SURVEYING BOATS (*Continued*).

by

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CANADA.

Typical boats used in the Canadian Hydrographic Service are as follows:

(1) Open Motor Launch..... 26 feet, 8 inches,
(2) Half Cabin Motor Launch..... 27 feet,
(3) Gig Lifeboat — Pulling..... 27 feet;

also considerable use is made of the ordinary fishing dory for landing and carrying gear, and in connection with sweeping equipment; 16 and 18 feet dinghies are used but no special specification is available of these boats.

In addition (4) the 44 foot motor launch BOULTON is employed on small surveys in the Great Lakes and Saint Lawrence River, and (5) the gasoline launch *Pilot* N° 1 on the Great Slave Lake.

On the Pacific Coast of Canada, owing to heavy currents and deep water very little work is possible from pulling boats and the new Surveying Ship *Wm. J. Stewart* employed on that coast is therefore equipped with four gasoline launches, her small boat equipment being as follows:

4 Gasoline Launches..... 26 ft. 8 in. × 7 ft. 1 in. × 3 ft. ½ in.
2 Standard Lifeboats..... 23 ft. 0 in. × 7 ft. 6 in. × 2 ft. 7 in.
1 Dinghy..... 20 ft. 0 in. × 5 ft. 6 in. × 2 ft. 3 in.
3 Dinghies..... 16 ft. 0 in. × 5 ft. 2 in. × 2 ft. 0 in.
4 Dories..... 18 foot;

also on this coast, owing to the difficulties experienced in finding suitable camping sites, a house boat *Pender* (6) has been constructed equipped with two 27 feet open motor launches and with ample accommodation for officers and crew and the stores necessary for her to act as an independent command.

It will be noted that the motor launches (1) and (2) are of two types, open and half cabin; the former give better view for the work and are used on the Pacific Coast of Canada. The half cabin launch, however, affords better protection from the weather and is found suitable for surveying work in the Gulf of St Lawrence and Hudson Strait.

Details of these boats are as follows:

(1) 26.7 FOOT OPEN MOTOR LAUNCH — 1928.
(See Plan N° 12, Fig. 10).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	26	08	8.12
	Beam.....	7	01	2.16
	Draft (approx.).....	2	06	0.76

The keel, stem, stern post, knee and shaft log are of yellow oak, ribs of oak 1/4" ×1" nett, planking cedar, engine bed heavy oak. Rudder balanced type of 1/4" bronze 24" ×24". Copper gasoline tank of a capacity of about 30 gallons.

These boats are divided into two main compartments, the engine being forward and surveyors' one aft.

Engines. — The boats in the C. G. S. *Wm. J. Stewart* are equipped with "Acadia" direct drive engines fitted with PARAGON reverse gear. Number of cylinders, 2; bore 5"; stroke 6"; developing 12-16 H.P. at 700 R.P.M. Maximum speed 7 knots. Fuel consumption, 2 gallons per hour. Propeller diameter 22". Pitch 27".

General Remarks. — The rudder is of the balanced type 24" ×24", the boat being steered by means of a solid brass tiller. The sounding chains are fitted on the starboard side of the fore deck. The engine and surveyors' compartments are protected by canvas canopies. In the after compartment a folding table is fitted: 2 ft ×3 ft. They are designed for surveying work on the Pacific Coast of Canada.

(2) 27 FOOT HALF CABIN MOTOR LAUNCH — 1927.
(See Plan Nº 13, and Fig. 11).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	27	00	8.23
	Beam.....	8	00	2.44
	Draft (Max.).....	2	06	0.76

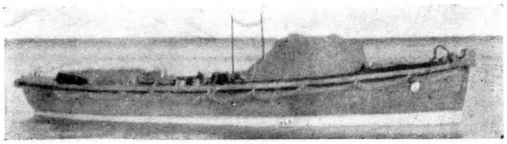
The keel is of white oak in one piece, 3 ½ inch sided and 5 inches moulded amidships, with a wrought iron band 3 ½ inches wide and ½ inch thick fitted the whole length; the stem, shaft log and floors are of oak; frames of white oak or rock elm; outside planking and deck planking of white pine; engine bearers of oak. Rudder plate and rudder stock are of bronze, balanced type, fitted with a tiller. Two copper gasoline tanks are fitted, one on each side of the boat, each of a capacity of 17 gallons.

These boats have a cabin amidships forming an engine room with a pine roof 3/4 inch thick, a cockpit forward of the engine room protected by a folding waterproof canvas canopy, and a cockpit aft sheltered at its forward end by the continuation of the cabin roof.

Engines. — The boats in the C. G. S. *Cartier* are equipped with "Thornycroft" RA/4 type engines, fitted with PARAGON reverse gear. Number of cylinders, 4; bore 3 3/4"; stroke 5"; developing 25 H.P. at 1100 R.P.M. Maximum speed 8 knots. Fuel consumption 2 1/4 gals. per hour. Propeller diameter 22". Pitch 27".

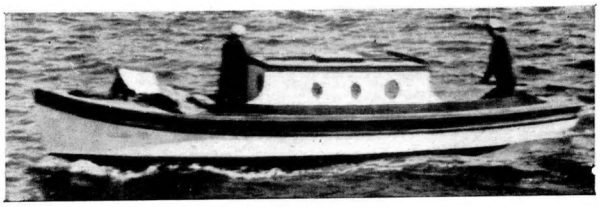
General Remarks. — The boat is divided into three main compartments, the engine room being amidships and surveyors' compartment aft. At the forward end of the after compartment is fitted a hinged drawing table which is protected by an extension of the roof of the engine compartment.

FIG. 10



26.7 Foot Open Motor Launch, 1928.
Embarcation non pontée à moteur de 26.7 pieds (8 m. 12), 1928.

FIG. 11

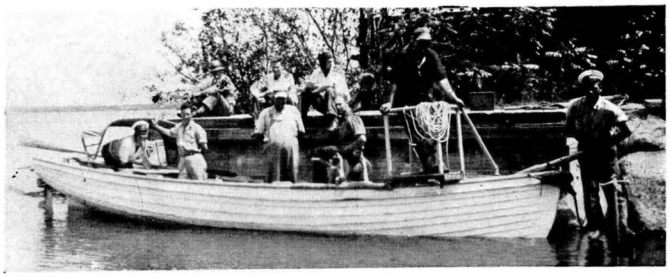


27 Foot Half Cab'n Motor Launch, 1927.
Embarcation à moteur à cabine ouverte de 27 pieds (8 m. 23), 1927.

FIGS. 12, 13 & 14.

27 foot Gig Lifeboat.
Yole de sauvetage de 27 pieds.

FIG. 12



Fitted out for sounding. — Armée en sonde. Brockville, 1931.

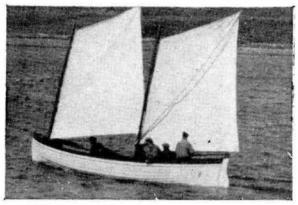


FIG. 14

FIG. 13

FIG. 15

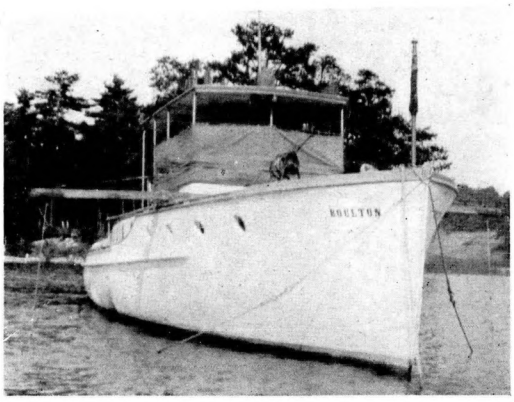
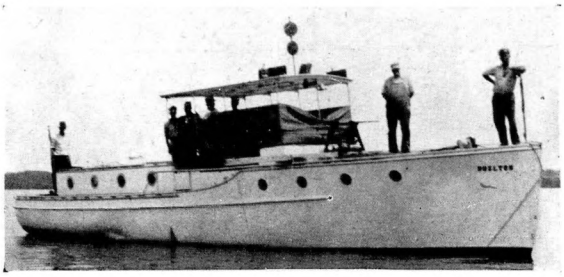


FIG. 16



44 Foot Motor Launch Boulton.
Embarcation à moteur, type Boulton, *de 44 pieds (13 m. 41).*

CANADA

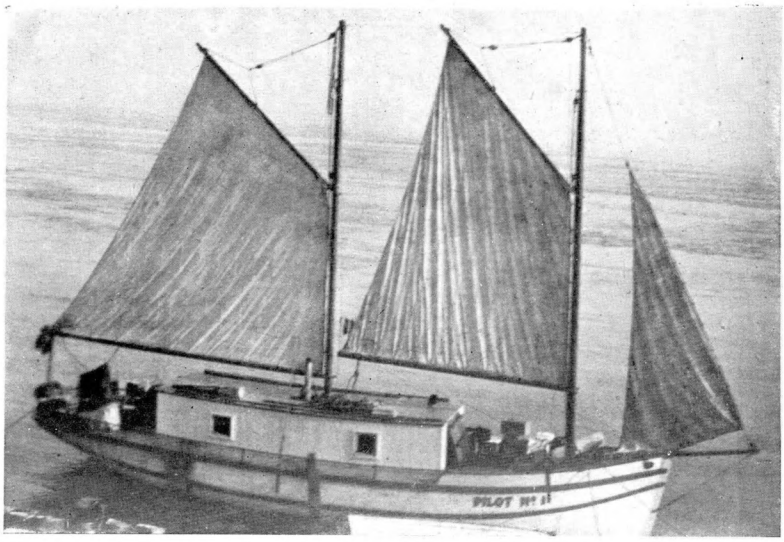


FIG. 17. — *Launch* Pilot N° 1.
Embarcation Pilot N° 1.

GERMANY - ALLEMAGNE

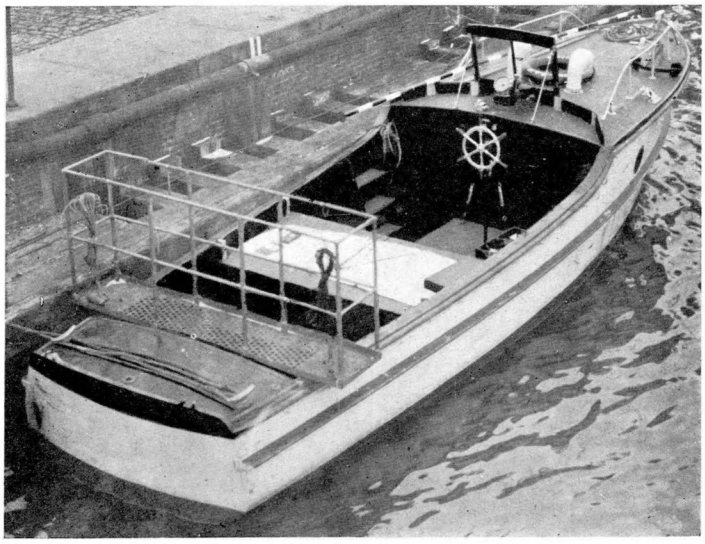


FIG. 18

FIG. 19

9.1 metre Motor Pinnace. — *Pinasse à moteur de 9 m. 1*

These boats are designed for surveying work in the Gulf of Saint Lawrence and Hudson Strait.

(3) 27 FOOT GIG LIFEBOAT. (PULLING).
(See Plans Nos 14 & 15 and Figs. 12, 13 & 14).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	27	00	8.23
	Beam.....	6	00	1.83
	Depth moulded.....	2	04	0.71

The keel, stem and stern post are of white oak; planking cedar, cypress, white or yellow pine; frames and thwarts white oak or rock elm; stem and stern bands and keel band of galvanised wrought iron. Two copper air tanks of a total volume of 22 cubic feet are fitted under the side benches one on either side of the boat. The boat is fitted with a centre-board. Sails as per sail plan. Sounding chains are fitted in the bow of the boat as shown in Fig. 12.

(4) 44 FOOT MOTOR LAUNCH "BOULTON".
(See Plans Nos 16 & 17 and Figs. 15 & 16).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	44	00	13.41
	Beam.....	11	00	3.35
	Draught (Max.).....	3	09	1.14

A full cabin single screw gasoline launch, the hull constructed with white beech keel, frames of white oak, stringers and clamp strakes of spruce ; decks of white pine, cabin white pine, roof of deck house 7/8" pine covered with duck.

Engine. — "Acadia" gas engine, direct drive, fitted with PARAGON reverse gear. 4 cylinders, bore 5", stroke 6 ½; developing 30-40 H.P. at 700-800 R.P.M. Max. speed, 8 knots. Fuel consumed 3 gals. per hour. Propeller diameter 22". Pitch 27".

The boat is fitted with two galvanised iron fuel tanks of 75 gallons capacity each and one galvanised iron water tank of 50 gallons capacity.

General Description. — The top of the deck house at the fore end is fitted as a bridge, with a deck chart table protected by a canvas side screen and wooden sun awning. Forward of the bridge on each side of the upper deck, sounding chains are fitted. A watertight bulkhead extends across the launch 5 feet from the bow, abaft which are the officers' quarters, chart table, drawers, etc.; further aft, under the bridge are the forward crew's quarters, stores and fuel tanks; abaft that the engine room, and right aft additional crew's quarters and fresh-water tank. The launch can accomodate from 8 to 9 people for short periods. The deck house extends from the break of the forecastle to the after end of the after crew's quarters.

She was constructed for carrying out surveys on the Great Lakes and Saint Lawrence River.

(5) LAUNCH "PILOT Nº 1".
(See Fig. 17. No plans available).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	40	00	12.20
	Beam.....	10	06	3.20
	Draft	2	06	0.76

Fitted with two masts and fore and aft sails and a long shallow-draft centre board.

Engine. — "Kermath" 4 cylinder 25-50 H.P. gasoline engine developing a speed of about 8 knots (light draft). Fuel capacity 100 gallons.

General Description. — This launch was built at Edmonton, Alberta, for operations on the Great Slave Lake. During the summer of 1930 she covered the whole distance from Fort Smith to the mouth of the McKenzie River and back under her own power, the object of the expedition being an attempt to discover a 16 ft. channel through the delta of the McKenzie River ; this, however, was unsuccessful. She proved very efficient, the whole party of 7 being able to live on board.

(6) HOUSE BOAT "PENDER" — 1929.
(See Plan Nº 18).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	100	00	30.48
	Breadth, extreme	31	00	9.45
	Depth over planking	6	00	1.83

General Remarks. — As before stated this houseboat was designed for service on the Pacific Coast owing to the difficulty experienced in finding suitable camping sites for the surveying parties. She carries 2 open 27 ft. motor launches and has ample accomodation for 3 officers and a crew of 14 including a cook and steward. The officers' accommodation aft consists of 3 cabins, a bath room, dining room and a chart room 11 ft. 7 in. square fitted with a 5 ×8 foot chart table and the necessary drawers, shelves and lockers. A cooking galley and refrigerating plant of sufficient capacity for 20 men is provided. A total of 1500 gallons of gasoline is carried in two tanks aft, and 50 tons of water in tanks forward and amidship.

She has no motive power of her own but is fitted with special towing bollards. Her anchor gear consists of one 4 1/4 cwt. stockless bower and one 1 1/4 cwt. stream anchor, a 3 inch steel wire cable for the bower anchor and a 1 3/4 inch wire for the stream. She also carries a 2 1/4 inch tow line and a 4 inch hemp warp. A double-geared two-speed hand capstan is fitted on the forecastle for lifting the bower anchor and a double-action ratchet drive hand capstan aft.

There are three pairs of davits, one on either beam and one aft for hoisting the dories.

A 110 volt 3 kilowatt electric light plant is installed in the forecastle and the necessary fire, bilge and power pumps.

Further details and plans are available if required.

GERMANY.

No special type of boat has been designed for use in the German Surveying Service, the work being carried out in the ordinary service boats but with extra fittings as necessary. The following boats are used as tenders to the Surveying Vessel *Meteor*:

(1) 9.1 Metre (29.9 foot) Motor Pinnace.
(2) 10.0 » (32.8 ») Motor Pinnace (Class 1).
(3) 7.6 » (24.9 ») Motor Dinghy.

In addition there are two *Peilboote* (Surveying Boats) II and V (4).

Details of these boats are as follows:

(1) 9.1 Metre Motor Pinnace.
(See Plan N° 19 and Figs. 18 & 19).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall	29	10	9.1
	Beam	7	10	2.4
	Draft (fully loaded)	3	4 (about)	1.0

Engine. — A 2 cylinder Diesel motor of 12 H.P. developing a maximum speed of 8 knots. Fuel for about 50 hours is carried in the boat.

General Description. — The crew consists of 1 Officer or Surveying Mate in charge, 1 Petty Officer as plotter, 1 Leading Seaman or Surveyor as recorder, 2 Leading Seamen or Officers as angle observers, 2 Leading Seamen as leadsmen, 1 Coxswain and 1 Engineer. A special fitting in this boat consists of an elevated platform athwart the boat aft for use by the angle observers and leadsmen. It is an iron platform weighing 75 kgs. (165.5 lbs) bolted to both sides of the boat, about 1 metre (3.3 feet) high, with a rail of steel tubing round it. The bottom plate is perforated to reduce weight, roughened at both ends to give the leadsmen a better foothold.

Plotting is carried out on a table fitted athwart the boat below the platform.

(2) 10.0 Metre Motor Pinnace Class I.
(See Plan N° 20 and Figs. 20 & 21).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	32	10	10.0
	Beam.....	8	6	2.6
	Draft (about)	3	11	1.2

Engine. — The boat is equipped with a 16 H.P. Diesel 4 cylinder motor developing a maximum speed of about 8 ½ knots. Fuel for about 50 hours is carried in the boat.

General Description. — The equipment and surveying complement is the same as described for (1) except that in this boat the leadsmen's chains are forward on either side of the boat and the plotting table is placed within the cabin aft. A rail of steel tubing is fitted round the after part of the stern sheets of the boat to give support to the angle observers.

(3) 7.6. METRE MOTOR DINGHY.
(No Plans or Figures available).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	24	11	7.6
	Beam.....	6	02	1.9
	Draft (about).....	2	07	0.8

This boat is used for sounding out shallow waters; its equipment is the same as that for (1) and (2).

(4) PEILBOOTE II & V, 1911-12.
(See Fig. 22).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	74	8	22.8
	Beam.....	15	8	4.8
	Draft	4	8	1.4

These boats are of steel with a displacement of 90 tons, a speed of 8 ½ knots and a complement of 1 Officer and 13 men. As a rule they carry out survey work independently, but in military, administrative and technical respects they are under the command of the Surveying Vessel.

FRANCE.

In French Hydrography the greater part of the sounding work, the investigation of shoals and sweeping is done from boats and launches. The latter are as a rule small steam vessels of the tug type.

The boats, to which the following remarks are confined, are of small enough dimensions to be hoisted on board the Surveying Ships, with the exception of the pinnaces which, on account of their size, remain permanently in the water. The principal types are as follows:

(1) 7.65 Metre Steam Cutter. Type *White.*
(2) 7.65 Metre Motor Cutter. Type *White.*
(3) 7.00 Metre Motor Boat. Type *Brestois.*
(4) Motor Dinghy (Youyou).
(5) Pulling Whaler and Dinghy.
(6) Pinasse d'Arcachon.

Up to 1927 all the power-driven boats were WHITE steam cutters; since that time their replacement by cutters with internal combustion engines and KITCHEN rudders has been steadily undertaken and is now almost completed.

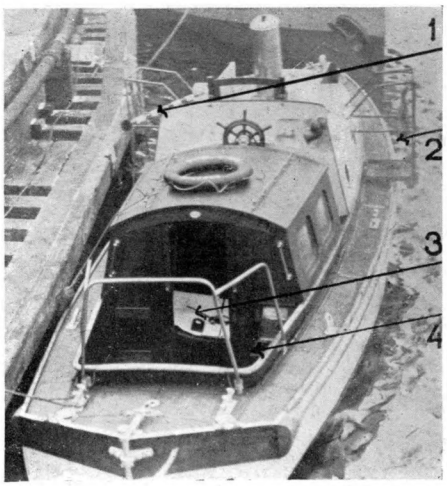


FIG. 20

1. *Stave.*
   Perche.

2. *Sounding chains.*
   Poste de sondage.

3. *Boat sounding sheet. Station pointer.*
   Minute d'embarcation. Stigmographe.

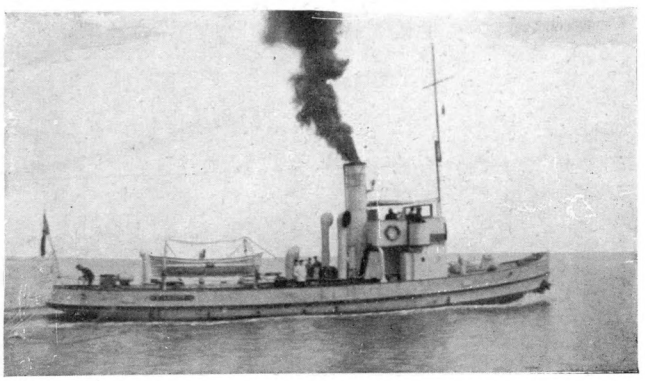
4. *Angle measuring instruments.*
   Appareils de mesure d'angles.

FIG. 21

10.0 metre (32.8 foot) Motor Pinnace Class I.
Pinasse à moteur de 1re classe de 10 mètres.

FIG. 22.

Peilboote II & V - 1911-12



28 foot (8.53 metres) Motor Launch.
Embarcation à moteur de 28 pieds (8 m. 53).

FIG. 23

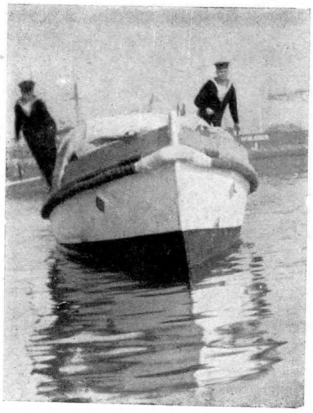


FIG. 24

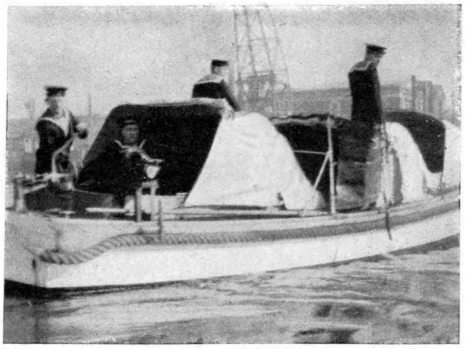


FIG. 25.

Details of these boats are as follows :

(1) 7.65 METRE (25.1 FEET) "WHITE" STEAM CUTTER.

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	25	01	7.65
	Beam.....	6	05	1.96
	Draft	3	04	1.00

The hull is constructed of wood. Displacement 2,850 kgs. (2 tons 16 cwt.). Speed 6 knots.

General remarks. — The principal advantages and disadvantages of this type of boat are those resulting from the use of the steam engine.

Its great weight gives the boat mediocre sea-keeping qualities. Its bulky fittings only allow of very small accommodation for the officers aft. The personnel required is comparatively large, the boat's crew alone requiring 4 men : one coxswain, one bowman, 1 engineer and 1 stoker. Raising steam, which takes from 1 ½ to 2 hours, complicates its use. Also, owing to the condenser being placed alongside the keel, stranding or grounding may have troublesome consequences. On the other hand the steam engine is robust, reliable, silent and economical ; it has a considerable range of speed enabling it to be run very slowly, which is of prime importance for sounding, or at a considerable speed with an experienced engineer.

This type of boat will shortly disappear from the French Hydrographic Service.

(2) 7.65 METRE (25.1 FEET) "WHITE" MOTOR BOAT.
(See Plan N° 21).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	25	01	7.65
	Beam.....	6	05	1.96
	Draft (about).....	2	06	0.75

The hull is identical with the WHITE Steam Boat but the officers' compartment aft is appreciably larger being 1.78 ×1.06 metres (5 ft. 10 in. ×3 ft. 06 in.). The engine compartment is protected by means of a canvas canopy supported by circular iron hoops, the foremost compartment by means of a fixed metal turtle-back, and the surveyors' compartment aft by a folding canvas canopy.

Engine. — The engine has four cylinders and develops about 25 H.P. giving a speed of 6 knots. Fuel used, petrol.

General remarks. — The engine is noisy and fuel consumption high, also the engine does not lend itself to low speeds or to large variations in speed — the boats have therefore been fitted with KITCHEN rudders which enables the coxswain easily to control the speed and has made them remarkably easy to handle and their turning circle very small.

This type of boat is considered more serviceable than the WHITE Steam Boat, but its weight is still large and as the weight is relatively far forward its sea worthiness leaves something to be desired.

(3) 7 METRE (23 FEET) "BRESTOIS" TYPE MOTOR BOAT.
(See Plan N° 22).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	23	00	7.0
	Beam.....	6	07	2.0
	Draft (about).....	2	02	0.65

This type of boat has a wooden hull, with two cockpits, one before and one abaft the engine compartment. Its displacement is 2,135 kgs. (2 tons).

Engine. — The engine develops 7 H.P. at 880 R.P.M. giving a speed of 5-6 knots. Fuel used, petrol.

General remarks. — The same general remarks as for the WHITE Motor Boat apply to this type — but its limited weight makes it a very workmanlike craft which rises well to the sea. It is a roomy boat which facilitates its use, especially as an auxiliary to the American sweep. It is feared, however, that its build may be too light for work in waters where particularly heavy seas are experienced.

(4) MOTOR DINGHY. "YOUYOU".
(No plans available).

Wooden hull, length 5 metres (16 ft. 05 in.). Fitted with a 5 H.P. motor.

These boats are too small to be used regularly for surveying but they sometimes carry out searches for rocks in very sheltered waters.

(5) PULLING WHALER AND DINGHY.

These boats are not specially designed for surveying. The whalers are 7 metres (23 feet) long and weigh 740 kgs. (14 ½ cwt.) and the dinghies 5 metres (16 ft. 05 in.) long weighing 520 kgs. (10 1/4 cwt.).

Their use is limited almost exclusively to coast-lining and searching for pinnacle rocks at small depths.

(6) PINASSE D'ARCACHON.
(See Plan N° 23).

Dimensions of Hull.	Length overall..	12-15 metres (39 ft. 05 in. - 49 ft. 03 in.).
	Draft (about) ...	0.8 metres (2 ft. 07 in.).

Built of wood, half decked, with a powerful 32 H.P. motor. They can attain a speed of 8 knots and are most seaworthy even in quite bad weather. A crew of 3 men living on board is sufficient to man them. Their fuel consumption, however, is high.

Up to now they have been used almost exclusively as auxiliaries for the hydrographic sweep. They have the disadvantage for this type of work of riding too high out of the water which does not allow them to manœuvre easily owing to the considerable lee-way they make in a wind. For sounding work and investigating shoals they have the disadvantage of a motor boat without a KITCHEN rudder ; nevertheless, provided special precautions are

FIG. 26

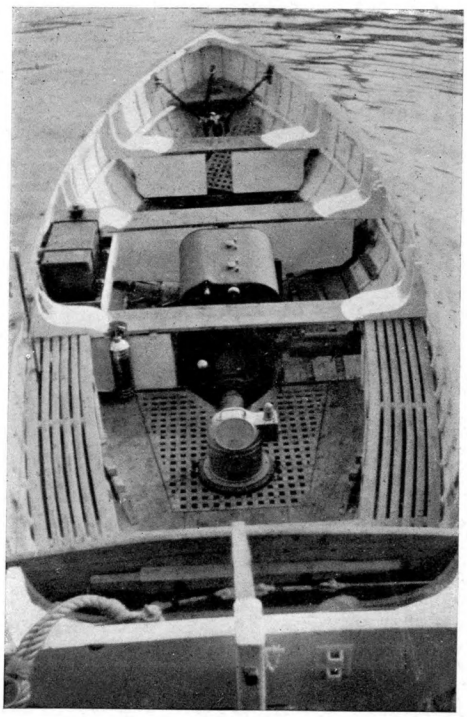


FIG. 27

FIGS. 26 & 27

16 foot (4.88 metres) Motor Dinghy
youyou à moteur de 16 pieds (4m. 88)

FIG. 27 *shows steering lever on port-side amidships giving one-man control*

La FIG. 27 *montre à bâbord au milieu le levier de commande de la barre permettant la manœuvre de l'embarcation par un seul homme*

FIG. 28

33 foot (10.06 metres) Surveying Motor Boat (John THORNYCROFT & Co - 1931).
Embarcation hydrographique à moteur de 33 pieds (10 m. 06) (John THORNYCROFT & Co - 1931).

taken, they have been used with success in a colonial survey where their small draft, seaworthy qualities and large radius of action enabled them to work over a very extensive field.

GREAT BRITAIN.

The principal types of boats used in the British Surveying Service are as follows :

(1) 28 Foot (8.53 Metres) Motor Launch.
(2) 25 Foot (7.62 ") " " — 1926.
(3) 25 Foot (7.62 ") " " — New design.
(4) 16 Foot (4.88 ") Motor Dinghy.
(5) 27 Foot (8.23 ") Whaler (Pulling).

A General Service pattern 30 foot cutter (pulling) is also carried in some of the larger surveying ships, also additional skiffs or dinghies, fitted with outboard motors, as tenders to the motor boats. All these are open boats. The Motor Launches are fitted with KITCHEN rudders but as their stern power is relatively small it has been considered advisable to retain the reversing gear in the boat for use in an emergency and for ordinary use when not engaged in sounding. All boats are fitted with a metal keel-band for beaching.

In addition to the above, in 1931 the firm of John THORNYCROFT & Co. constructed a special 33 foot Motor Launch (6) for the Marine Survey of Bhavnagar, India, plans and a description of which are included.

Details of the above boats are as follows :

(1) 28 FOOT (8.53 METRES) MOTOR LAUNCH.
(See Plan N° 24 and Figs. 23, 24 & 25).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	28	00	8.53
	Beam.....	7	06	2.29
	Draft (mean).....	2	05½	0.75

This type of boat is carvel planked of teak in two thicknesses, the inner thickness being diagonal and the outer longitudinal. When built for service in tropical waters, copper sheathing is fitted to the bottom.

Engine. — These boats are fitted with motors designed by the Ferry Engine Coy, Woolston, Southampton. Number of cylinders, 4 ; bore 3 7/8" ; stroke 5". Propeller diameter 19". Pitch 12". H.P. 21-24. R.P.M. 1060. Speed 7 ½ knots. Fuel used, petrol or paraffin as desired.

General remarks . — These boats are divided into four watertight compartments by means of steel bulkheads, their life-saving capacity being 32 men. The diameter of their turning circle is about 30 feet. They were designed for use in the open sea and can be well covered in with the aid of canvas canopies ; they have proved themselves to be excellent sea boats and in every way most satisfactory for surveying work.

A 6-inch coir rope fender is fitted round the rubbing strake. An electric generator and battery is carried for lighting, the navigation lanterns being arranged for both oil and electric lighting. Their crew, in addition to the Officer in charge and Recorder, consists of a Coxswain, 3 Able Seamen and a Leading Stoker. The cost of these boats is about £ 1250 each.

"Primus" stoves, ovens and boilers are supplied and the boat can be regarded as being self-contained for two or three days at a time.

They are all fitted with KITCHEN rudders and one of them is fitted with a trial set of Echo Sounding gear.

(2) 25 FOOT (7.62 METRES) MOTOR LAUNCH — 1926.
(See Plan N° 25).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	25	00	7.62
	Beam.....	6	09 ½	2.07
	Draft (mean)	1	11 ½	0.60

Engine. — These boats are fitted with motors designed by the Ferry Engine Coy, Woolston, Southampton. Number of cylinders, 4; bore 3 3/4", stroke 5". Propeller diameter 17 3/4", pitch 13 ½". H.P. 14-16. R.P.M. 950. Speed 7 ½ knots. Fuel used, petrol or paraffin as desired.

General remark. — The above particulars for 28 foot Motor Launches generally apply to the 25 foot Launches. The life-saving capacity of the latter (1926 type) is 20 men, and their lifting weight is 3.3 Tons.

The cost of the last 25 foot boats built was about £ 880 each.

The 1926 type of 25 foot Motor Launch is not considered to be a success, not being a particularly good sea boat; a new design of hull has therefore been prepared.

(3) 25 FOOT (7.62 METRES) MOTOR LAUNCH — NEW DESIGN.
(See Plan N° 26).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	—	—	—
	Beam.....	—	—	—
	Draft (mean)	—	—	—

This is a new design not yet built.

(4) 16 FOOT (4.88 METRES) MOTOR DINGHY.
(See Plan N° 27 and Figs. 26 & 27).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	16	00	4.88
	Beam.....	5	05	1.65
	Draft (mean)	1	03	0.38

This boat is clinker built of silver spruce.

Engine. — Fitted with a motor designed by the Ferry Engine Coy, Woolston, Southampton. Number of cylinders, 4; bore 2 ½", stroke 3". Propeller diameter 12", pitch 10 ½". H.P. 8-9. R.P.M. 1300. Speed 6 knots. Fuel used, petrol.

The engine is arranged to be readily removable so that the boat can be used for rowing if desired.

General remarks. — This boat was designed for use in rivers or other enclosed and sheltered surveys. It has proved to be a great success and it is proposed to provide all surveying ships with at least one of these boats at an early date, replacing the outboard motors now in use. The life-saving capacity is 12 men, lifting weight 0.85 tons.

The cost of these boats is about £220 each.

(5) 27 Foot (8.23 Metres) Whaler (Pulling).
(See Plan N° 28).

		Feet	Inches	Metres
Dimensions	Length overall.....	—	—	—
	Beam.....	—	—	—

No details have been supplied of this boat, but it is understood to be a very suitable type of pulling boat for surveying work and, being fitted with a drop keel, sails well.

(6) 33 Foot (10.06 Metres) Surveying Motor Boat built by John Thornycroft & Co for the Marine Survey of Bhavnagar, India - 1931.
(See Plan N° 29 and Fig. 28).

		Feet	Inches	Metres
Dimensions of Hull.	Length overall.....	33	00	10.06
	Beam.....	8	06	2.59
	Draft	3	06	1.07

Boat is of the hard chine type with double skin mahogany planking, American elm timbers, English oak keel, motor bearers of teak. Hull is divided up by three watertight bulkheads of double skin mahogany, and is copper sheathed to about 4 inches above waterline, and finished off at keel with gunmetal stem and keel band. Propeller bracket is of gunmetal, with a special type skeg to protect propeller. There is a stout rope fender fitted all round the boat.

Protection from bad weather is afforded by three folding hoods on galvanised iron hoops, one over each compartment. The forecastle is also decked in for 4 ½ feet from the bow. A sun awning of mahogany is also provided covered with painted canvas and fitted on brass stanchions and stays, with a hatch cut each side, in way of leadsmen's chains.

Electric light supplied by battery, charged by dynamo fitted to engine, comprises navigation lights, small searchlight, compass light and plugs for wandering leads. There is also an electric starter to the engine and electric horn.

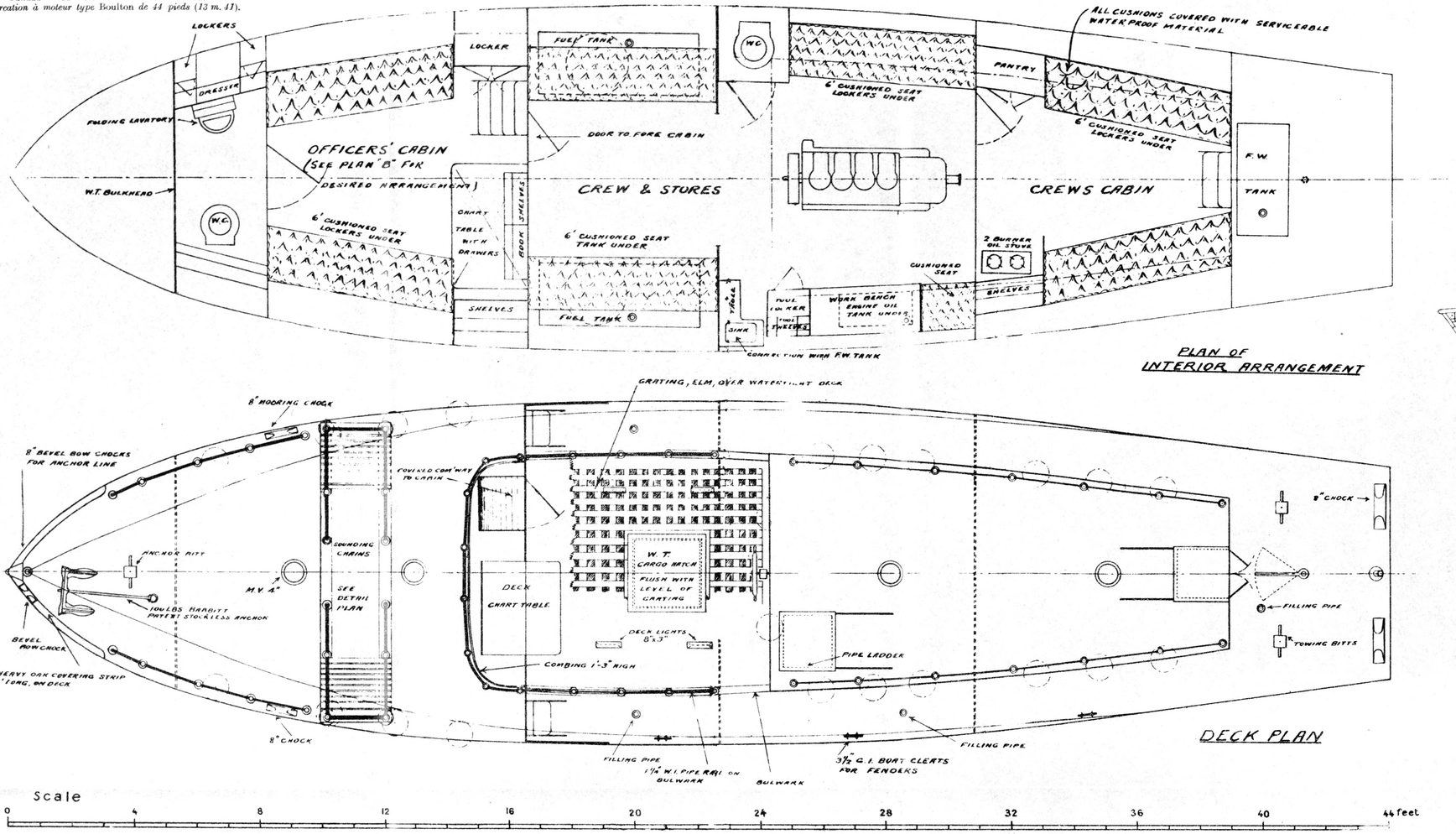
Engines. — Boat is propelled by a Thornycroft RD/4 type motor, running on petrol, having four cylinders of 4 3/8 inches (111 m/m) bore × 5 ½ inches (140 m/m) stroke, giving 50 B.H.P. at about 1500 R.P.M. Motor is fitted with a 3 to 1 reducing gear, giving the boat a speed of 9 knots in service conditions. Fuel used, petrol — provided from a 50 gallon tank fitted in the aft peak.

General performance. — With a freeboard of 2 ft. 9 inches and in addition a coaming right round the boat 6 inches high aft increasing to one foot forward, she is very dry, her bows lifting well in a choppy sea; being flat-bottomed aft her rolling is not excessive even with a beam sea. She is fitted with a balanced rudder and manœuvres very handily. There is practically no vibration even at full speed. The boat has very good accommodation aft for the surveying officers and for the crew forward. Her crew, in addition to the Officer in charge and Assistant, consists of 1 Coxswain, 3 Leadsmen and 1 Engineer. She has proved to be an excellent boat in every respect and well adapted for marine surveying.

▣ ▣ ▣

PLAN Nº 16.

Canada — 44 Foot Motor Launch Boulton.
Embarcation à moteur type Boulton *de 44 pieds (13 m. 41).*

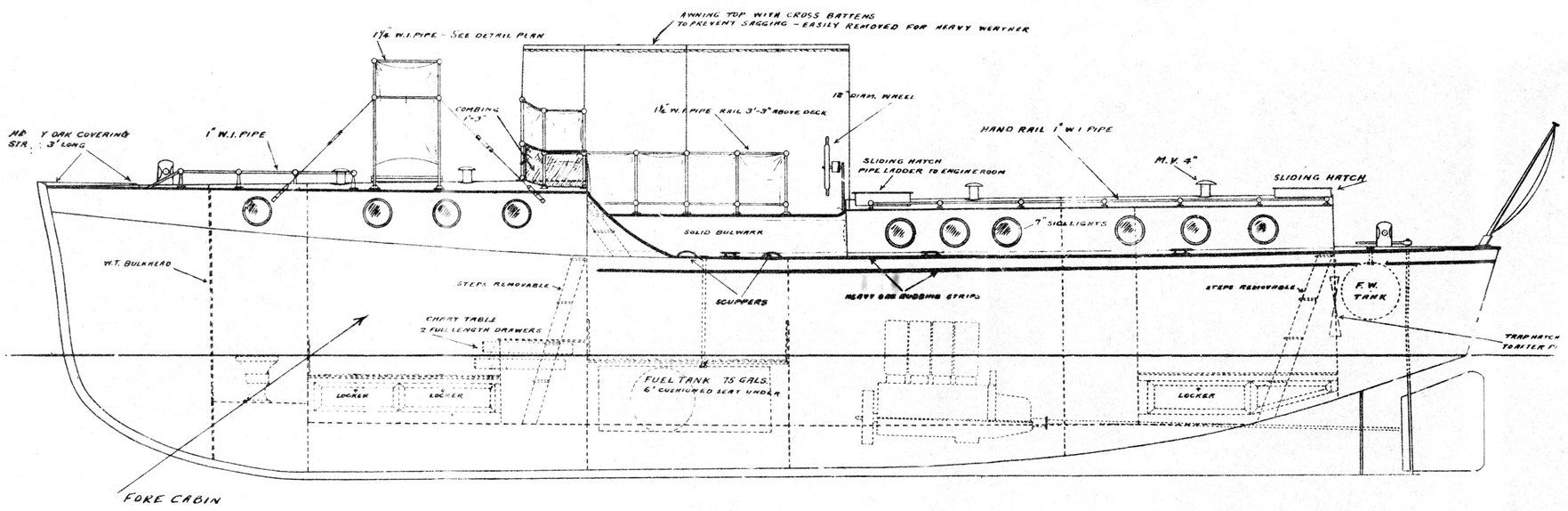


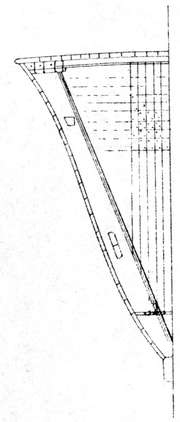
PLAN OF
INTERIOR ARRANGEMENT

DECK PLAN

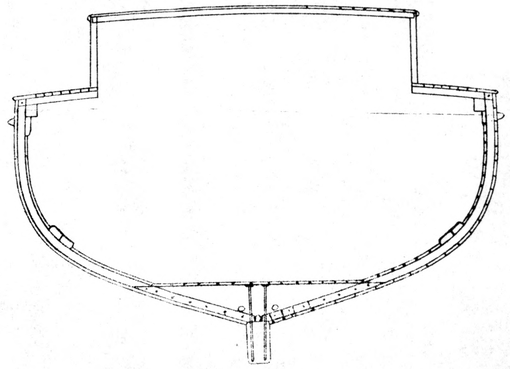
Scale

0 4 8 12 16 20 24 28 32 36 40 44 feet



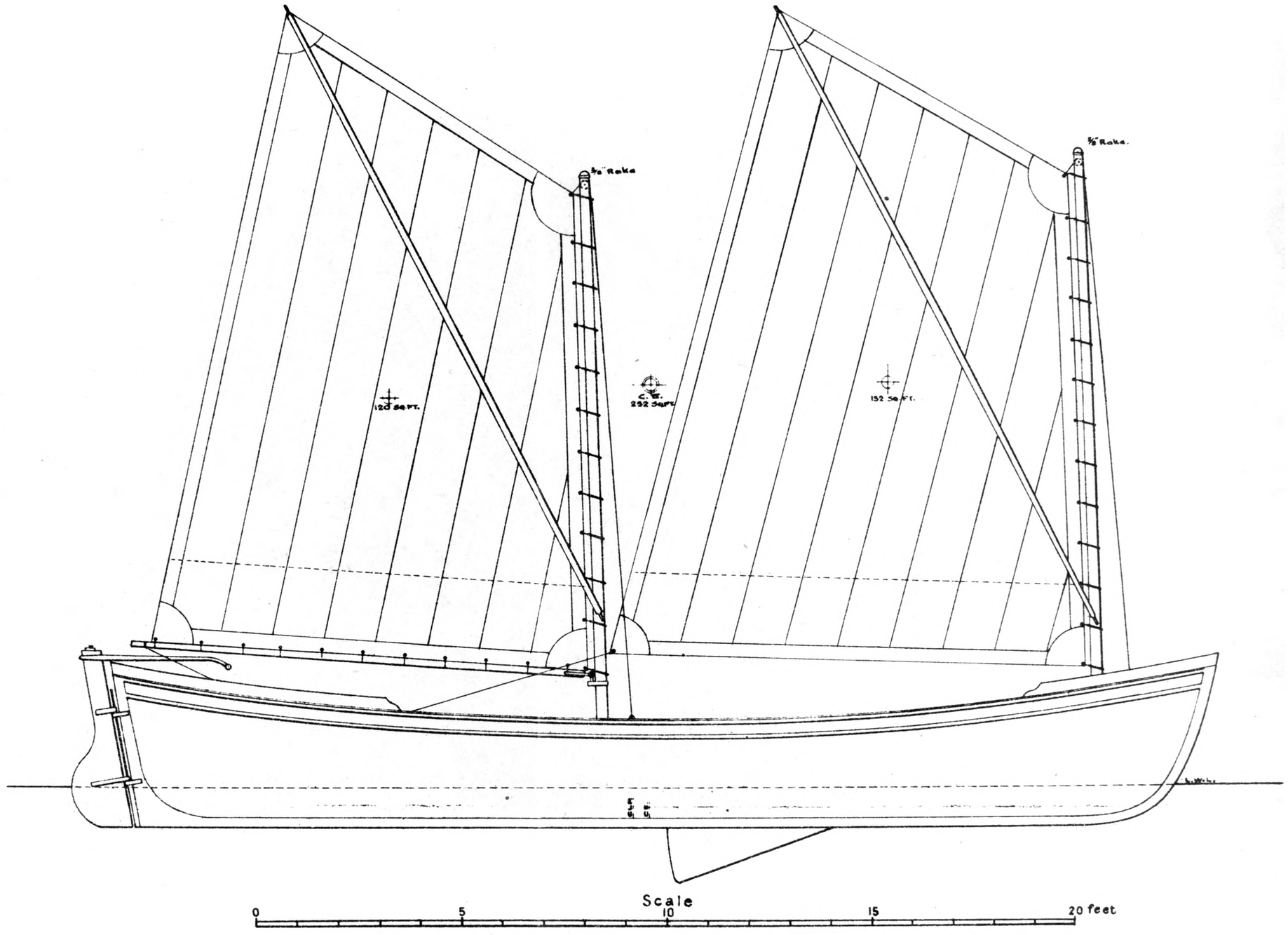


PLAN Nº 17.



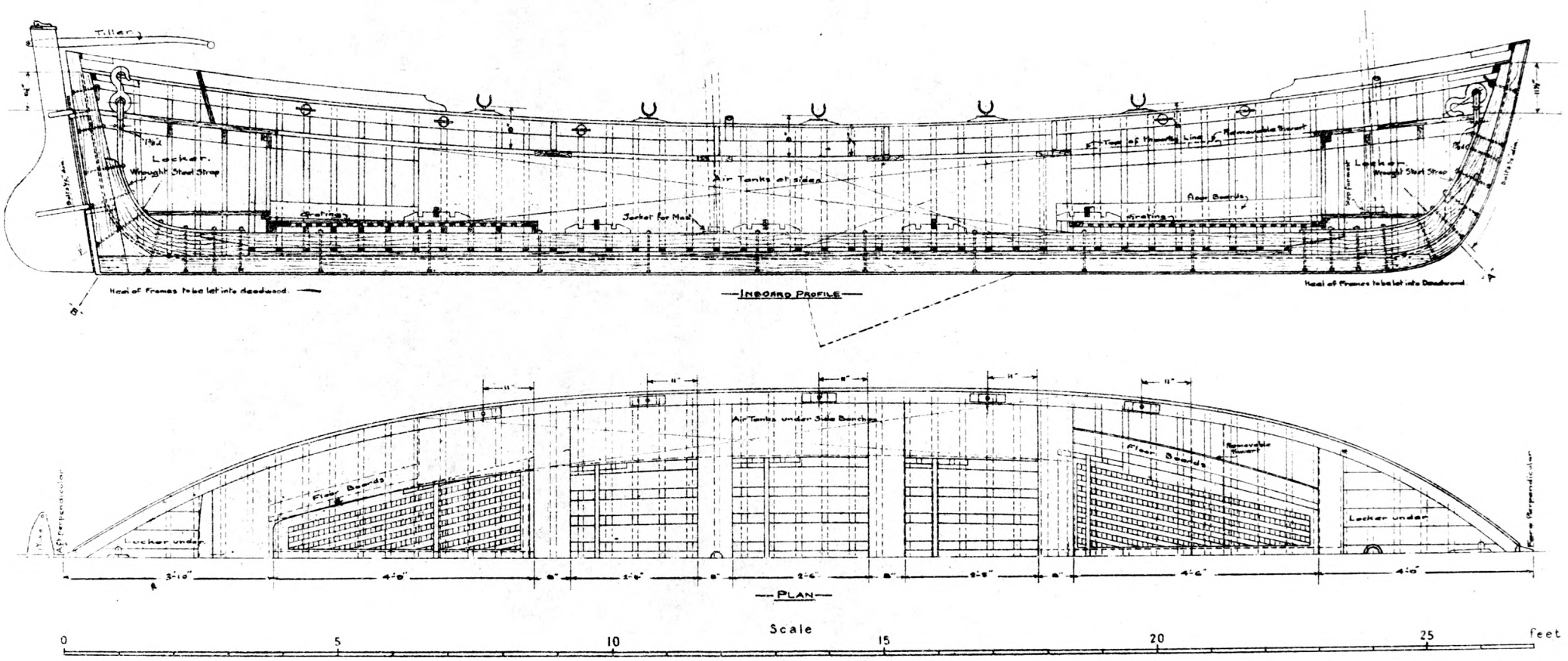
PLAN Nº 15.

Canada — 27 Foot Gig Lifeboat (Sail plan).
Yole de sauvetage de 27 pieds (8 m. 23) (plan de voilure).



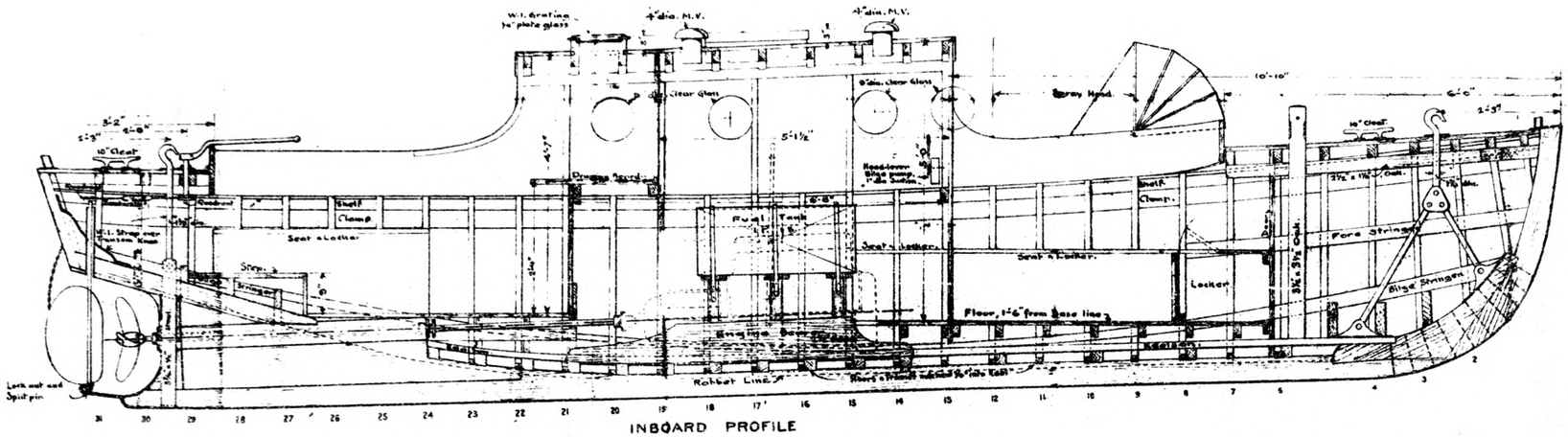
Plan No 14.

Canada — 27 Foot Gig Lifeboat (Pulling).
Yole de sauvetage de 27 pieds (8 m. 23) - à rames.

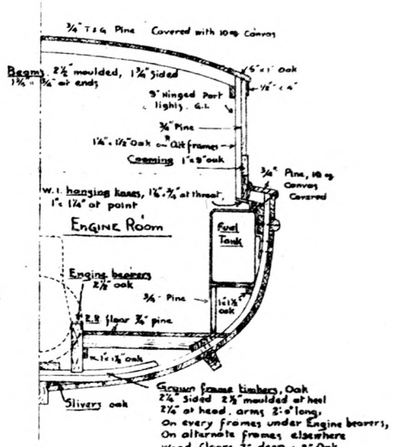


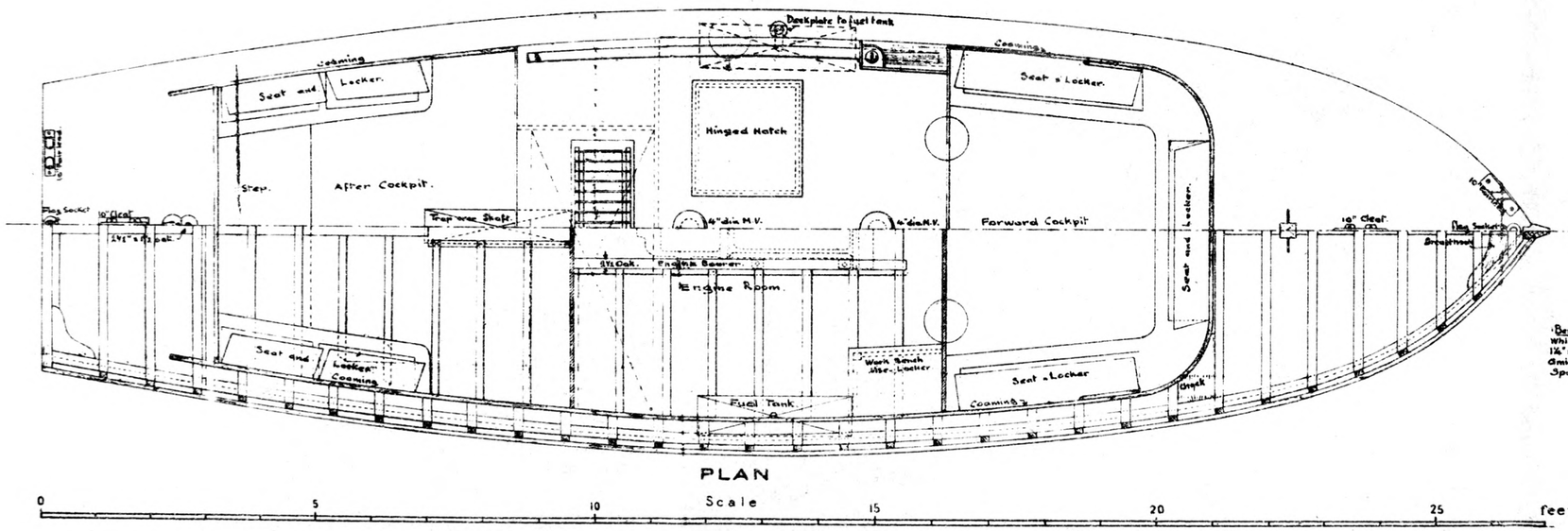
PLAN Nº 13.

Canada — 27 Foot Half Cabin Motor Launch - 1927.
Embarcation à moteur à cabine ouverte de 27 pieds (8 m. 23) - 1927.



INBOARD PROFILE

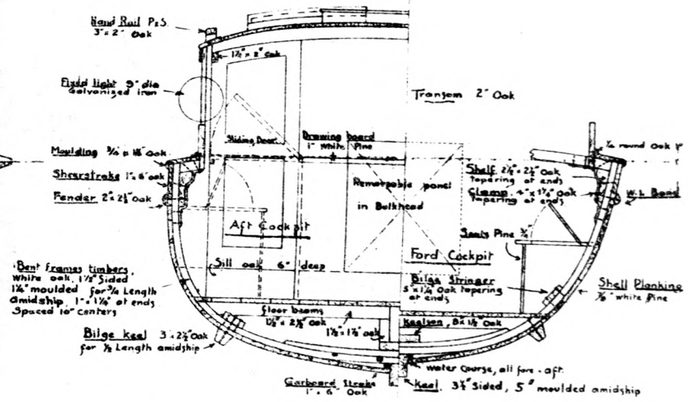




PLAN

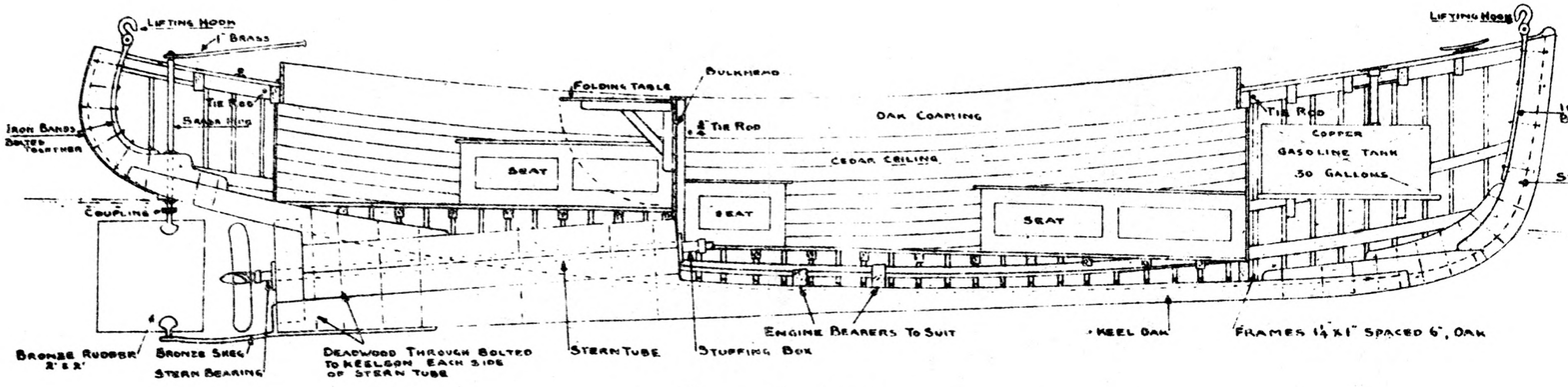
Scale

0 5 10 15 20 25 feet



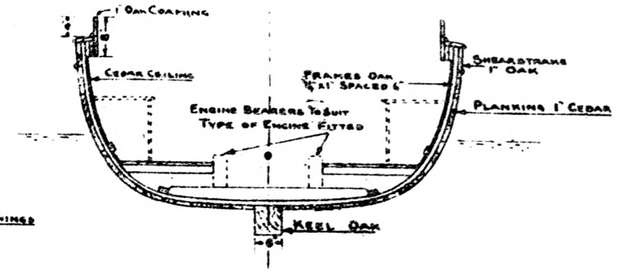
PLAN Nº 12.

Canada — 26.7 Foot Open Motor Launch - 1928.
Embarcation non pontée à moteur de 26.7 pieds (8 m. 12) - 1928.



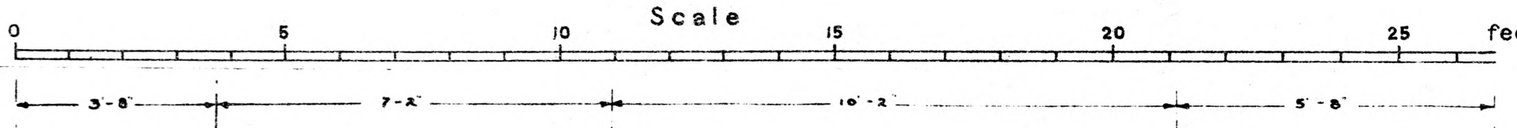
INBOARD PROFILE

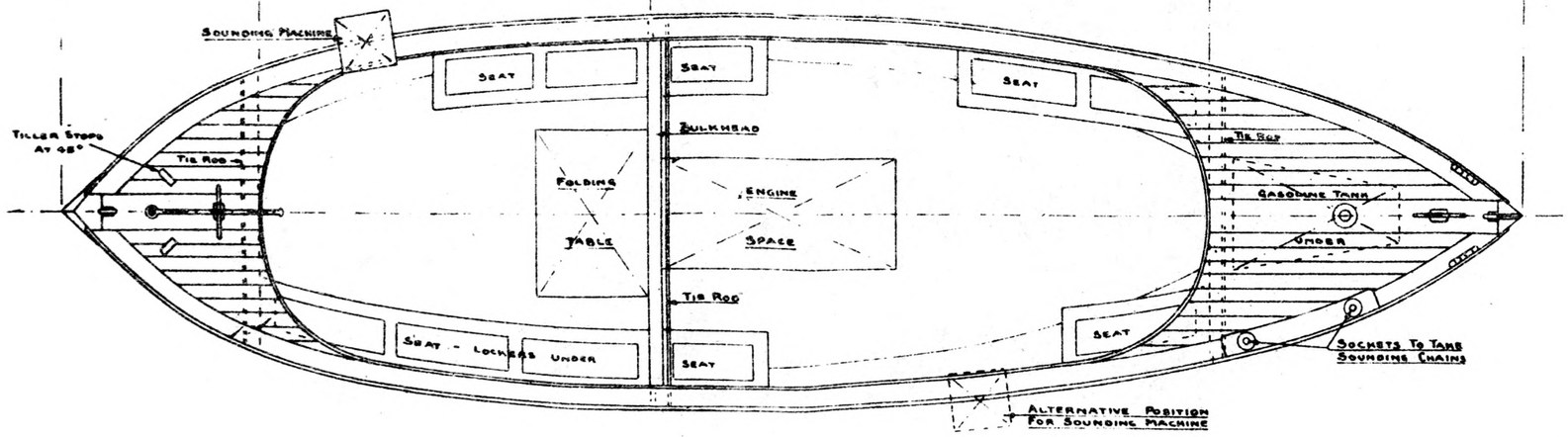
COPPER & BRASS FASTENINGS THROUGHOUT



MIDSHIP - SECTION

Scale

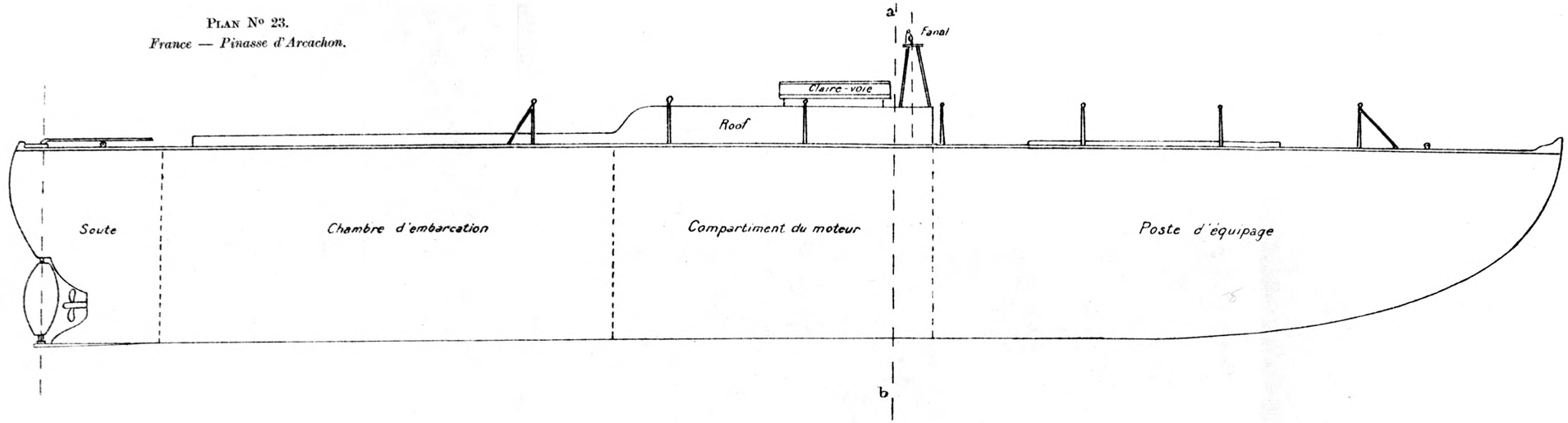


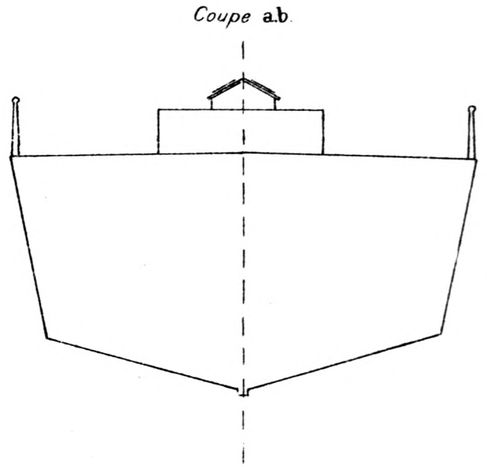


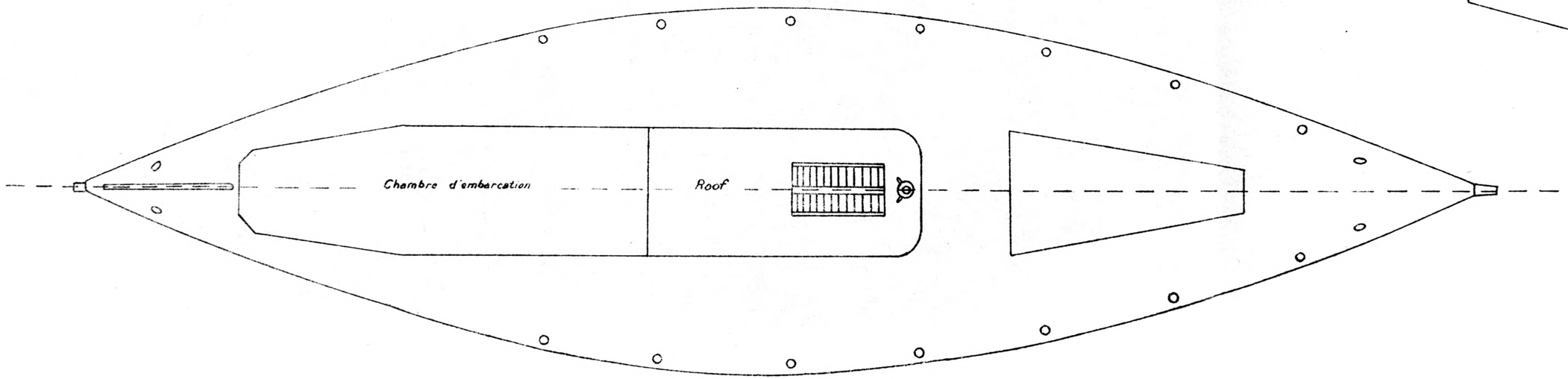
DECK PLAN

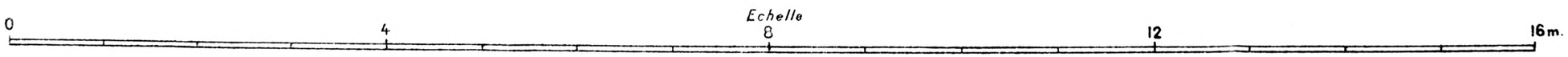
PLAN No 23.

France — Pinasse d'Arcachon.



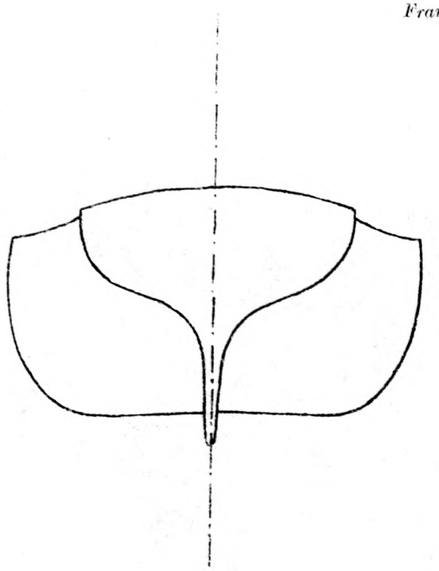


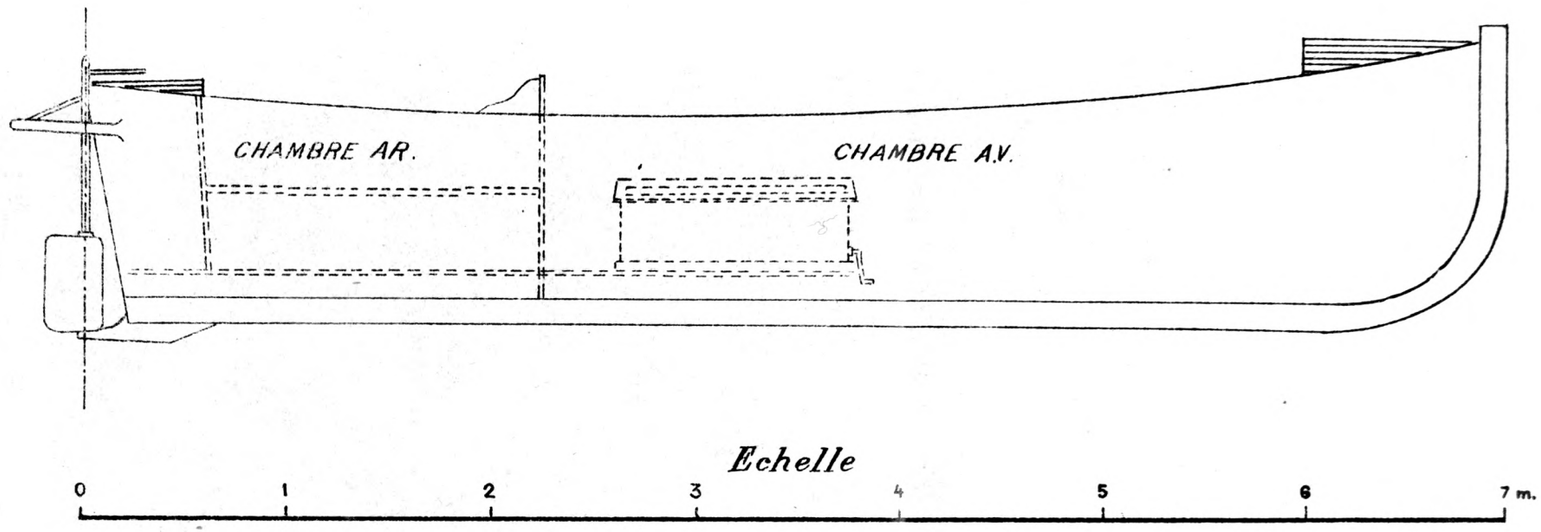




PLAN Nº 22.

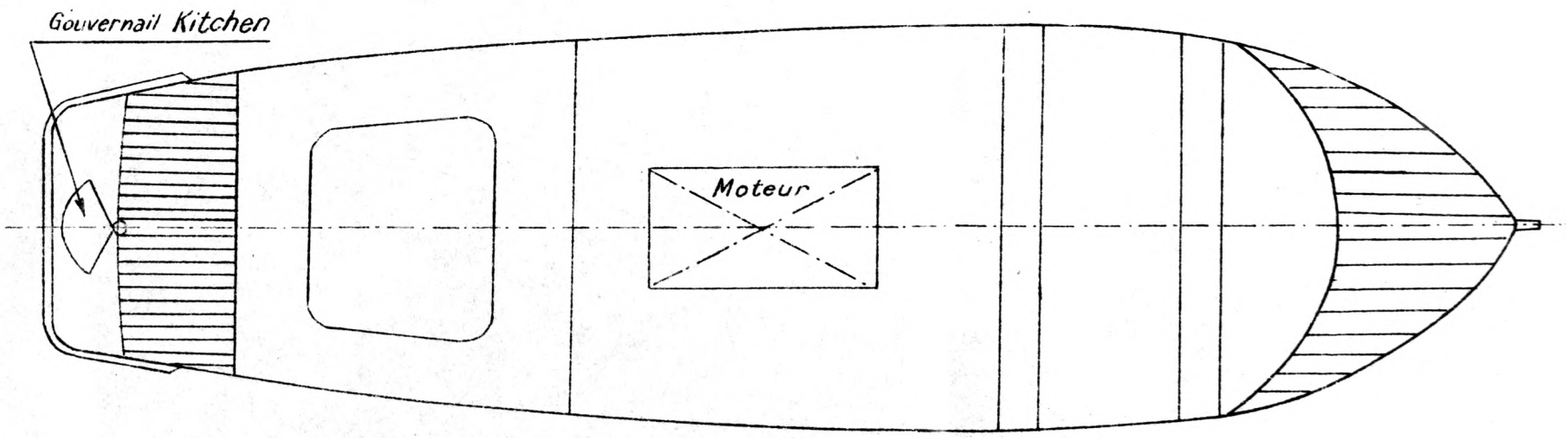
France — 7 Metres (23 Foot) Brestois *type Motor Boat.*
Canot à moteur type Brestois *de 7 mètres.*





Echelle

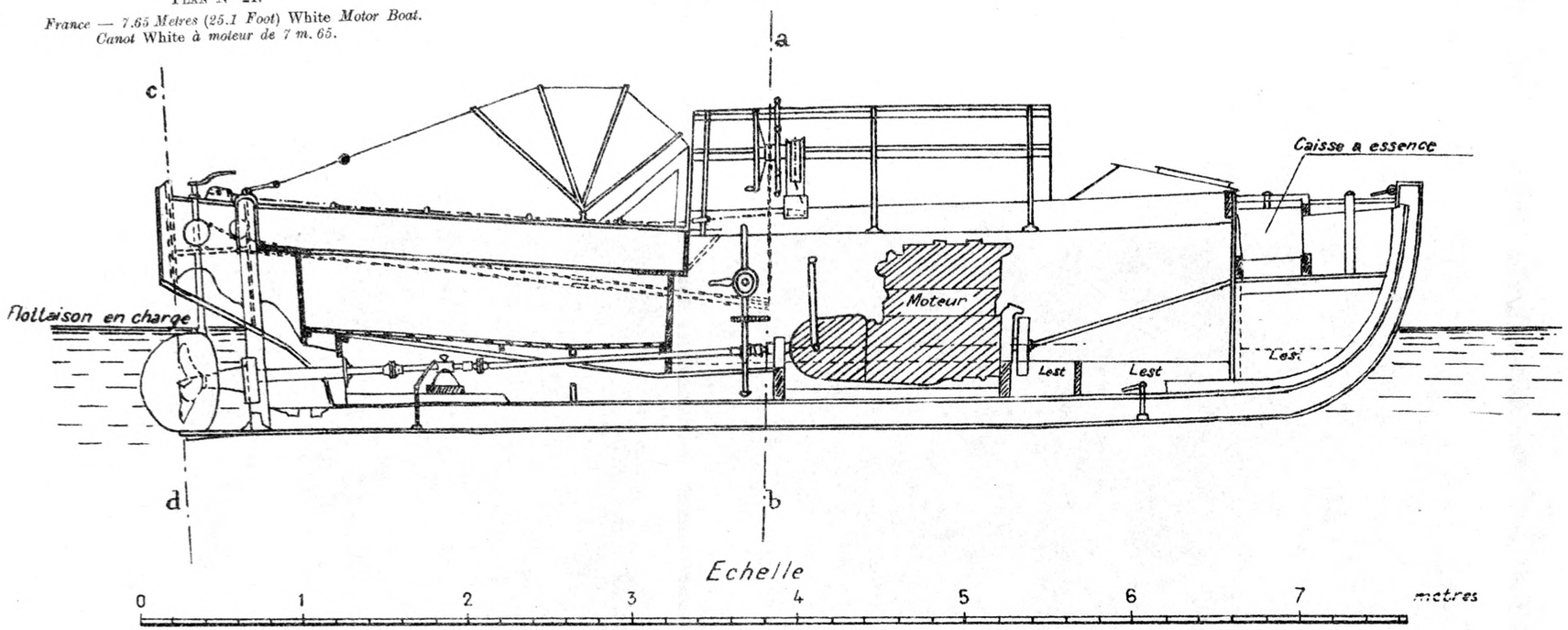
0 1 2 3 4 5 6 7 m.



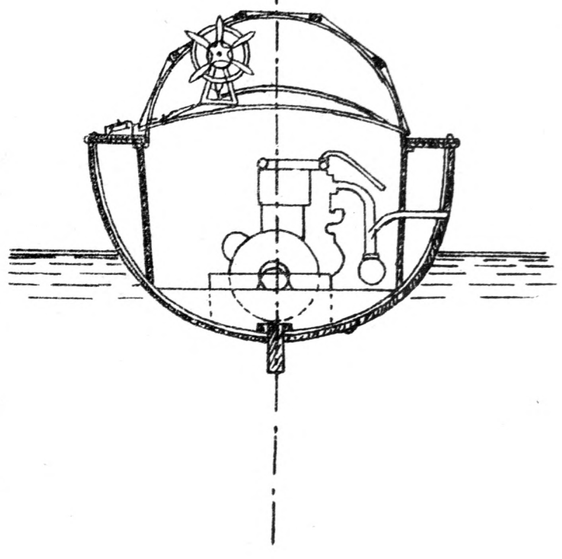
PLAN N° 21.

France — 7.65 Metres (25.1 Foot) White *Motor Boat.*
Canot White *à moteur de 7 m. 65.*

Coupe longitudinale



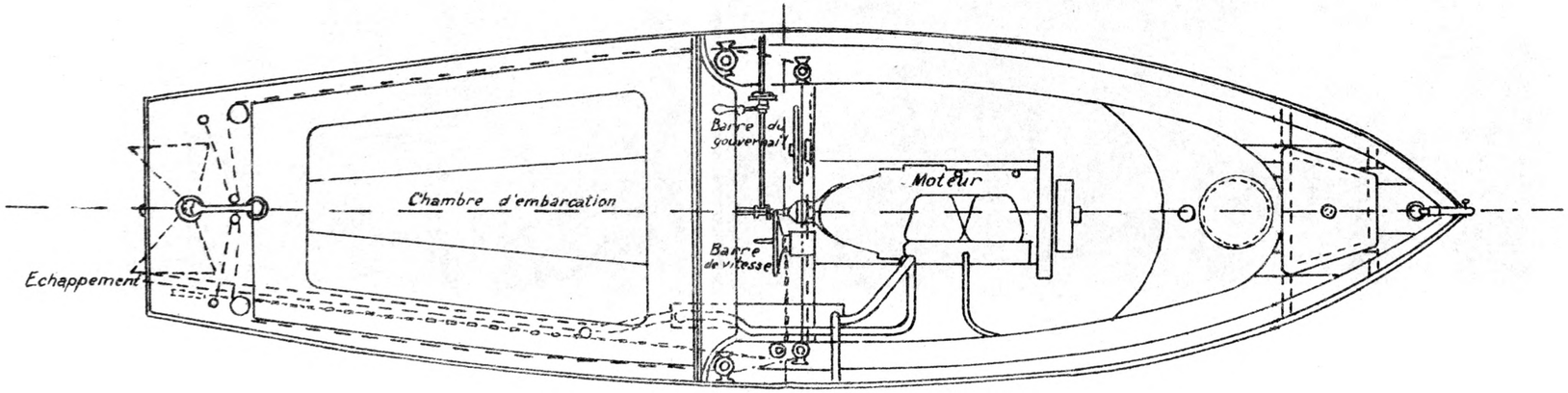
Coupe a.b.



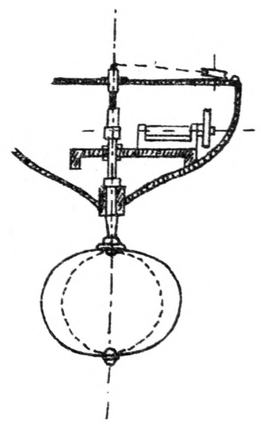
Echelle

Vue en Plan

(Le capot en toile et les arceaux enlevés)

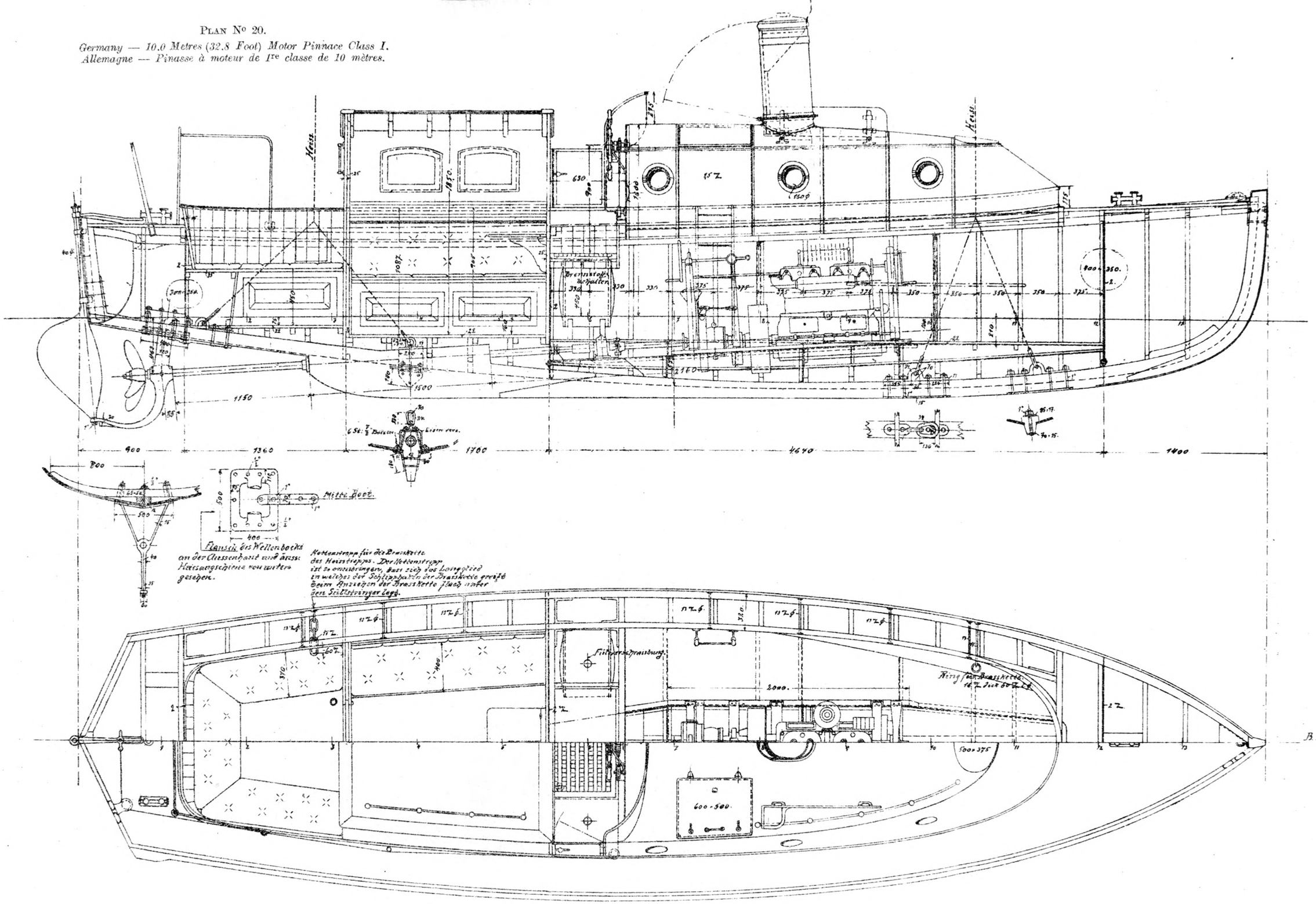


Coupe c.d



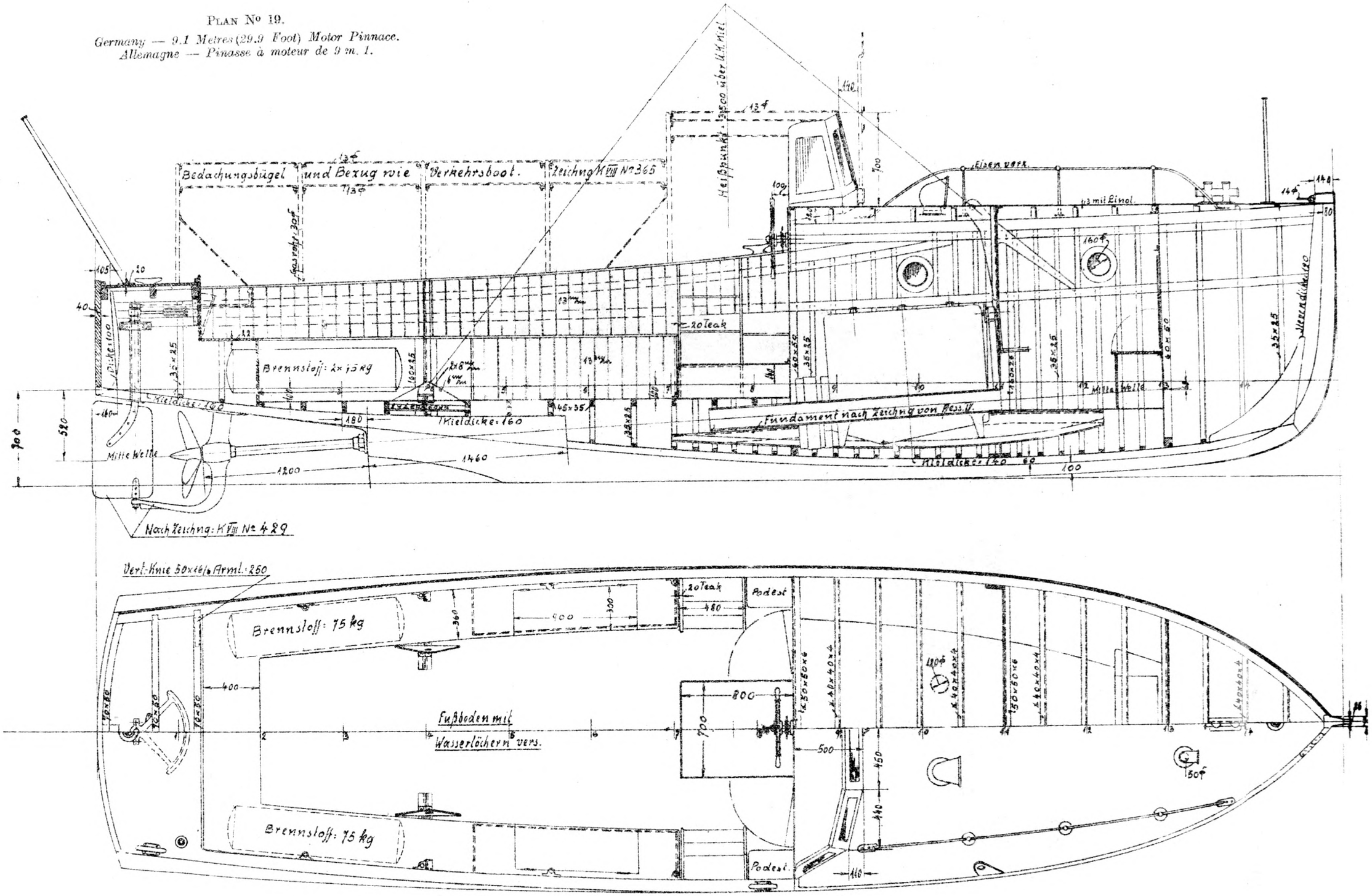
PLAN Nº 20.

Germany — 10.0 Metres (32.8 Foot) Motor Pinnace Class I.
Allemagne — Pinasse à moteur de 1re classe de 10 mètres.



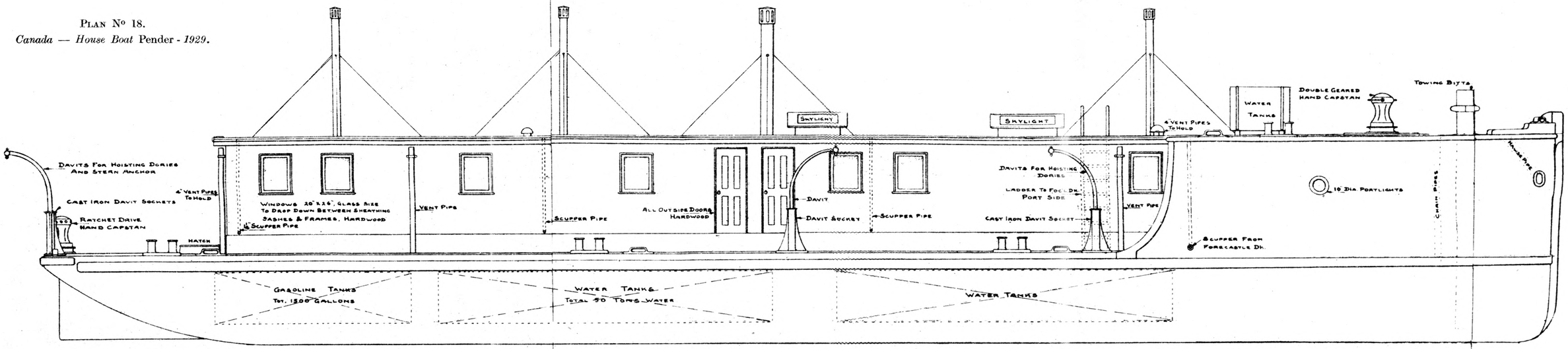
PLAN No 19.

Germany — 9.1 Metres (29.9 Foot) Motor Pinnace.
Allemagne — Pinasse à moteur de 9 m. 1.



PLAN Nº 18.

Canada — House Boat Pender - *1929.*



OUTBOARD PROFILE

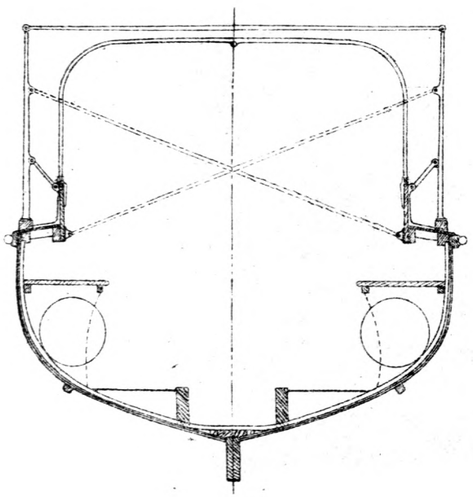
MAIN DECK

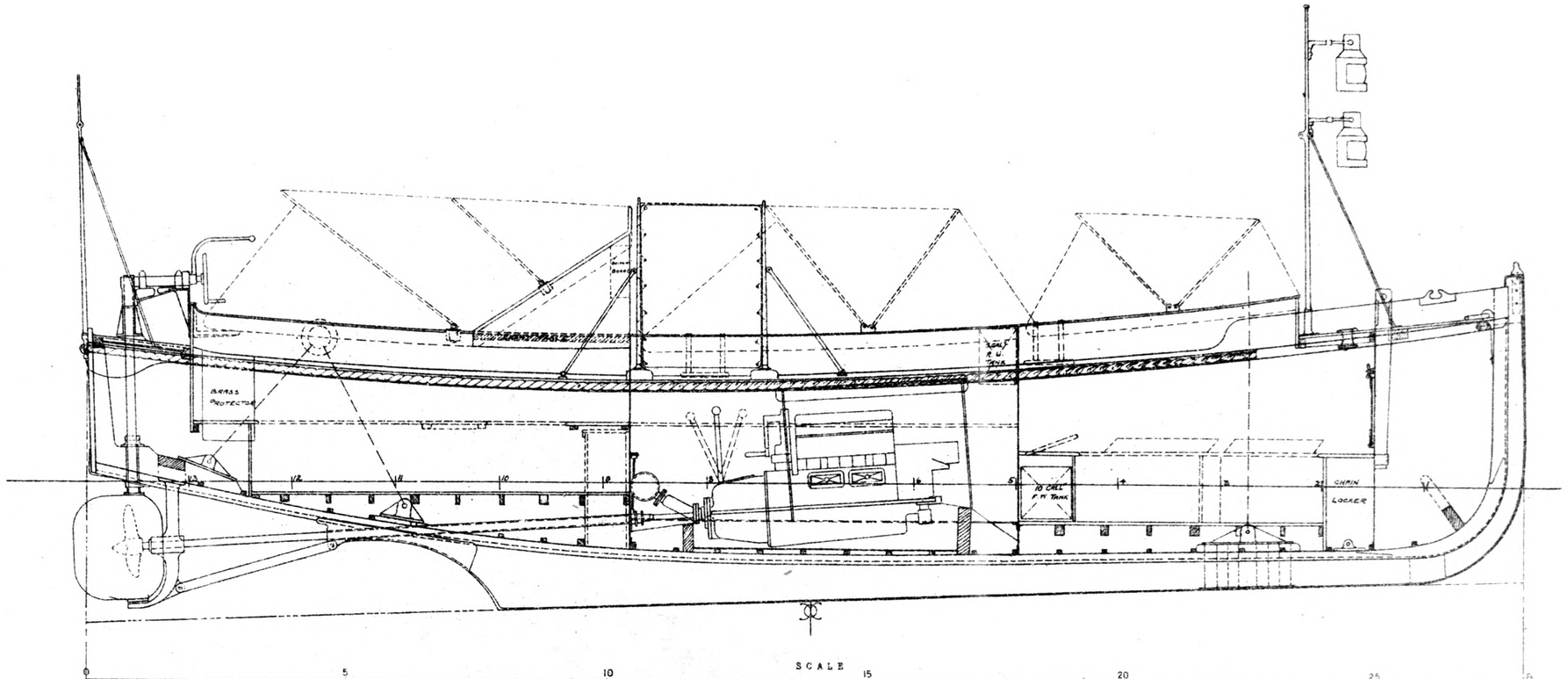
Scale

0 10 20 30 40 50 60 70 80 90 100 feet

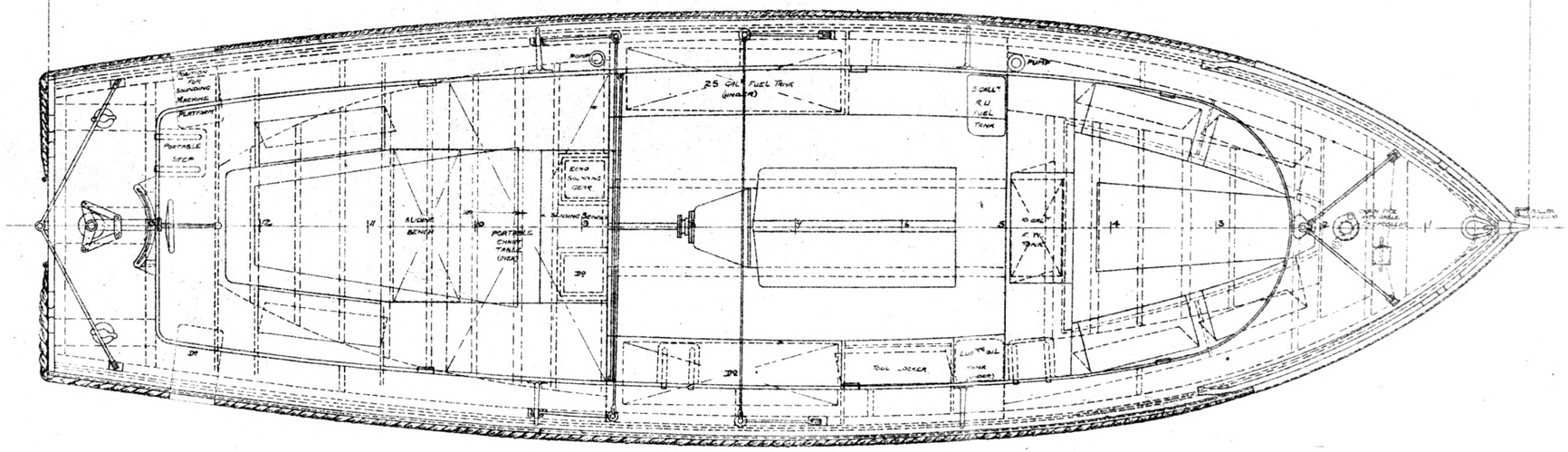
PLAN Nº 24
Great Britain. 28 Foot (8.53 metres) Motor Launch.
Grande-Bretagne. Embarcation à moteur de 28 pieds (8 m. 53).

MIDSHIP SECTION





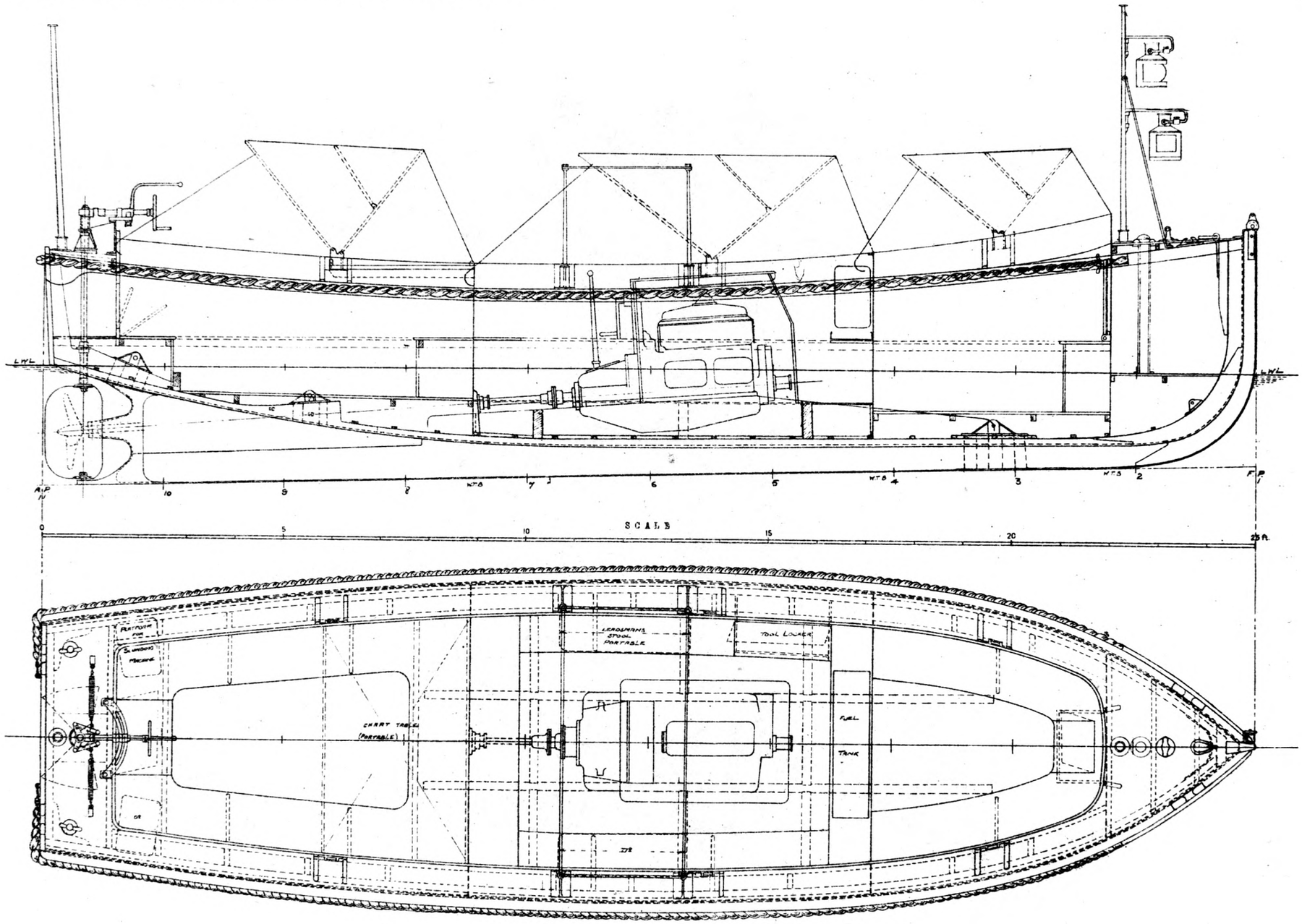
PLAN

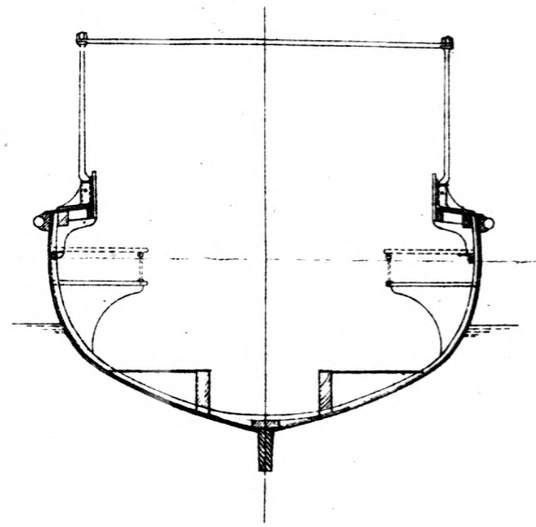


PLAN No 26.

Great-Britain, 25 foot (7.62 metres) Motor Launch. New Design.

Grande-Bretagne. Embarcation à moteur de 25 pieds (7 m. 62). Nouveau tracé.

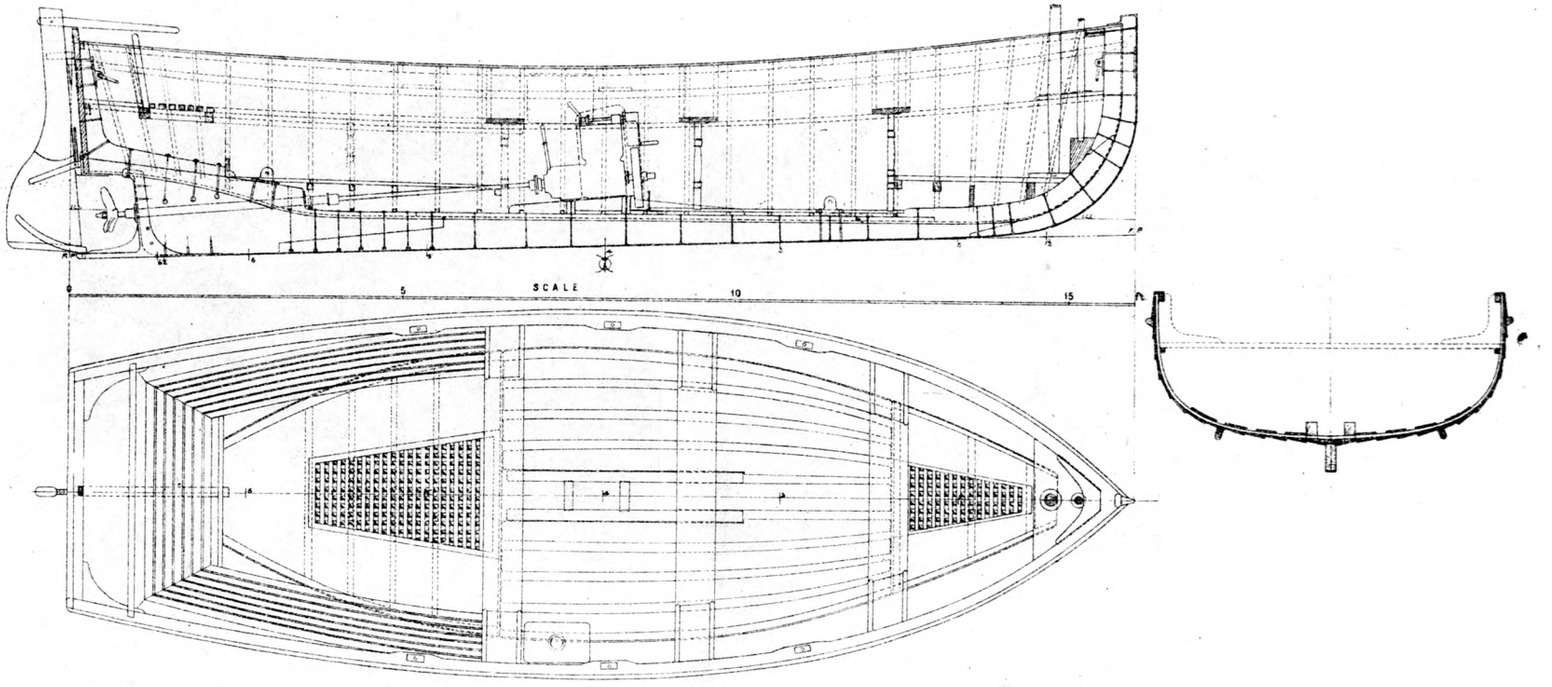




PLAN No 27.

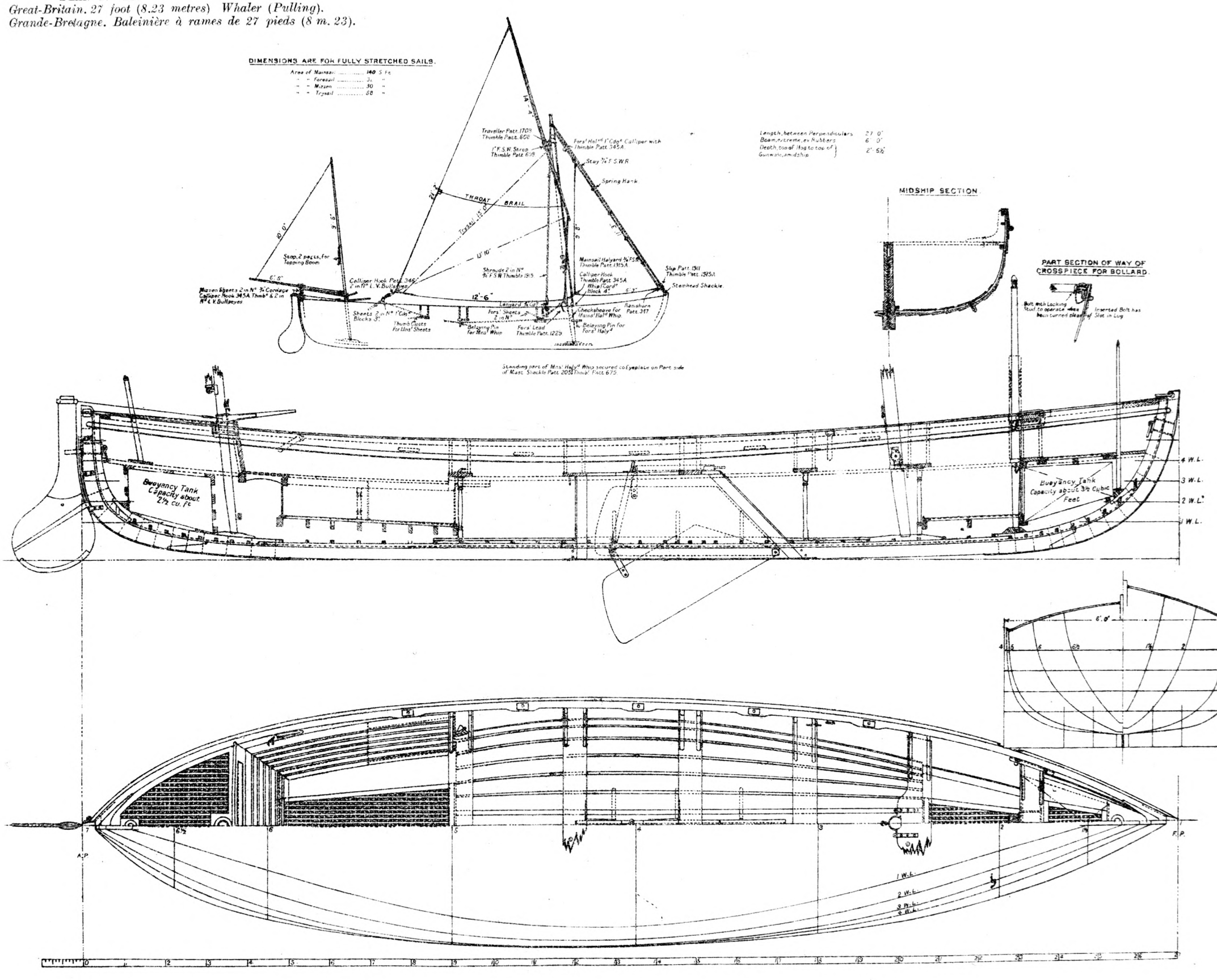
Great-Britain. 16 foot (4.88 metres) Motor Dinghy.

Grande-Bretagne. Youyou à moteur de 16 pieds (4 m. 88).



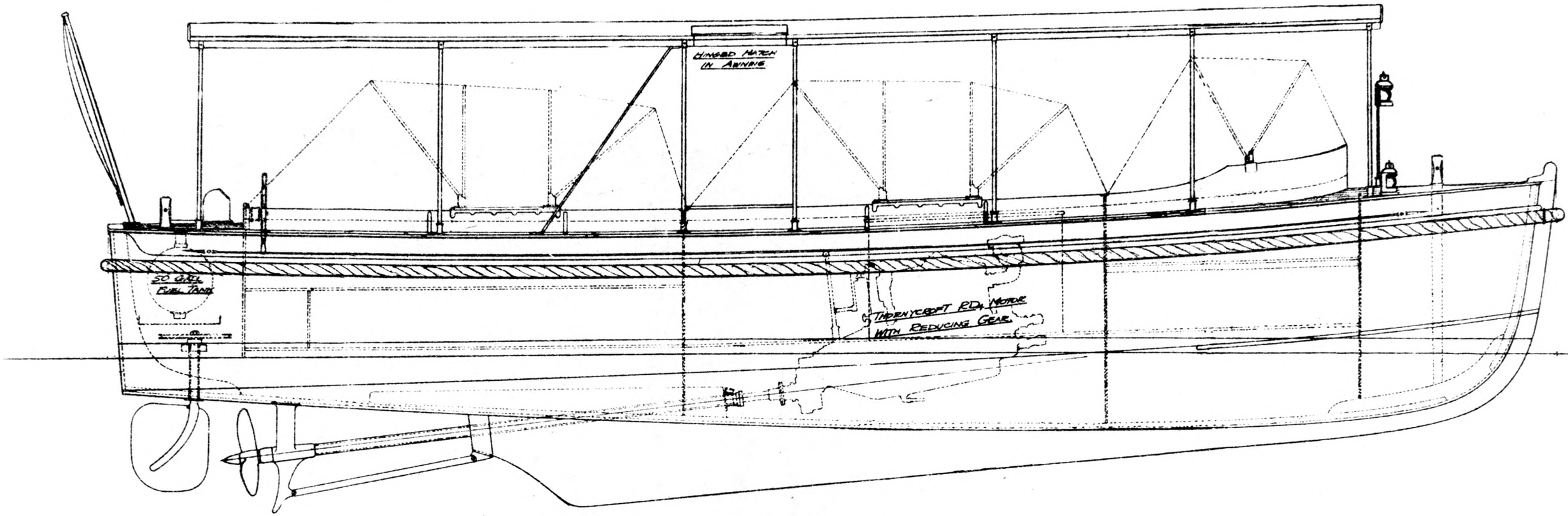
PLAN No 28.

Great-Britain. 27 foot (8.23 metres) Whaler (Pulling).
Grande-Bretagne. Baleinière à rames de 27 pieds (8 m. 23).



PLAN N° 29.

Great-Britain — 33 Foot (10.06 Metres) Surveying Motor Boat (John Thornycroft & C° - 1931)
Grande-Bretagne — Embarcation hydrographique à Moteur de 33 pieds (10 m. 06) (John Thornycroft & C° - 1931)



Scale of Feet

5 10 15 20 25 30 33

Scale of Mètres

0 1 2 3 4 5 6 7 8 9 10