

# REPORT ON MACHINERY.

No. 91.

(Received in London Office 8/10/81 13

No. in Survey held at *Philadelphia* Date, first Survey *July 27* Last Survey *Sept 21 1881.*  
 Reg. Book. *1* on the Machinery of the Steamship "*Vaderland*" Tons *2748.*  
 Master *W. A. Reynon.* Built at *Newcastle* When built *1872.*  
 Engines made at *Newcastle* By whom made *Palmer & Co.* when made *1872*  
 Boilers made at *do.* By whom made *do.* when made *1872*  
 Registered Horse Power *290.* Owners *Soc. anon de Nav. Belge d'Anvers.* Port belonging to *Antwerp.*

## ENGINES, &c.—

Description of Engines *Inverted, Compound, Surface Condensing.*  
 Diameter of Cylinders *41 1/8" and 80"* Length of Stroke *42"* No. of Rev. per minute *62* Point of Cut off, High Pressure *3/4* Low Pressure *3/4*  
 Diameter of Screw shaft *13 1/2"* Diameter of Tunnel shaft *12 1/2"* Diameter of Crank shaft journals *13 1/2"* Diameter of Crank pin *13 1/2"* size of Crank webs *16 x 9 1/2"*  
 Diameter of screws *18 ft.* Pitch of screws *17 to 21 ft.* No. of blades *4.* state whether moveable *Yes.* total surface *72 sq. ft.*  
 No. of Feed pumps *two* diameter of ditto *6"* Stroke *27"* Can one be overhauled while the other is at work *Yes*  
 No. of Bilge pumps *two* diameter of ditto *6"* Stroke *27"* Can one be overhauled while the other is at work *Yes.*  
 Where do they pump from *Engine room, fire room, and tunnel.*  
 No. of Donkey Engines *two.* Size of Pumps *9" Cyl. 6" Pist. 9" Stroke* Where do they pump from *From bilge, sea, Water-tight tanks, to Boilers, Deck, and overboard.*  
 Are all the bilge suction pipes fitted with roses *Yes.* Are the roses always accessible *Yes.* Are the sluices or engine room bulkheads always accessible *Yes.*  
 No. of bilge injections *One* and sizes *6"* Are they connected to condenser, or to circulating pump *circulating pump.*  
 How are the pumps worked *by beams from crossheads.*  
 Are all connections with the sea direct on the skin of the ship *Yes.* Are they Valves or Cocks *Kingston Valves, and Cocks.*  
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates *Yes.* Are the discharge pipes above or below the deep water line *above.*  
 Are they each fitted with a discharge valve always accessible on the plating of the vessel *Yes.* Are the blow off cocks fitted with a spigot and brass covering plate *Yes.*  
 What pipes are carried through the bunkers *None* How are they protected *—*  
 Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times *Yes.*  
 Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges *Yes.*  
 When were stern tube, propeller, screw shaft, and all connections examined in dry dock *August 8. 1881.*  
 Is the screw shaft tunnel watertight *Yes* and fitted with a sluice door *Yes.* worked from *Upper Engine room platform.*

## BOILERS, &c.—

Number of Boilers *Two.* Description *Cylindrical, Multitubular, double ended.*  
 Working Pressure *70 lb.* Tested by hydraulic pressure to *140 lb.* Date of test *September 17. 1881.*  
 Description of superheating apparatus or steam chest *Cylindrical, with internal flue.*  
 Can each boiler be worked separately *Yes.* Can the superheater be shut off and the boiler worked separately *No.*  
 No. of square feet of fire grate surface in each boiler *90.* Description of safety valves *lever, weighted.*  
 No. to each boiler *two* area of each valve *24 sq. ins.* Are they fitted with easing gear *Yes.*  
 No. of safety valves to superheater *One on each.* area of each valve *7 sq. ins.* are they fitted with easing gear *Yes.*  
 Smallest distance between boilers and bunkers *on deck* *9 inches.*  
 Diameter of boilers *13 ft* Length of boilers *17 ft* description of riveting of shell long. seams *double butt, double chain riv.* circum. seams *double chain riv.*  
 Thickness of shell plates *1 in* diameter of rivet holes *1 in* whether punched or drilled *punched.* pitch of rivets *3 1/8 in.*  
 Lap of plating *Stays 10 1/2" lap 6"* per centage of strength of longitudinal joint *68* working pressure of shell by rules *82 lb.*  
 Size of manholes *13" x 15 1/2"* size of compensating rings *2 1/2" x 3/4" bar iron.*  
 No. of Furnaces in each boiler *six* outside diameter *37 in* length, top *7 ft 1 1/2"* bottom *—*  
 Thickness of plates *1/2"* description of joint *lap.* if rings are fitted *No* greatest length between rings *—*  
 Working pressure of furnace by the rules *85 lb.*  
 Combustion chamber plating, thickness, sides *1/2 in* back *—* top *1/2 in*  
 Pitch of stays to ditto *9"* sides *9"* back *—* top *8 in.*  
 If stays are fitted with nuts or riveted heads *Nuts.* working pressure of plating by rules *93 lb.*  
 Diameter of stays at smallest part *1 1/8"* working pressure of ditto by rules *90 lb.*  
 End plates in steam space, thickness *3/4 in* pitch of stays to ditto *18" and 15"* how stays are secured *laid over T iron*  
 Working pressure by rules *85 lb.* diameter of stays at smallest part *1 3/4" sq.* working pressure by rules *70 lb.* with and without T iron  
 Front plates at bottom, thickness *3/4 in* Back plates, thickness *—* greatest pitch of stays *irregular* working pressure by rules *—*



Diameter of tubes 3 in pitch of tubes 4 1/4" thickness of tube plates, front 3/4 in back 3/4 in  
 How stayed Staytubes pitch of stays 12 3/4" width of water spaces 5 in  
 Diameter of Superheater or Steam chest 7 1/4" length 7 ft.  
 Thickness of plates 5/8" description of longitudinal joint lap, double diameter of rivet holes 7/8" pitch of rivets 2 5/8"  
 Working pressure of shell by rules 74 lb. Diameter of flue 4 1/4" thickness of plates 1/2"  
 If stiffened with rings Yes. distance between rings 2 1/4" Working pressure by rules 1st rule - 166 lb., 2nd rule, not to exceed 70 lb.  
 End plates of superheater, or steam chest; thickness 5/8" How stayed radial angle irons.  
 Superheater or steam chest; how connected to boiler by Stop Valve and Steam pipe (see tracing).

**DONKEY BOILER—** Description Cylindrical Multitubular.  
 Made at Newcastle By whom made Palmers. when made 1872.  
 Where fixed in Stake hold working pressure 50 lb. Tested by hydraulic pressure to 100 lb. No. of Certificate —  
 Fire grate area 15 sq. ft. Description of safety valves deadweight No. of safety valves One area of each 7 sq. in.  
 If fitted with casing gear Yes. If steam from main boilers can enter the donkey boiler Yes, if valves are open.  
 Diameter of donkey boiler 7 ft. length 9 ft. description of riveting double chain, lap.  
 thickness of shell plates 1/2 in diameter of rivet holes 3/4 in whether punched or drilled punched.  
 pitch of rivets 2 1/2 in lap of plating 4 1/4" per centage of strength of joint 70.  
 thickness of crown plates 1/2 in stayed by Girders.  
 Diameter of furnace, top 36 in bottom — length of furnace 6 ft.  
 thickness of plates 1/2 in description of joint lap, single rivelled.  
 thickness of furnace — plates stayed by —  
 Working pressure of shell by rules 64 lb. working pressure of furnace by rules 166 lb., but not to exceed 85 lb.  
 diameter of uptake — thickness of plates — thickness of water tubes —

The foregoing is a correct description,

Manufacturer.

# General Remarks (State quality of workmanship, opinions as to class, &c.)

The quality of Workmanship, the general design of Engines & Boilers is good.

The engines, Boilers, Superheaters and appendages, the Sea Connections, Cocks, bilge pipes etc, Propeller Shaft, Stern bush, etc, have been carefully examined in accordance with the rules, pages 55, 56 & 57.

All defects found have been repaired, and all requirements, to bring them into accordance with the rules, have been complied with, as fully described in the accompanying report on "Repairs".

The safety Valves on Main Boilers have been set to blow off at 68 lb, and that on Donkey Boiler to 45 lb.

The machinery and boilers are now in good and safe working conditions, and, in my opinion merit the favorable consideration of the Committee, to have the record "Lloyds M.C. 10.81" (in red) and a Working pressure of 70 lb inserted in the Register Book.

The amount of Entry Fee £ 3 : 0 : 0 received by me,

Special £ 8 : 10 : 0

Certificate (if required) £ 0 : 5 : 0 18

To be sent as per margin.

(Travelling Expenses, if any, £ 0 : 3 : 0 18)

Committee's Minute

Lloyds M.C. 10.81  
1881

John Haug - Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



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