

# LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

## ENGINEER SURVEYOR'S REPORT ON MACHINERY.

### ENGINES.

Rev 21/9/76

Description *Compound Inverted Surface Condensing*  
 Made by *Messrs Palmers Shipbuilding & Iron Works*  
 When *July 1876* At *London*  
 Diameter of cylinder *24" & 40"* Length of stroke *30"*  
 No. of revolutions per minute *About 65*  
 Point of cut off *.66 of stroke*  
 Diameter of screw shaft *8"* *Dia of tunnel shaft 7 1/4"*  
 Diameter of crank shaft journals *8"*  
 Diameter of screw, or of paddle wheel *11.0"*  
 Pitch of screw *13.6*  
 No. of blades, *4* Total surface *29 sq ft*  
 No. of bilge pumps *2* and sizes *4" dia x 15" stroke Single Acting*  
 Do they pump from each compartment *from engine room, tunnel, after hold, & fore hold.*

Are all the bilge suction pipes fitted with roses *Yes*  
 No. of feed pumps *2* and sizes *5" dia x 8" stroke Single Acting*  
 What gauges are there attached to the engines and boilers ... *2 Steam, 1 Combined, 1 Vacuum*  
 Description and size of Donkey Pumps ... *1 - 8" dia x 12" stroke Double Acting, 2 - 4" x 8" "*  
 Where do they pump from ... *1 - from ballast tanks & engine room, 2 - from engine room, tunnel, after hold, & fore hold & not well*  
 No. of bilge injections *1* and sizes *6 1/4" dia*  
 Are they connected to air, or circulating pumps *Circulating Pump*  
 Is there a hand pump in the engine room *Small dent hole works 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 *One* Description *Round Multitubular*  
 Made by *Messrs Palmers Shipbuilding & Iron Works*  
 When *July 1876* At *London*  
 Working pressure *150 lbs*  
 Tested by hydraulic pressure to *150 lbs*, Date *July 1876*  
 Description of super-heating apparatus *Annular Superheater*  
 Can each boiler be worked separately *Only one boiler in ship*

Can the super-heater be shut off and the boilers worked separately *Yes*  
 Description and area of safety valves on each boiler *Direct Spring 3" on boiler, 3 1/8" dia. Area 23.5. Superheater valve 3"*  
 No. of square feet of fire-grate surface in each boiler *45 sq 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. *Suction pipes in holds not accessible when ship is loaded*

### DONKEY BOILER.

Description *Vertical Cylindrical Water tubes in furnace*  
 Where fixed *On deck*  
 Working pressure *4 1/2 lbs*

Tested by hydraulic pressure to *100* Reported *May 1876*, Date *May 1876*  
 Description and area of safety valves *Direct Spring 3" 14.16 sq in*  
 No. of square feet of fire grate *7.06 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 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 *None*  
 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 *Yes*

*Palmers Shipbuilding & Iron Works Ltd* Manufacturers of Engines and Steam Boilers only  
*Wm Price*

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 *"Thornbough"* owned by *J. Fawcett & Son* of the Port of *London* of *462.21* Tons Register, and *80 (Eighty)* Registered Horse Power, and that they have been carefully inspected and examined by me at *Arrow on 2 June* and found to be at this date, viz., *August 31st* 18 *76* in good order and safe working condition.

Survey fee *4-0-0*  
 Certificate *5-0* Received at *Shields*  
*44-5-0* by *P. Young*  
 Travelling expenses *1-10-0*  
 (10/1/76.)  
*20/9/76.*

*James Caird*  
 Engineer Surveyor to Lloyd's Register of Shipping.  
 Lloyd's Register Foundation  
 IRON 468-0244