

**ENGINEER SURVEYOR'S REPORT ON MACHINERY.**

**ENGINES.**

Description *Vertical Compound Surface Cond.*  
 Made by *Chas. D. Malver & Co.*  
 When *February 1879* At *Hull*  
 Diameter of cylinder *2: 40 1/2* Length of stroke *45"*  
 No. of revolutions per minute *About 55*  
 Point of cut off *A. V. 3/5 of stroke. L. V. 5/8 of stroke.*  
 Diameter of screw shaft *12 1/2"*  
 Diameter of crank shaft journals *12 1/2"*  
 Diameter of screw, or of paddle wheel *18 0"*  
 Pitch of screw *19 0"*  
 No. of blades, *4* Total surface *65 sq*  
 No. of bilge pumps *2* and sizes *6" dia, 28" stroke.*  
 Do they pump from each compartment *from fore, main & after holds or from engine room*

Are all the bilge suction pipes fitted with roses *Yes*  
 No. of feed pumps *2* and sizes *5" dia, 28" stroke*  
 What gauges are there attached to the engines and boilers ... *3 Steam*  
 Description and size of Donkey Pumps ... *1 Vacuum Vertical 9" dia, 8" stroke, 5 1/2" plunger.*  
 Where do they pump from *from sea, forewell, foreman, & after hold & from engine room*  
 No. of bilge injections *one* and sizes *5" pipe.*  
 Are they connected to air, or circulating pumps *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 } *Yes*  
 each to any part of the vessel }

**MAIN BOILERS.**

Number *Two* Description *Circular tubular*  
 Made by *Charles D. Malver & Co.*  
 When *February 1879* At *Hull*  
 Working pressure *75 lb per sq. inch.*  
 Tested by hydraulic pressure to *150 lb*, Date *4/2/79*  
 Description of super-heating apparatus  
 Can each boiler be worked separately *Yes*

Can the super-heater be shut off and the boilers worked separately *No superheater*  
 Description and area of safety valves on each boiler ... *2 Adams Spring valves - 3 1/8" dia*  
 No. of square feet of fire-grate surface in each boiler *58 sq*  
 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. ... *except suction pipes & roses in holds when ship is loaded*

**DONKEY BOILER**

Description *Horizontal Multitubular*  
 Where fixed *On Deck*  
 Working pressure *45 lbs. Certified pressure 75 lbs*

Made by *H. Porter, Stockton on Tyne*  
 Tested by hydraulic pressure to *150 lbs*, Date *11/3/79*  
 Description and area of safety valves *1 direct 2 3/8" dia & 8.8 sq. 1 lever 2 3/8" dia 5*  
 No. of square feet of fire grate *15 7/8 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 - 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 *Yes*

*Charles D. Malver & Co.* Manufacturers of Engines & Main Boilers only

We 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 *"Harter"* owned by *J. H. Bushby* of the Port of *London* of *1196* Tons Register, and *300* Registered Horse Power, and that they have been carefully inspected and examined by us at *Hull, Stockton & Middlesbrough* and found to be at this date, viz., *24 March 1879* in good order and safe working condition.

Amount of Fee for Survey ... £ *15:0:0*  
 Travelling Expenses, if any, £ *0:5:0*  
 Recd. *9/4/79*  
 (1000/31/7/76.)

*W. Keydell & James Adam*  
 Engineer Surveyors to Lloyd's Register of Shipping.



Report (if any) on Hull of Vessel. Report on Engines No 190

The Machinery and Borders of this Record  
are fitted in accordance with the Committee  
requirements. It is submitted that she is  
eligible to have Lloyd's M.C. and  
a machinery certificate from.

26<sup>th</sup> March 1879.

MD 10.4.79



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