

THE TWIN-SCREW STEAMER "MOSKVA"

DESIGNED AND CONSTRUCTED BY THE CLYDEBANK ENGINEERS

(For Description)

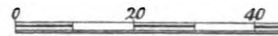


Fig. 1

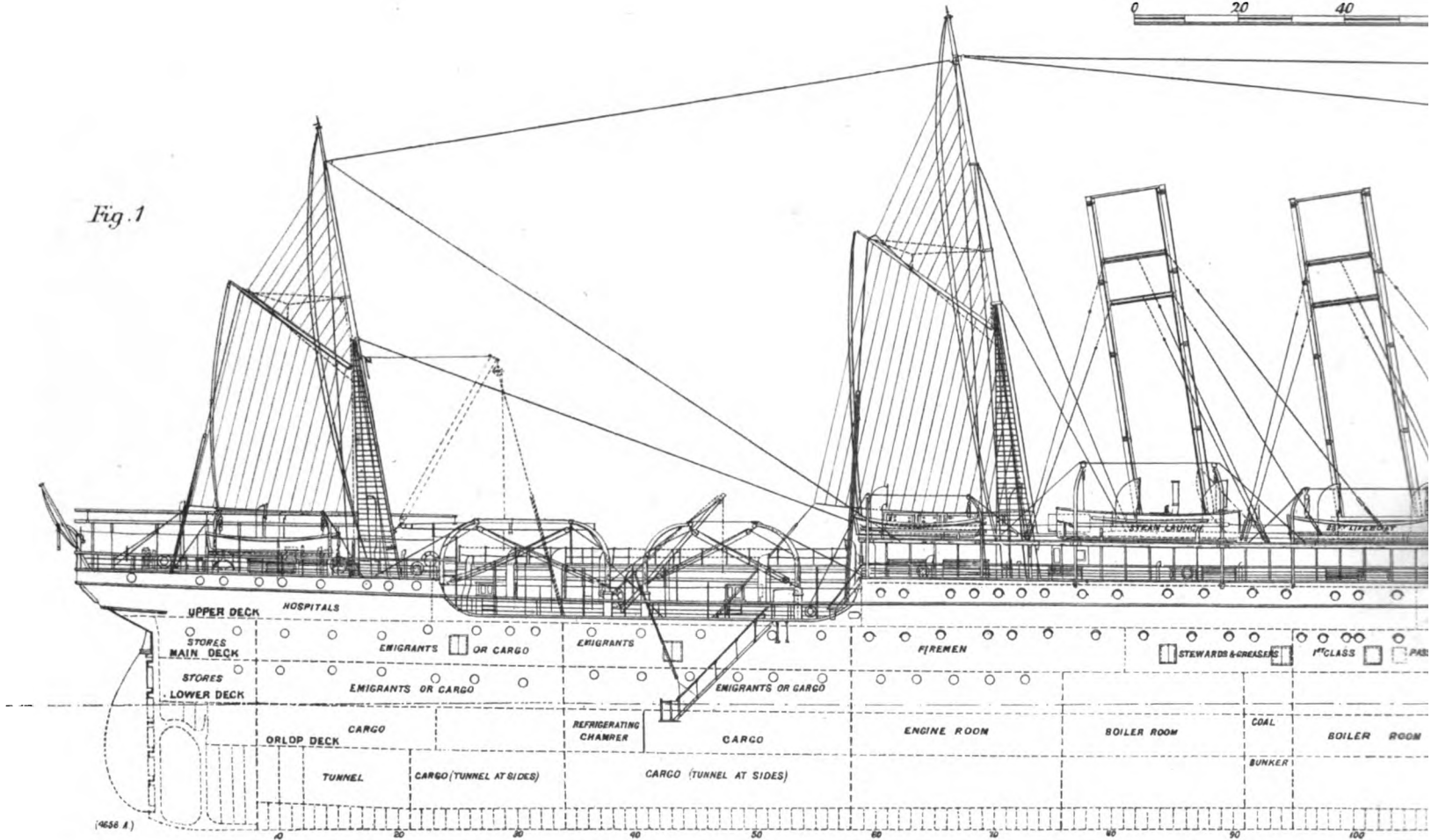


Fig. 2. POOP, BRIDGE & FORECASTLE DECKS.

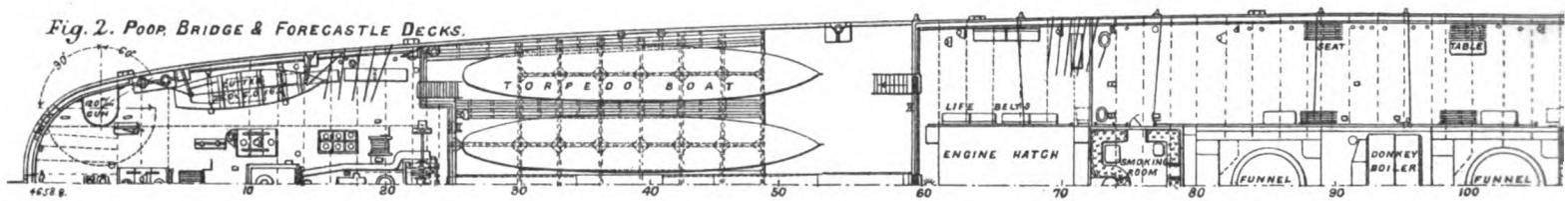


Fig. 3 UPPER DECK.

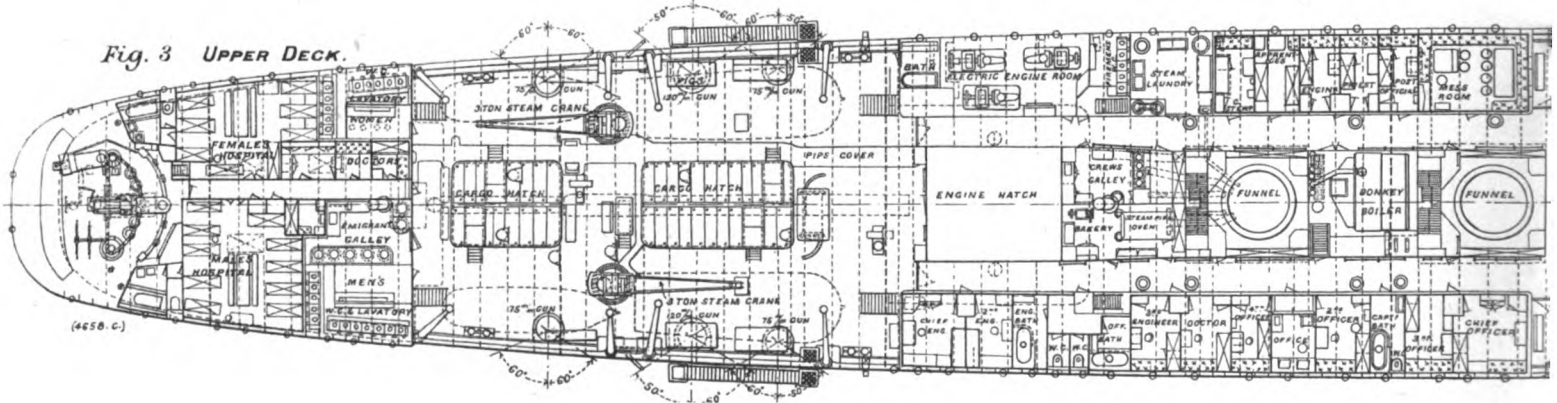


Fig. 4 MAIN DECK.

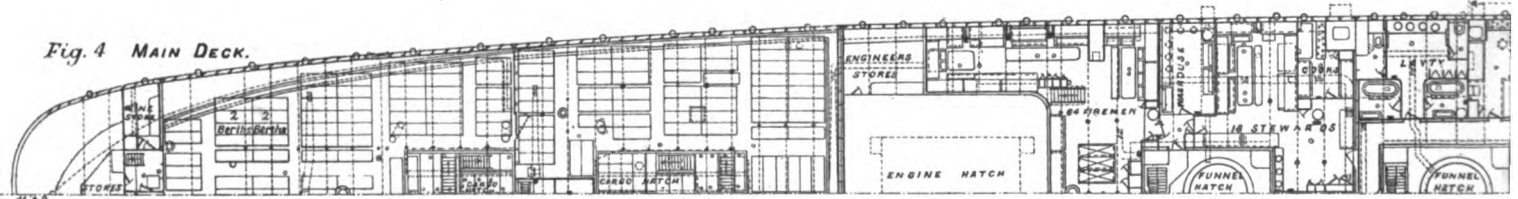
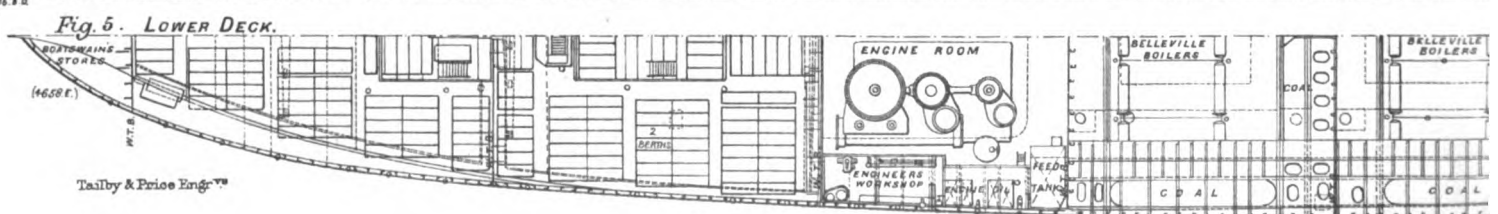


Fig. 5. LOWER DECK.



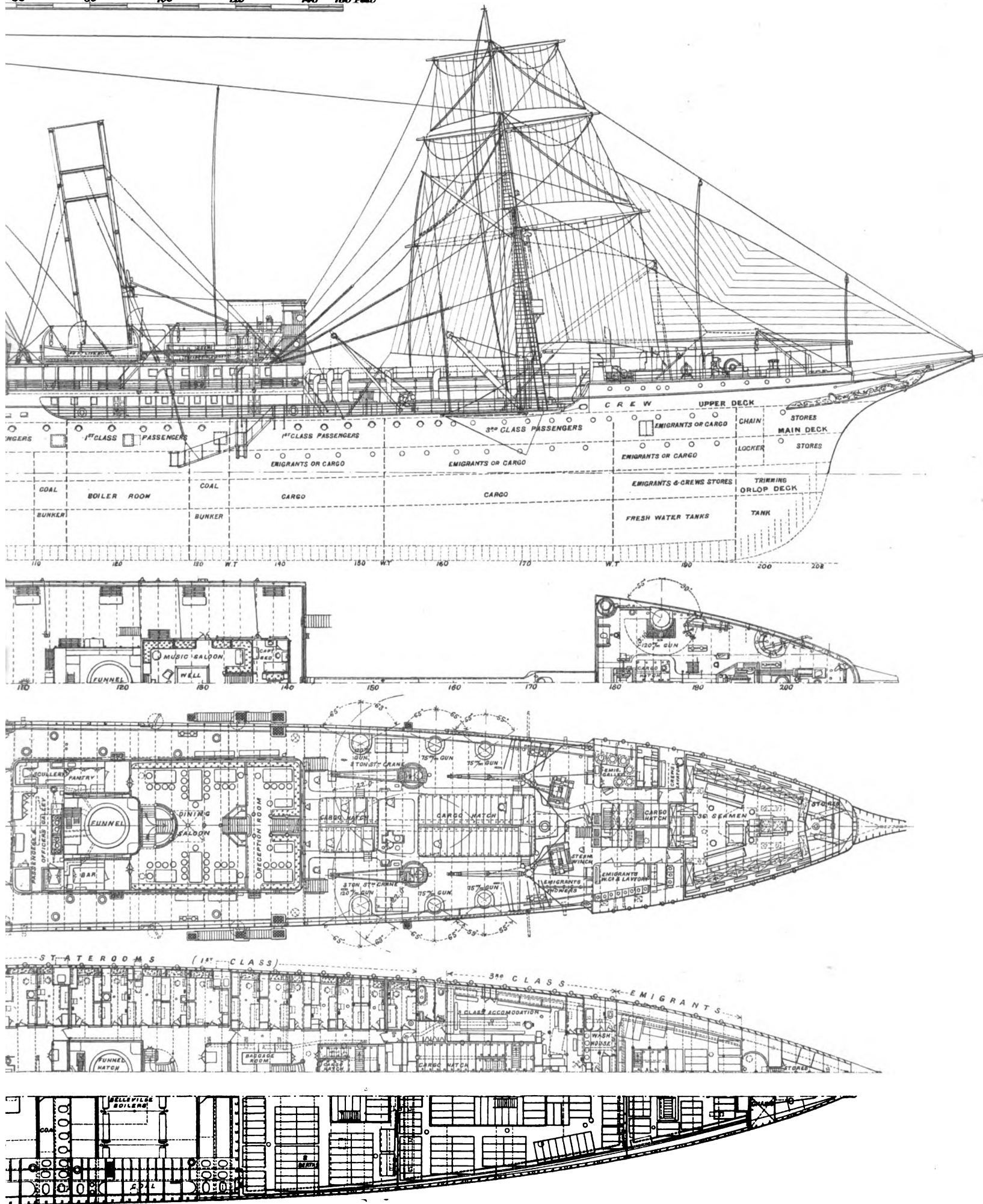
Tailby & Price Engrs.

FOR THE RUSSIAN VOLUNTEER FLEET

ING AND SHIPBUILDING COMPANY, LIMITED, CLYDEBANK, N.B.

, see Page 626.)

60 80 100 120 140 160 Feet



T.-S.S. "MOSKVA" FOR THE RUSSIAN VOLUNTEER FLEET.

WE reproduce, on our two-page plate, profile and deck plans of the twin-screw steamer Moskva, a high-speed mail and passenger steamer, designed and constructed by the Clydebank Engineering and Shipbuilding Company, Limited, for the Russian Volunteer Fleet. In peace time the vessel is intended to maintain a regular service between the Port of Odessa in the Black Sea and Vladivostok in Siberia, and for this purpose her holds and hatchways are arranged, as shown in the plan of the upper deck, so that she may be able to carry a large quantity of bulky machinery and other engineering material on the outward voyage, as well as a large number of emigrants accommodated principally on the main and lower decks, while first-class and third-class passengers are on the upper and main decks respectively. On the homeward journey the staple cargo of the vessels of this company is tea. The principal particulars of the ship are as follow:

Length over all	508 ft.
" between perpendiculars	470 "
Breadth	58 ft. 3 in.
Depth	37 ft.
Gross tonnage	7300
Number of first-class passengers	74
" third	50
" emigrants or troops	1536
Triple-expansion engines, cylinders' diameters	36½ in., 61 in., 103 in.
Piston stroke	54 in.
Condenser surface	19,800 sq. ft.
Boilers	30 Belleville boilers
Grate area	1394 sq. ft.
Heating surface	41,600
Boiler pressure	250 lb.
Reduced pressure	210 "
Indicated horse-power	15,500
Speed on long-distance trial	20½ knots

The Moskva, as suggested by the profile (Fig. 1), has an exceedingly bold and handsome appearance, having three masts, with yards on the fore mast, and three exceptionally tall funnels. She is fitted with a forecastle, long bridge deck and poop, and has a bold sheer. The figure-head is the double-headed imperial eagle, and in its artistic finish is a credit to the builders. The vessel is classed 100 A1 at Lloyd's, and is subdivided by ten watertight bulkheads, as indicated on the profile (Fig. 1). The arrangement entitles her to the certificate of the Board of Trade as being able to float with any two adjacent compartments flooded. Water-ballast tanks are fitted all forward and aft, the tanks having a total capacity of 950 tons.

As regards the passenger accommodation, the arrangements are on the spacious and well-designed scale which characterizes the vessels of this fleet, and these will be readily followed by a study of the plans which we are enabled to place before our readers. There is a large first-class saloon on the upper deck forward of the machinery (Fig. 3), fitted up in polished mahogany; on the bridge deck above there is a handsome music-saloon, as shown on half plan, (Fig. 2). All the arrangements for cooking and baking, laundry work, &c., are on an extensive scale as required by the unusual length of voyage, the kitchen, pantry, scullery, &c., being shown in Fig. 3. One feature of the arrangement, too, is a large steam laundry on the upper deck. The hospitals, too, are extensive and splendidly equipped in view of the long voyage. These are, as usual, aft on the upper deck. Special attention has been given to the ventilation of the vessel, which is carried out by means of sixteen special ventilating fans, each of which is driven by a separate electric motor.

In time of war, the Moskva can be converted into a powerful auxiliary cruiser, for which duty her realised continuous speed of 20 knots will render her doubly efficient. The decks are strengthened and supported in such a way as to admit of eight guns of 4½-in. calibre and an equal number of 3-in. calibre being mounted in time of war. The positions of these are clearly shown on the plan. Two of the larger guns are mounted on the forecastle and two on the poop for bow and stern fire. The other four are on the broadside forward, where also the 3-in. guns are mounted. The arc of fire is given in each case in Fig. 3. The magazines for the ammunition are portable, and will be kept on shore at Odessa, ready to be put on board at a moment's notice. Arrangements are made for hoists to be fitted to enable the ammunition to be served quickly to the guns so that the vessel will also be equal to a cruiser specially built for fighting. The coal bunkers, along each side of the three boiler compartments, extend practically to the load-water line, and will afford some protection. In a subsequent issue we shall illustrate and describe the propelling machinery, the principal particulars of which we have given in the Table at the beginning of this article.

INDUSTRIAL NOTES.

THE thirty-ninth annual report of the Amalgamated Society of Carpenters and Joiners is, from the labour point of view, a most satisfactory record of progress, numerically, financially, and industrially. As regards the latter aspect, the report states that the year 1898 opened up with ominous warnings of the fate which would overtake the union if the members displayed feelings of unrest and dissatisfaction with the conditions of labour, but, as a fact, the union was able during the year to obtain advances in wages and other concessions in 125 towns, at an outlay far below any other period during the last decade. This, it is stated, was accomplished in the most peaceful and conciliatory manner, due to the goodwill of employers, and to the moderation and judgment of the managing committees of the union and the members generally in the various districts. The concessions, we are assured, have led to a better understanding generally, instead of leaving a feeling of irritation provocative of misunderstandings in the future. This result is eminently satisfactory to the parties concerned, and will doubtless pave the way to peaceful negotiations in the future.

The numerical progress has been great, no fewer than thirteen new branches were opened in the year, and 9444 new members were admitted into the union. The total number of members on January 1 of this year was 56,634; in 1878 the total was 10,504; and in 1888 only 25,050, showing an increase in those ten years of 14,546; and from 1888 to 1898 of 31,584. This progress is prodigious.

The financial progress has also been great. The total income from all sources was 142,766*l.*, an increase of 5528*l.* The interest amounted to 2097*l.* of which 1030*l.* came from investments, and 1877*l.* from banks as interest on deposits and current account. In 1896, before the system of investments was adopted, the total interest only amounted to 1313*l.*, all told. The ordinary income from members' contributions, &c., was 134,617*l.* 4*s.* 9*d.*; from admissions of members, 4219*l.* 6*s.* 8*d.*; recovered income tax, 27*l.* 10*s.*; rules and reports, 870*l.* 7*s.*; advertisements, 14*l.* 16*s.*; defalcations recovered, 19*l.*; discounts, &c., make up the remainder. The income is very large, and the test of usefulness is the way in which so large a sum is expended. This will be seen by the disbursements in the shape of benefits.

The total expenditure amounted to 106,362*l.* 8*s.* 9*d.* This large amount is itemised fully in the balance-sheet. The chief items are as follow: Unemployed benefit, 13,462*l.* 6*s.* 1*d.*, to this must be added 214*l.* 14*s.* 4*d.*; sick benefit cost 29,978*l.* 5*s.* 2*d.*, and medical certificates 904*l.* 9*s.*; accident benefit, 4500*l.*; superannuation benefit, 14,663*l.* 4*s.* 4*d.*; funerals, 5788*l.* 6*s.* 9*d.*; tool benefit, loss of by fire or theft, 2502*l.* 17*s.* 7*d.*; and benevolent grants, 8470*l.* 3*s.* 4*d.* All these items come under the head of provident benefits, about which there can be no question, even from the stoutest opponent of trade unionism.

Under the head of trade privileges, &c., the items relate to labour disputes, the total of which appear to be as follow: Trade privileges, 4963*l.* 17*s.* 7*d.*; trade management expenses, 2794*l.* 6*s.*; total, 7758*l.* 3*s.* 7*d.* This is not a large sum by which to gain concessions for the members in wages, hours of labour, and conditions of employment in 125 towns.

The cost of management generally comes under various heads, and it must be remembered that it covers all payments by 744 branches, as well as by the general office. Branch secretaries' salaries amounted to 3145*l.* 11*s.* 5*d.*; treasurers' salaries, 1401*l.* 7*s.* 2*d.*; other branch officers and committees, 1969*l.* 16*s.* 9*d.*; sick stewards, 1142*l.* 17*s.* 3*d.*—this really belongs to the sick account; auditing accounts, 704*l.* 0*s.* 4*d.*; banking expenses, trustees and other officers, 260*l.* 17*s.* 2*d.*; delegations, 603*l.* 15*s.* 9*d.*; executive council meetings, 185*l.* 2*s.* 6*d.*; American council, 36*l.* 18*s.* 5*d.*; Australian council, 22*l.* 17*s.* 6*d.*; summoned special meetings, 593*l.* 2*s.* 4*d.* Then there was the general council meeting, which is exceptional, 794*l.* 10*s.* 2*d.* The cost of rent, fuel, gas, rates and taxes, repairs, &c., 2214*l.* 13*s.* 10*d.*; of printing and stationery, 2631*l.* 9*s.* 6*d.*; postages, parcels, telegrams, money orders, &c., 1016*l.* 1*s.* 2*d.*; insurance, boxes, bags, cards, emblems, &c., 112*l.* 14*s.*; the Trade Union Congress and its committee, 154*l.* 19*s.*; defalcations and base coin, 147*l.* 10*s.*; law expenses, 778*l.* 1*s.* 3*d.*; depreciation of currency, foreign exchanges, 92*l.* 13*s.* 6*d.* These are all the chief items in the balance-sheet, and the whole outlay speaks well for the management of so large a society, and, after all, the assets amount to 179,147*l.* 11*s.* 6*d.*, or equal to 3*l.* 3*s.* 3*d.* per member. Such a record does credit to the labour world. The Amalgamated Society of Carpenters and Joiners stand in the front rank of trade unions, with the Engineers, Boilermakers, and Iron Ship Builders, all being on the same lines as regards benefits and general management.

The actual cash balance was 172,712*l.* 11*s.* 6*d.*, the other assets being house property in Manchester, Dublin, Cork, and Brisbane, and goods and stock at the general office, American and Australian offices,

and at the branches. Of the cash balance 133,754*l.* 16*s.* 10*d.*, was held by 743 branches; 223*l.* 10*s.* 4*d.* by the American and Australian district offices, and 2350*l.* 17*s.* 7*d.* by the general office; 36,383*l.* 6*s.* 8*d.* is invested with the Charlton Union, Accrington Gas and Water Board, and the Corporation of Rawtenstall. These investments not only secure a better interest than money in the banks, but they constitute a guarantee fund, in case of dire calamity for the payment of sick benefit, and superannuation allowance, as the money could not be realised so readily as in the case of deposit accounts. By the time the vote of the members could be taken the danger would be over.

The operations of the society during the 39 years of its existence are shown by the following Table, in which provident benefits are shown first, then cost of disputes for trade privileges:

	Total Amount.	Per Member.
	£	£ s. d.
Unemployed benefit	559,871	27 14 8
Sick benefit	462,906	22 18 7½
Superannuation benefit	113,716	5 12 7½
Funeral benefit	83,395	4 2 7½
Accident benefit	41,470	2 4 0½
Tool benefit	44,250	2 3 9½
Benevolent grants	28,156	1 7 10½
Trade privileges—disputes	176,921	8 15 3½
Grants to other trades—disputes	23,730	1 3 6
Aggregate amount—39 years	1,537,415	76 3 1½

There is one item in the totals which deserves a word: the superannuation allowance has only cost 5*l.* 12*s.* 7*d.* per member over the whole time, and yet the benefit is from 7*s.* to 8*s.* per week for life, whereas the pensions schemes only suggest 5*s.* per week. Altogether the benefits in this union are great—sick benefit 12*s.* per week, unemployed 10*s.* per week, accident benefit 10*l.*, tool benefit 20*l.*, strike pay 15*s.* per week. Funeral benefit 12*l.* per member, and 5*l.* for wife. Members are also aided to obtain compensation for injuries under the Employers' Liability Act and the Compensation Act; thus the benefits of the society are various.

The monthly report of the Carpenters and Joiners is, indeed, encouraging, considering the unsettled state of the building trades, owing to the Plasterers' dispute. Calling attention to the state of affairs, the report states that considerable apprehension existed by reason of the dispute mentioned, and of the termination of many notices on May 1 in the building trades. "However," it proceeds, "we are glad to be in a position to record settlements in some of the principal towns, and there is a probability of the other disputes being arranged without any long dispute. Thirty-four towns, some of them, like Liverpool, Manchester, Glasgow, &c., very large towns, have amicably settled matters." In nine towns disputes had arisen in the month covered by the report, but only at Halifax and Hull are the men still out. But in those places the majority have found work elsewhere than in the firms struck. The total number of members is now 58,186, of whom only 535 were on unemployed benefit, and of these 71 were on the reduced scale; those on the sick fund numbered 1292, and superannuation allowance 759, of whom 523 were in receipt of 8*s.* per week. Of the 535 who were on unemployed benefit, 132 were in Canada, the United States, or in Australia, leaving only 403 out of work in the United Kingdom. This is a very trifling percentage of the total number of members. No wonder that the conditions of labour improve when the demand for competent workers is great. Some curious questions are in the report from branches; one is whether a levy for the wages of members elected on public bodies can be made; the reply is No, all contributions for this purpose must be voluntary; the council will not sanction compulsory levies for the purpose. One raises the question of foremen belonging to a Master Builders' Association; the decision is that a member cannot belong to two trade unions at the same time. Another question is whether a member ought to be allowed to work for one employer in the day, and another after the day's work is finished; the reply is that in the opinion of the council it is unfair, and is at variance with the best interests of the union. There are several resolutions on federation, dealing mostly with a rejected scheme; on the voting for the scheme of the Trades Congress, it is rejected by a majority of 3871, although in October last the vote was in favour by a majority of 3157. This is the third scheme rejected.

The threatened cessation of work in the cotton trade has been averted, as was prognosticated in these Notes from the first. The public press generally regarded the situation as most critical, and so it was; it was even so regarded in Lancashire by the employers and cotton operatives, but the real gleam of sunshine was found in the fact that the representatives of the millowners and of the operatives have for a long time past been in the habit of discussing grievances, and when this is the case there is some guarantee that

complete only when the end of the supplementary lever worked by the handle has been placed in the notch of the stud screwed in the rear of the gun.

To operate the firing device it is sufficient to pull the straight arm of the catch by means of the firing line, or to act on the small firing lever held by the pointer. The finger of the catch turns round to the rear, and by acting on the butt end of the trigger and on the hammer, which can only move in a straight line, the firing spring is pressed down; escapement then takes place, and the hammer being freed is thrown forward under the action of its spring and drives the striker against the fuse. At the same time the working arm of the catch, by bearing against the piston of the safety device, drives it home by pressing down the counteracting spring.

When the catch is released it has a tendency to resume its first position under the action of the safety piston; it acts, therefore, owing to its projection on the butt end of the movable cylinder of the trigger; the latter is withdrawn, but is thrust out again immediately under the action of its spring, the two pieces again engaging each other. The device is then ready to repeat the firing action. Figs. 517 and 518 show in detail the shape of the various parts and the way in which they act. Fig. 516 is reproduced from a photograph of breech-blocks of this type for the current calibres of quick-firing Schneider-Canet guns of recent manufacture.

Breech-Block for 65-Millimetre (2.559-In.), 50-Calibre Quick-Firing Schneider-Canet Gun (Figs. 519 to 521).—In this breech-closing arrangement the clutch device for the working lever and the lateral rod for firing are not used owing to the dimensions of the gun, which is fired solely by the firing line.

Breech-Block for 10-Centimetre (3.937-In.), 50-Calibre Quick-Firing Schneider-Canet Gun.—This mechanism contains the clutch device for the working lever, and the lateral firing lever.

Breech-Block for 12-Centimetre (4.724-In.), 50-Calibre Quick-Firing Schneider-Canet Gun (Figs. 522 and 523).—Besides the various parts described above, this breech-block is provided with a charging plate, jointed on a hinge fitted to the rear end of the gun. In Fig. 523 this plate is shown brought down, under the breech-block bracket. In Fig. 522 it is shown brought up, flush with the lower part of the bore, to facilitate the quick introduction of the cartridges.

Breech-Block for 15-Centimetre (5.905-In.), 50-Calibre Quick-Firing Schneider-Canet Gun.—This mechanism is similar to the preceding one, but is of larger dimensions, corresponding to the increase in the calibre.

GREAT CENTRAL RAILWAY.

(Continued from page 482.)

WHILE the Great Central will use the permanent way of the Metropolitan Railway from Finchley to Quainton Road, some interesting works were involved at Neasden, five miles from the Marylebone Station, in providing siding accommodation, repairing shops and the like, while an enormous bank, something like a mile long and 200 yards wide, has been made, immediately to the south-west of the Metropolitan line, which runs through Neasden, and on past Wembley Park in a north-westerly direction. This bank was made with the spoil excavated in cuttings and tunnels in the length of the Great Central Railway, from Marylebone to Finchley. The River Brent had to be diverted for a length of 600 ft., the new channel being in a culvert, with two 20-ft. spans, and 100 ft. of it is actually in tunnel. There is another culvert crossing under the bank for a length of 1000 ft., for the Brent feeder from the Welsh Harp to the North Metropolitan Canal of the Grand Junction Company. This culvert is 12 ft. wide, but neither in connection with the diversion of the river and in the construction of the culvert was much difficulty experienced. Extensive reconstruction of sewers was necessitated by the works, the Willesden Vestry having about a mile of 4 ft. 6 in. by 3 ft. sewer laid for them, as well as smaller drains, while the New River Company's conduit had to be reconstructed, in cut and cover, across the works. Advantage was also taken to have a railway connection for goods traffic made from Neasden to the Midland and South Western Junction line, from Cricklewood to Acton, and thus Great Central traffic can almost be sent anywhere.

On this extensive bank, which is five miles from London, there are 10 miles of sidings, providing accommodation for 700 wagons for north-bound traffic, and for 600 wagons for south-bound traffic, together with a locomotive shed for 30 engines, carriage and wagon-repairing shops, 350 ft. by 120 ft.; sand driers, balancing tables for locomotives, sheerlegs, coal stacks, electric light installation, with generating plant, &c. And adjoining the works, 150 cottages have been erected as residences for the workers. Corresponding establishments have been constructed at several points on the railway north of Quainton-road, notably at Woodford, Nottingham, and Annesley. In fact, the buildings are almost identical, although the extent of sidings, &c., may vary, so that the drawings which we intend to reproduce in subsequent articles, are representative of all.

The carriage and wagon shop is a very fine building, 359 ft. long by 120 ft. wide, divided into two shops by a wall down the centre. There are six roads into the shed, with trolley runs 1 ft. 6 in. gauge between each pair of rails, and extending to the workshops at the end of the shed. A pit runs the full length of the shops under one of the roads. The workshops are well equipped with all necessary tools, while facilities for repairing parcels' carts are also provided. The building includes rooms for various stores, with foreman and clerks' offices above. The roof is an excellent example of the French truss type, and is illustrated on page 680 by Figs. 292 to 299. The span is 60 ft., and the principals are spaced 11 ft. centre to centre, and weigh about 2 tons each. The total weight of steelwork in the roof is 131 tons, equivalent to 8.23 lb. per square foot of ground area covered. The roof is well braced with wind-bracing rods, and also in a longitudinal direction through the lower members. The purlins are of timber, 9 in. by 4 in., covered with boarding and slates, except at the ridge, where the roof is glazed with $\frac{1}{4}$ -in. plate glass. Immediately adjoining the carriage and wagon-repairing shop is the electric power house, but, as we have already indicated, we prefer to defer reference to the electric installation until later. In our next article we shall reproduce drawings of a typical locomotive shed and its accessories.

(To be continued.)

ENGINES OF THE RUSSIAN VOLUNTEER STEAMER "MOSKVA."

ACCORDING to our promise, when we described the Russian volunteer twin-screw steamer *Moskva* (page 626 *ante*), we now reproduce, on our two-page plate, drawings of the propelling engines, which were designed by Mr. John G. Dunlop, the engineering director of the Clydebank Engineering and Shipbuilding Company, Limited, who built and engineered the ship. The engines, as will be seen, are of the three-cylinder vertical triple-expansion type. Each of the two sets is designed to develop 7750 indicated horsepower, giving a combined indicated power of 15,500. The cylinders are 36 $\frac{1}{2}$ in., 61 in., and 103 in. in diameter by 54 in. stroke. The high and intermediate-pressure cylinders are fitted with piston valves having approved adjustable packing rings, while the low-pressure cylinders are fitted with treble-ported flat slide valves having a special type of relief frame at the back to relieve the steam pressure. All the valves are worked by a single eccentric radial valve gear. It is operated by a single eccentric through a quadrant rocking on trunnions, as shown on the end elevation (Fig. 9). This arrangement of valve motion allows the valves of the cylinders to be placed at the back, and thereby brings the centres of the cylinders much closer together, so that space in the engine compartment is economised. The reversing is done by Brown's steam and hydraulic engine.

The condensers are oblong, of cast iron and support the back of the intermediate pressure and low-pressure cylinders. The high-pressure cylinders and fronts of the intermediate pressure and low-pressure cylinders are supported by cast-iron columns with forked legs. The combined cooling surface of the condensers is 19,800 square feet. They are fitted with brass tubes. The condensing water to each condenser is circulated by two large centrifugal pumps driven by independent engines made by Messrs. Drysdale and Co., of Glasgow; the air pumps are driven by levers working from the crossheads of the high-pressure cylinders.

The bedplates are of cast-iron box-shaped, having circular recesses for the main-bearing bushes. The bushes are of gun-metal and lined with best white metal.

The shafting is of Siemens-Martin steel, each crankshaft is in three interchangeable pieces. The thrust blocks are of ordinary horseshoe type, and the thrust collars are of cast steel lined with white metal, each

being separately adjustable. The screw propellers are four-bladed, the boss being steel and the blades of manganese-bronze. Arrangements are made for allowing the pitch to be altered if required.

In addition to the auxiliary machinery already mentioned, space has had to be provided for the following auxiliary machinery in the engine-room. Two Worthington fire and bilge pumps, two large ballast pumps, capable of discharging 800 tons of water per hour, one fresh water pump, two of Caird and Rayner's evaporators, capable of evaporating 65 tons of water per 24 hours, and one auxiliary condenser and circulating pump, distillers and evaporators for ship purposes, refrigerating machinery, and four hotwell pumps.

Steam is supplied by 30 water-tube boilers of the Belleville type, 24 of eight elements, and six of seven elements, each element having ten pairs of tubes. There are three separate watertight boiler-rooms, each containing ten boilers. The total grate area is 1394 square feet, and the total heating surface 41,600 square feet; the boiler pressure is 250 lb. per square inch, but this is brought down to 210 lb. per square inch by reducing valves before going to the engines. The feed water is supplied by six pumps of Belleville's manufacture. Air blowing engines have been supplied by Messrs. W. H. Allen and Co., and the ashes are conveyed from the stokeholds by means of See's ash ejectors. The whole of the boiler-rooms are well ventilated by means of six large fans, one placed in each stokehold.

The vessel left the builders' yard on October 3 last, and proceeded to the Tail of the Bank. On Tuesday, the 4th, she went on a preliminary trial of about four hours' duration, the builders running the vessel on the measured mile at various speeds. On Wednesday, the 5th, the official trial of 12 hours' duration at full speed was successfully made. Getting under way at daybreak, the vessel proceeded down the Firth of Clyde, and at 6.30 a.m. the trial commenced. The speed was checked by running on the measured mile, and also by noting the times taken to run known distances between lights. The engines worked without the slightest hitch, the boilers generated an ample supply of steam and gave no trouble, and an average speed of about 20 $\frac{1}{2}$ knots was maintained during the whole trial, which ended at 6.30 p.m. The directors of the Russian Volunteer Fleet were represented by Colonel Linden, General Toropoff, Mr. Varschavsky, Captain Kreuger, and Mr. Gretchin; the Imperial Russian Navy by Mr. Poutchkin; and the builders by Messrs. J. R. Thomson, G. P. Thomson, and J. G. Dunlop, directors of the company.

PILE-DRIVING WITH THE WATER-JET AT BLACKPOOL.

AN interesting application of the well-known method of driving piles through sand by means of the water-jet has recently been carried out at Blackpool in connection with the new pier works there. This contract included the driving of a large number of such piles, and the contractor, Mr. Robert Finnegan, therefore decided to adopt the water-jet system, in which a flow of water is maintained at the front of the pile, so loosening the sand that the pile will often sink by its own weight. When the conditions are favourable experience has shown this system to have very great advantages. In the present instance ten piles, each 15 ft. long, were sunk in the course of a tide (four to five hours), whereas, driving in the usual way, not more than two or three could have been got down in this time. The plant used is shown in our illustration on page 665, and was supplied by Messrs. Merryweather and Sons, of Greenwich, the pump and boiler being of the light fire engine type, and easily transported from place to place on a pair of wheels. The pile was driven by a tup, and the point was followed by a nozzle which could be directed to any side of the pile. A bed of gravel was met with 4 ft. below the beach level, and was passed through without difficulty, whilst such boulders as were encountered were shifted aside by the rush of the high-pressure water.

THE TEACHING OF LANGUAGES.—As we all know by experience, the language of the text-book is very different from that of real life. One may attain quite a respectable proficiency in a foreign tongue by aid of books and tutors, and yet when suddenly put down in a railway station where that tongue is spoken, find that we cannot recall any word suitable to our needs. There are, however, teachers who avoid this difficulty. We have received a pamphlet, "Saggio di Dialoghi Tecnici Inglesi per l'Insegnamento Terminologico delle Industrie Navali e Meccaniche," written by Professor R. Gambaro, of the Scuola Navale Superiore at Genoa, in which we find in excellent idiomatic and technical English a dialogue between a shipowner and the representative of a firm of shipbuilders concerning the specification of a new vessel and her machinery. At the end are copious notes to assist the student in making the translation from English to Italian. An exercise of this kind will give the student more real mastery of a language than several volumes written on the Ollendorffian system.

THE ENGINES OF THE RUSSIAN VOLUNTEER TWIN-SCREW STEAMER "MOSKVA."

CONSTRUCTED BY THE CLYDEBANK ENGINEERING AND SHIPBUILDING COMPANY, LIMITED, CLYDEBANK, N.B.

(For Description, see Page 674.)

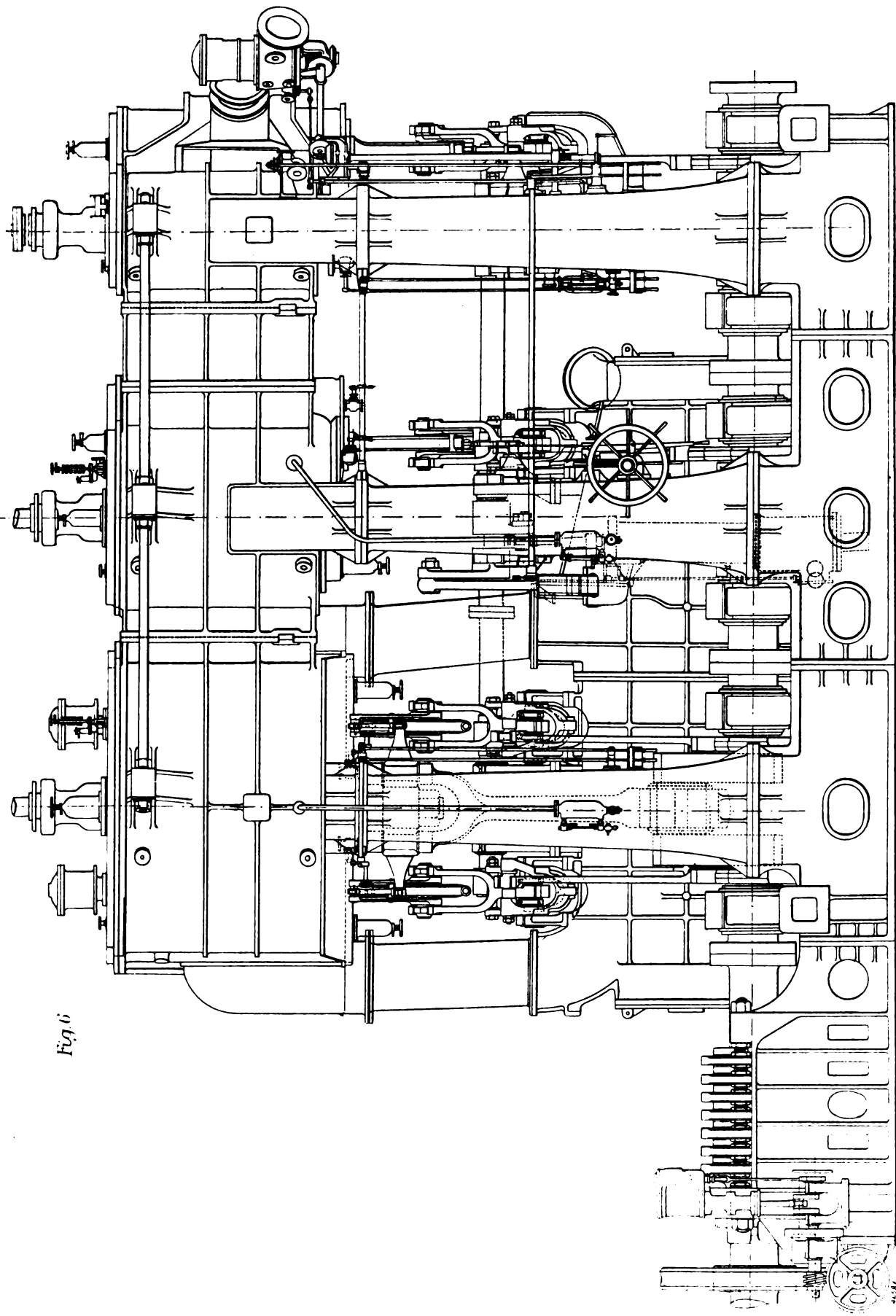


Fig. 6

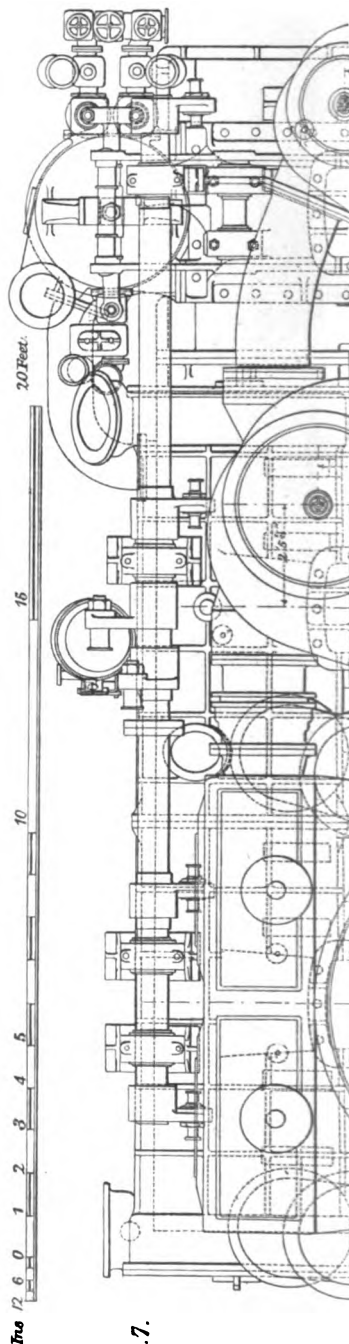


Fig. 7.

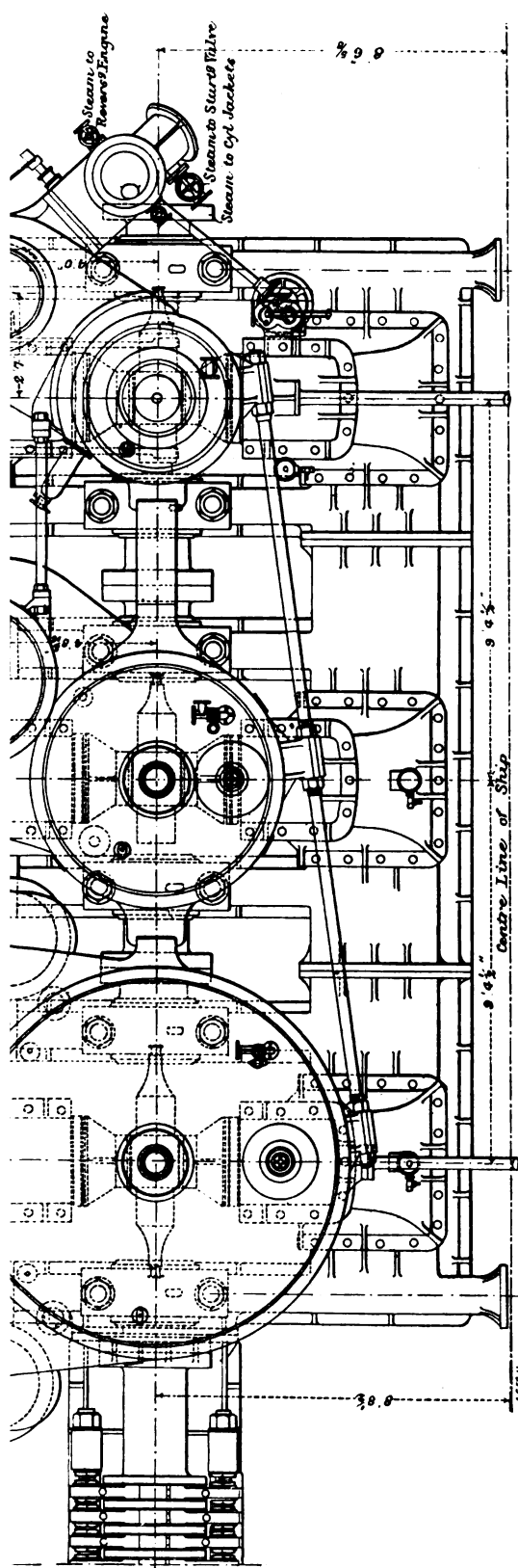


Fig. 9.
H.P. END
LOOKING AFT.

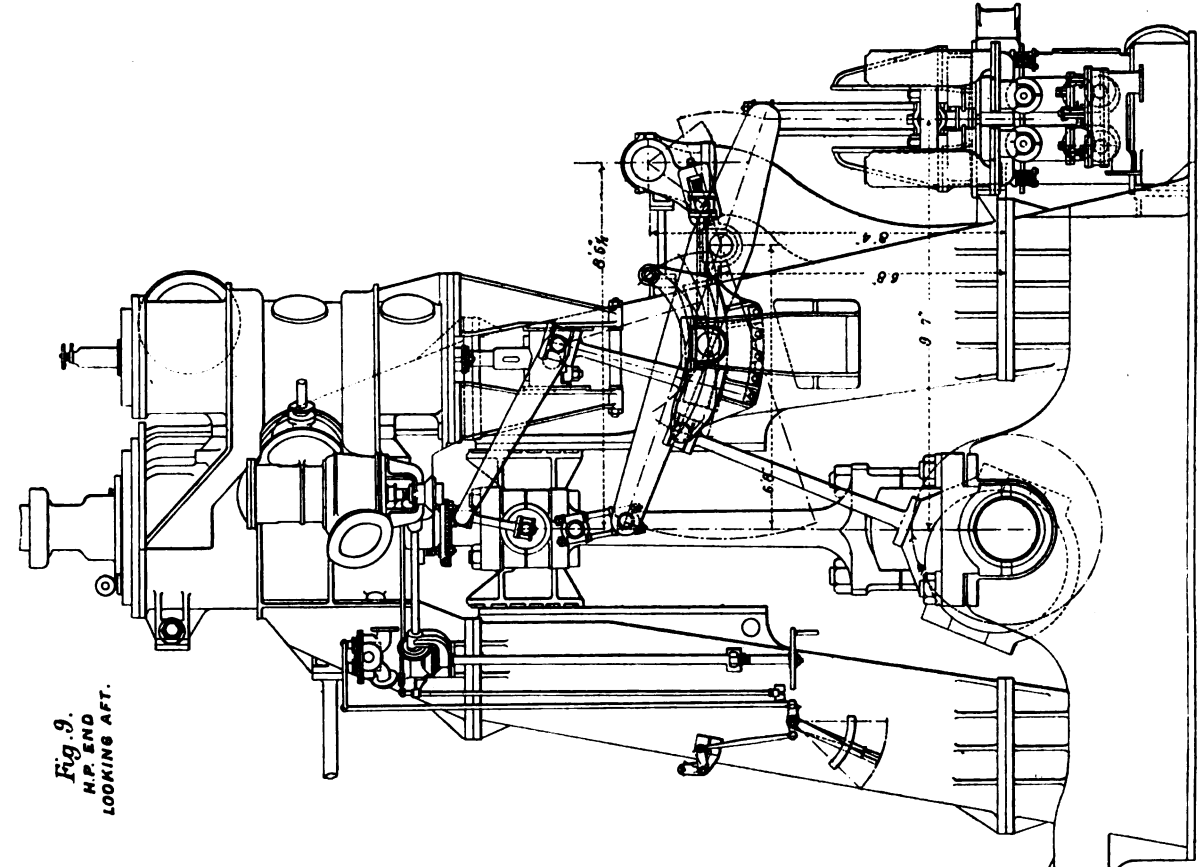


Fig. 8.
L.P. END
LOOKING FORWARD

