

16600 *Iron*

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

Rec 14/7/76

ENGINEER SURVEYOR'S REPORT ON MACHINERY.

ENGINES.

Report (if any) on Hull of Vessel. Port Newcastle No. 102263

Description *One Comp. inverted Surface Cond. S.P. Cyl. and top of H.P.*
 Made by *Messrs R. Stephenson and Coy.*
 When *New* 1876 At *Newcastle*
 Diameter of cylinder *One 26" one 58"* Length of stroke *42"*
 No. of revolutions per minute *About 56*
 Point of cut off *About 3/4 stroke*
 Diameter of screw shaft *10" x 11"*
 Diameter of crank shaft journals *11"*
 Diameter of screw, or of paddle wheel *16" 0"*
 Pitch of screw *20" 6" to 23" 6"*
 No. of blades, *4* Total surface *46 sq ft*
 No. of bilge pumps *1* and sizes *6 dia x 16 stroke Single acting*
 Do they pump from each compartment *After hold, fore hold and engine room*

Are all the bilge suction pipes fitted with roses *Yes*
 No. of feed pumps *1* and sizes *6 dia x 16 stroke Single acting*
 What gauges are there attached to the engines and boilers ... *2 Vacuum 1 Steam on each end of hold and 1 Steam in engine room*
 Description and size of Donkey Pumps ... *One inverted donkey with 2 cyls and two double acting pumps 5 dia x 8 stroke*
 Where do they pump from ... *Sea, after hold, fore hold, engine room and holdwell*
 No. of bilge injections *1* and sizes *3 dia*
 Are they connected to air, or circulating pumps *Circulating pump*
 Is there a hand pump in the engine room *No Donkey works by hand*
 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*

MAIN BOILERS.

Number *One* Description *Horizontal Multitubular Round in centre oval at ends*
 Made by *Messrs R. Stephenson & Co*
 When *New* 1876 At *Newcastle*
 Working pressure *80 lbs per sq inch*
 Tested by hydraulic pressure to *160*, Date *June 1876*
 Description of super-heating apparatus *Horizontal cylindrical steam chest*
 Can each boiler be worked separately *Only one boiler in ship*

Can the super-heater be shut off and the boilers worked separately *No*
 Description and area of safety valves on each boiler ... *Two spring valves 3 3/4 dia Area 45 sq in*
 No. of square feet of fire-grate surface in each boiler *80 sq ft*
 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. *Suction pipe not accessible in fore hold when ship is loaded*

DONKEY BOILER.

Description *Cylindrical Multitubular Horizontal*
 Where fixed *On deck*
 Working pressure *60*

Made by *J.H. Wilson & Co Liverpool*
 Tested by hydraulic pressure to *Reported to 120 lbs*, Date *1876*
 Description and area of safety valves *Direct weight 3.9 sq in*
 No. of square feet of fire grate *8.6 sq ft*

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 and cocks*
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stoke hold plates ... *No*
 Are the discharge pipes above or below the deep water line *Below*
 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 *New*
 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. No door fitted, entrance above water line.*

Messrs R. Stephenson & Co
J. W. Budden

Manufacturers of Engines and Main Boilers only

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 "*Arago*" owned by *Gills & Co* of the Port of *Liverpool* of *1061.24* Tons Register, and *170* Registered Horse Power, and that they have been carefully inspected and examined by me at *Hebburn on Tyne* and found to be at this date, viz., *July 21st* 1876 in good order and safe working condition.

Survey fee *£5-5-0*
 Certificate *5-0*
£5-10-0

James I. Blair
 Engineer Surveyor to Lloyd's Register of Shipping.

Received at Shields by *P. Young* 12/7/76