

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S REPORT ON MACHINERY.

ENGINES.

Rec 13/11/77

Description *2 cyl^l compound inverted S.C.*
 Made by *Messrs Palmers & Co Limited*
 When *Nov 9th 1877* At *Lancaster on Tyne*
 Diameter of cylinder *33" x 64"* Length of stroke *42"*
 No. of revolutions per minute *(56)*
 Point of cut off *1/2 stroke*
 Diameter of screw shaft *11 1/2"*
 Diameter of crank shaft journals *11 1/2"*
 Diameter of screw, or of paddle wheel *16' 6"*
 Pitch of screw *18' 6"*
 No. of blades, *(14)* Total surface *67 sq. feet*
 No. of bilge pumps *(2)* and sizes *4 1/2" dia 21 stroke*
 Do they pump from each compartment *Eng. Room, Aft hold, aft hold, main hold, fore hold*

Are all the bilge suction pipes fitted with roses *Yes 1 main Bilge*
 No. of feed pumps *(2)* and sizes *4 1/2" dia, 21 stroke*
 What gauges are there attached to the engines and boilers ... *2 Steam, 2 Stroke hold, 2 Steam Eng. in Room*
 Description and size of Donkey Pumps ... *(Ballast) 8" dia 12 stroke D.A. (Boiler) 4" 8" D.A.*
 Where do they pump from ... *(Ballast) from Tanks & Engine Room (Boiler) from Sea & some as Bilge Pumps*
 No. of bilge injections *(1)* and sizes *6 1/4"*
 Are they connected to air, or circulating pumps *Circulating*
 Is there a hand pump in the engine room *Small donkey can be used*
 Can it be worked by the main engines *No*
 Is there a deck hose of sufficient length to reach to any part of the vessel *Yes piping those*

MAIN BOILERS.

Number *Two* Description *Cylindrical Tubular*
 Made by *Messrs Palmers & Co*
 When *Nov 9th 1877* At *Lancaster on Tyne*
 Working pressure *80 lbs per sq. inch*
 Tested by hydraulic pressure to *160 lbs*, Date *Sept 2nd 1877*
 Description of super-heating apparatus *None Steam Receiver*
 Can each boiler be worked separately *Yes*

Can the super-heater be shut off and the boilers worked separately *No*
 Description and area of safety valves on each boiler *(2) Spring Valves by Palmers & Co 4 1/2" dia = 31.8 sq. in*
 No. of square feet of fire-grate surface in each boiler *54 sq. feet*
 Are there separate blow off and brine cocks on each boiler, independent of those on the vessel's skin *Yes*
 Are all pipes, cocks, roses, and pumps in connection with the machinery accessible at all times. *All except roses in holds*

DONKEY BOILER.

Description *Vertical cylindrical cross tubes*
 Where fixed *Upper Deck*
 Working pressure *50 lbs per sq. inch*
by Messrs Palmers & Co Liverpool

Tested by hydraulic pressure to *100 lbs per sq. inch*, Date *Sept 7th 1877*
 Description and area of safety valves *1 dead weight 4" dia = 12.5*
 No. of square feet of fire grate *17 sq. feet*

PIPES, COCKS, AND CONNECTIONS.

Are all connections with the sea direct on the skin of the ship *Yes*
 Are they Kingston valves or common cocks ... *Stop Valves rest are common Cocks*
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stoke hold plates ... *Yes*
 Are the discharge pipes above or below the deep water line *Above*
 Are they each fitted with a discharge valve on the plating of the vessel *Yes*

What pipes are carried through the bunkers *None*
 How are they protected *None*
 When were the stern tube, propeller, screw shaft, and all connections examined in dry dock *Nov 1st 1877*
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilge *Yes*
 Is the screw shaft-tunnel water tight and fitted with a sluice door on bulkhead *Yes*

Safety Valves tested 31 lbs lifted 84 1/2 lbs accumulated to 85 lbs closed 81 lbs

For *Palmers Shipbuilding & Iron Co. Ltd.* Manufacturer.

I hereby certify that the whole of the above are correct particulars of the Machinery and Boilers of the Iron (or Wood)

Screw (or Paddle) Steam Vessel *Rurusa* owned by *James F. Stewart & Son*
 of the Port of *Lancaster* of *1299 17* Tons Register, and *260* Registered Horse Power,
 and that they have been carefully inspected and examined by me at *Lancaster on Tyne*
 and found to be at this date, viz., *Nov 9th 1877* in good order and safe working condition.

Amount of Fee for Survey ... £ *12:0:0* *plus 64*
 (Travelling Expenses, if any, £ *0:5:0*)
 (1000/31/76.)

George W. Mammul
 Engineer Surveyor to Lloyd's Register of Shipping.

present when engines were tried, dates of trial except North Shields
 cast from Bilge pipes which gave out though being checked and renewed

IRON 474-0507