

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S REPORT ON MACHINERY.

ENGINES.

Description *Compound Inverted Surface Condensing*
 Made by *Blair & Co. (Linn)*
 When *January 1878* At *Stockton*
 Diameter of cylinder *30" 55"* Length of stroke *36"*
 No. of revolutions per minute *About 65*
 Point of cut off *1/2 stroke*
 Diameter of screw shaft *10"*
 Diameter of crank shaft journals *10"*
 Diameter of screw, or of paddle wheel *13" 6"*
 Pitch of screw *14" 0"*
 No. of blades, *4* Total surface *About 3829 feet*
 No. of bilge pumps *2* and sizes *3 1/2 x 26 1/2 inch Single Acting*
 Do they pump from each compartment *For pumps draws from tanks after pump draws from engine room only*

Are all the bilge suction pipes fitted with roses *Yes*
 No. of feed pumps *2* and sizes *3 1/2 x 26 1/2 inch Single Acting*
 What gauges are there attached to the engines and boilers ... *3 steam 1 vacuum*
 Description and size of Donkey Pumps ... *No 1 pump 1 1/2 x 9 1/2 inch Double Acting No 2 " 4 x 8 "*
 Where do they pump *Part of tanks & engine room No 2 pumps from sea, hotwell, after part of tanks*
 No. of bilge injections *1* and sizes *1 1/2 " x engine room*
 Are they connected to air, or circulating pumps *Circulating pumps*
 Is there a hand pump in the engine room *Donkeys work 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 *Two* Description *Cylindrical Multitubular*
 Made by *Blair & Co. (Linn)*
 When *January 1878* At *Stockton*
 Working pressure *18 lbs*
 Tested by hydraulic pressure to *156 lbs* Date *4 Dec 1877*
 Description of super-heating apparatus *None*
 Can each boiler be worked separately *Yes*

Can the super-heater be shut off and the boilers worked separately *No superheaters*
 Description and area of safety valves on each boiler *Two spring valves on each boiler Combined area 16.6*
 No. of square feet of fire-grate surface in each boiler *24.97 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 *Yes*

DONKEY BOILER.

Description *Vertical Water tubes in furnace*
 Where fixed *In stockhole*
 Working pressure *68 lbs*

Tested by hydraulic pressure to *140 lbs* Date *7 Dec 1877*
 Description and area of safety valves *Test certificate No 12*
 No. of square feet of fire grate *19.13 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 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 *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 *"*
 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 *Sluice door not watertight Sluice door fitted*

Pro Blair & Co
24 Blair

Manufacturers of Engines & 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 *Montrose* owned by *Joseph Johnston & Sons*
 of the Port of *Montrose* of *814.53* Tons Register and *120* Registered Horse Power,
 and that they have been carefully inspected and pumped by me at *Stockton and Hartlepool*
 and found to be at this date, viz., *19th January 1878* in good order and safe working condition.

Amount of Fee for Survey ... £ *6 0 0*
 (Travelling Expenses, if any, £ *0 0 0*)

Engineer Surveyor to Lloyd's Register of Shipping.

Wm. Hartlepool