

# REPORT ON MACHINERY.

Port of Belfast

MON. 16 SEP 1895

Received at London Office

No. in Reg. Book. Survey held at Belfast Date, first Survey July 7<sup>th</sup> Last Survey Sept 6<sup>th</sup> 1895  
(Number of Visits 24)

on the Steel Screw Steamer "Pakling" Tons { Gross 4446 Net 2874

Master R. Allen Built at Belfast By whom built Wor Ruman Clark & Co L<sup>rs</sup> When built 1895

Engines made at Belfast By whom made Wor Ruman Clark & Co L<sup>rs</sup> when made 1895

Boilers made at Belfast By whom made Wor Ruman Clark & Co L<sup>rs</sup> when made 1895

Registered Horse Power 800 Owners China Mutual Steam. Nav. Co. L<sup>td</sup> Port belonging to London

Nom. Horse Power as per Section 28 512 600

**ENGINES, &c.** — Description of Engines Triple Expansion No. of Cylinders Three

Diameter of Cylinders 28: 44: 44 Length of Stroke 60 Revolutions per minute 60 Diameter of Screw shaft as per rule 14.8  
as fitted 15 1/2

Diameter of Tunnel shaft as fitted 15 Diameter of Crank shaft journals 15 1/2 Diameter of Crank pin 15 1/2 Size of Crank webs 21 1/2 x 10 1/2

Diameter of screw 19" 0" Pitch of screw 21" 6" No. of blades 4 State whether moveable yes Total surface 98 sq. ft.

No. of Feed pumps two Diameter of ditto 4 1/2" Stroke 30" Can one be overhauled while the other is at work yes

No. of Bilge pumps two Diameter of ditto 4 1/2" Stroke 30" Can one be overhauled while the other is at work yes

No. of Donkey Engines four Sizes of Pumps Eng. Rm. duplex 7" x 5" x 6" No. and size of Suctions connected to both Bilge and Donkey pumps  
Ballast duplex 8" x 10" x 10"  
Wear feed duplex 10" x 8" x 24"  
Small donkey 5" x 3 1/2" x 6" In Holds, &c. Two 3 1/2" wing suction in each of

In Engine Room three 3 1/2" Nos 1, 2 & 3 holds. No 4 hold well 3 1/2". Tunnel well 3"

No. of bilge injections 1 sizes 9" Connected to condenser, or to circulating pump dis. p. Is a separate donkey suction fitted in Engine room & size yes 3 1/2"

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 none

Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks larger, valves; smaller, 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 below

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 launch Is the screw shaft tunnel watertight yes

Is it fitted with a watertight door yes worked from upper engine room platform.

**OILERS, &c.** — (Letter for record 5) Total Heating Surface of Boilers 8493 sq. ft.

No. and Description of Boilers Two double ended Cyl. built Working Pressure 180 Tested by hydraulic pressure to 360

Date of test 8/7/95 Can each boiler be worked separately yes Area of fire grate in each boiler 110 1/4 No. and Description of safety valves to each boiler Two Adam's patent Area of each valve 15.9 Pressure to which they are adjusted 185 Are they fitted with easing gear yes Smallest distance between boilers or uptakes and bunkers or woodwork 10 1/2" roller lagged Mean diameter of boilers 14" 3"

Length 19' 0" Material of shell plates steel Thickness 1 3/8" Description of riveting: circum. seams treble riveted long. seams double butt straps  
was done

Diameter of rivet holes in long. seams 1 7/16" Pitch of rivets 9 7/8" Lap of plates or width of butt straps 21 1/16"

Per centages of strength of longitudinal joint 88.8 Working pressure of shell by rules 199 Size of manhole in shell 16" x 12"

Size of compensating ring 2' 8" x 2' 3 1/4" x 7/8" No. and Description of Furnaces in each boiler six. Flanged Material steel Outside diameter 43 1/4"

Length of plain part top 1" 7/2" Thickness of plates cruc. 5/8" Description of longitudinal joint Welded No. of strengthening rings four  
bottom spacing of rings

Working pressure of furnace by the rules 185 Combustion chamber plates: Material steel Thickness: Sides 19/32 Back ✓ Top 19/32 Bottom 3/4

Pitch of stays to ditto: Sides 7 3/4" x 8 3/16" Back ✓ Top 7 3/4" x 8 3/16" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 182

Material of stays steel Diameter at smallest part 1 3/8" Area supported by each stay 63.4 Working pressure by rules 186 End plates in steam space: Material steel Thickness 1 1/8" Pitch of stays 16" max How are stays secured don't. nuts & washers Working pressure by rules 234 Material of stays steel

Diameter at smallest part 2 1/2" Area supported by each stay 222 Working pressure by rules 204 Material of Front plates at bottom steel

Thickness 1" Material of Lower back plate ✓ Thickness ✓ Greatest pitch of stays as appri Working pressure of plate by rules 180

Diameter of tubes 2 1/2" Pitch of tubes 3 5/8" x 3 13/16" Material of tube plates steel Thickness: Front 13/16 Back 3/4 Mean pitch of stays 7 7/16"

Pitch across wide water spaces 13 1/2" Working pressures by rules 180 Girders to Chamber tops: Material steel Depth and thickness of girder at centre 9" x 1 1/2" suspended Length as per rule 3' 10 1/2" Distance apart 7 3/4" Number and pitch of Stays in each 4 at 8 3/16"  
12 5/8" x 1 1/2" not suspended

Working pressure by rules 190 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 ✓

Stays 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 easing gear ✓

**DONKEY BOILER**— Description *Horizontal Multitubular. Two flues.*  
 Made at *Belfast* By whom made *Workman Clark & Co Ltd* When made *1895* Where fixed *On deck, under*  
 Working pressure *90* tested by hydraulic pressure to *180* No. of Certificate *218* Fire grate area *31 1/2* Description of safety valves *Adami pat*  
 No. of safety valves *two* Area of each *3.97* Pressure to which they are adjusted *92* If fitted with easing gear *yes* If steam from main boilers  
 enter the donkey boiler *no.* Diameter of donkey boiler *10' 6"* Length *9' 0"* Material of shell plates *steel* Thickness *5/8*  
 Description of riveting long seams *Yield riveted lap* Diameter of rivet holes *29/32* Whether punched or drilled *drilled* Pitch of rivets *4*  
 Lap of plating *6 3/4"* Per centage of strength of joint Rivets *83.2* Thickness of shell plates *11/16 upper* Radius of do. *14"*  
 Dia. of stays *1 3/4 (10th)* Diameter of furnace Top *37 1/16* Bottom *37 1/16* Length of furnace *6' 3"* Thickness of furnace plates *17/32* Description  
 joint *Donk. straps* Thickness of furnace crown plates *1/2* Stays by *1/8 stay 8 1/4 x 9" max pitches* Working pressure of shell by rules *92*  
 Working pressure of furnace by rules *109 lbs* Diameter of tubes *3"* Thickness of tube plates *front 11/16 back 3/4* Thickness of water tubes *8 1/8 x 12*

**SPARE GEAR.** State the articles supplied:— *Propeller shaft. Length crank shaft. Thrust shaft. 2 Steel*  
*2 Top end - & 2 bottom end bolli & nuts. 2 Main bearing bolli & nuts. 2 Bolli & nuts for ecc. stra*  
*6 Coupling bolli & nuts. 12 Junk ring bolli. 2 Feed valves & 2 bilge pump valves. 2 Safety v. sp*  
*2 Cy. escape v. springs. Feed escape valve & 2 springs. 15 Condenser tubes & 30 ferrules. Studs & nu*  
*The foregoing is a correct description, for various parts. 100 fire bars. Assorted bolli & n*  
**PRO WORKMAN, CLARK & CO., LIMITED,** Manufacturer. *Crow of various sizes etc.*

*M. H. Self*  
**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
 The machinery of this vessel has been constructed under special survey & the workmanship is good throughout. The boilers are made in accordance with the approved photoprints, & boilers & steam pipes have been tested as required by the Rules.  
 The furnaces are supplied with forced draught on Howden's system. The electric lighting installation is by W C Martin & Co of Glasgow & a report of the particulars is forwarded herewith.  
 The approved tracings of main & donkey boilers & of engine room & ship pipe arrangements & screw shaft-forgings certificates are enclosed.  
 The machinery in my opinion qualifies the vessel for the notation **+ Lmc 9.95** in the Register Book.

It is submitted that this vessel is eligible for **THE RECORD** + **L. H. C. 9.95.**  
**F. D.** and **Elec. light** to be noted in the Register Book.  
*A. L. Jones*  
*16.9.95*

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

MACHINERY CERTIFICATE WRITTEN.  
 Certificate (if required) to be sent to  
 The amount of Entry Fee.. £ 3 : 0 :  
 Special .. .. £ 45 : 12 :  
 Donkey Boiler Fee .. .. £ : :  
 Travelling Expenses (if any) £ : :  
 When applied for, *11. Sep. 18.95*  
 When received, *18.9.95*  
*A. L. Jones*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Ships

Committee's Minute  
 Assigned  
**TUES. 17 SEP 1895**  
**+ Lmc 9.95**

