

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S REPORT ON MACHINERY.

ENGINES.

Description *Compound Inverted Street Acting*
 Made by *The London & Glasgow Engineering Coy (Limited)*
 When *18 73* At *Glasgow*
 Diameter of cylinders *16" & 8 1/2"* Length of stroke *40"*
 No. of revolutions per minute *About 52*
 Point of cut off *Variable*
 Diameter of screw shaft *14"*
 Diameter of crank shaft journals *The Crank 13 3/4" & 15"*
 Diameter of screw, *and paddle wheel* *16 1/2"*
 Pitch of screw *25 ft*
 No. of blades, *four* Total surface
 No. of bilge pumps *two* and sizes *4 3/4" x 10" 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 *6 1/2" dia x 15 1/2" stroke*
 What gauges are there attached to the engines and boilers... *Since Steam, one Vacuum & one Compound*
 Description and size of Donkey Pumps... *Double acting 4 1/2" x 9" stroke*
 Where do they pump from... *From the Sea & Bilge*
 No. of bilge injections *one* and sizes *6"*
 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 *Yes*
 Is there a deck hose of sufficient length to reach to any part of the vessel *Yes*

MAIN BOILERS.

Number *two* Description *Round Horizontal*
 Made by *The London & Glasgow Engineering Coy*
 When *18 73* At *Glasgow*
 Working pressure *70 lbs*
 Tested by hydraulic pressure to *not ascertained*
 Description of super-heating apparatus *Round Longitudinal Receiver*
 Can each boiler be worked separately *Yes*

Can the super-heater be shut off and the boilers worked separately *Yes*
 Description and area of safety valves on each boiler *two Direct Spring each 30 1/2" area*
 No. of square feet of fire-grate surface in each boiler *110 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 Stoke hold*
 Working pressure *40 lbs*

Tested by hydraulic pressure to *not ascertained*
 Description and area of safety valves *Direct weight 11" area*
 No. of square feet of fire grate *19 ft*

PIPES, COCKS, AND CONNECTIONS.

Are all connections with the sea direct on the skin of the ship *All except Donkey Suction*
 Are they Kingston valves or common cocks... *Screw Down Seals & Hooks*
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stoke hold plates... *The Blow off cocks are under passage at side of the boilers the others are up engine room*
 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 *Main Steam pipe & many pipes to the hold*
 How are they protected *By iron & wood casing*
 When were the stern tube, propeller, screw shaft, and all connections examined in dry dock *May 20th 1878*
 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*

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 *"State of Pennsylvania"* owned by *The State Steam Ship Coy (Limited)* of the Port of *Glasgow* of *1593* Tons Register, and *400* Registered Horse Power, and that they have been carefully inspected and examined by me at *Glasgow* and found to be at this date, viz., *June 14th 1878* in good order and safe working condition.

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

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