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LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S REPORT ON MACHINERY.

ENGINES.

Rec 11/1/77

Report (if any) on Hull of Vessel. Port Glasgow No. 4485

Description *Compound Inverted Direct Acting*
 Made by *Messrs. R. Napier & Sons*
 When *18 47* At *Glasgow*
 Diameter of cylinder *24" x 42"* Length of stroke *2' 3"*
 No. of revolutions per minute *90*
 Point of cut off *Variable*
 Diameter of screw shaft *4 1/2"*
 Diameter of crank shaft journals *4 3/4"*
 Diameter of screw, ~~and paddle wheels~~ *18 ft*
 Pitch of screw *11 ft*
 No. of blades, *four* Total surface
 No. of bilge pumps *two* and sizes *2' dia' x 11" stroke*
 Do they pump from each compartment *Yes*

Are all the bilge suction pipes fitted with roses *Yes*
 No. of feed pumps *two* and sizes *2' dia' x 11" stroke*
 What gauges are there attached to the engines and boilers ... *Two Steam One Vacuum One Compound*
 Description and size of Donkey Pumps ... *Double acting 4" x 8" stroke*
 Where do they pump from ... *From the sea, Bilge*
 No. of bilge injections *One* and sizes *4"*
 Are they connected to air, or circulating pumps *to circulating*
 Is there a hand pump in the engine room *Yes*
 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 *Round Horizontal*
 Made by *R. Napier & Sons*
 When *18 47* At *Glasgow*
 Working pressure *65 lbs*
 Tested by hydraulic pressure to *130 lbs*, Date *June 4th 1877*
 Description of super-heating apparatus *Round Vertical with tube*
 Can each boiler be worked separately

Can the super-heater be shut off and the boilers worked separately
 Description and area of safety valves on each boiler *Two Direct Spring each 13.36" area*
 No. of square feet of fire-grate surface in each boiler *57 1/2 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. *Yes*

DONKEY BOILER.

Description *Round Vertical*
 Where fixed *In hold at Port side*
 Working pressure *4 lbs*

Tested by hydraulic pressure to *80 lbs*, Date *June 4th 1877*
 Description and area of safety valves *Two Lever Weight each 3.9" area*
 No. of square feet of fire grate *12 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 ... *Screw down Valves & Cocks*
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stoke hold plates ... *All fitted above the turn of the Bilge*
 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
 When were the stern tube, propeller, screw shaft, and all connections examined in dry dock *On slip previous to being launched*
 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*

Messrs. R. Napier & Sons Manufacturer.
D. Bell

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 *Hanger* owned by *H. Martini & Coy* of the Port of *Glasgow* of *338* Tons Register, and *80* Registered Horse Power, and that they have been carefully inspected and examined by me at *Glasgow* and found to be at this date, viz., *July 5th 18 77* in good order and safe working condition.

Amount of Fee for Survey *£ 4*
 (Travelling Expenses, if any, £)

James Morrison
 Engineer Surveyor to Lloyd's Register of Shipping.

(1000/31/776.)

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