

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S REPORT ON MACHINERY.

ENGINES.

Description *Compound Inverted*
 Made by *Henderson & Co*
 When *1873* At *Renfrew*
 Diameter of cylinder *54 & 102* Length of stroke *54*
 No. of revolutions per minute
 Point of cut off *from 12" to 52"*
 Diameter of screw shaft *16 1/2*
 Diameter of crank shaft journals *16" aft pin is 16 1/2*
 Diameter of screw, or of paddle wheel *18 feet*
 Pitch of screw *25 feet mean pitch*
 No. of blades, *14* Total surface
 No. of bilge pumps *2* and sizes *7 1/2" x 18"*
 Do they pump from each compartment *yes*

Are all the bilge suction pipes fitted with roses *yes*
 No. of feed pumps *2* and sizes *7 1/2" x 18"*
 What gauges are there attached to the engines and boilers ... *4 Steam, 1 Vacuum, 1 Compound*
 Description and size of Donkey Pumps ... *2, 1 1/2" dia 9" stroke, Double Acting*
 Where do they pump from ... *Sea, Eng Room, Aft Hold, Main hold, Hotwell,*
 No. of bilge injections *2* and sizes *2 1/2*
 Are they connected to air, or circulating pumps *Circulating*
 Is there a hand pump in the engine room *no*
 Can it be worked by the main engines
 Is there a deck hose of sufficient length to reach to any part of the vessel *not ascertained*

MAIN BOILERS.

Number *Six* Description *Cylindrical*
 Made by *Henderson & Co*
 When *1873* At *Renfrew*
 Working pressure *65 lbs*
 Tested by hydraulic pressure to *not ascertained*
 Description of super-heating apparatus *3 cylinders in duplicate*
 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 Lever & weight each 4 1/2 diameter*
 No. of square feet of fire-grate surface in each boiler *not measured*
 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, except those in hold*

DONKEY BOILER.

Description *New Donkey Boiler to be fitted*
 Where fixed
 Working pressure

Tested by hydraulic pressure to , Date
 Description and area of safety valves
 No. of square feet of fire grate

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 ... *Values for Air & Blow off Cock for Donkey & sea injection*
 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
 When were the stern tube, propeller, screw shaft, and all connections examined in dry dock *now*
 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 *no*

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 *Vasco de Gama* owned by
 of the Port of *London* of *1980* Tons Register, and *530* Registered Horse Power,
 and that they have been carefully inspected and examined by me at *London*
 and found to be at this date, viz., *November 29th 1878* in good order and safe working condition.

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

Engineer Surveyor to Lloyd's Register of Shipping.