

# REPORT ON MACHINERY.

Port of *Glasgow*

Received at London Office **THURS. 11 MAY 1893**

No. in Survey held at Reg. Book.

*Glasgow*

Date, first Survey *26<sup>th</sup> Dec. 1892* Last Survey *1<sup>st</sup> May 1893.*

(Number of Visits *14*)

on the *S.S. Cumberland*

Tons *Gross 396 Net 159*

Master *Evans*

Built at *Paisley*

By whom built *Fulleton & Co.*

When built *1893*

Engines made at *Glasgow*

By whom made *Ross & Duncan*

when made *1893*

Boilers made at *Do*

By whom made *Do Do*

when made *1893*

Registered Horse Power *67*

Owners *J. J. Mack & Sons*

Port belonging to *Liverpool*

Nom. Horse Power as per Section 28

## ENGINES, &c.—

Description of Engines *Compound Vertical Direct Acting*

*Two* of Cylinders

Diameter of Cylinders *20-40* Length of Stroke *27* Revolutions per minute *106* Diameter of Screw shaft *as per rule 7 1/2*

Diameter of Thrust *as per rule 7 1/2* Diameter of Crank shaft journals *7 1/2* Diameter of Crank pin *7 1/2* Size of Crank webs *as fitted 5 1/2 x 3 1/2*

Diameter of screw *9-0* Pitch of screw *11-6* No. of blades *Four* State whether moveable *Stid* Total surface *54 sq ft.*

No. of Feed pumps *One* Diameter of ditto *3* Stroke *13 1/2* Can one be overhauled while the other is at work

No. of Bilge pumps *One* Diameter of ditto *3 1/2* Stroke *13 1/2* Can one be overhauled while the other is at work

No. of Donkey Engines *One* Sizes of Pumps *4 x 5 x 5* Stroke No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room *Three - 2* In Holds, &c. *Two - 2 1/2 Two - 2*

No. of bilge injections *one size 3* Connected to condenser, or to circulating pump *Ramp* Is a separate donkey suction fitted in Engine room & size *yes - 2*

Are all the bilge suction pipes fitted with roses *yes* Are the roses in Engine room always accessible *yes* Are the sluices on Engine room bulkheads always accessible *yes*

Are all connections with the sea direct on the skin of the ship *yes* Are they Valves or Cocks *Both*

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 and all boiler mountings accessible at all times *yes*

Are the bilge suction pipes, cocks, and valves arranged so as to prevent any communication between the sea and the bilges *yes*

When were stern tube, propeller, screw shaft, and all connections examined in dry dock *Before launching* the screw shaft tunnel watertight *No tunnel*

Is it fitted with a watertight door  worked from

## BOILERS, &c.—

(Letter for record *S*)

Total Heating Surface of Boilers *1289 sq ft.*

No. and Description of Boilers *One - Cylindrical Multitubular* Working Pressure *100 lbs.* Tested by hydraulic pressure to *200 lbs.*

Date of test *14-4-93* Can each boiler be worked separately  Area of fire grate in each boiler *40 sq ft.* No. and Description of safety valves to each boiler *Two - Direct Spring* Area of each valve *4.07 sq* Pressure to which they are adjusted *100 lbs.* Are they fitted with casing gear *yes*

Smallest distance between boilers or uptakes and bunkers or woodwork *10* Mean diameter of boilers *18-6*

Length *9-6* Material of shell plates *Steel* Thickness *7/16* Description of riveting: circum. seams *Lap Bolt Riv.* seams *Butt Bolt Riv.*

Diameter of rivet holes in long. seams *7/16* Pitch of rivets *5 1/2* Lap of plates or width of butt straps *13 1/2*

Per centages of strength of longitudinal joint *88.9* Working pressure of shell by rules *101 lbs.* Size of manhole in shell *15 x 11 1/2*

Size of compensating ring *6 x 7 1/2* No. and Description of Furnaces in each boiler *Two - Plain* Material *Steel* Outside diameter *47 3/4*

Length of plain part *top 6-0 bottom 5-0* Thickness of plates *top 1 1/2 bottom 1 1/2* Description of longitudinal joint *Welded* No. of strengthening rings *2 on top*

Working pressure of furnace by the rules *111 lbs.* Combustion chamber plates: Material *Steel* Thickness: Sides *1 1/2* Back *1 1/2* Top *1 1/2* Bottom *1 1/2*

Pitch of stays to ditto: Sides *8 x 8* Back *8 x 8* Top *8 x 8* If stays are fitted with nuts or riveted heads *Nuts* Working pressure by rules *105 lbs.*

Material of stays *Steel* Diameter at smallest part *1 1/2 + 1 3/8* Area supported by *each* stay *64 sq* Working pressure by rules *111 lbs.* End plates in steam space: Material *Steel* Thickness *1 1/2* Pitch of stays *14 1/2 x 16 1/2* How are stays secured *Nuts & Riv.* Working pressure by rules *105 lbs.* Material of stays *Steel*

Diameter at smallest part *2 1/2* Area supported by *each* stay *292 1/2 sq* Working pressure by rules *115 lbs.* Material of Front plates at bottom *Steel*

Thickness *5* Material of Lower back plate *Steel* Thickness *5* Greatest pitch of stays *11 1/2 x 8* Working pressure of plate by rules *105 lbs.*

Diameter of tubes *3 1/2* Pitch of tubes *4 1/2 x 4 1/2* Material of tube plates *Steel* Thickness: Front *7/16* Back *5/8* Mean pitch of stays *11 1/2*

Pitch across wide water spaces *13 1/2 + 1 1/2* Working pressures by rules *105 + 140 lbs.* Girders to Chamber tops: Material *Iron* Depth and thickness of girder at centre *6 1/2 x 3* Length as per rule *25* Distance apart *8* Number and pitch of Stays in each *Two - 8*

Working pressure by rules *111 lbs.* Superheater or Steam chest; how connected to boiler  Can the superheater be shut off and the boiler worked separately

Diameter  Length  Thickness of shell plates  Material  Description of longitudinal joint  Diam. of rivet holes  Pitch of rivets  Working pressure of shell by rules  Diameter of flue  Material of flue plates  Thickness

If stiffened with rings  Distance between rings  Working pressure by rules  End plates: Thickness  How stayed

Working pressure of end plates  Area of safety valves to superheater  Are they fitted with casing gear

If not state whether report also sent on the ...



12204 80

**DONKEY BOILER**— Description *Vertical - Two Cross Tubes*  
 Made at *Gateshead* By whom made *Clarke Chapman & Co. York* Where fixed *on deck*  
 Working pressure *70 lbs* Tested by hydraulic pressure to *140 lbs* No. of Certificate *4080* Fire grate area *8 1/2 sq ft* Description of safety valves *Direct Spring*  
 No. of safety valves *one* Area of each *4.91* Pressure to which they are adjusted *70 lbs* If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *No*  
 Diameter of donkey boiler *4'-3"* Length *9'-6"* Material of shell plates *Steel* Thickness *1/2"*  
 Description of riveting long. seams *Lap. Dble. Riv.* Diameter of rivet holes *7/8"* Whether punched or drilled *Drilled* Pitch of rivets *2 1/2"*  
 Lap of plating *3 3/8"* Per centage of strength of joint *74%* Rivets *74%* Thickness of shell crown plates *7/16"* Radius of do. *5'-0"* No. of Stays to do. *Three*  
 Dia. of stays *1 3/8"* Diameter of furnace Top *3'-2 3/8"* Bottom *3'-7"* Length of furnace *4'-6"* Thickness of furnace plates *13/32"* Description of joint *Lap. Single Riv.* Thickness of furnace crown plates *1/2"* Stayed by *As shell crown* Working pressure of shell by rules *97 lbs*  
 Working pressure of furnace by rules *79 lbs* Diameter of uptake *12"* Thickness of uptake plates *3/8"* Thickness of water tubes *3/8"*

SPARE GEAR. State the articles supplied:— *Connecting rod top bottom end bolts & nuts*  
*two main bearing bolts: set cam pump bolts: set feed & bilge pump*  
*valves: bolts, nuts, turn, etc.*

The foregoing is a correct description,  
 Manufacturer. *Ross & Hancock*  
*J. Hancock*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The machinery of this vessel has been constructed under Special Survey. The material and the workmanship is of good description, and in my opinion is eligible to be noted + L.M.C. 5-93 in the Register Book.*  
*Appended are two Forging Reports and one Boiler Drawing.*

It is submitted that  
 this vessel is eligible for  
 THE RECORD + L.M.C. 5-93 -  
 Prob 11/5-193 -

The Surveys are requested not to write on or below the space for Committee's Minute.

Certificate (if required) to be sent to  
 The amount of Entry Fee... £ *1* : *WRITTEN* : When applied for, *2/5 18-93*  
 Special ... .. £ *10* : *1* : :  
 Donkey Boiler Fee ... .. £ : : : : When received, *4/5 18-93*  
 Travelling Expenses (if any) £ : : : :  
 Committee's Minute *FRI 12 MAY 1893*

*R. J. B. Broun*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
*Glasgow*

Assigned *+ L.M.C. 5, 93*

