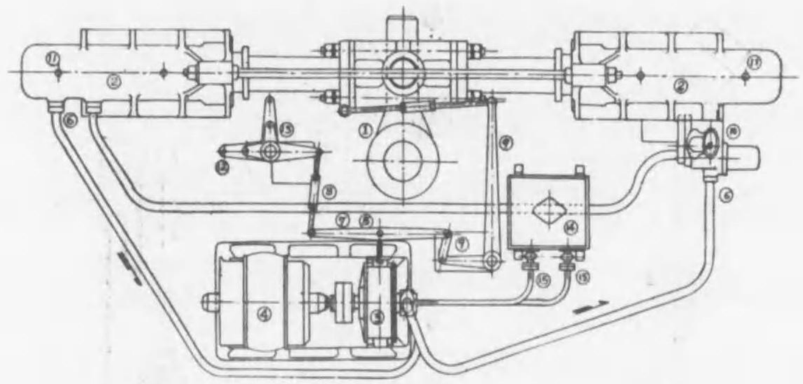
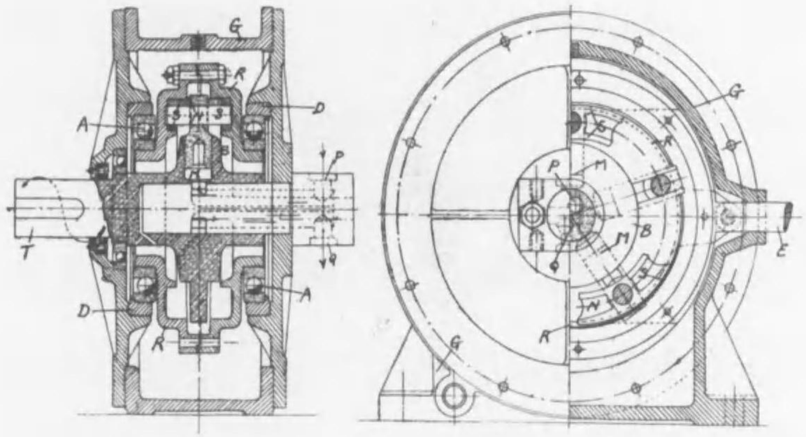


Fig. 1.

1. Tiller arm.
2. Hydraulic cylinders.
3. Patent Hele-Shaw pump driven by electric motor.
4. Electric motor.
5. Pump control spindle.
6. Pipe connections from hydraulic cylinders to pump.
7. Floating lever.
8. Floating lever connection to telemotor transmission gear.
9. Floating lever connection to rudder tiller arm.
10. Spring loaded relief valve.
11. Air cocks on hydraulic cylinders.
12. Head gear connection.
13. Telemotor gear connection.
14. Oil tank.
15. Non-return valve on oil tank.

75

HELE-SHAW PUMP.



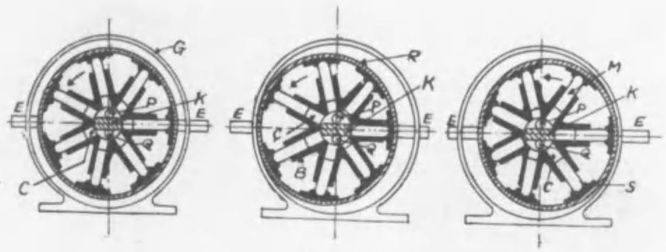


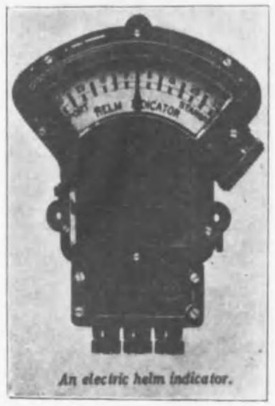
Fig. 2.

E. Spindle.
G. Outer casing.
R. Inner ring.
S. Slipper.
N. Gudgeon pin.
A. Ball race bearing.
D. Guide chair.
T. Shaft (driven).
B. Hub.
C. Cylinder.
K. Central valve.
M. Plunger.
P. Inlet and outlet port way.
Q. Opening in the fixed shaft T.

76

BRIDGE EQUIPMENT.

McNab Engine Direction Indicator. The appropriate spindle moves with each stroke of the engine. The action is caused by an air pump attached to the engine.

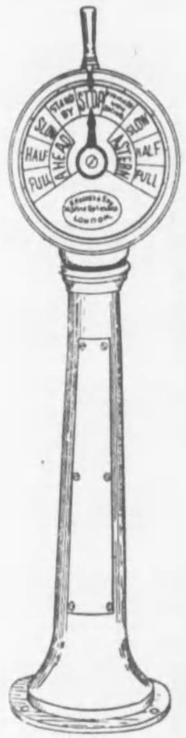


An electric helm indicator.

Kent-Chadburn Clear View Screen.

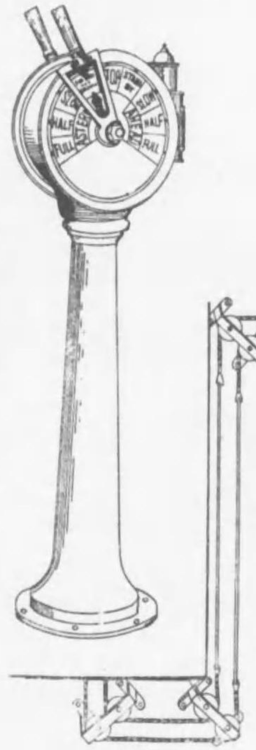
77

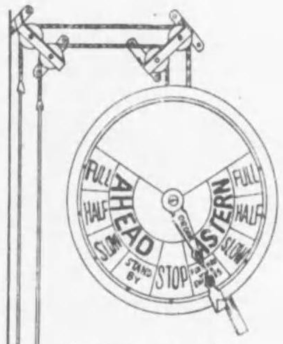
ENGINE-ROOM TELEGRAPHS.



The Transmitter is fitted with Special Long Spindle, etc., so that it can be operated from **outside** as well as **inside** the Wheelhouse.

→ Double-face Engine Room Transmitter.





Reply Engine Room Indicator.

Telegraph on a turbine steamer. Lower dial maneuvering turbines. Upper dial ahead only.

A handy rig. Revolution counter. R.P.M.'s and direction of engines on telegraph stand.

78

CORROSION OF HULL.

Fig. 1.

船喰蟲(貨物の3)

Fig. 2.

船喰蟲(Teredo)ノ全體ヲ示ス

1. 水　管
2. 出入水孔
3. 介　殻
4. 足

Fig. 3. 船喰蟲

1. きくひもどき（雄）(Chelura)
2. 同　　上（雌）
3. きくひむし (Limnoria)
4. 胎兒を抱ける
   きくひむし（雌）
5. 同　　上

（實物の7倍大）

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CORROSION OF HULL.

船喰蟲により侵蝕せられたる木版部内
（實物の $\frac{1}{3}$）

船喰蟲ノ一種 (Xylotrya)

パレット

Fig. 1. コケムシ (Bryozoa)

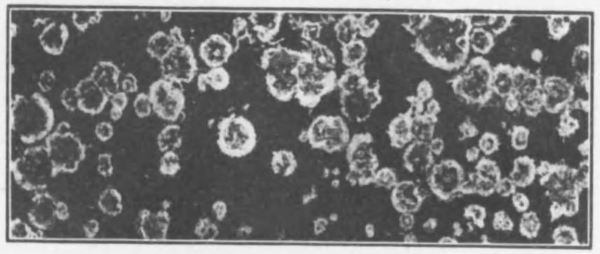
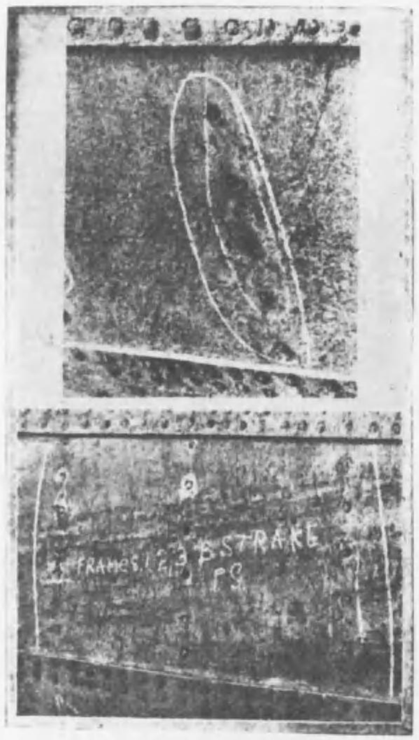


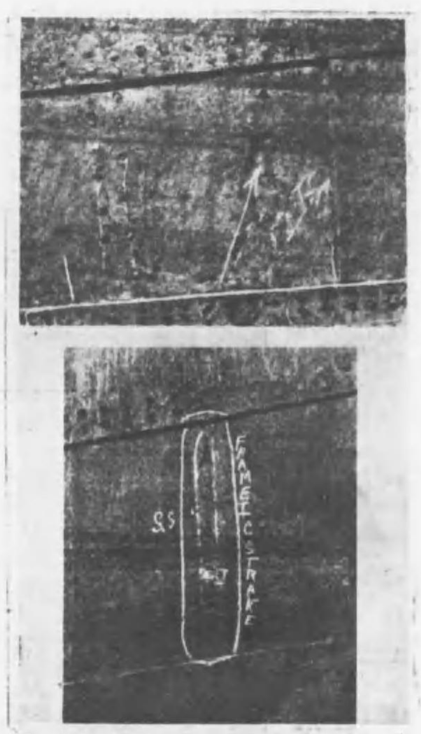
Fig. 2. コケムシ

80

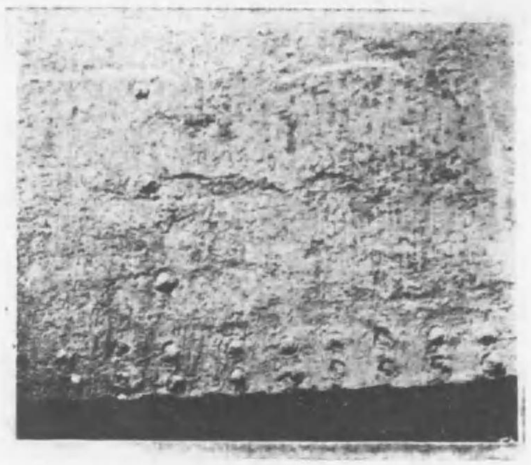
CORROSION OF HULL.



Typical cases of corroded steel rivet points.



Typical cases of corroded steel rivet joints.



Pitted shell plates.

81

CORROSION OF RIVET.

Fig. 1.—Corroded steel rivet point.

Fig. 2.—Corroded iron rivet point

Fig. 3.—Corroded steel rivet head

82

TURNING CIRCLE.

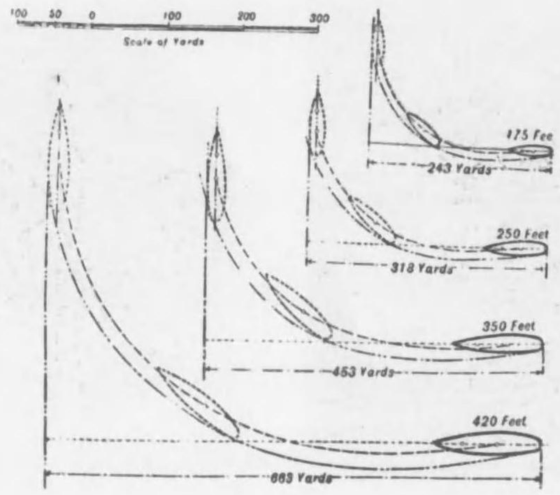


Fig. 1

Turning circles for ships of different Lengths and characteristics.

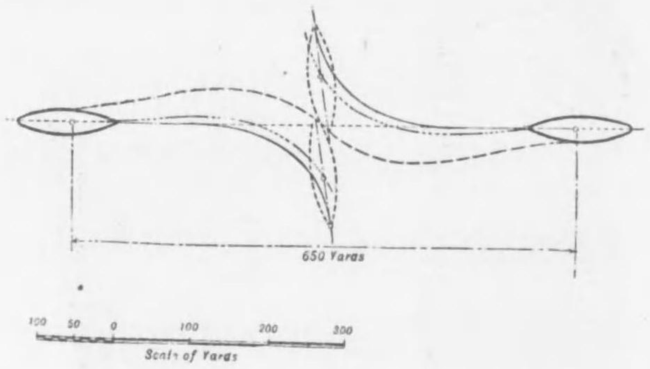


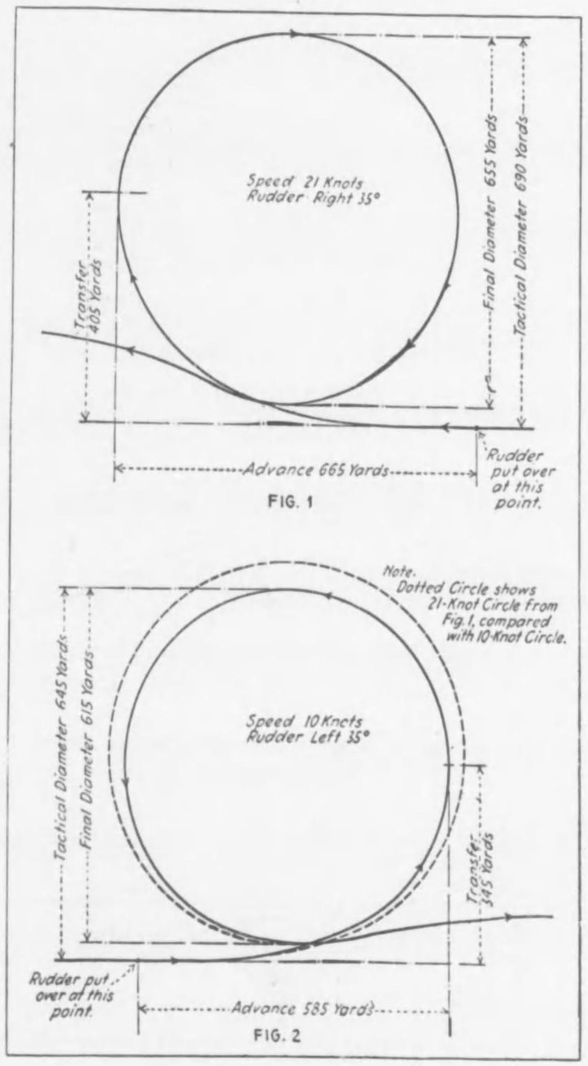
Fig. 2.

Two Yashimas meeting.

83

TURNING CIRCLES.

(U. S. S. NEW MEXICO).

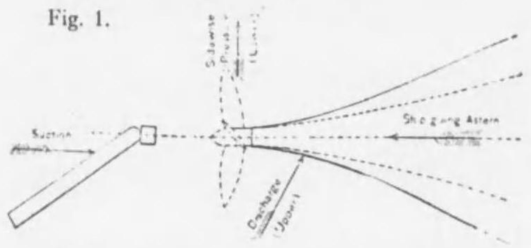


84

EFFECTS OF SCREW UPON STEERING.

Ship and Screw going Astern. Ship beginning to back.

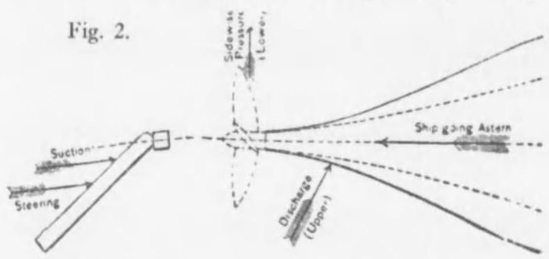
Fig. 1.



Stern usually goes to Port. Head to Starboard.

Ship and Screw going Astern. Ship Moving Astern.

Fig. 2.



Stern may go to Starboard. Head to Port.

Ship and Screw going Astern. Ship Moving Astern.

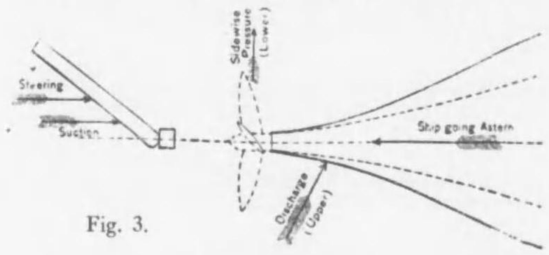


Fig. 3.

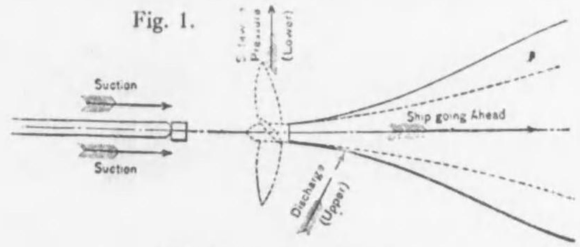
Stern goes rapidly to Port. Head to Starboard.

85

EFFECTS ON SCREW UPON STEERING.

Ship going Ahead. Screw Backing.

Fig. 1.



Head goes to Starboard.

Ship going Ahead. Screw Backing.

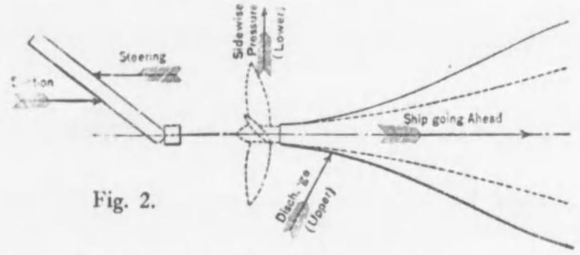
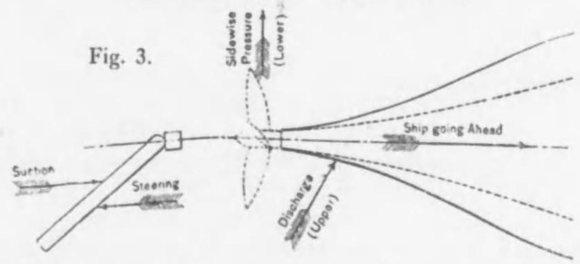


Fig. 2.

Head goes to Starboard decidedly, May go slightly to Port at first.

Ship going Ahead. Screw Backing.

Fig. 3.

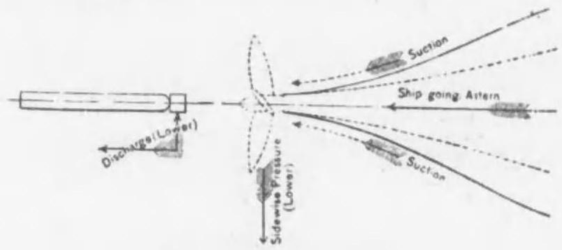


Forces nearly balance. Head will usually go a little, to Port.

86

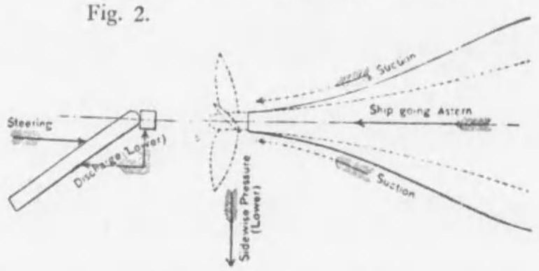
EFFECTS OF SCREW UPON STEERING.

Ship going Astern. Screw going Ahead.
Fig. 1.



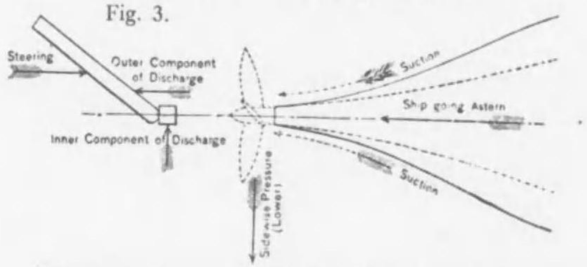
Stern may go either way.

Ship going Astern. Screw going Ahead.
Fig. 2.



Stern goes decidedly to port. Head to Starboard.

Ship going Astern. Screw going Ahead.
Fig. 3.

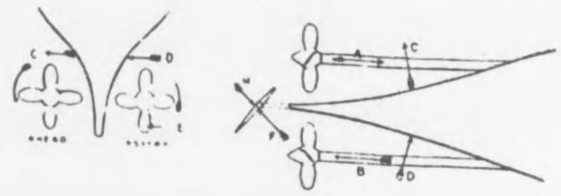


Stern usually goes to Starboard Head to Port.

87

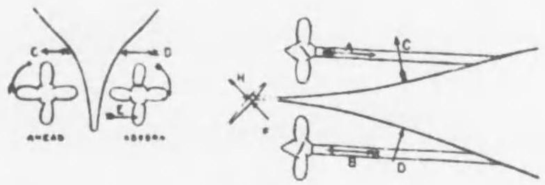
EFFECTS OF TWIN-SCREW UPON STEERING.

Ships with Outward-turning Screws. Turning to Starboard.



A. Thrust of screw ahead.
B. Thrust of starboard screw astern.
C. Defect of pressure due to suction of ahead screw.
D. Excess „ „ race of astern screw.
E. Paddle-wheel action of astern screw due to churning of surface water.
F. Pressure on rudder due to headway and race of ahead screw.
H. „ „ „ suction of astern screw.

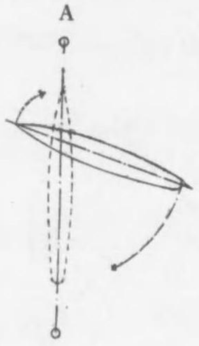
Ship with Inward-turning Screws. Turning to Starboard.

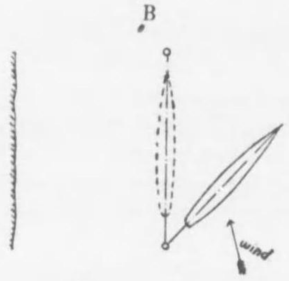


A. Thrust of port screw ahead.
B. Thrust of starboard screw astern.
C. Defect of pressure due to suction of ahead screw.
D. Excess „ „ race of astern screws.
E. Paddle-wheel action of astern screw due to churning of surface water.
F. Pressure on rudder due to headway and race of ahead screw.
H. „ „ „ suction of astern screw.

88

SECURING BETWEEN TWO BUOY.

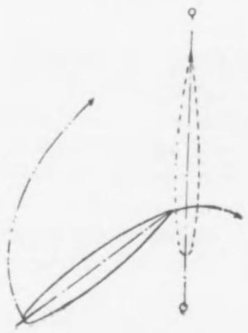




When the Wind Abaft the Beam.

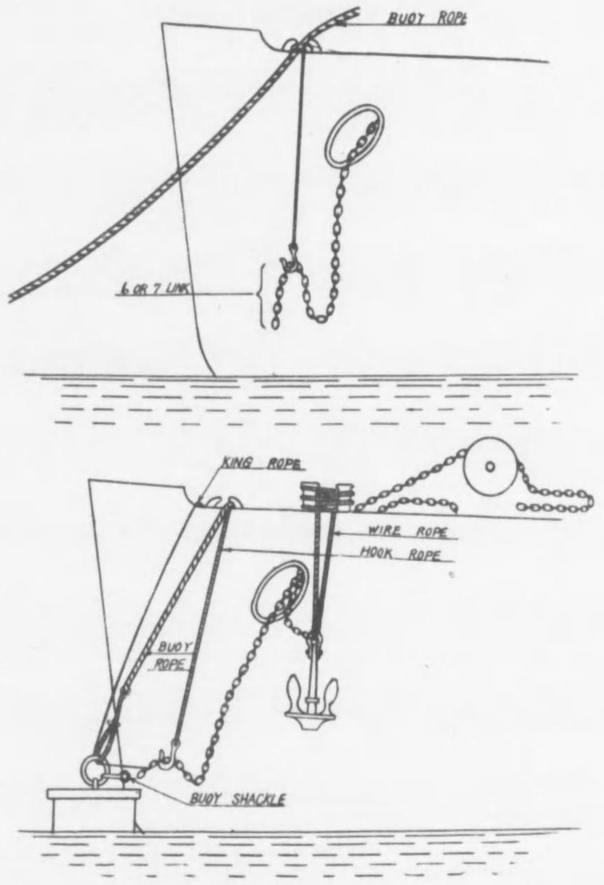
When the Wind Athwart the Beam.

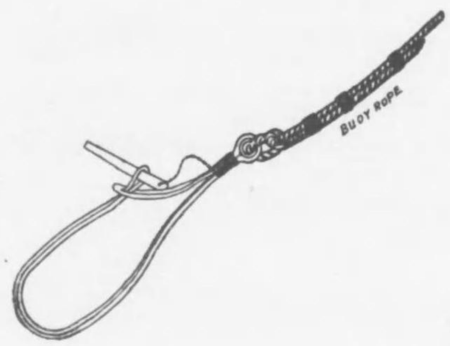
LEAVING BUOY.



89

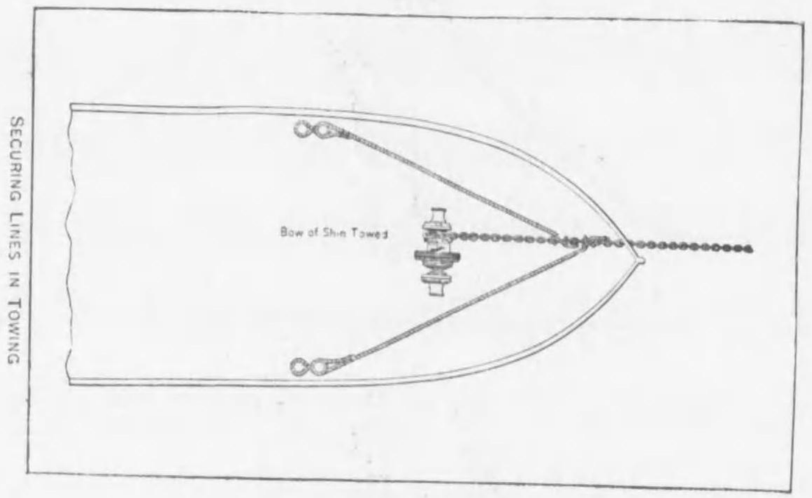
PICKING UP A BUOY.

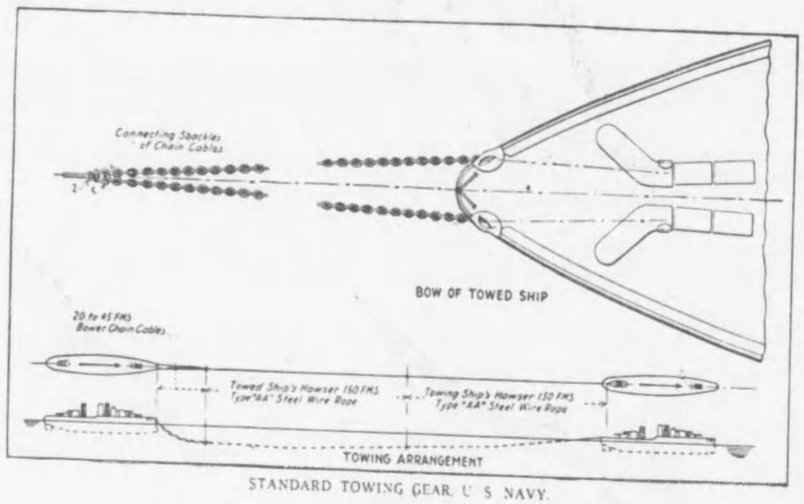




90

STANDARD TOWING GEAR.





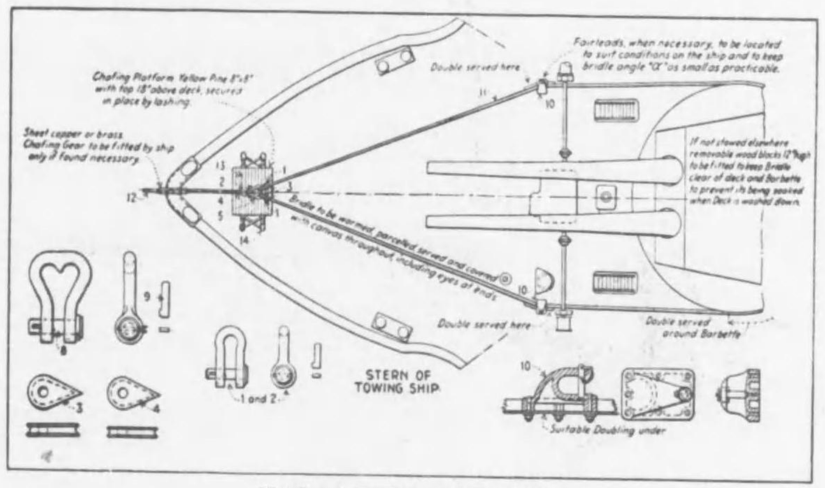
STANDARD TOWING GEAR, U. S. NAVY.

91

TOWING.

Fig. 1. THE WRONG WAY.
An Unweighted Towline of Incorrect Length.

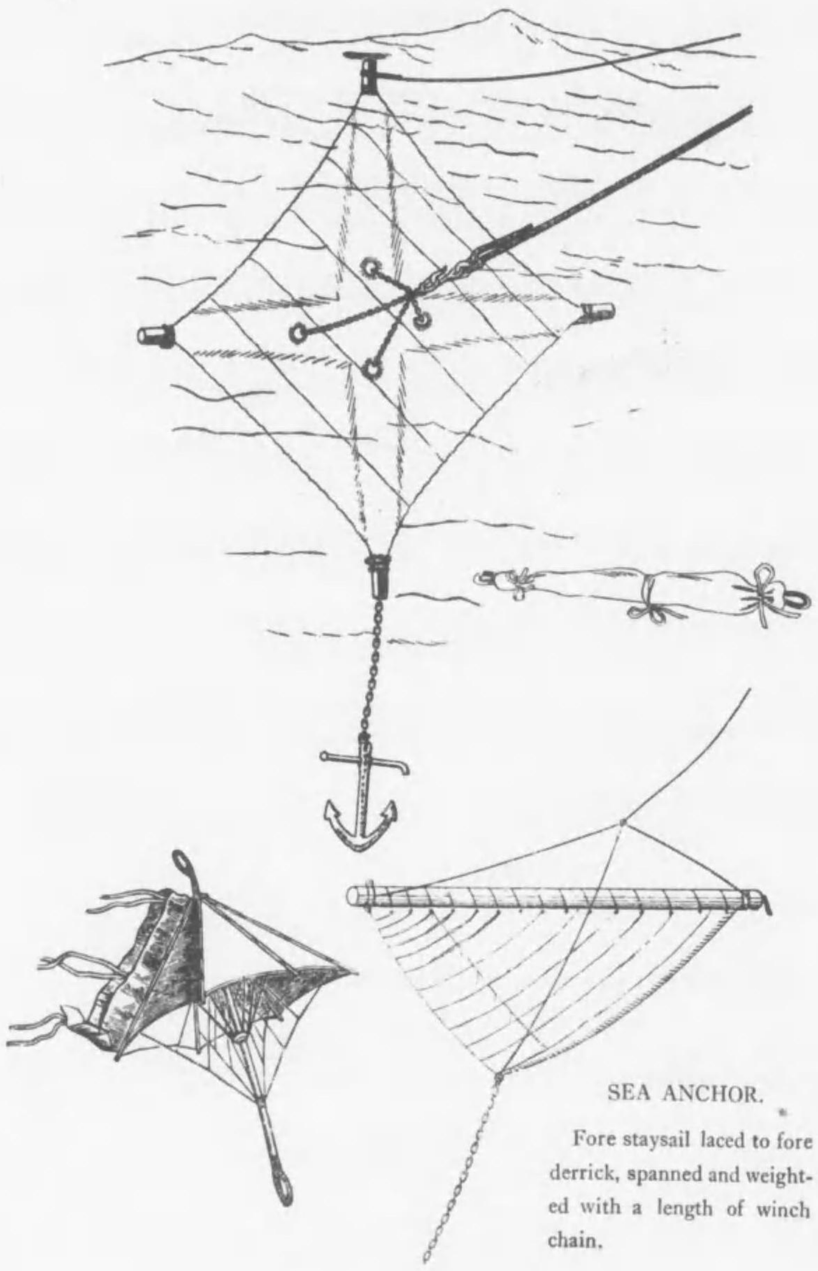
Fig. 2. THE RIGHT WAY.
A Weighted Towline of Correct Length.



STANDARD TOWING GEAR, U. S. NAVY

92

DROGUE OR SEA ANCHOR.

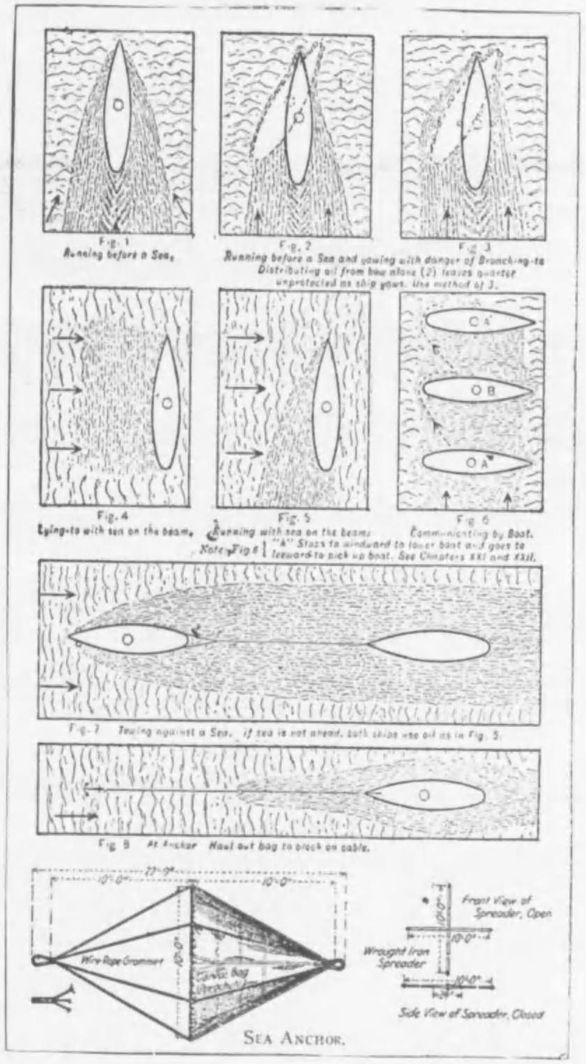


SEA ANCHOR.

Fore staysail laced to fore derrick, spanned and weighted with a length of winch chain.

93

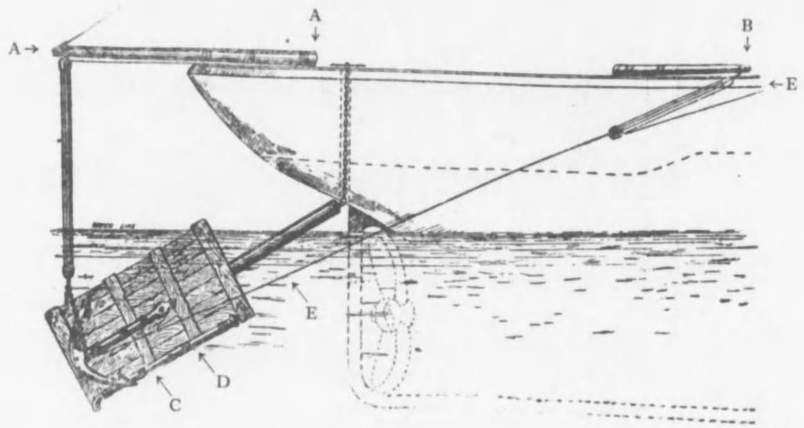
THE USE OF OIL.



SEA ANCHOR.

94

JURY RUDDERS.



A A. Two cargo derricks, cross lashed together.

B. Cross spar for steering lines.

C C. Planks forming rudder-blade.

D. Chain or stock to weight and immerse rudder.

E E. Steering lines.

95

JURY RUDDERS.

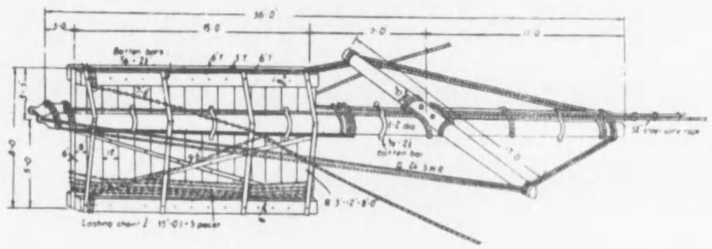


Fig. 1. The Final Jury Rudder.

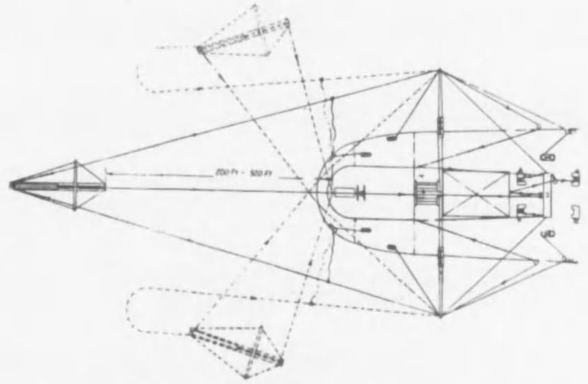


Fig. 2. Sketch showing Method of Manoeuvering the Final Jury Rudder.

76

COLLISION MAT.

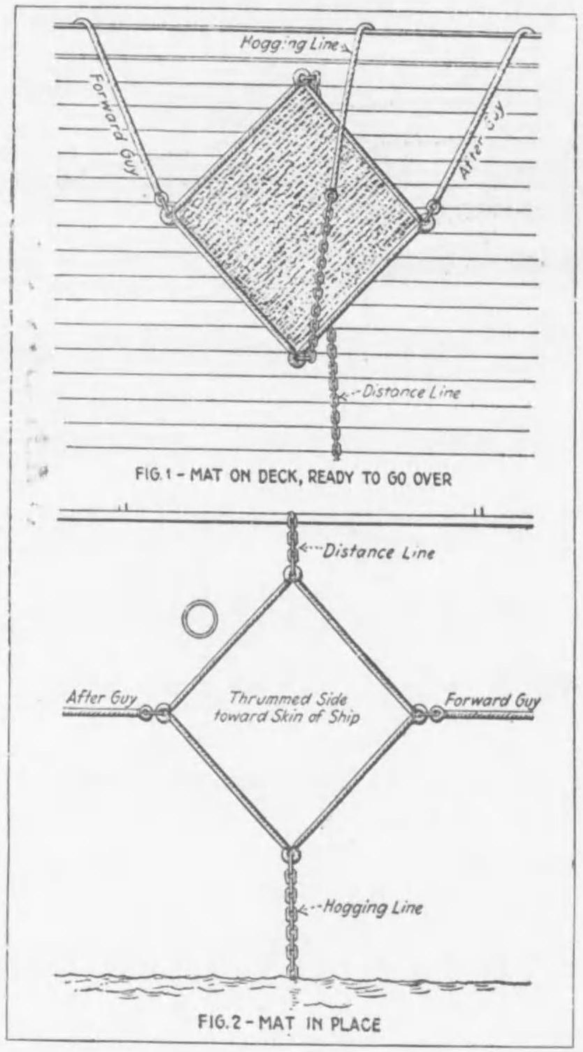


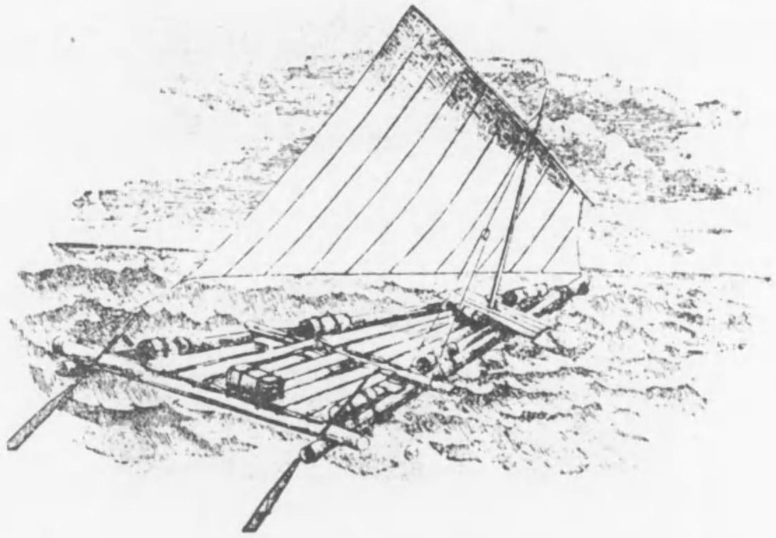
FIG. 1 - MAT ON DECK, READY TO GO OVER

FIG. 2 - MAT IN PLACE

97

LIFE-SAVING APPARATUS.

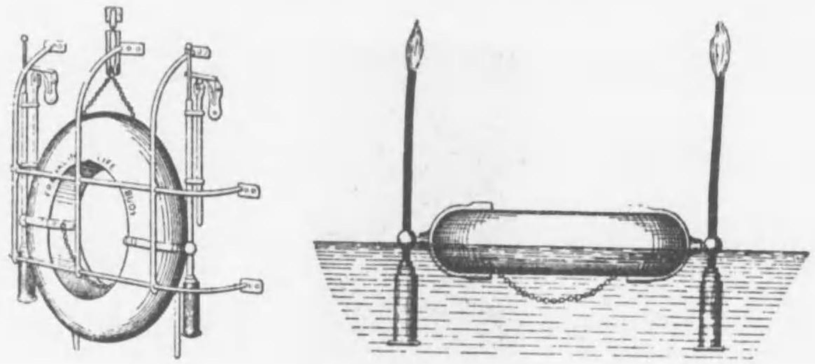
Buoy and water light.



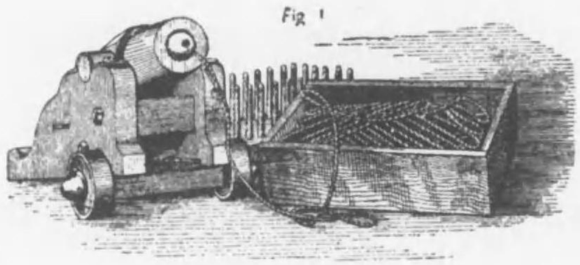
Raft with empty oil tanks and drums.

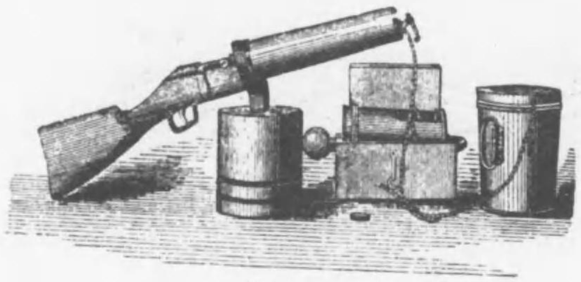
98

LIFE SAVING APPARATUS.



Franklin life buoy.





Line-throwing guns.

99

RESCUING PASSENGERS FROM STRANDED VESSEL.

FIG. 1
TAIL-BLOCK HAULED OFF BY FIRST LINE FROM SHORE

FIG. 2
HAWSER HAULED OFF BY WHIP

FIG. 3
BREECHES BUOY

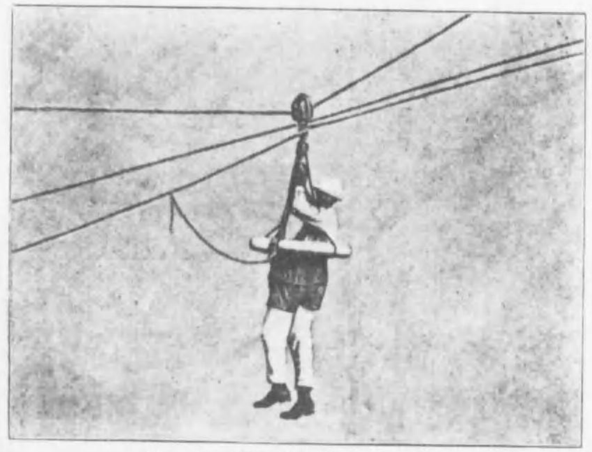


Fig. 4. Breeches buoy in use.

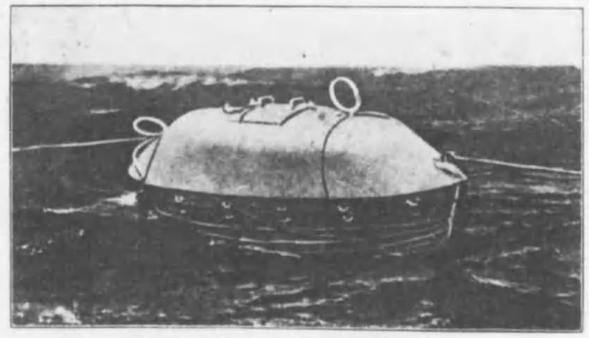
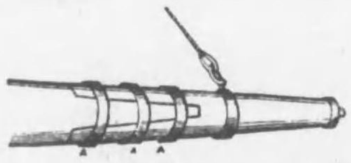


Fig. 5. Life car as used in drill.

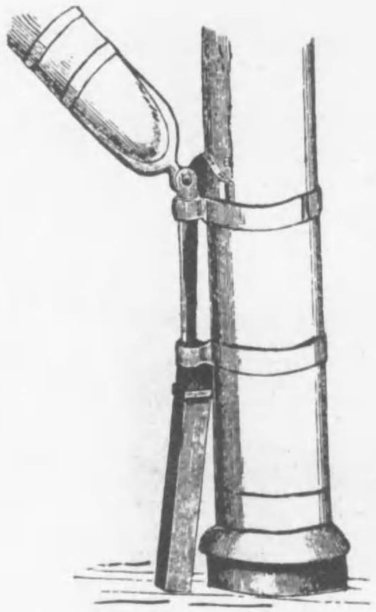
100

ACCIDENTS TO SPARS ETC.

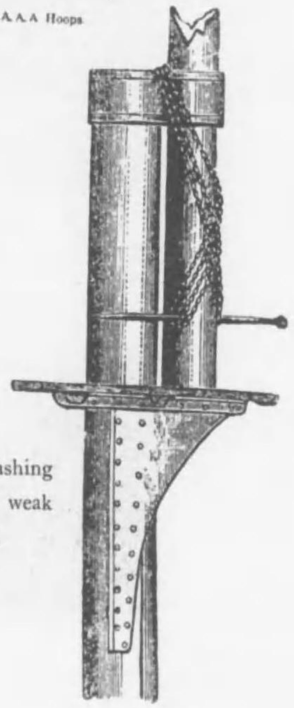
Schooners main gaff fished.



Yard-arm keyed. A.A.A Hoops



A. Shore for the lower end.
B. Chock to help the gooseneck.

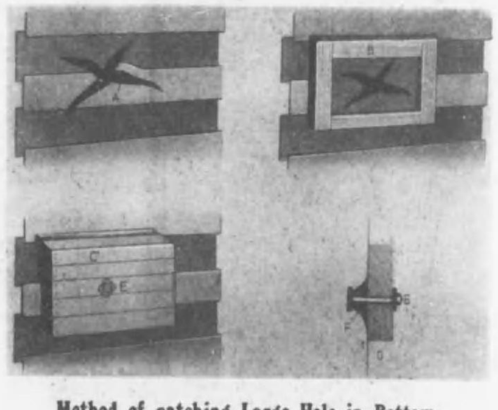


Preventer lashing to help a weak trestle-tree.

101

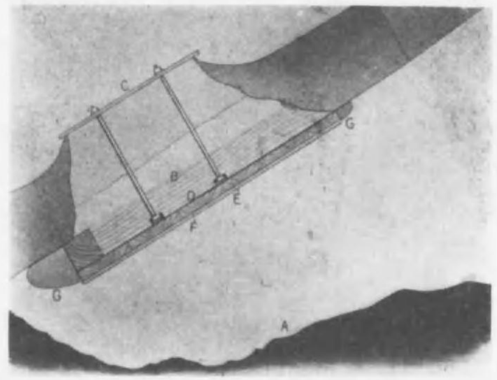
VARIOUS REPAIRS.

—Wooden Patch secured on Outside of Ship by Hook Bolts



Method of patching Large Hole in Bottom.

A. Rock blasted away in neighbourhood of hole.
B. Timber frames 4 feet apart bolted to toggle plates.
C. Toggle plates.
D. Inner planking.
E. Outer planking.
F. Canvas between layers of planking.
G. End of canvas turned over and stuffed with oakum etc.

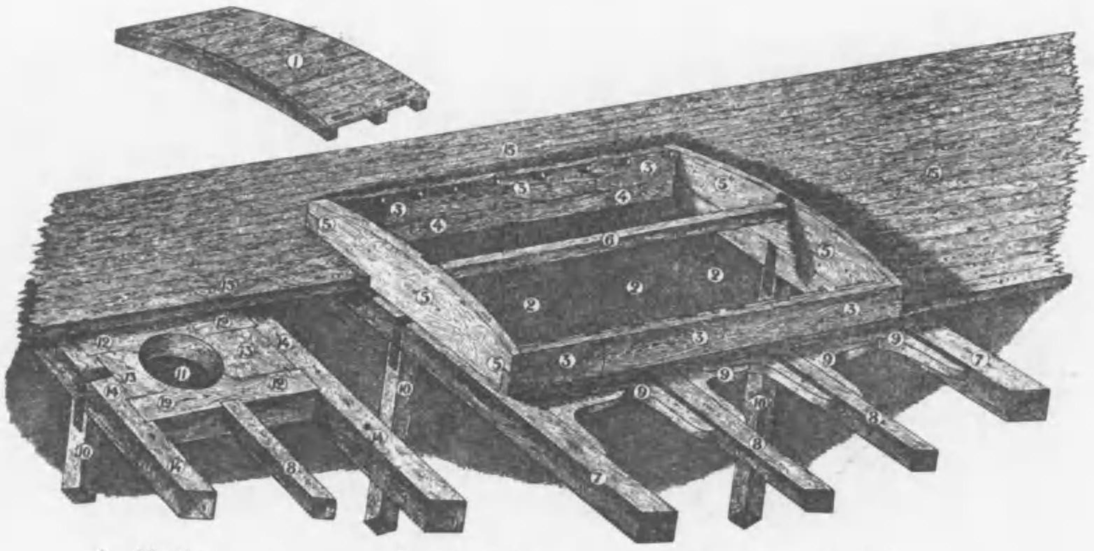


Method of patching Hole in Bottom Plating.

A. Hole in plating.
B. Wood frame bolted to plating.
C. Frame planked over.
D. Section showing frame and planking.
E. Center securing bolt.
F. Bricks and cement.

102

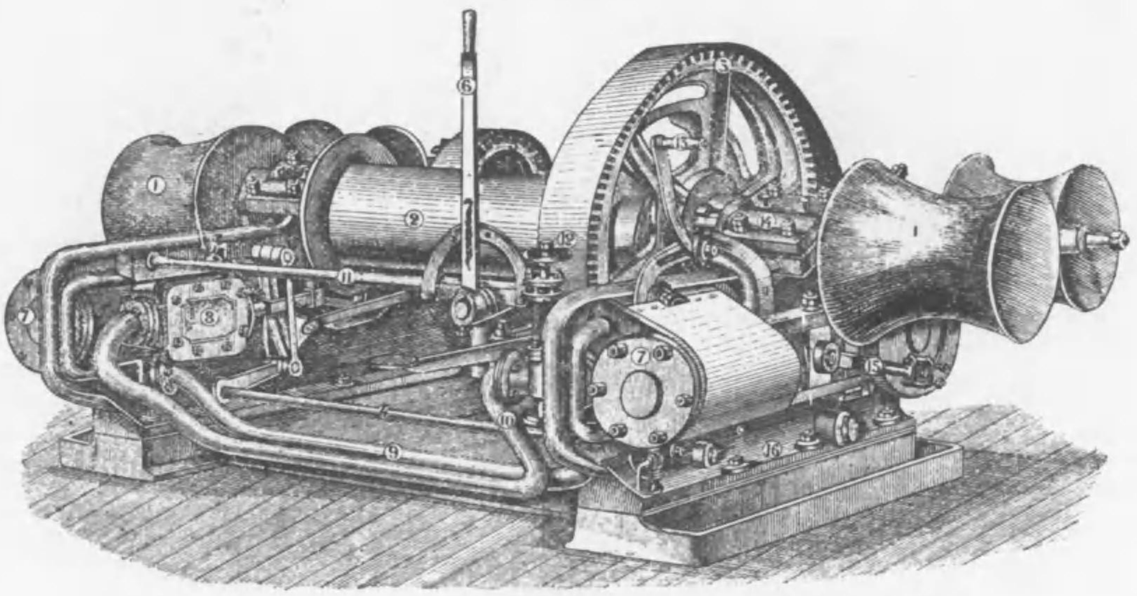
HATCHWAY ETC. OF WOODEN VESSEL.



1. Hatch.
2. Hatchway ; Hatch.
3. Hatchway-coamings ; Hatch-coamings.
4. Hatchway-carling ; Hatch-carling.
5. Headledges.
6. Fore and After.
7. Hatchway-beams ; Hatch-beams.
8. Half-beams.
9. Lodging-knees.
10. Deck-stanchions.
11. Mast-hole.
12. Mast-carlings } forming
13. Chocks } Mast-partners.
14. Mast-beams.
15. Deck-planking.

103

STEAM-WINCH.



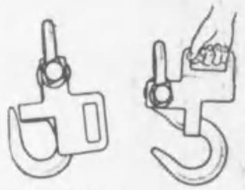
1. Warping-ends.
2. Barrel.
3. Main-spur-wheel. Weigh-shaft.
4. Weigh-bar.
5. Small-spur-wheel.
6. Clutch-lever.
7. Cylinders.
8. Valve-casing ; Steam-chest ; Valve-chest ; Valve-box.
9. Exhaust-pipe.
10. Steam-pipe.
11. Tie-rod ; Stay.
12. Stop-valve.
13. Reversing-lever.
14. Bearing-keep.
15. Connecting-rod.
16. Base-plate ; Bed-plate.

104

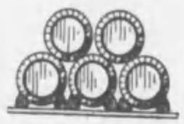
CARGO WORK.

Note use of net.

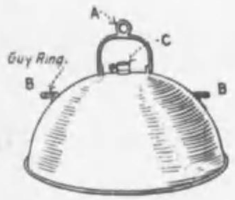
A hand counter.



Safety hook



Cask stowage



Always have your cargo lights and cables, in good order. A, Ring for the lanyard to carry weight of the reflector. B, Guy rings to point reflector. C, Connection for cable. Do not hang the light by the cable.

Plain hook — *Reverse eye hook* — *Double swivel hook*

Swivel cargo hook (Liverpool) (hook) — *Cargo hook with safety tongue* — *Hatch hook*

105

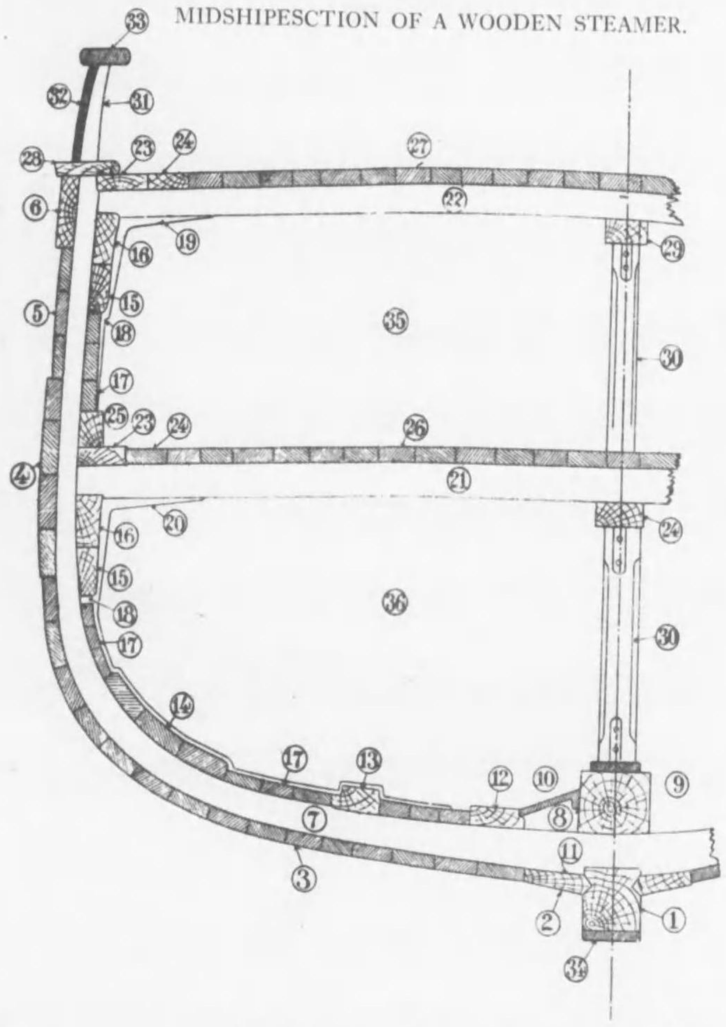
TAKING A HORSE ON BOARD.

PART II

SHIP BUILDING

106

MIDSHIPESCTION OF A WOODEN STEAMER.



1. Keel (龍骨)
2. Garboard Strake (龍骨翼板)
3. Bottom Planking (船底外板)
4. Wales; Bends (外部腰板)
5. Side Planking (船側外板)
6. Sheer Strake (舷側厚板)
7. Frame (肋骨)
8. Limbers Water Course (淦水道)
9. Keelson (內龍骨)
10. Limber Board (淦水覆板)
11. Limber Hole (淦水孔)
12. Limber Strake (側內厚板)
13. Side Keelson (側內龍骨)
14. Bilge Strake (彎曲部縱通材)
15. Clamp (副梁受材)
16. Shelf (梁受材)
17. Ceiling (內張板)
18. Air Course (通風路)
19. Beam Knee (梁曲材)
20. Knee Rider (特設梁曲材)
21. Main Deck Beam (正甲板梁)
22. UpperDeckBeam (上甲板梁)
23. Water Way (梁壓材)
24. Thin waterway (副梁壓材)
25. Spirketting (內部腰板)
26. Main Deck Planking (正甲板)
27. Upper Deck Planking (上甲板)
28. Plank Sheer; Covering Board (船舲)
29. Fore and Aft Runner (梁下縱通材)
30. Stanchion; Pillar (梁柱)
31. Bulwark Stanchion (船墻柱)
32. Bulwark Planking (船墻板)
33. Main Rail; Roughtree Rail (船墻手摺)
34. False Keel (假龍骨)
35. Tween Decks (甲板間)
36. Hold (船艙)

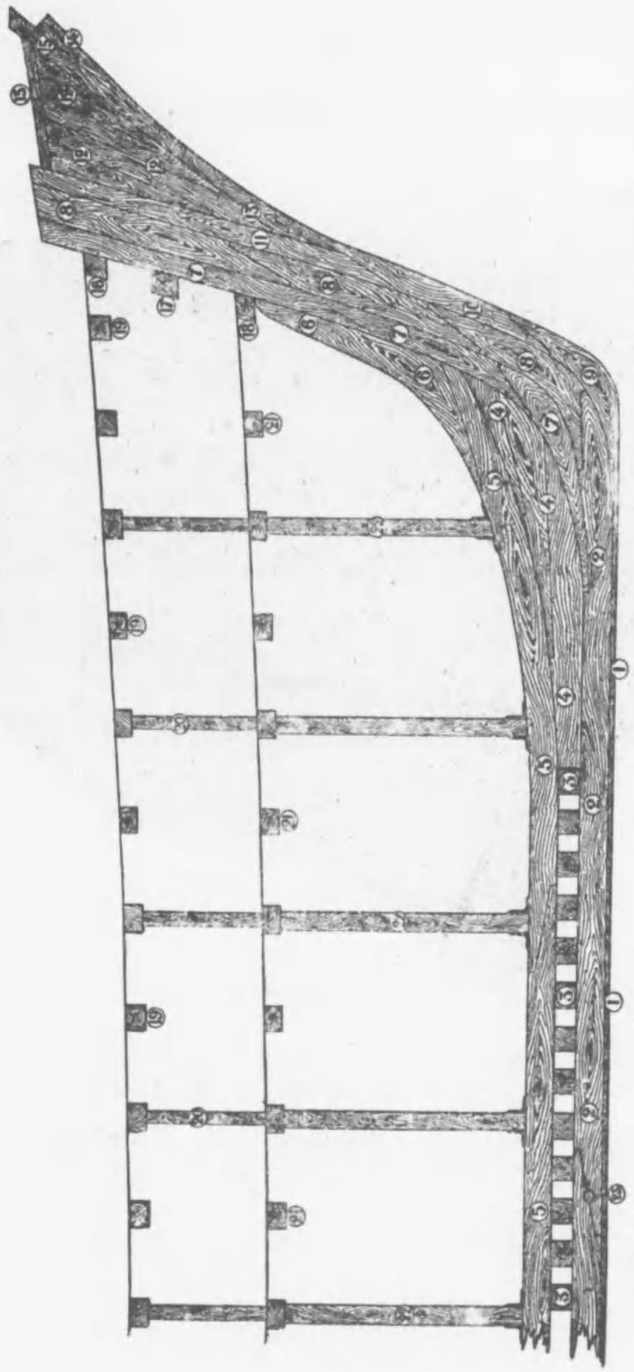
107

SQUARE-BODY-FRAMES, SHOWING BUTT-CHOCKS, JOINT-DOWELS, ETC. OF A WOODEN VESSEL.

1. Keel.
2. Floors.
3. 1st Futtocks; Half-floors.
4. 2nd Futtocks.
5. 3rd Futtocks.
6. 4th Futtocks.
7. 5th Futtocks.
8. Top-timbers.
9. Butt-chocks.
10. Joint-dowels.

108

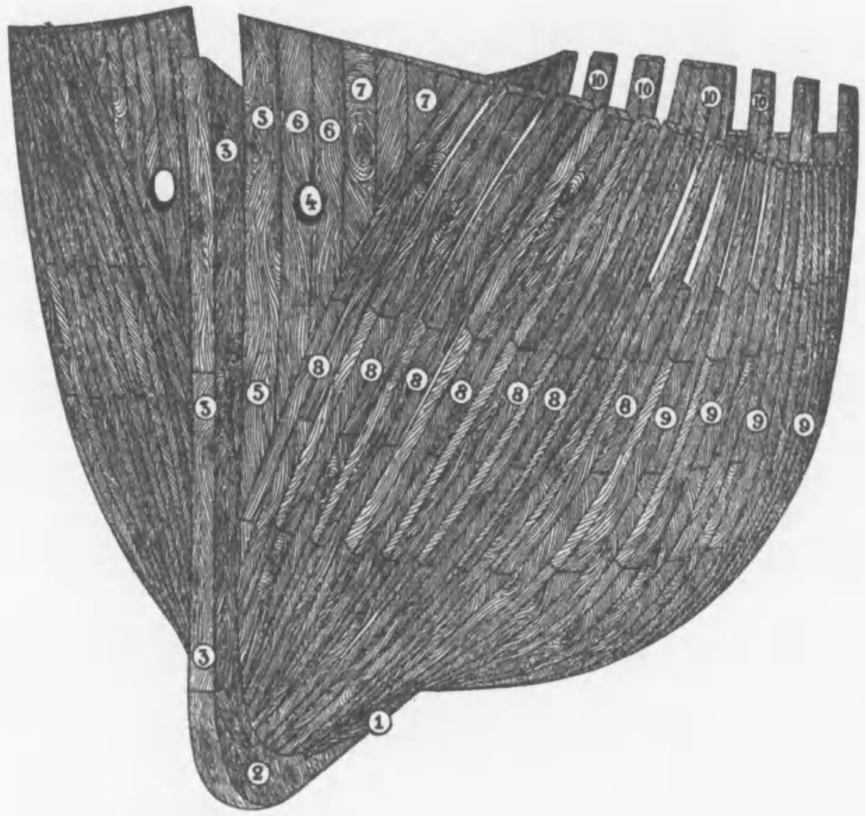
FORWARD PORTION OF KEEL, STEM APRON ETC. OF A WOODEN VESSEL.



1. False-keel.
2. Keel.
3. Floors.
4. Fore-deadwood; Stem-deadwood.
5. Keelson.
6. Stemson.
7. Apron.
8. Stem.
9. Gripe.
10. Cutwater.
11. Independent-piece.
12. Filling-chocks.
13. Lace-piece.
14. Bobstay-piece.
15. Gammoning-piece.
16. Upper-deck-hook.
17. Breast-hook.
18. Lower-deck-hook.
19. Upper-deck-beams.
20. Deck-stanchions; Upper-deck-stanchions.
21. Lower-deck-beams.
22. Hold-stanchions.
23. Stop-water.

109

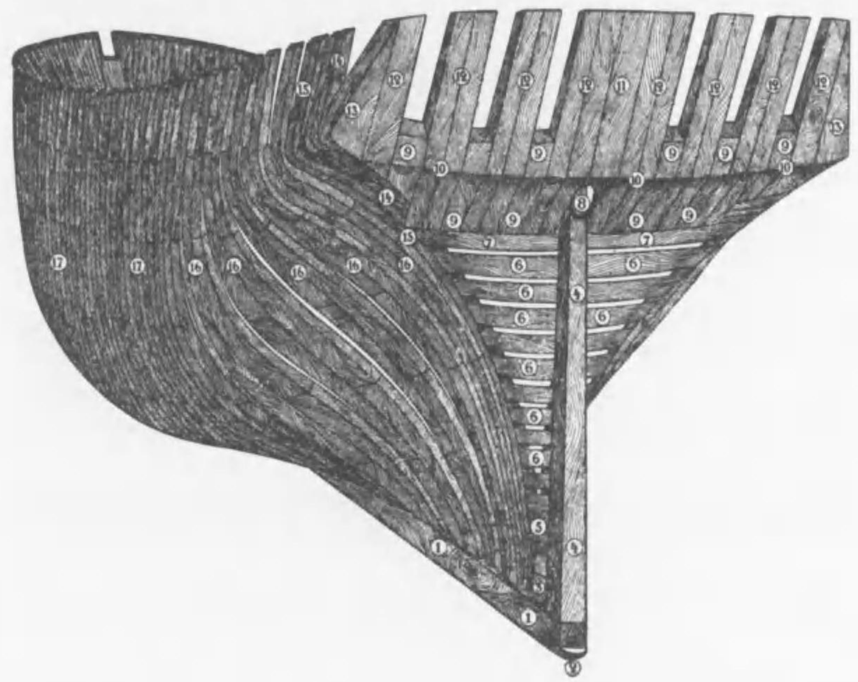
FRONT VIEW OF A WOODEN VESSEL IN FRAME.



1. Keel.
2. Gripe.
3. Stem.
4. Hawse-hole.
5. Knight-head.
6. Hawse-timbers.
7. Filling-timbers.
8. Cant-frames.
9. Square-body-frames.
10. Stern-timbers.

110

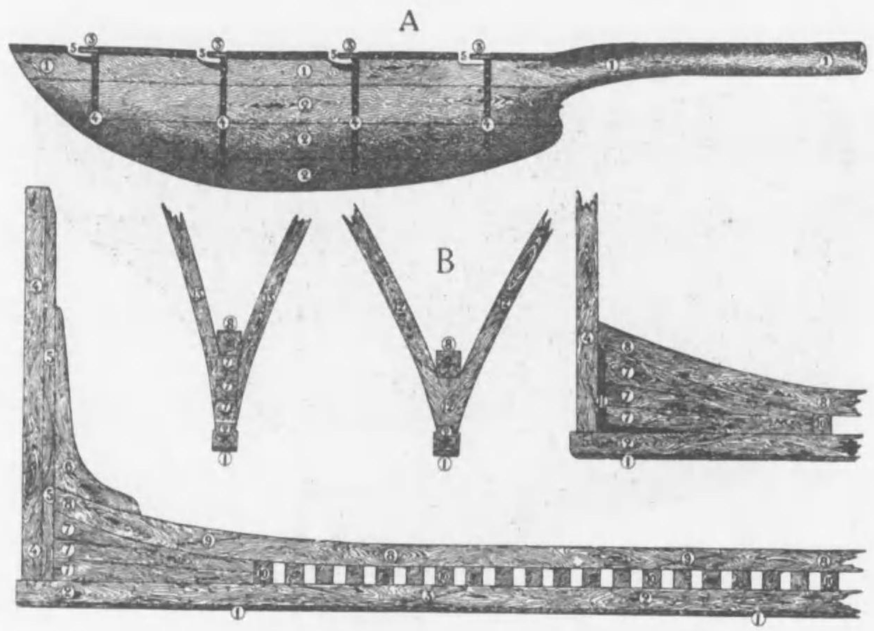
STERN VIEW OF A WOODEN VESSEL IN FRAME.



1. Keel.
2. Skeg of Keel.
3. Deadwood.
4. Stern-post.
5. Filling-chock.
6. Filling-transoms.
7. Wing-transom.
8. Helm-port.
9. Counter-timbers.
10. Margin.
11. Horn-timber.
12. Stern-timbers.
13. Side-counter-timbers.
14. Quarter-timbers.
15. Fashion-timber.
16. Cant-frames.
17. Square-body-frames.

111

AFTER PORTION AND RUDDER OF A WOODEN VESSEL.



A. Rudder of a Wooden Vessel.

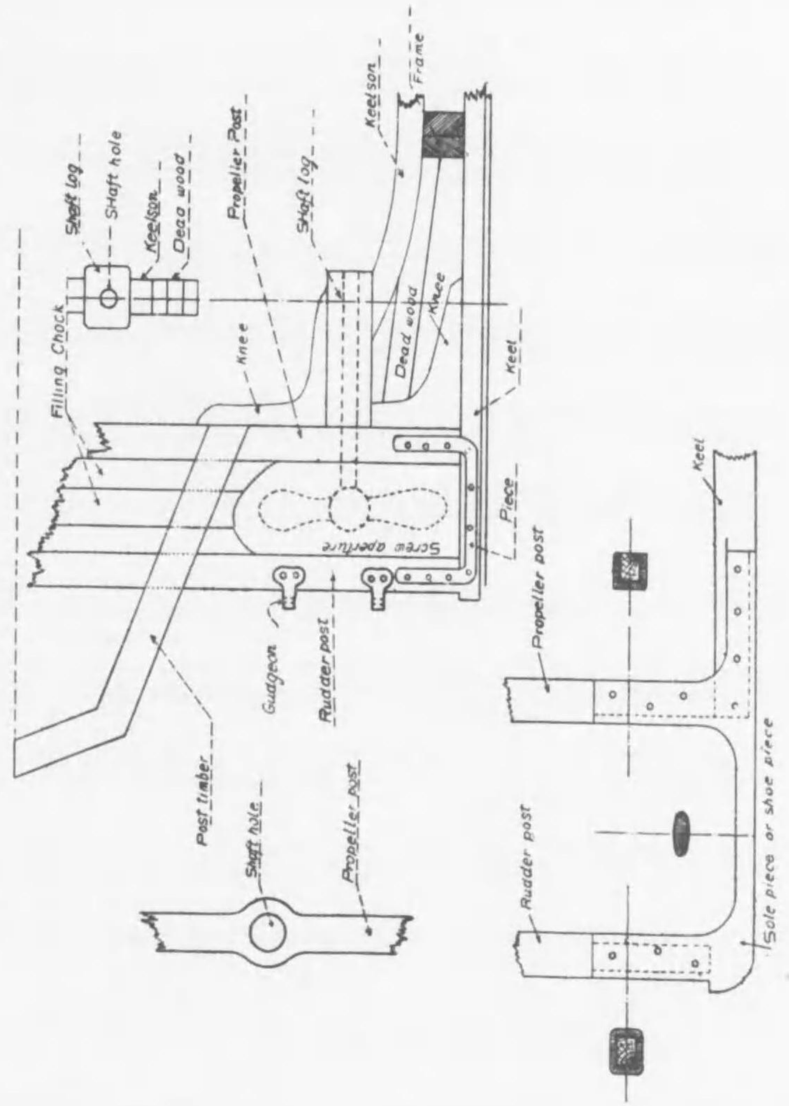
1. Main-piece of Rudder.
2. Back-pieces of Rudder.
3. Rudder-pintles.
4. Pintle-straps.
5. Pintle-scores.

B. After portion of Keel, Stern-post, Inner-post, Sternson, Cant-floor, Cant-frame, etc. of a Wooden Vessel.

1. False-keel.
2. Keel.
3. Keel-scarph.
4. Stern-post.
5. Inner-post, Inner-stern-post.
6. Sternson.
7. After-deadwood.
8. Keelson.
9. Keelson-scarphs.
10. Floors.
11. Heel-knee.
12. Cant-floor.
13. Cant-frame.

112

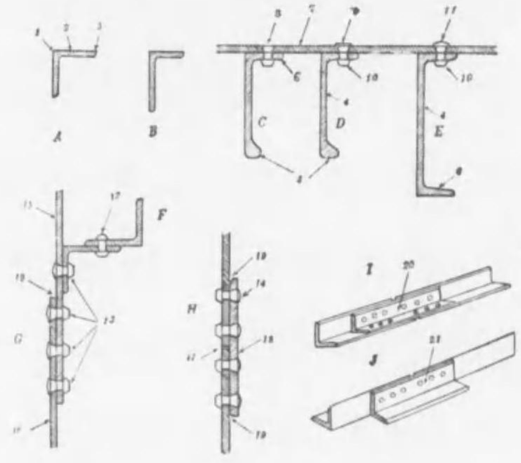
STERN CONSTRUCTION OF A WOODEN SINGLE SCREW STEAMER.



113

MATERIALS AND ITS CONNECTION.

材 料 と 其 取 付 方



A. Angle of Equal Legs （等邊山形材）
B. Angle of Unequal Legs （不等邊山形材）
C. Bulb Angle (Old Type) （球山形材(舊型)）
D. Bulb Angle (English New Standard) （球山形材(新式英國型)）
E. Channel （溝形材）
F. Built Up Frame （組立肋骨）
G. Lap Joint of Plates （板の累接）
H. Butt Joint of Plates （板の衝接）
I. Angle Joint （山形材の接續方）
J. Angle Joint （山形材の接續方）
1. Heel of Angle （山形材の踵部）
2. Leg of Angle （山形材の脚部）
3. Toe of Angle （山形材の脚端）
4. Web （ウエッブ）
5. Bulb （球）
6. Flange （フランヂ）
7. Deck Plate （甲板）
8. Countersink (or Countersunk) Rivet with Flush Point （平打のシヅミ鋲）
9. Countersink Rivet （シヅミ又は設釘）
10. Pan Head Rivet （鍋頭鋲）
11. Hammered Point （槌打仕上げ）
12. Button or Snap Point （ボタン頭）
13. Pan Head Countersink Swell （槌打仕上げの鍋頭）
Necked Rivet with Hammered Point （根太シヅミ鋲）
14. Bull Head Point Rivet （ベル仕上鋲）
15. Inner Strake of Shell Plating (外板の内層板)
16. Outer Strake of Shell Plating (外板の外層板)
17. Butt Joint （衝接）
18. Butt Strap Plate （衝接覆板）
19. Caulking Edge （塡隙縁）
20. Bossom Piece （胸材）
21. Back Piece or Angle Strap （背材又は覆山形材）

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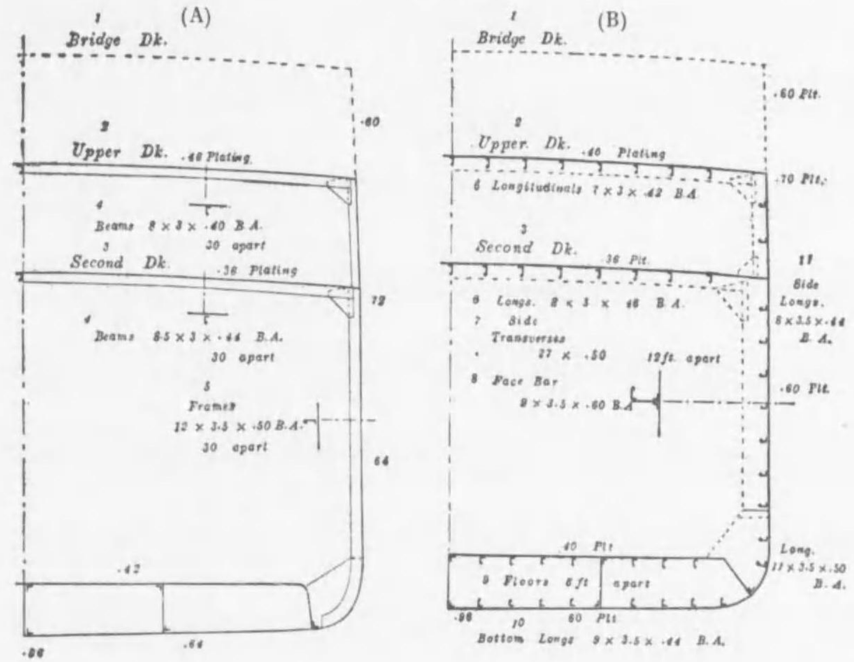

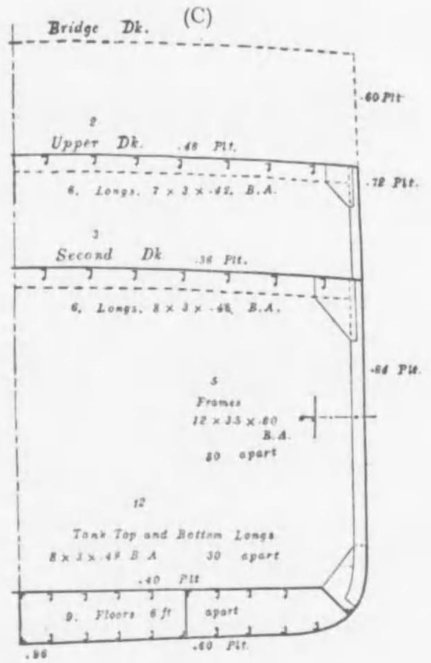

THREE SYSTEMS OF SHIP CONSTRUCTION.

船體組立法の三式

A. Transverse System （橫骨式）
B. Longitudinal System （縱骨式）
C. Combined System （混合式）
1. Bridge Deck （船橋樓甲板）
2. Upper Deck （上甲板）
3. Second Deck （第二甲板）
4. Beam, Bulb Angle (BA) （梁、球山形材[略符BA]）
5. Frame （肋骨）
6. Longitudinal （縱材）
7. Side Transverse （船側橫材）
8. Face Bar （內緣型材）
9. Floor (6ft. apart) （肋板[六呎置]）
10. Bottom Longitudinal （船底縱材）
11. Side Longitudinal （船側縱材）
12. Tank Top and Bottom Longitudinal （內底板及船底の縱材）

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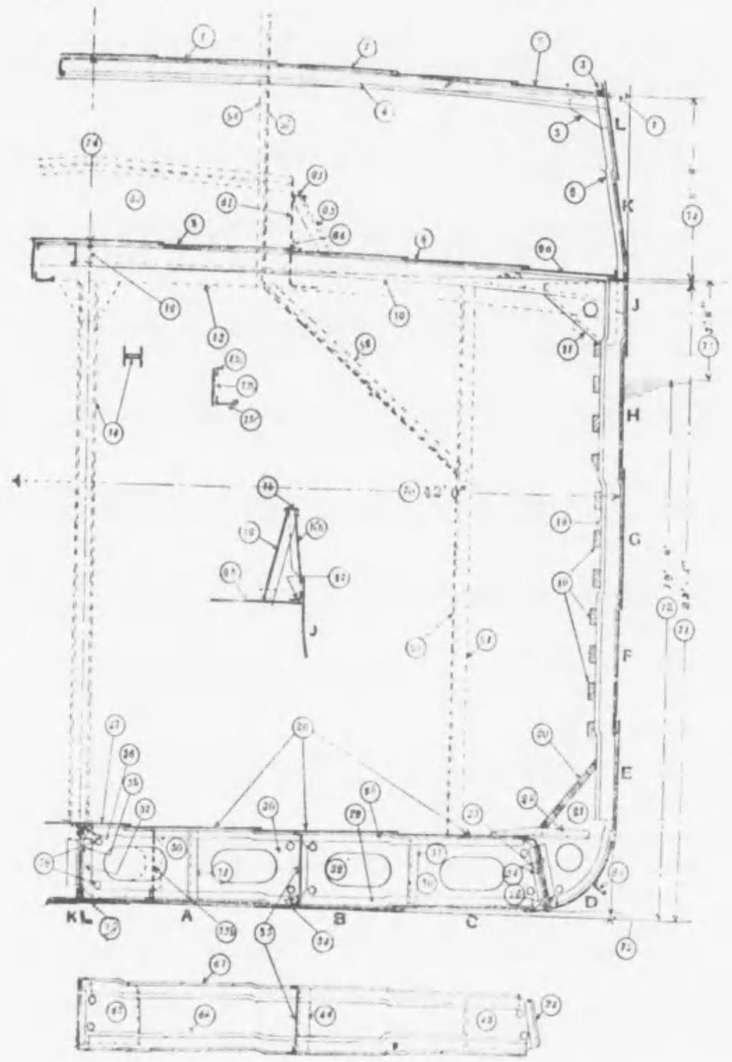
MIDSHIP SECTION.

中 央 切 斷 圖



K, L. Keel Plate (龍骨板)
A, B, C. Bottom Plating (船底外板)
D. Bilge Strake (彎曲部外板)
E, F, G, H, J, K, L. Side Plating (船側外板)
H. Strake below Sheer Strake or Top Side plate. (頂部外板)
J. Upper Deck Sheer Strake (上甲板舷側厚板)
L. Bridge Deck Sheer Strake (船橋樓甲板舷側厚板)

1. Bridge Deck-Deck Plate (船橋樓甲板, 鋼板)
2. Bridge Deck-Stringer Plate (船橋樓甲板, 梁上側板)
3. Bridge Deck-Stringer Angle (船橋樓甲板, 外板取付山形材)
4. Bridge Deck-Beam (BA) (船橋樓甲板, 梁 [球山形材])
5. Bridge Deck-Beam Knee (船橋樓甲板, 梁枝)
6. Tween Deck Frame (A) (甲板間肋骨[山形材])
7. Tumble Home at Bridge Deck (船橋樓に於けるタンブルホーム)
8. Upper Deck-Deck Plate (上甲板, 鋼板)
9a. Upper Deck-Stringer Plate Bridge inside (上甲板の船橋樓內の梁上板間)
9b. Upper Deck-Stringer Plate (上甲板の梁上側板)
10. Upper Deck-Beam (BA) (上甲板の梁[球山形材])
11. Upper Deck-Beam Knee (上甲板の梁枝)
12. Round-Up (or Camber) of Upper Deck Beam (上甲板の梁矢)
13. Hatch End Beam of Upper Deck (上甲板の艙口端梁)
13a. Hatch End Beam Connecting Angle (上甲板の艙口端梁取付山形材)
13b. Hatch End Beam Web Plate (上甲板の艙口端梁竪板)
13c. Hatch End Beam Face Bar (BA) (上甲板の艙口端梁內緣竪材[球山形材])
14. Wide Spaced Pillar (CH) (特設梁柱[溝形材])
15. Bulwark Rail (BA) (舷檣端材[球山形材])
Kb. Bulwark (舷檣)
16. Bulwark Stay (A) (舷檣支柱[山形材])
9b. Upper Deck Stringer Plate (上甲板梁上側板)
17. Upper Deck Stringer Angle or Gunwale Bar or Gunnel Bar (舷端[又は舷緣]山形材)
18. Hold Frame (BA) (艙內肋骨球[山形材])
19. Sparing (船側內張板[亞米利加松])
20. Limber Board (溜水道覆板)
21. Frame Bracket or Tank Side Bracket (緣板外側に取付くる肋骨肘板)
22. Gusset Angle (腹形板に組合する山形材)
23. Margin Plate of Double Bottom (二重底の緣板)
24. Connecting Angle of Floot to Margin Plate (緣板の取付竪山形材)
25. Margin Angle (緣板の外板取付け山形材)
26. Inner Bottom Plate of Double Bottom or Tank Top Plate (二重底內底板又は頂板)
27. Middle Line Strake or Centre Line Strake of Tank Top (二重底の中心線內底板)
28. Reverse Frame (副肋材)
29. Main Frame (正肋材)
30. Floor Plate (肋板)
31. Stiffener or Strut (支材)
32. Man Hole (人孔)

28–32: Soild Floor (實體肋板)

33. Intercostal Side Girder (隔切板桁材)
33b. Aditional Side Girder in Engine Room (汽機室に於ける增設側桁材)
34. Bottom Angle of Side Girder (側桁材の底部山形材)
35. Center Girder (中心線桁板)
36. Top Angle of Center Girder (心線桁板の頂部山形材)
37. Vertical Angle of Center Girder (中心線桁板竪山形材)
38. Bottom Angle of Center Girder (中心線桁板底部山形材)
39. Air Course (空氣孔)
41. Reverse Frame (BA) (副肋材[球山形材])
42. Main Frame (BA) (正肋材[球山形材])
43. Connecting Bracket (接續肘板)
44. Strut (A) (支材[山形材])

41–44: Skeleton Floor (スケレト肋板)

45. Bilge Keel or Rolling Chock (BA) ビルヂキール (球山形材)
50. Coal Bunker Bulkhead (石炭庫隔壁)
51. Stiffener (A) (防撓材[山形材])
52. Stiffener (A) (防撓材[山形材])
53. Machinery Casing (機關室圍壁)
54. Stiffener (A) (防撓材)
60. End Coaming (艙口端緣板)
61. Side Coaming (艙口側緣板)
62. Stiffener of Coaming (BA) (緣板防撓材[球山形材])
63. Stay for Stiffener (A) (防撓材支柱[山形材])
64. Deck Connecting Angle (甲板取付山形材)
70. Breadth Moulded (船の幅)
71. Depth Moulded (船の深)
72. Load Draught (Moulded) (滿載吃水)
73. Freeboard (乾舷)
74. Tween Deck Height (甲板間の高)
75. Rise of Floor (船底の傾斜)

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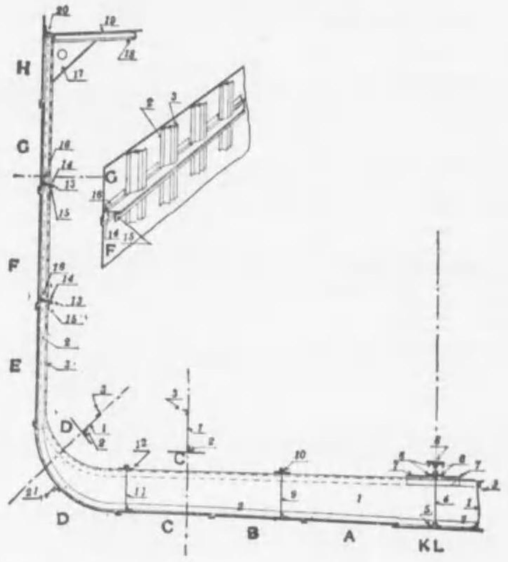
PERSPECTIVE VIEW OF ORDINARY FRAME.

普 通 肋 骨 の 斜 面 圖



K, L. Keel Plate （龍骨板）

A, B, C, D, E, F, G, H. Shell Plates （外板）

1. Floor Plate （肋板）
2. Frame or Main Frame （正肋材）
3. Reverse Frame （副肋材）
4. Centre Keelson Intercostal Plate （中心線内龍骨の斷切板）
5. Centre Keelson Shell Angle （中心線外板取付山形材）
6. Centre Keelson Four Angle （中心線四鎭の山形材）
7. Centre Keelson Foundation Plate （中心線礎板）
8. Centre Keelson Rider Plate （中心線冠板）
9. Side Keelson Intercostal Plate （側内龍骨の斷切板）
10. Side Keelson Angle （側内龍骨の山形材）
11. Bilge Keelson Intercostal Plate （彎曲部内龍骨の斷切板）
12. Bilge Keelson Angle （彎曲部内龍骨の山形材）
13. Side Stringer （船側縱通材）
14. Side Stringer Plate （船側縱通材）
15. Side Stringer Face Angle （船側縱通内緣型材）
16. Side Stringer Shell Angle or Shell Lug （船側縱通外材取付短山形材）
17. Beam Bracket or Beam Knee （梁枝）
18. Upper Deck Beam (B. A.) （上甲板梁[球山形材]）
19. Upper Deck Stringer Plate （上甲板梁上側板）
20. Upper Deck Stringer Angle or Gunnel Bar （上甲板舷端[又は舷緣]山形材）
21. Bilge Keel or Rolling Chock （ビルヂキール又はローリングチョック）

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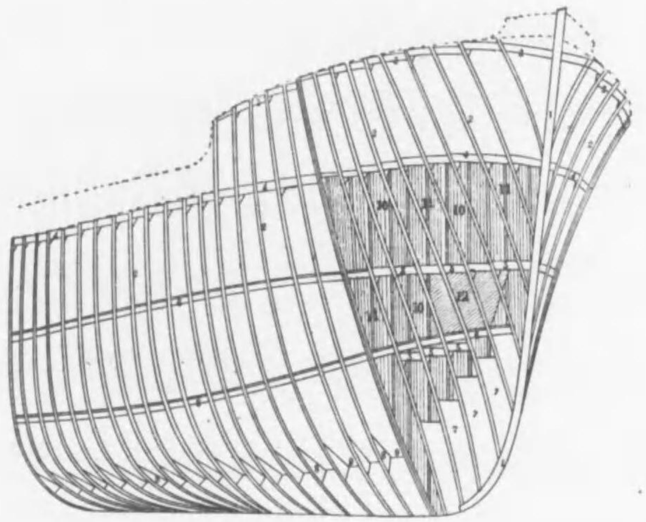
PERSPECTIVE VIEW OF SHIP BOW IN FRAMES.

船 首 の 斜 面 圖 (肋骨を立てたる時)



1. Stem （船首材）
2. Frame （肋骨）
3. Forecastle Deck Beam （船首樓甲板梁）
4. Upper Deck Beam （上甲板梁）
5. Panting Beam （船首防撓梁）
6. Panting Stringer （防撓縱通材）
7. Floor in Peak （水艙内肋板）
8. Frame Bracket （肋骨肘板）
9. Tank Top （内底板）
10. Collision Bulkhead （船首隔壁）
11. Bulkhead Stiffener （隔壁の防撓材）
12. Wash Plate in Peak （水艙内の制水板）

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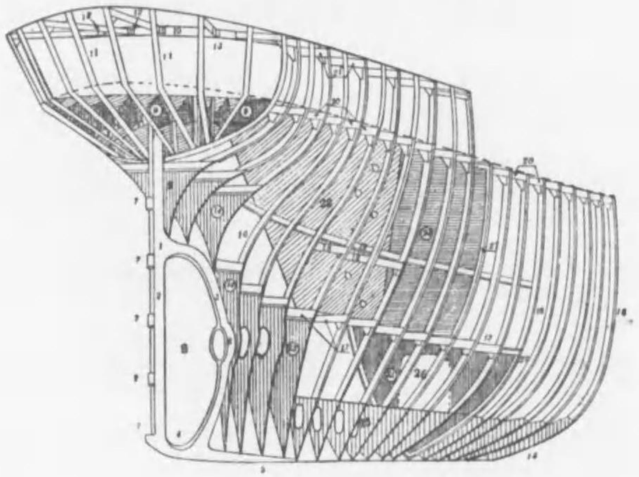
PERSPECTIVE VIEW OF STERN IN FRAME.

船尾斜面圖（肋骨を立てたる時）



1. Stern Frame （船尾骨材）
2. Rudder Post （舵柱）
3. Propeller Post （推進器柱）
4. Sole Piece or Shoe Piece （踵部）
5. Heel Piece （延長部）
6. Boss （螺旋軸孔）
7. Gudgeon （壺金）
8. Screw or Propeller Aperture （推進器の回轉間隙）
9. Transom Plate or Floor （船尾肋板）
10. Transom Beam or End Beam （船尾梁）
11. Cant Frame （斜肋骨）
12. Cant Beam （斜梁）
13. Lug Piece （取付短山形材）
14. Deep Floor （深肋板）
15. Ordinary Floor （普通肋板）
16. Frame （肋骨）
17. Tunnel Recess Top Beam （隧道端室梁）
18. Panting Beam （船尾防撓梁）
19. Panting Stringer （船尾防撓縱通材）
20. Upper Deck Beam （上甲板梁）
21. Poop Deck Beam （船尾樓甲板梁）
22. Wash Plate in Peak Tank （船尾水艙內の制水板）
23. Stuffing Box Bulkhead （墳坐取付隔壁）
24. After Peak Bulkhead （船尾隔壁）
25. Tunnel Recess Bulkhead （隧道端室隔壁）
26. Shaft Tunnel （車軸隧道）
27. Boundary Angle of Bulkhead （壁隔周邊山形材）

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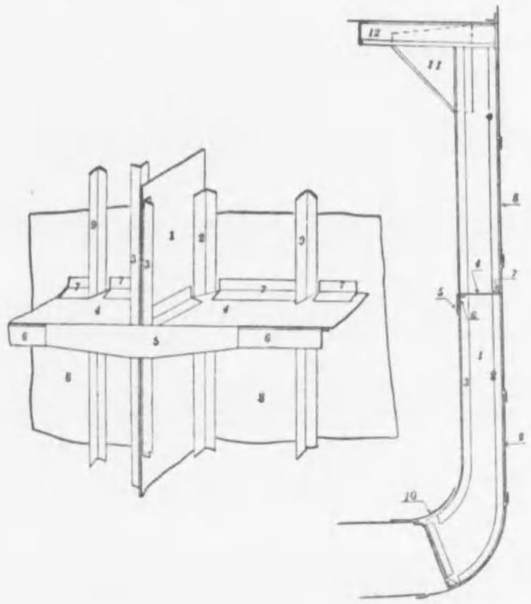
PERSPECTIVE VIEW OF WEB FRAME STRINGER & HALF DIAMOND.

特設肋骨・間側板及び半甲板の斜面圖



1. Web Plate （ヴエッブ プレート）
2. Shell Angle （外板取付山形材）
3. Face Bar （內緣型材）
4. Stringer Plate （間側板）
5. Half Diamond Plate （甲板[半分]）
6. Face Bar of Stringer （間側板の內緣型材）
7. Shell Lug of Stringer （間側板の外板取付短山形材）
8. Shell Planting （外板）
9. Intermediate Frame （中間肋骨）
10. Gusset Plate （撥形板）
11. Beam Knee or Beam Bracket （梁枝）
12. Beam （梁）

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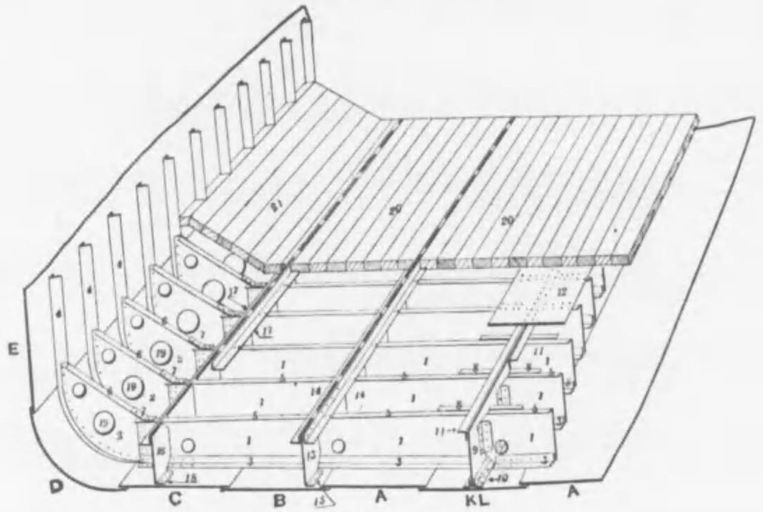
ORDINARY FLOOR OR SINGLE BOTTOM FLOOR.

普通肋板又は單底肋板



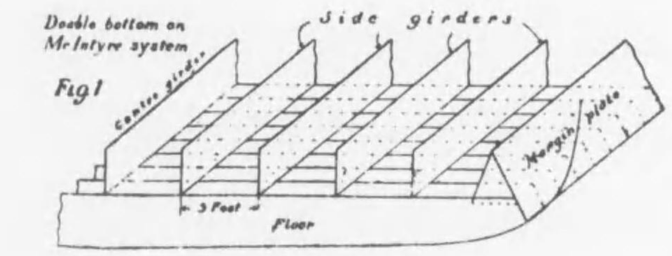
K, L. Keel Plate (龍骨板)

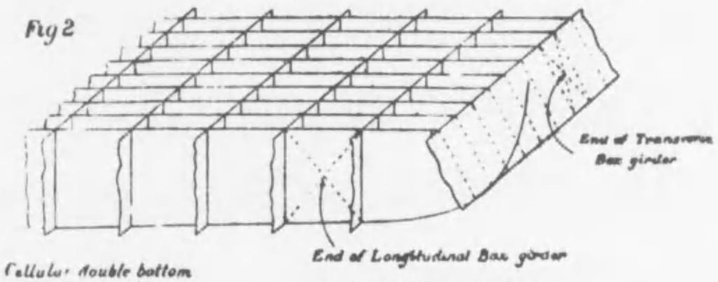
A, B, C, D, E. Shell Plate (外板)

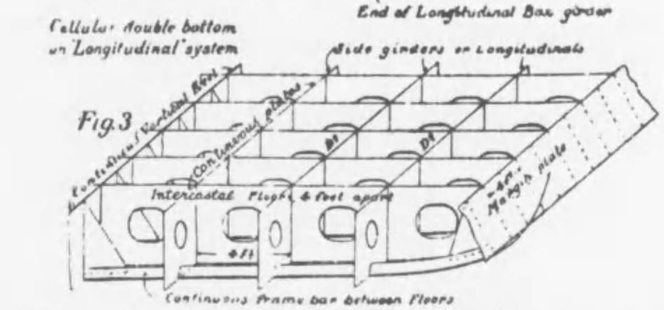
1. Floor Plate (肋板)
2. Frame Bracket (肋板の外側に付する肋骨肘板)
3. Main Frame or Bottom Angle (正肋材又は底部山形材)
4. Side Main Frame or Side Frame (舷側正肋材又は舷側肋骨)
5. Upper Flange of Floor Plate in Line of Reverse Frame (逆肋材代用の肋板の上縁)
6. Upper Flange of Bracket (肋骨肘板の上縁)
7. Strap Plate Connecting Flanges of Bracket and Floor (肋板及び肘板の上縁を接續する覆板)
8. Back Angle (背材)
9. Centre Keelson Through Plate (中心線内龍骨貫通板)
10. Centre Keelson Bottom Angle (中心線内龍骨底部山形材)
11. Centre Keelson Top Angle (中心線内龍骨頂部山形材)
12. Centre Keelson Rider Plate (中心線内龍骨冠板)
13. Side Keelson Intercostal Plate (側内龍骨斷切板)
14. Side Keelson Angle (側内龍骨山形材)
15. Flange of Intercostal Plate Connecting to Shell (外板に取付くる斷切板の上縁)
16. Bilge Keelson Intercostal Plate (彎曲部内龍骨斷切板)
17. Bilge Keelson Angle (彎曲部龍骨山形材)
18. Flange of Intercostal Plate Connecting to Shell (外板に取付くる斷切板の上縁)
19. Lighting Hole (輕くする爲めの孔)
20. Bottom Ceiling (船底内張板)
21. Limber Boards (淦水道覆板)

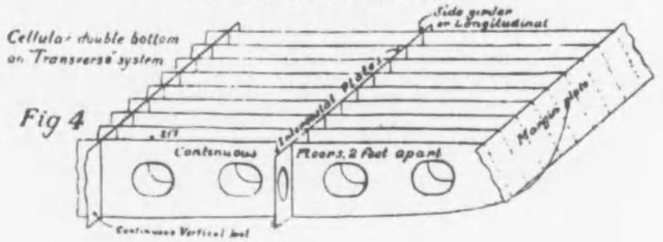
121

VARIOUS SYSTEMS ON DOUBLE BOTTOMS.





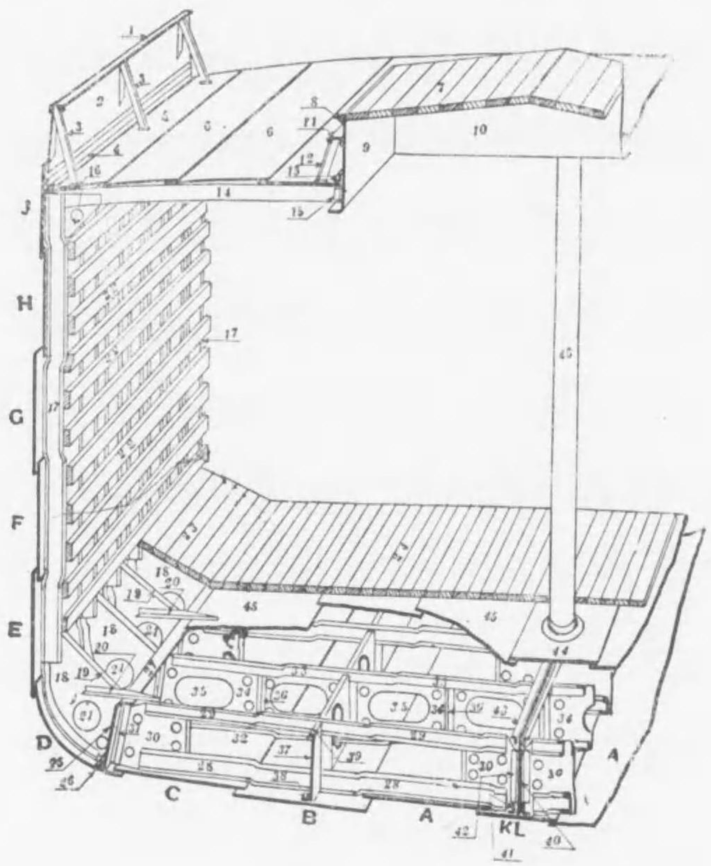




122

PERSPECTIVE VIEW OF MIDSHIP SECTION IN WAY OF HATCHWAY.

艙口に於ける船體中央切斷斜面圖



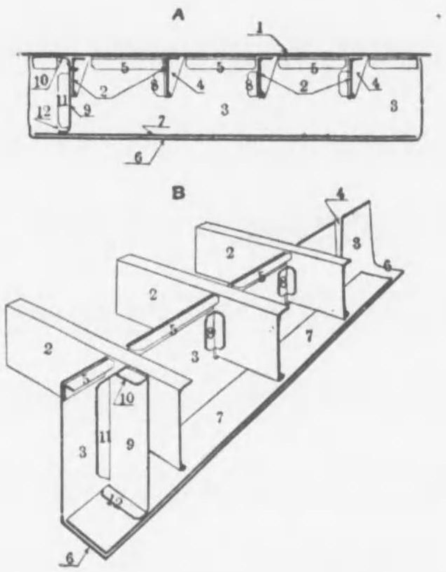
K, L. Keel Plate （龍骨板）
A, B, C. Bottom Plates （船底外板）
D. Bilge Plate （彎曲部外板）
E, F, G, H, J. Side Plates （船側外板）
H. Top Side Plate （頂部外板）
J. Upper Deck Sheer Strake （上甲板舷側厚板）

1. Bulwark Rail （舷檣手欄）
2. Bulwark （舷檣）
3. Stay （支柱）
4. Stringer Angle or Gunnel Bar （舷端[又は舷縁]山形材）
5. Upper Deck Stringer Plate （上甲板梁上側板）
6. Upper Deck Plates （上甲板の板）
7. Hatch Boards （艙口蓋板）
8. Half Round Bar （半丸棒）
9. Hatch Side Coaming （艙口側縁板）
10. Hatch End Coaming （艙口端縁板）
11. Coaming Stiffener （縁板防撓材）
12. Stay （支柱）
13. Deck Angle （甲板取付山形材）
14. Upper Deck Half Beam （上甲板半梁）
15. Lug Attachment of Half Beam （半梁の短山形材同着）
16. Upper Deck Beam Knee （上甲板梁肘）
17. Hold Frame （艙内肋骨）
18. Frame Bracket or Tank Side Bracket （肋骨肘板[又は縁板の外側に取付くる肘板]）
19. Flange of Bracket （肘板の曲縁）
20. Gusset Angle （撥形板に相當する山形材）
21. Lightening Hole （重量を輕くする爲めの孔）
22. Sparing （船側内張板）
23. Limber Boards （船倉部内張板[又は溜水道蓋板]）
24. Bottom Ceiling （船底内張板）
25. Margin Plate （縁板）
26. Margin Angle （縁板を外板に取付くる山形材）
27. Flange of Margin Plate （縁板曲縁）
28. Main Frame of Skeleton (or Open) Floor （スケレトン又はオープン肋板の正肋材）
29. Reverse Frame of Skeleton (or Open) Floor （スケレトン又はオープン肋板の副肋材）
30. Bracket of Skeleton (or Open) Floor （スケレトン又はオープン肋板の肘板）
31. Vertical Angle of Bracket （肘板の竪山形材）
32. Main Frame of Solid Floor （實體肋板の正肋材）
33. Reverse Frame of Solid Floor （實體肋板の副肋材）
34. Solid Floor （實體肋板）
35. Man Hole of Solid Floor （實體肋板人孔）
36. Strut （支柱）
37. Intercostal Plate of Side Girder （側桁材の斷切板）
38. Bottom Angle of Side Girder （側桁材の底部山形材）
39. Upper Flange of Side Girder （側桁材の上縁曲縁）
40. Centre Girder （中心線桁材）
41. Bottom Angle of Centre Girder （中心線桁材底部山形材）
42. Vertical Angle of Centre Girder （中心線桁材竪山形材）
43. Top Angle of Centre Girder （中心線桁材頂部山形材）
44. Centre Line Strake of Tank Top Plating （中心線内底板）
45. Tank Top Plating (or Inner Bottom Plating) （頂板又は内底板）
46. Wide Spaced Pillar （特設梁柱）

123

DECK GIRDER.

甲板下縦通材



A. Side View of Deck Girder （甲板下縦通材の側面圖）

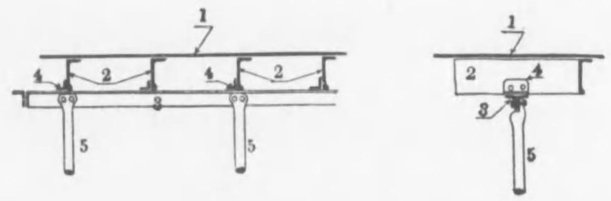
B. Perspective View of Deck Girder （甲板下縦通材の斜面圖）

1. Deck Plate （甲板）
2. Deck Beam （梁）
3. Deck Girder （甲板下縦通材）
4. Slots of Girder for Beam （梁を通す爲めの縦通材の切欠ぎ）
5. Deck Angles of Girder （縦通材の甲板取付山形材）
6. Flange of Girder （縦通材の曲緣）
7. Rider Plate （冠板）
8. Lug Piece （取付短山形材）
9. Tripping Bracket （トリツピング肘板）
10. Deck Flange of Tripping Bracket （トリツピング肘板甲板取付曲緣）
11. Girder Frange of Tripping Bracket （トリツピング肘板縦通材取付曲緣）
12. Rider Plate Flange of Tripping Bracket （トリツピング肘板冠板取付曲緣）

124

DECK RUNNER.

梁下縦通材

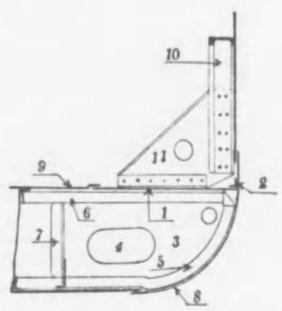


1. Deck Plate （甲板）
2. Deck Beam （梁）
3. Deck Runner （梁下縦通材）
4. Lug Piece （取付短形材）
5. Stanchion （梁柱）

125

HORIZONTAL MARGIN PLATE.

水平なる二重底緣板

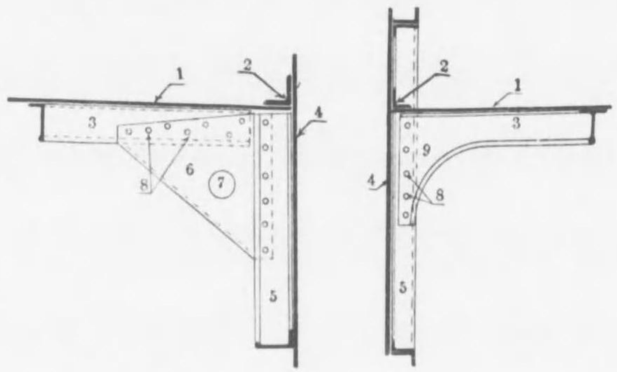


1. Margine Plate （緣板）
2. Margin Angle （緣板を外板に取付くる山形材）
3. Floor Plate （肋板）
4. Man Hole （人孔）
5. Bottom Angle or Main Frame in Double Bottom （二重底内の底部山形材又は正肋材）
6. Top Angle or Reverse Frame in Double Bottom （二重底内の頂部山形材又は副肋材）
7. Strut （支柱）
8. Shell Plating （外板）
9. Tank Top Plate （頂板又は内底板）
10. Hole Frame or Side Frame （艙内肋骨又は船側肋骨）
11. Frame Bracket （二重底の外側に付する肋骨肘板）

126

BEAM KNEE OR BEAM BRACKET.

梁　　矢

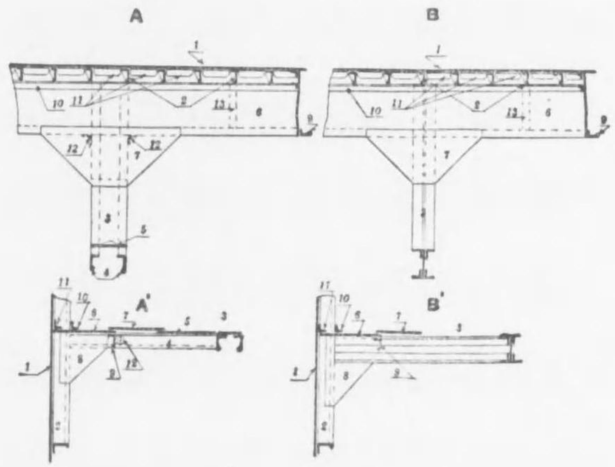


1. Deck Stringer Plate （梁上側板）
2. Deck Stringer Angle （梁上側板の外板取付山形材）
3. Deck Beam （梁）
4. Shell （外板）
5. Frame （肋骨）
6. Beam Knee or Beam Bracket （梁枝）
7. Lightening Hole （重量を輕くする孔）
8. Rivets （鋲又は鉸釘）
9. Forged-out Beam Knee （打出し梁枝）

127

HOLD BEAM & STRINGER.

艙梁及び其梁上側板

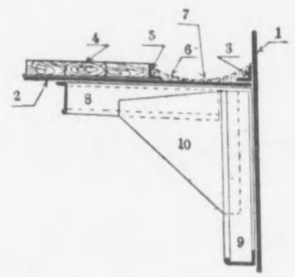


A. Plan （平面圖）
A′ Side view （側面圖）
B. Plan （平面圖）
B′ Side view （側面圖）
1. Shell （外板）
2. Frame （肋骨）
3. Hold Beam （艙梁）
4. Beam （梁）
5. Rider Plate （冠板）
6. Stringer Plate （梁上側板）
7. Bracket （肘板）
8. Beam Knee （梁枝）
9. Stringer Face Bar （梁上側板の內緣型材）
10. Stringer Shell Angle （梁上側板外板取付山形材）
11. Stringer Shell Lugs （梁上側板外板取付短山形材）
12. Lug Pieces of Face Bar （內緣型材の取付短山形材）
13. Bracket （肘板）

128

GUTTER WATERWAY.

舷側水道

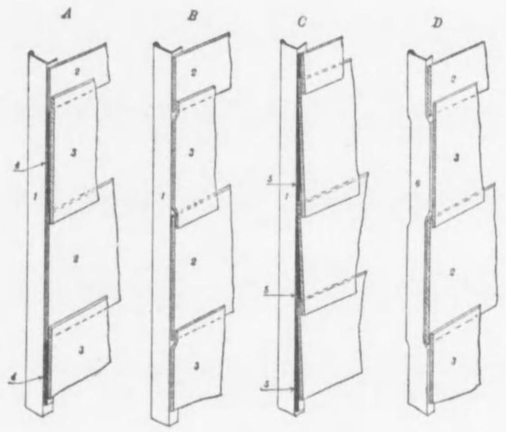


1. Shell (外板)
2. Stringer Plate (梁上側板)
3. Stringer Angle (Gunnel Bar) (舷端山形材)
4. Wood Deck (木甲板)
5. Wood Deck Margin Angle (木甲板端末山形材)
6. Cement (セメント)
7. Gutter Waterway (舷側水道)
8. Deck Beam (梁)
9. Frame (肋骨)
10. Beam Knee (梁枝)

129

PLATING SYSTEMS.

外板張方



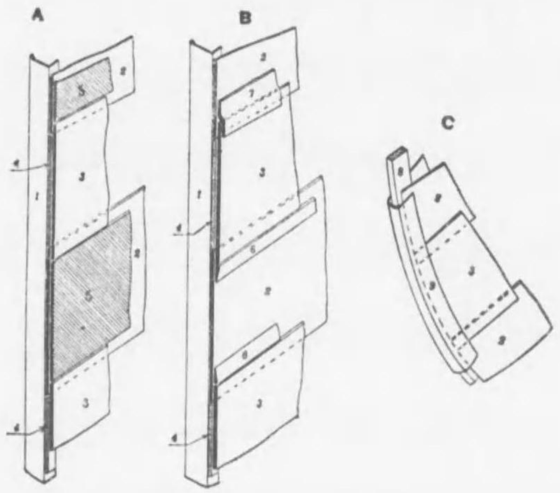
A. In and out System with Liners (塡材[目板]を用ゐる內外張)
B. In and out System Plate Joggled (板を段付けする內外張)
C. Clinker System with Tapered Liners
(三角塡材[目板]を用ふる羽目板張)
D. In and Out System Frame Joggled (肋骨を段付けする內外張)

1. Frame (肋骨)
2. Inner Strakes of Plating (內板)
3. Outer Strakes of Plating (外板)
4. Liners (塡材又は目板)
5. Tapered Liners (三角塡材又は目板)
6. Joggled Frame (段付けした肋骨)

130

DOUBLING, CHAFING PIECE, EDGE PATCH, STEM SHOE.

二重張、チャツフ板、目張、船首包覆板

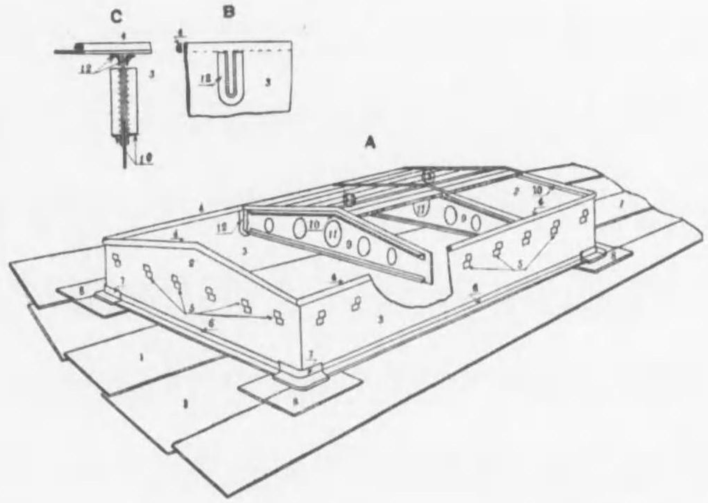


A. Doubling （二重張）
B. Chafing Piece & Edge Patch （チャツフ材及び目張）
C. Stem Shoe （船首包覆板）
1. Frame （肋骨）
2. Inner Strake （内層板）
3. Outer Strake （外層板）
4. Liner （目板又は塡材）
5. Doubling Plate （二重張）
6. Chafing Piece （チャツフ材）
7. Edge Patch （目張）
8. Stem （船首材）
9. Steam Shoe （包覆板）

131

HATCHWAY.

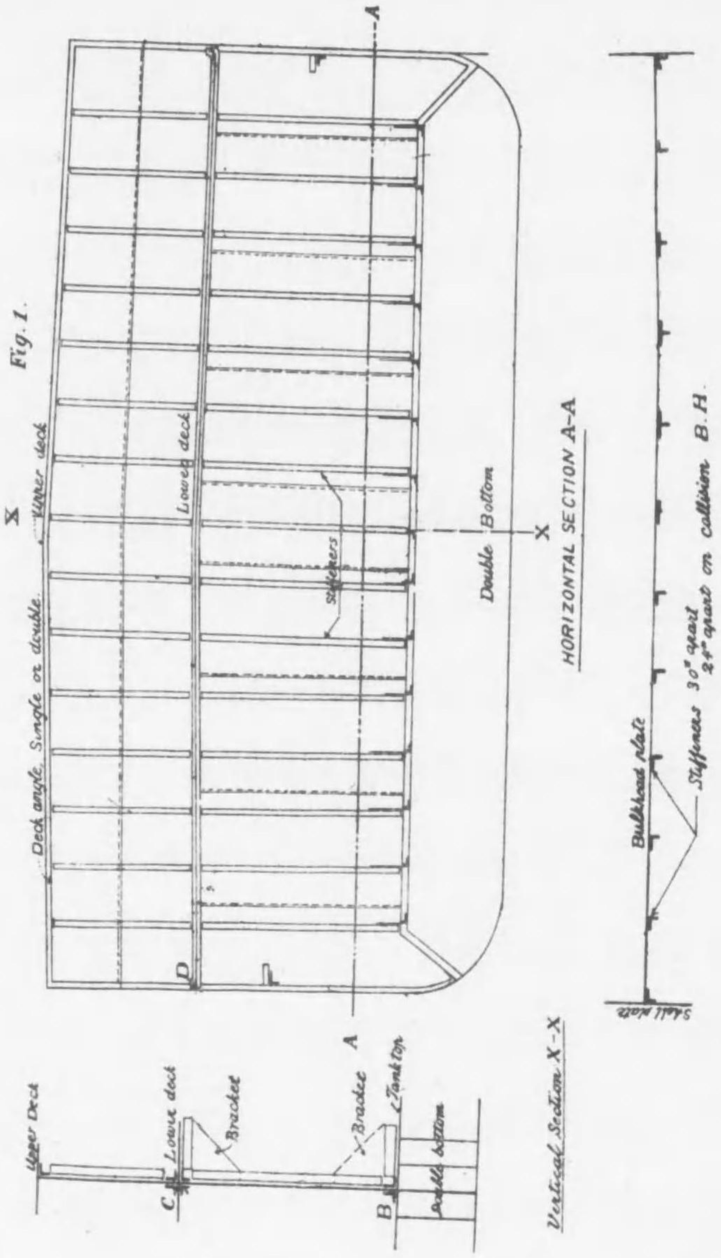
船　　口



A. Perspective View of Hatchway （船口の斜面圖）
B. Elevation of Shifting Beam Carrier （仕切板梁受の正面圖）
C. Plan of Shifting Beam Carrier （仕切板梁受の平面圖）
1. Upper Deck （上甲板）
2. End Coaming of Hatchway （船口の端縁材）
3. Side Coaming of Hatchway （船口の側縁板）
4. Half Round Bar on Top of Coamings （縁材上端の半丸棒）
5. Cleats for Hatch Battens （覆布押へ用のクリート）
6. Deck Angle （甲板取付山形材）
7. Strong Corner Deck Angles （四隅に於ける强力なる甲板取付山形材）
8. Corner Doubling （隅の二重張り）
9. Shifting Beam (or Web Beam) （仕切板梁）
10. Hatch Board Carrier （覆板受け）
11. Lightening Hole （輕量孔）
12. Shifting Beam Carrier （仕切板梁受け）
13. Hatch Board （覆板）

132

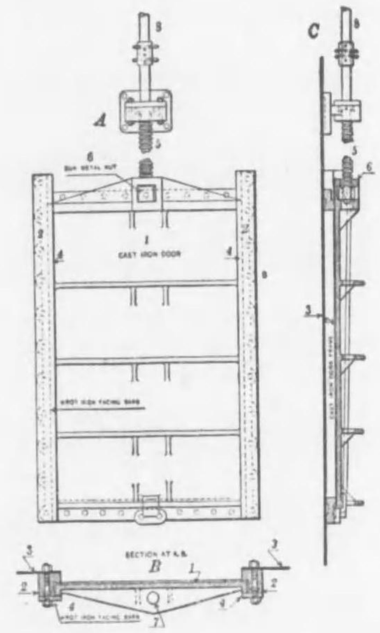
WATER TIGHT BULKHEAD.



133

SLUICE DOOR.

支 水 扉



A. Elevation （正面圖）
B. Cross Section （横斷面圖）
C. Longitudinal Section （縦斷面圖）
1. Sliding Door (Up and Down) （滑動扉[上下]）
2. Frame （枠）
3. Watertight Bulkhead （支水隔壁）
4. Facing Bars （面材）
5. Screwed Shaft （螺子を切つた軸）
6. Nut （ナット）
7. Holes for Shaft （軸孔）
8. Shaft to Handle （ハンドルへの傳動軸）

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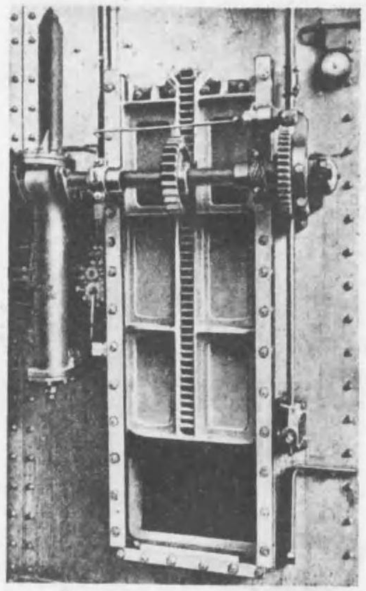
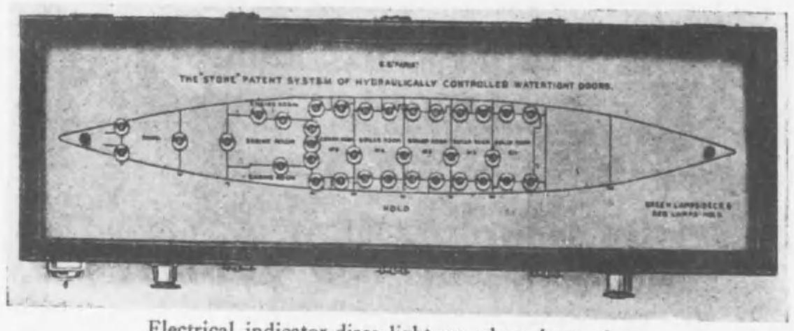
STONE'S SYSTEM OF W.T. DOOR CONTROL.



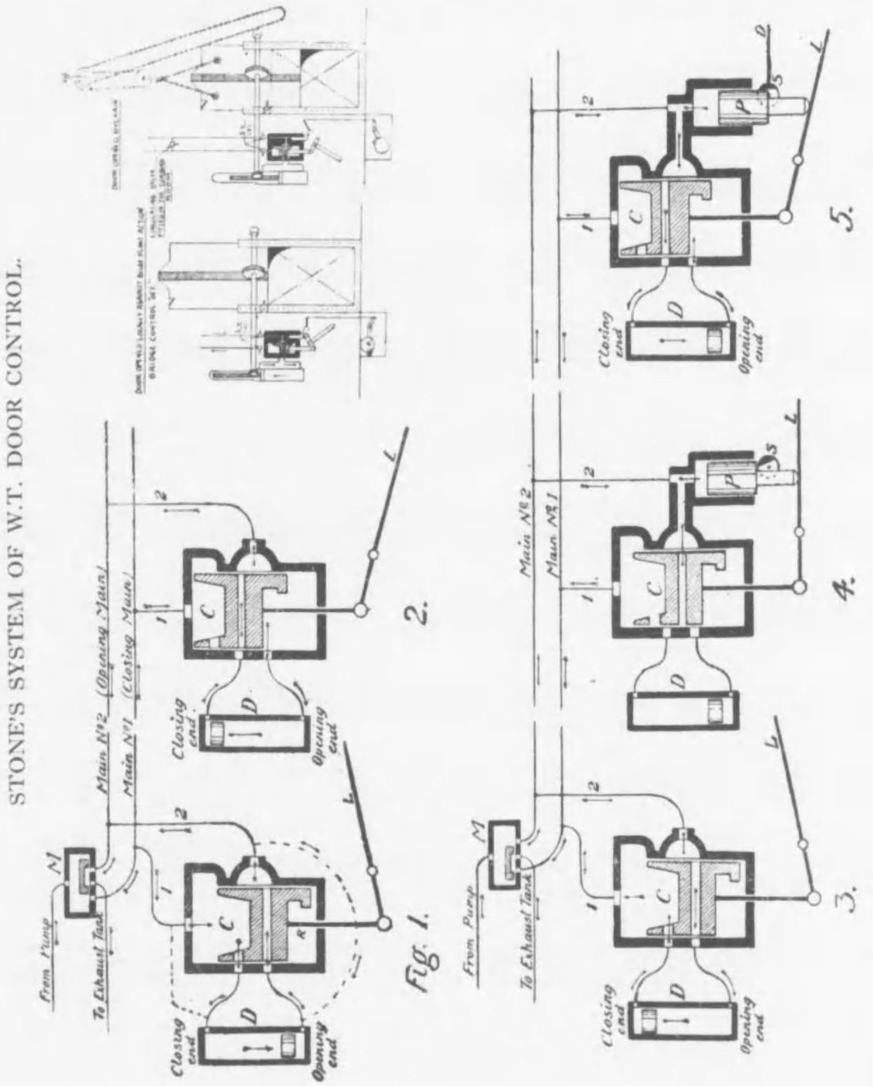
Sliding Water-tight Bulkhead Door.
(Hydraulic cylinder on left. alarm bell on right).



Electrical indicator-discs light up when doors close.

135

STONE'S SYSTEM OF W.T. DOOR CONTROL.



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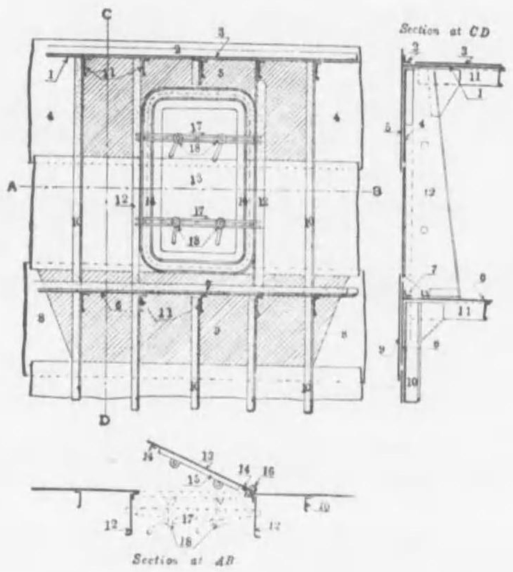
CARGO PORT.

載 貨 門



1. Boat Deck （端艇甲板）
2. Boat Deck Stringer Angle （端艇甲板舷端山形材）
3. Boat Deck Doubling Plate （端艇甲板二重張）
4. Boat Deck Sheer Strake （端艇甲板舷側厚板）
5. Boat Deck Sheer Strake Doubling （端艇甲板舷側厚板二重張）
6. Upper Deck （上甲板）
7. Upper Deck Stringer Angle （上甲板舷端山形材）
8. Upper Deck Sheer Strake （上甲板舷側厚板）
9. Upper Deck Sheer Strake Doubling （上甲板舷側厚板二重張）
10. Frame （肋骨）
11. Beam （梁）
12. Web Frame （特設肋骨）
13. Port Door （扉）
14. Collar Angle （周縁山形材）
15. Stiffeners （防撓材）
16. Hinge （蝶番）
17. Strong Back （橋材）
18. Butter Fly Screw （蝶螺子）

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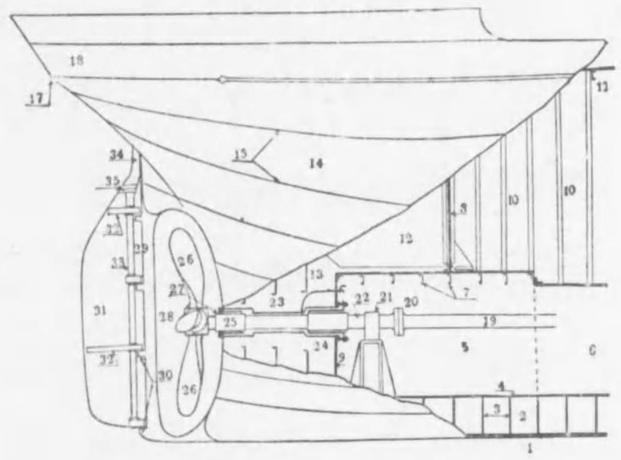
DESCRIPTION OF STERN.

船 尾 說 明 圖



1. Keel Plate （龍骨板）
2. Double Bottom （二重底）
3. Floor （肋板）
4. Tank Top Plate （內底板）
5. Tunnel Recess （隧道端室）
6. Shaft Tunnel （車軸隧道）
7. Recess Top Beam （隧道端室梁）
8. After Peak Bulkhead （船尾隔壁）
9. Stuffing Box Bulkhead （填塞取付隔壁）
10. Frame （肋骨）
11. Upper Deck Beams （上甲板梁）
12. Wash Plate （制水板）
13. Deep Floor （深肋板）
14. Shell （外板）
15. Seam of Shell Strakes （外板の縫線）
16. Moulding （モールデイング）
17. Knuckle Line （稜角線）
18. Counter （船尾突出部）
19. Tunnel Shaft or Intermediate Shaft （中間軸）
20. Coupling （接手）
21. Pedestal （車軸承臺）
22. Tail Shaft (Propeller Shaft, Screw Shaft) （推進器軸）
23. Stern Tube （船尾管）
24. Stuffing Box （填塞）
25. Stern Bush （船尾填材）
26. Propeller (Propeller Blades) （推進器[推進器翼]）
27. Boss （螺旋軸孔又は推進器軸孔）
28. Propeller Aperture, Screw Aperture （推進器の回轉する間隙）
29. Rudder Post （舵柱）
30. Gudgeon （壺金）
31. Rudder （舵）
32. Rudder Arm （補强骨）
33. Rudder Main Piece （舵心材）
34. Rudder Stock （舵頭材）
35. Rudder Coupling （舵頭材接手）

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BOSSING IN TWIN SCREW STEAMERS.

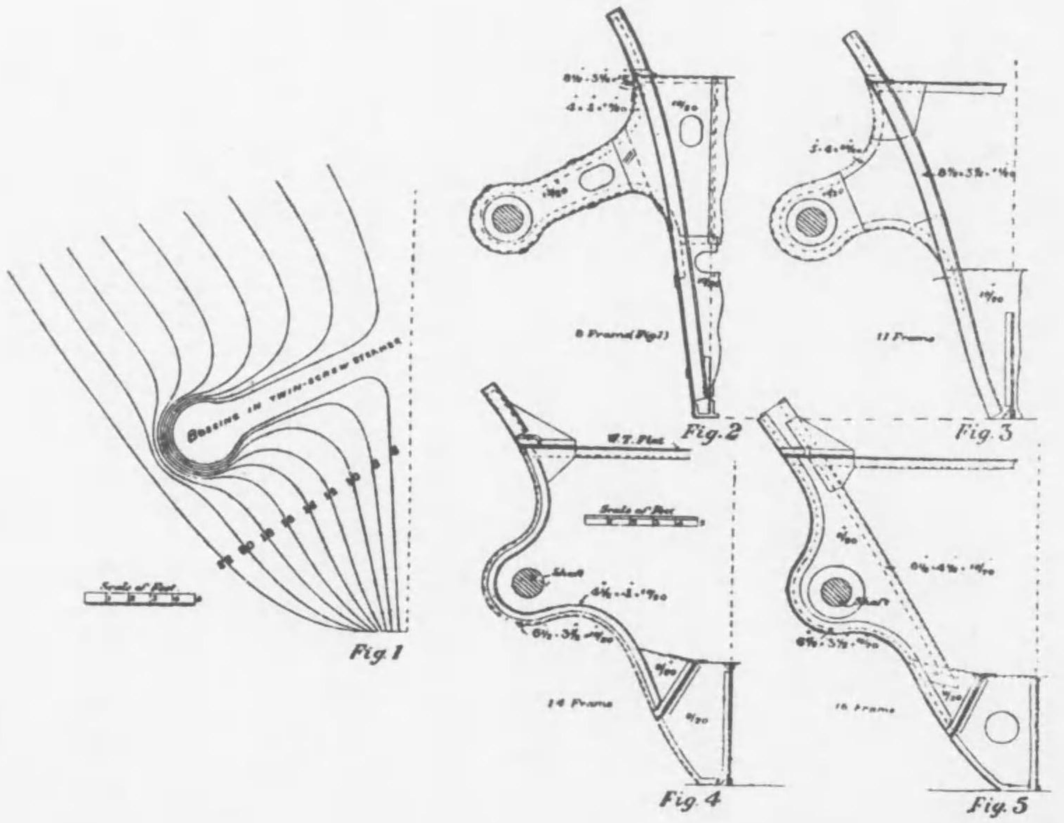

Fig. 1 Fig. 2 Fig. 3 Fig. 4 Fig. 5

139

BOSSING IN TWIN SCREW STEAMERS.

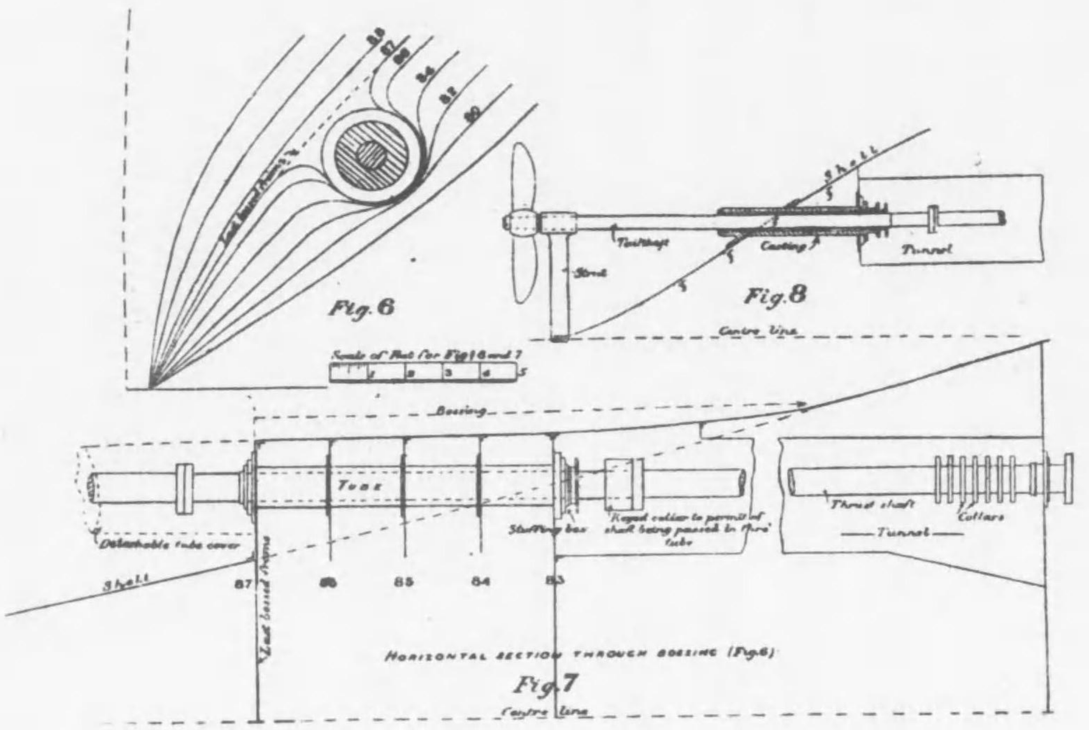

Fig. 6 Fig. 8

HORIZONTAL SECTION THROUGH BOSSING (Fig. 6)

Fig. 7

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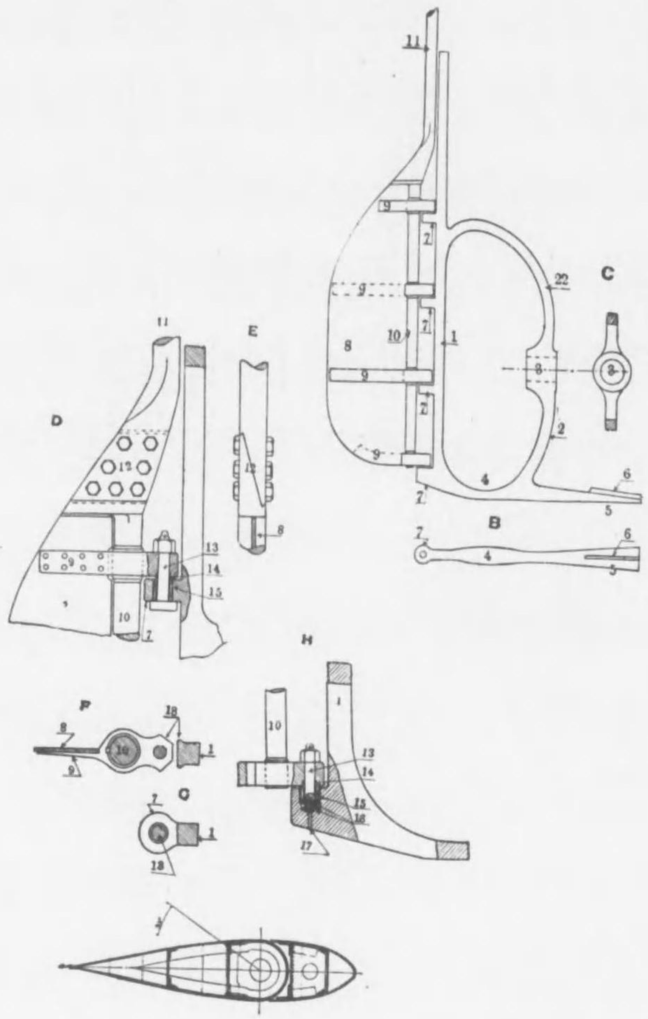
STERN FRAME & RUDDER.

船尾骨材及び舵



A. Stern Frame & Rudder (船尾骨材及び舵)
B. Plan of Shoe Piece (踵部の平面圖)
C. Boss (推進器軸孔)
D. Coupling & Pintle (接手及び舵針)
E. Side View of Coupling (接手側面圖)
F. Rudder Arm (舵の補强骨)
G. Gudgeon (壺金)
H. Lowest Gudgeon (下端の壺金)
I. Oertz Rudder (エルツ舵)

1. Rudder Post (舵柱)
2. Propeller Post (推進器柱)
3. Boss (推進器軸孔)
4. Shoe Piece (踵部)
5. Heel Piece (延長部)
6. Rib to Take Centre Girder (中心線桁板を取付くる力材)
7. Gudgeon (壺金)
8. Rudder Plate (舵板)
9. Rudder Arm (舵の補强骨)
10. Main Piece (舵心材)
11. Rudder Stock (舵頭材)
12. Vertical Coupling (竪形接手)
13. Pintles (舵針)
14. Gun Metal Bush (砲金填材)
15. Lignumvitae (リグナンヴアイテ)
16. Hard Steel Bearing (硬鋼製承金)
17. Drain Hole (水抜き)
18. Rudder Stopper (舵止め)

141

STERN FRAME AND RUDDER.

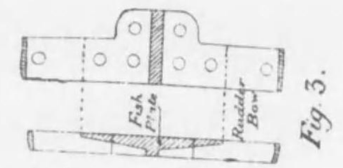


Fig. 3.

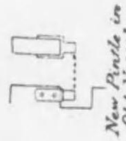


Fig. 4.

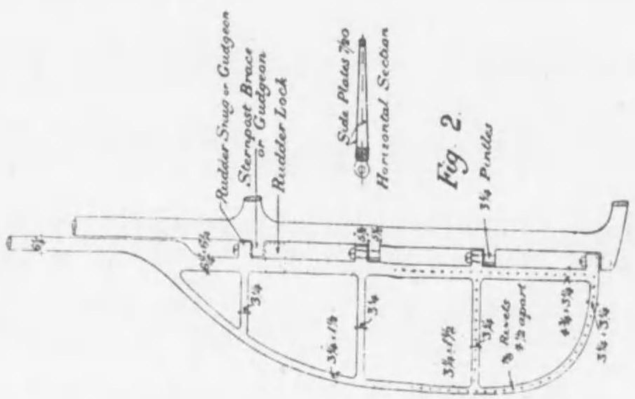
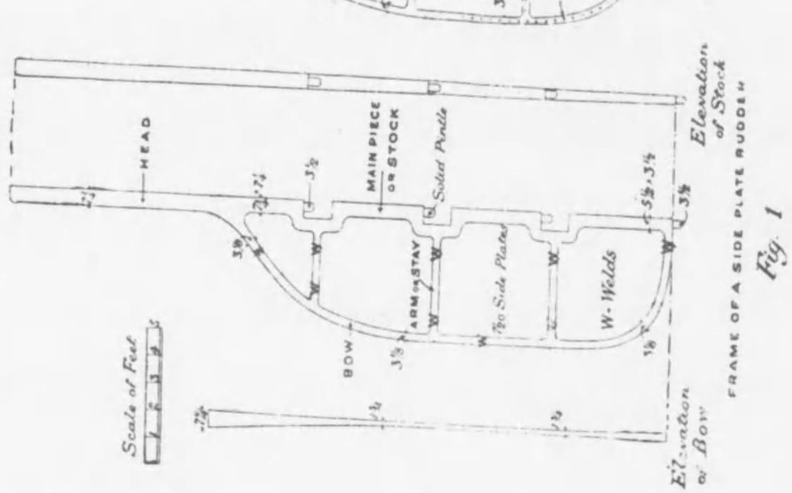


Fig. 2

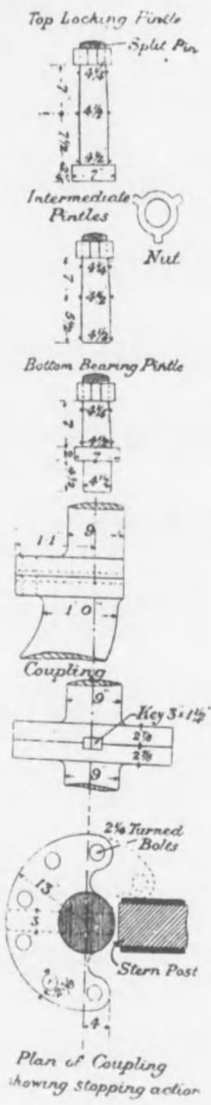


FRAME OF A SIDE PLATE RUDDER

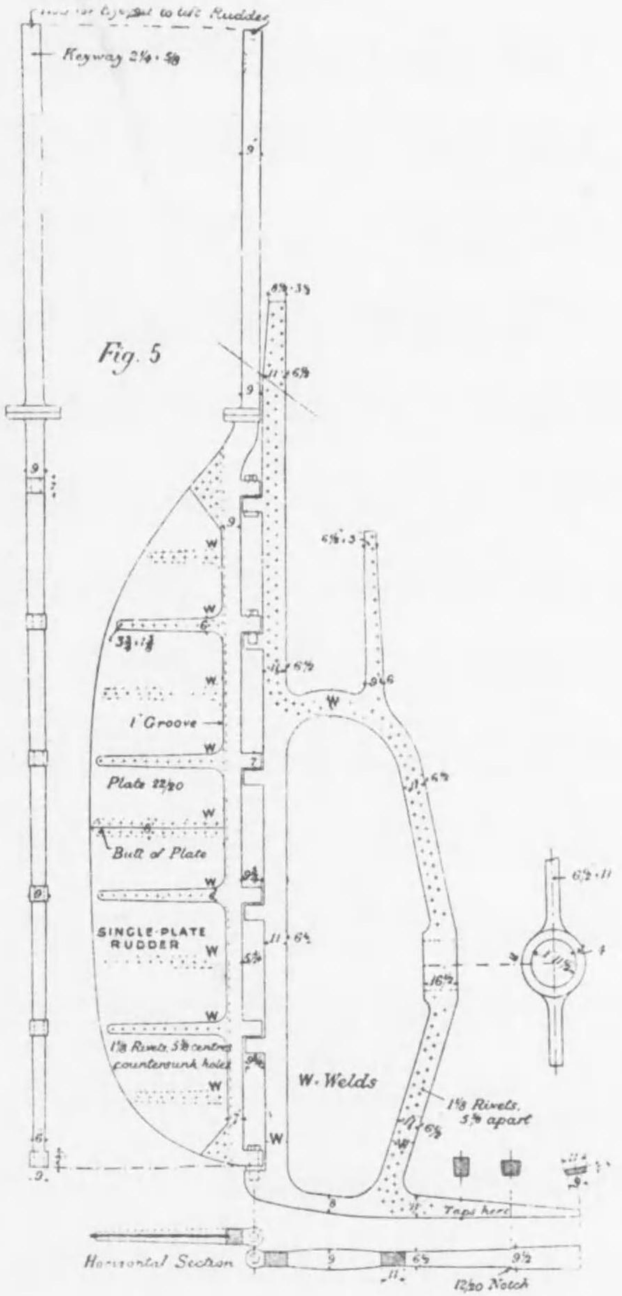
Fig. 1

142

STERN FRAME AND RUDDER.



Plan of Coupling showing stopping action



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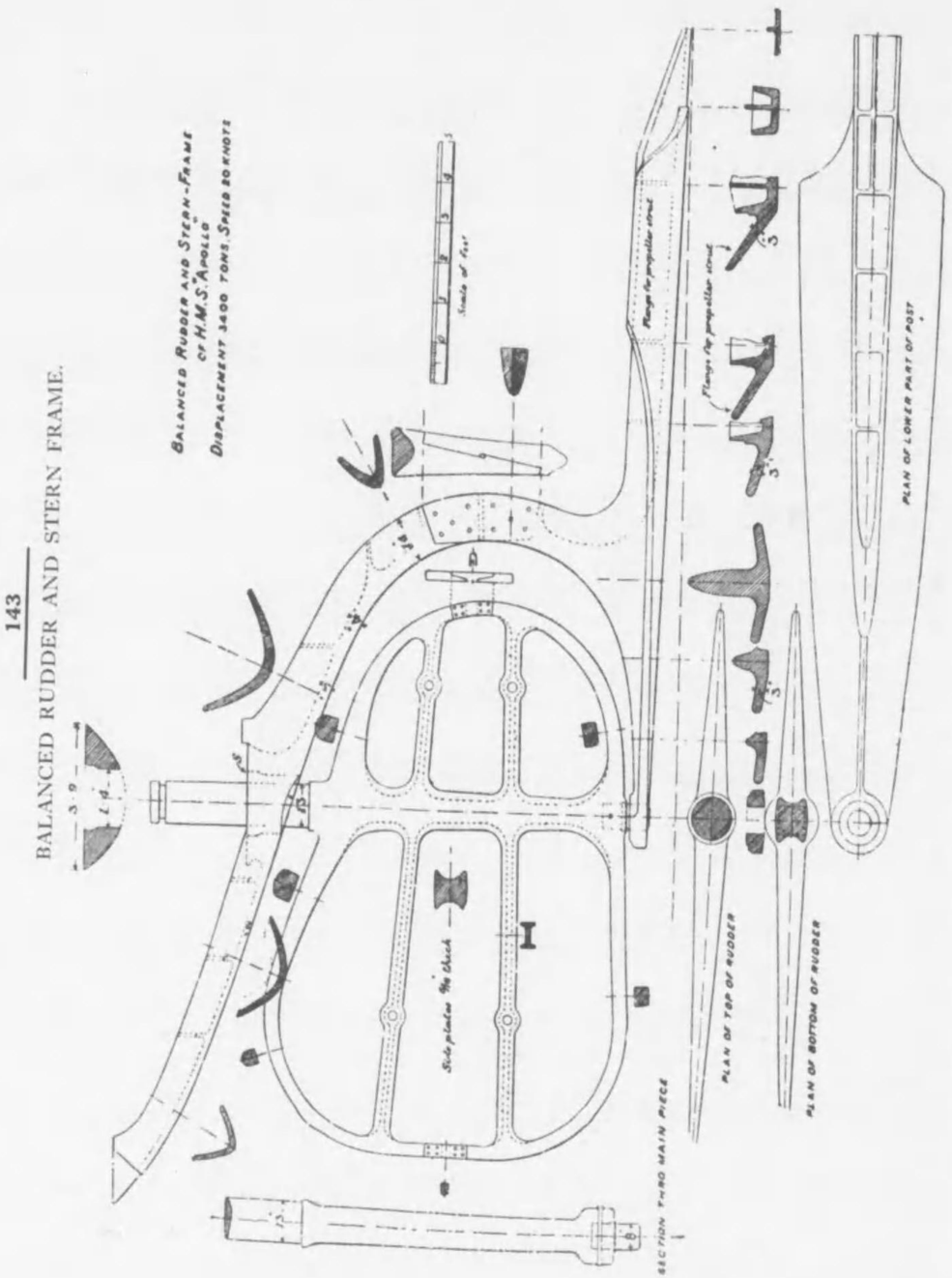
BALANCED RUDDER AND STERN FRAME.



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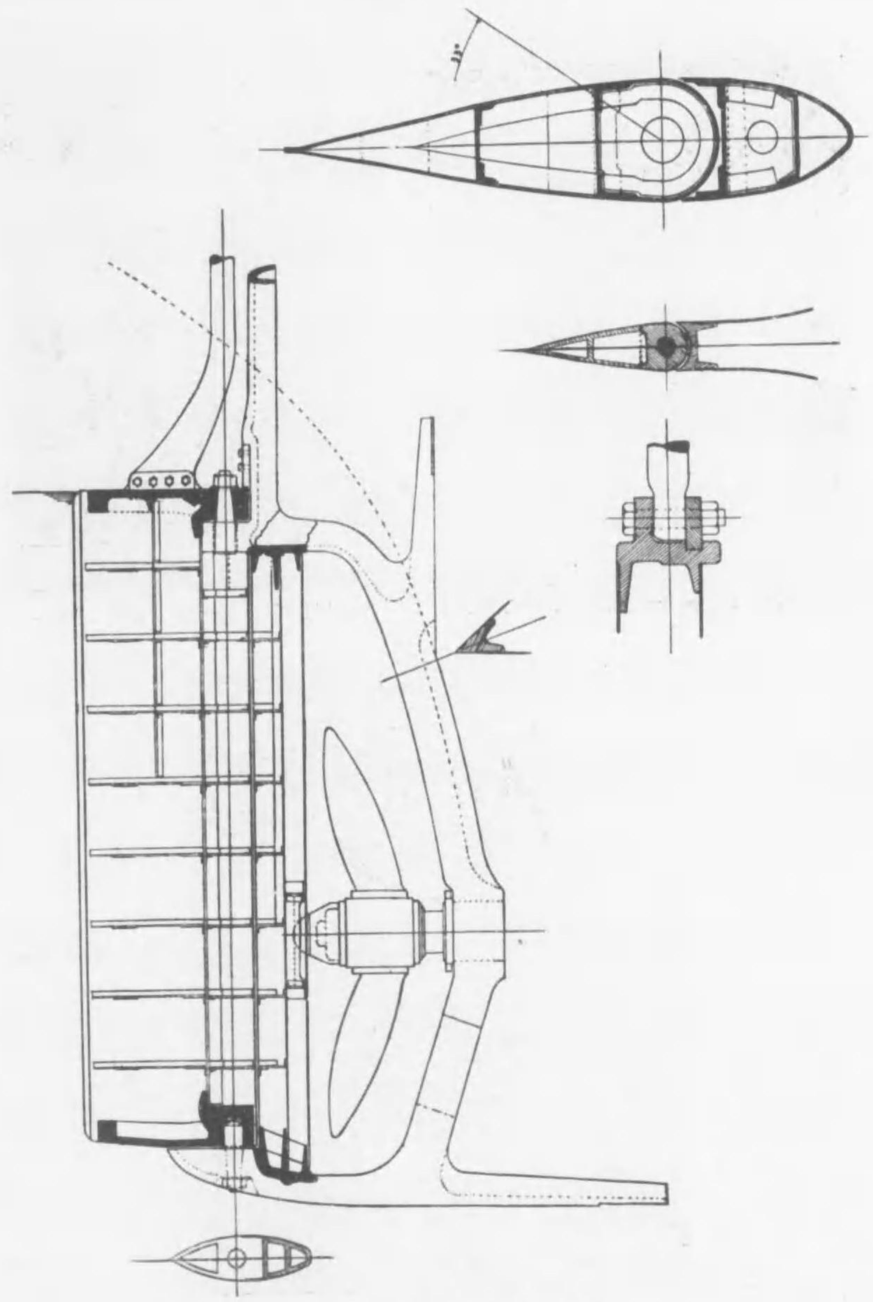
VARIOUS RUDDERS.



Construction of Oertz Rudder.

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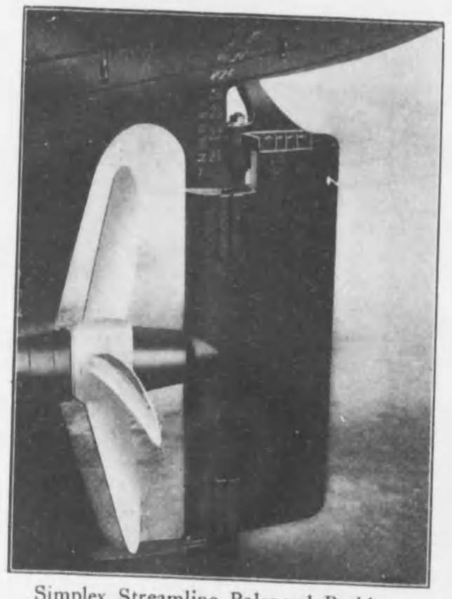
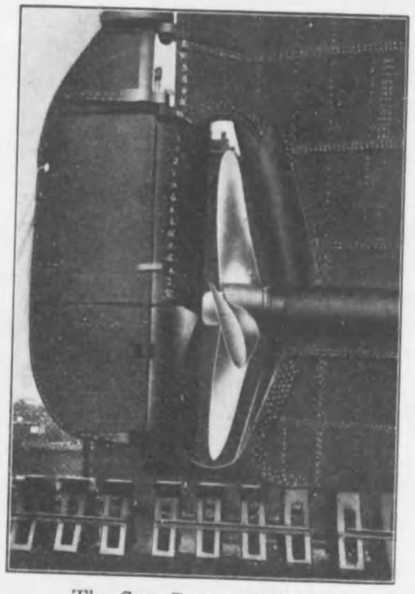
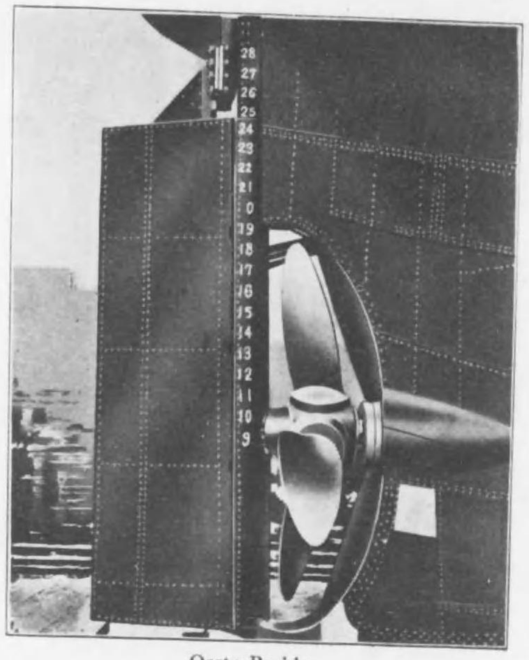
VARIOUS RUDDERS.



Simplex Streamline Balanced Rudder.



The Star Contra Rudder.



Oertz Rudder.

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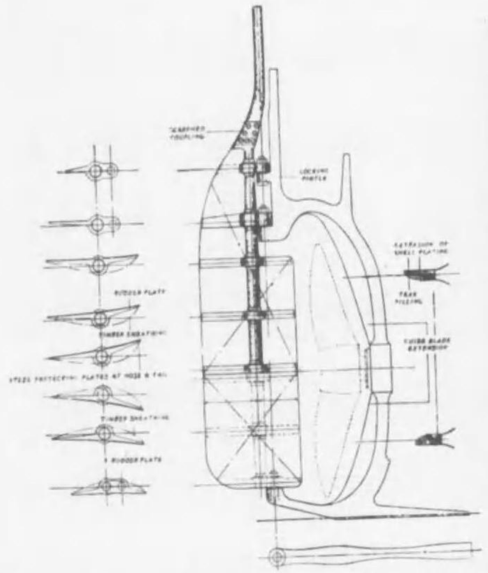
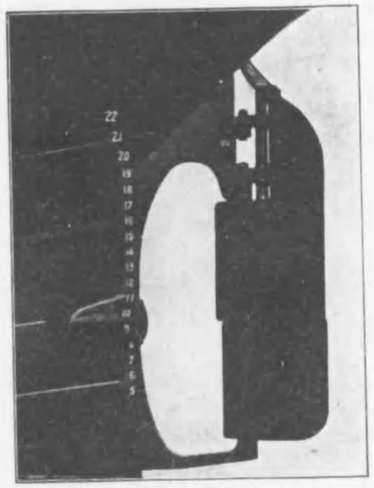
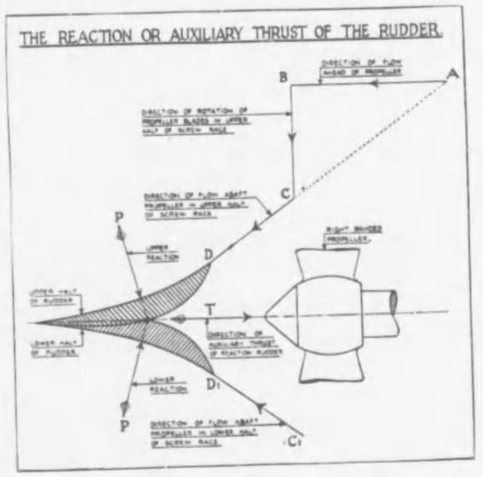
VARIOUS RUDDERS.





Balanced Reaction Rudder.

Balanced Reaction Rudder (Tutin Rudder)—Latest-Design.



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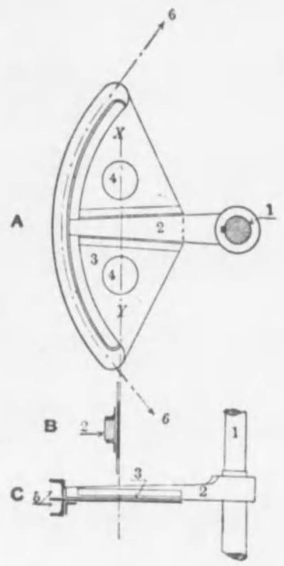
QURDRANT TILLER.

舵 柄 弧



A. Plan （平面圖）
B. Section at X-Y （X-Y の斷面圖）
C. Elevation （側面圖）
1. Rudder Head （舵頭）
2. Tiller （舵柄）
3. Quadrant （舵柄弧）
4. Lightening Hole （輕量孔）
5. Grooves for Steering Chain （鎖の溝）
6. Direction of Chain （鎖の方向）

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STUFFING BOXES & ETC.

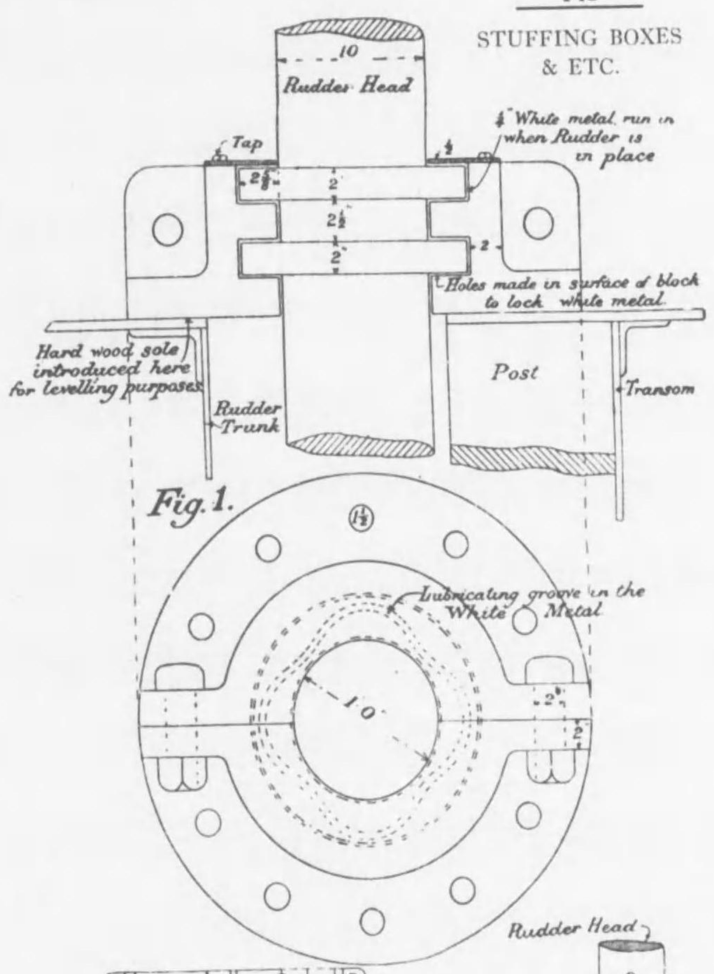


Fig. 1.

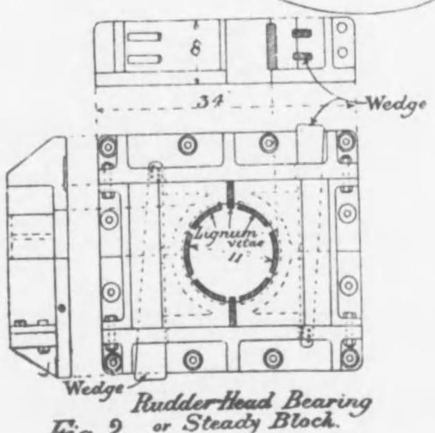


Fig. 2. Rudder Head Bearing or Steady Block.

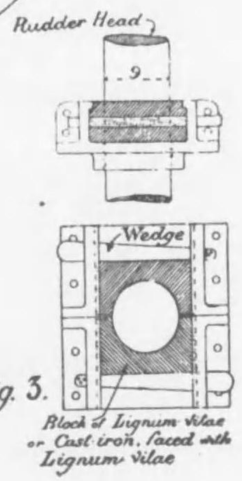
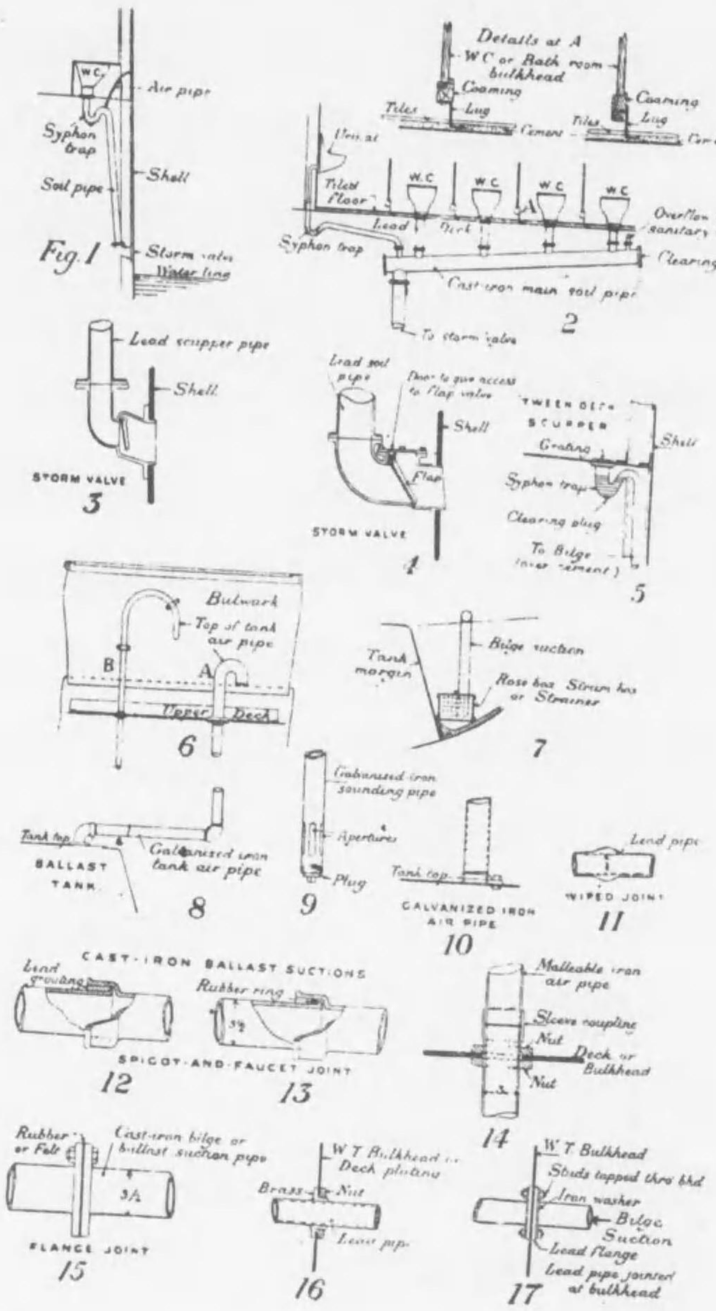
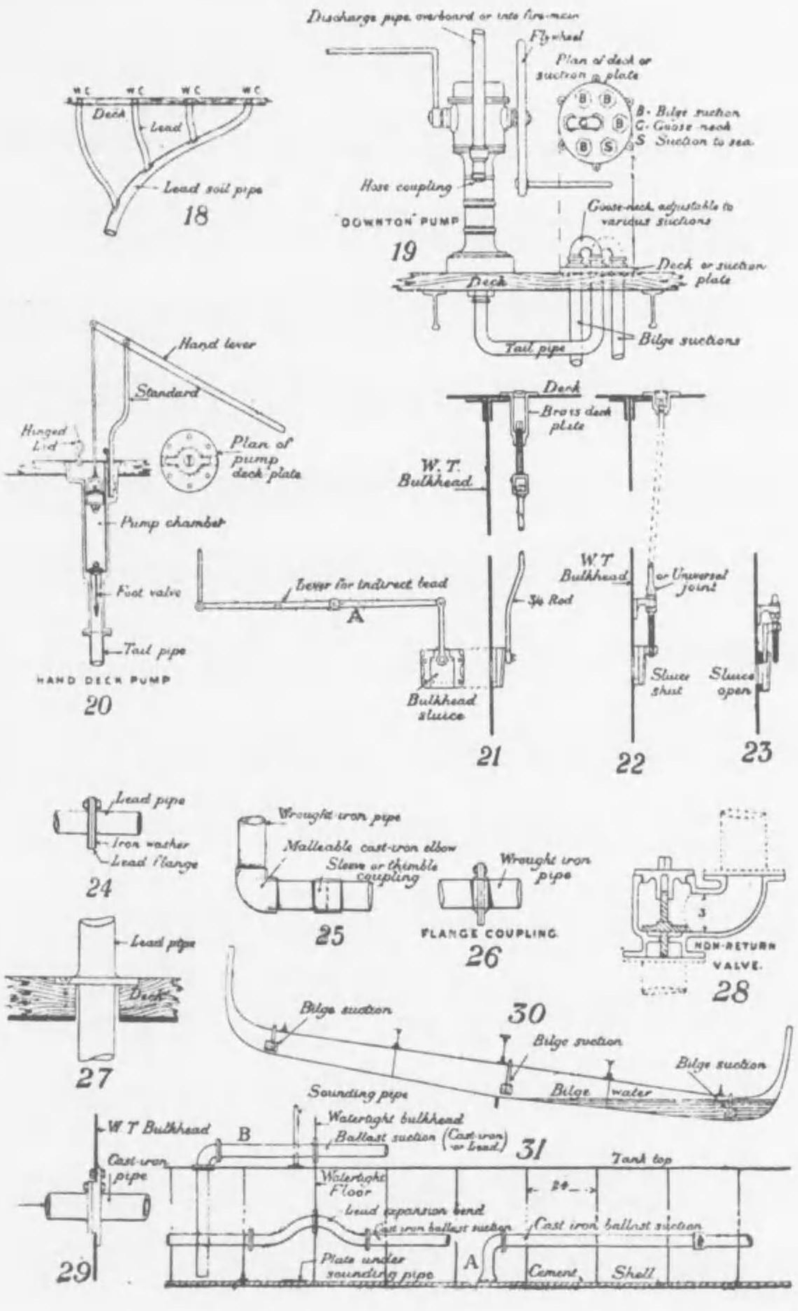


Fig. 3.

VARIOUS PIPES AND PUMPING DETAILS.



VARIOUS PIPES AND PUMPING DETAILS.



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第四號書式ノ二（木材滿載吃水線指定ニ用フルモノ）

號　　申請者　氏名

船舶滿載吃水線指定書		
甲板ノ中心ヨリ夏期木材滿載吃水線ニ至ル垂直距離	上方	尺
甲板ノ中心ヨリ熱帶木材滿載吃水線ニ至ル垂直距離	上方	尺
甲板ノ中心ヨリ冬期木材滿載吃水線ニ至ル垂直距離	方	尺
甲板ノ中心ヨリ冬期北大西洋木材滿載吃水線ニ至ル垂直距離	下方	尺
海水ニ於ケル各種木材滿載吃水線ヨリ之ニ對スル淡水木材滿載吃水線ニ至ル垂直距離	上方	尺

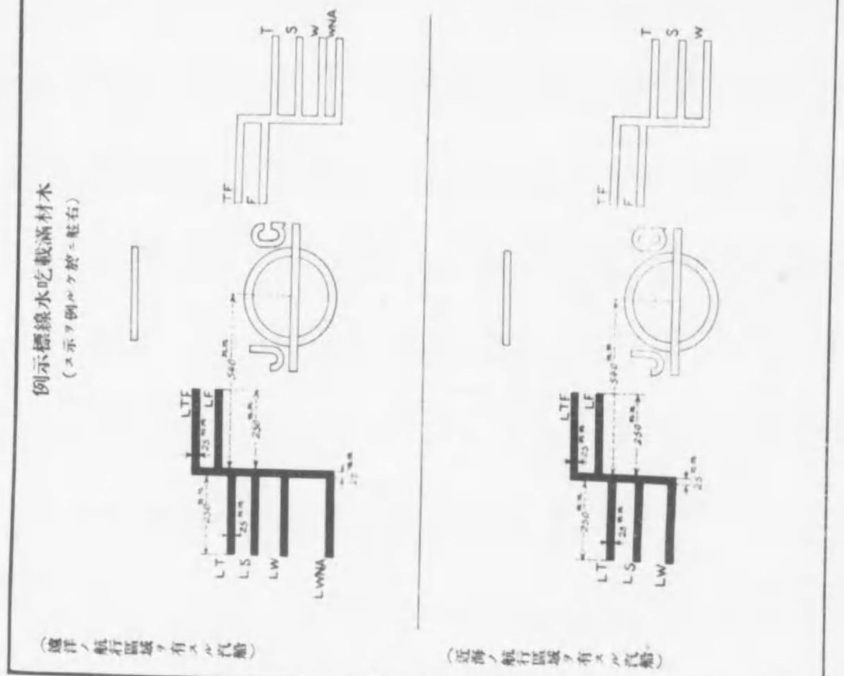
右船舶ハ丸ニ標示スル滿載吃水線ノ位置ニ之ヲ適用ス

年　月　日

管海官廳印

例示標線水吃載滿材木

（本示ヲ例ルヲ於ニ舷右）



（遠洋ノ航行區域ヲ有スル汽船）　（近海ノ航行區域ヲ有スル汽船）

備考

近海ノ航行區域ヲ有スル汽船ニ對シ指定ヲ受ス場合ニハ「甲板ノ中心ヨリ冬期北大西洋木材滿載吃水線ニ至ル垂直距離」ノ欄ニ於テ線ヲ引クベシ

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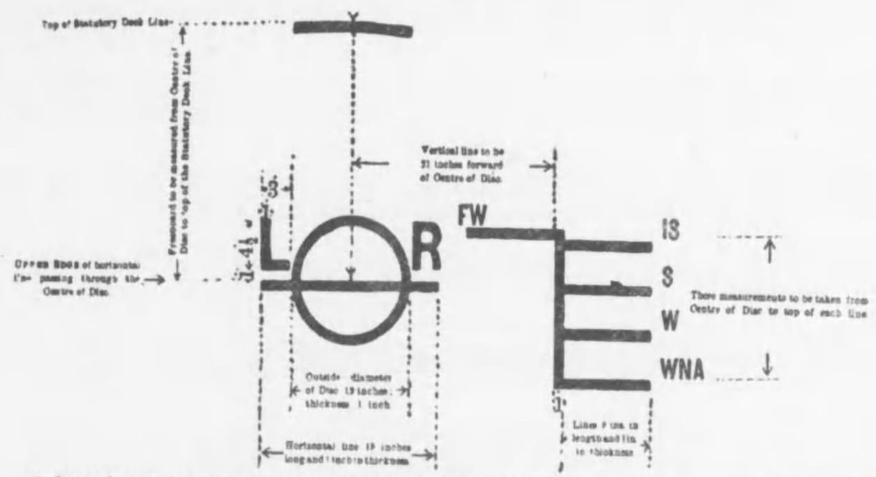
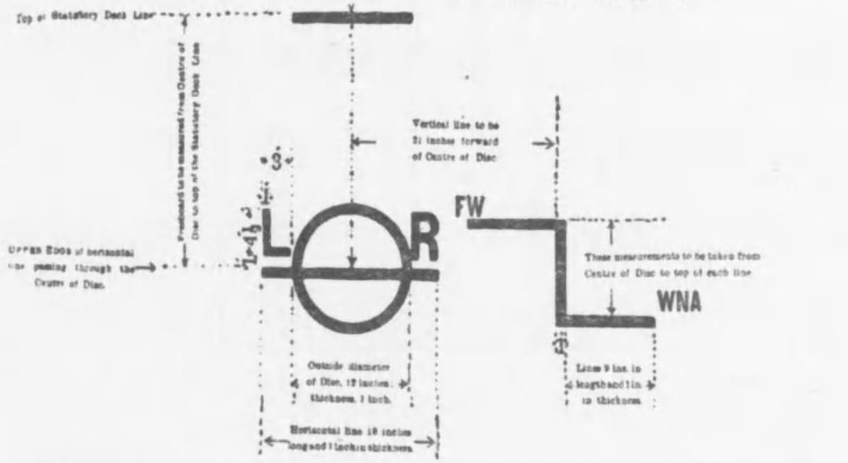
FREE BOARD MARKING FOR STEAMERS.



The Centre of Disc to be placed on both sides of vessel amidships, i.e., at the middle of the length of the load water line. Vessels are to be marked with such of the marks as are applicable to the nature of their employment. In accordance with the regulations made by the Board of Trade the discs and lines must be permanently marked by centre punch marks or cutting and the particulars given in the Certificate are to be entered in the official log.

N.B.—It is a condition on which an awning or partial awning-decked vessel is classed in the Society's Register Book that the Freeboard assigned shall be marked on the vessel's sides as above prescribed, and under the provisions of Section 41 of the Society's Rules for Iron or Steel Ships. If the vessel proceed to sea with a less freeboard than that approved by the Committee or if the freeboard mark be placed higher than the position assigned by the Committee the vessel will be liable to have her class expunged from the Register Book.

FREEBOARD MARKING FOR SAILING VESSELS.



The Centre of Disc to be placed on both sides of vessel amidships, i.e., at the middle of the length of the load line. Sailing vessels are required to be marked with only the maximum load line in fresh water. In accordance with the regulations made by the Board of Trade, the disc and lines must be permanently marked by centre punch marks or cutting and the particulars given in the Certificate are to be entered in the official log.

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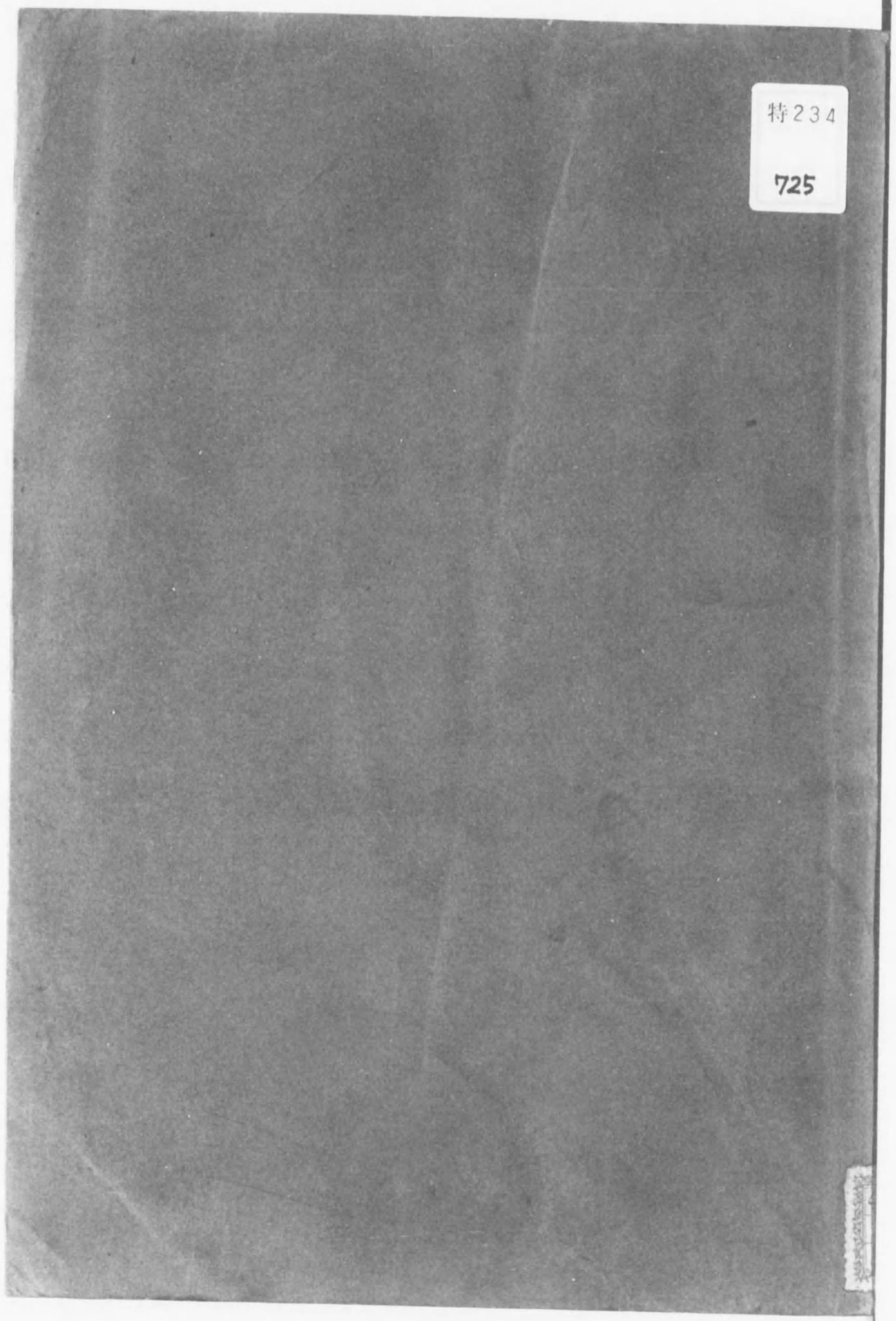

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