

# REPORT ON MACHINERY.

No. 6728.

Port of Belfast

Received at London Office

**FEB 10 1910**

No. in Survey held at Belfast

Date, first Survey 23<sup>rd</sup> June 1904 Last Survey 2<sup>nd</sup> Feb<sup>r</sup> 1910

Reg. Book.

on the

S.S. Professor

(Number of Visits 39)

Master

Built at

By whom built

Belfast Waupehan Clark & Co 1910

Gross 3400

Tons 2788

Engines made at

Belfast

By whom made

Waupehan Clark & Co 1910

Boilers made at

By whom made

when made

Registered Horse Power

Owners

Shannon Steamship Co Port belonging to Liverpool

Nom. Horse Power as per Section 28 301

Is Refrigerating Machinery fitted for cargo purposes No

Is Electric Light fitted Yes

## ENGINES, &c.—Description of Engines

Triple Expansion

No. of Cylinders 3

No. of Cranks 3

Dia. of Cylinders 20-34-58

Length of Stroke 48

Revs. per minute 70

Dia. of Screw shaft

as per rule 12.9

Material of Steel

as fitted 13.5 screw shaft

Is the screw shaft fitted with a continuous liner the whole length of the stern tube Yes

Is the after end of the liner made water tight

in the propeller boss Yes If the liner is in more than one length are the joints burned ✓

If the liner does not fit tightly at the part

between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive ✓

If two

liners are fitted, is the shaft lapped or protected between the liners ✓

Length of stern bush 4'-6"

Dia. of Tunnel shaft

as per rule 11.5

Dia. of Crank shaft journals

as per rule 12.1

Dia. of Crank pin 12.7

Size of Crank web 23 1/2 x 8 1/2

Dia. of thrust shaft under

collars 12 1/2

Dia. of screw 16'-0"

Pitch of Screw 16'-6"

No. of Blades 4

State whether moorable Yes

Total surface 752 sq ft.

No. of Feed pumps 2

Diameter of ditto 3 3/4

Stroke 24

Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2

Diameter of ditto 4

Stroke 24

Can one be overhauled while the other is at work Yes

No. of Donkey Engines 4

Sizes of Pumps

2 Orans 8 x 6 x 21

1 10 x 10 x 40

No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room 5'-3 1/2"

1 6 x 4 1/2

1 10 x 10

1 10 x 5 1/2

In Holds, &c. 7'-3 1/2" & 1'-2 1/2"

No. of Bilge Injections 1 sizes 4

Connected to condenser, or to circulating pump Yes

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 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 Both

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 False hold suction

How are they protected Wood casings

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

Dates of examination of completion of fitting of Sea Connections 24-11-04

of Stern Tube 24-11-04

Screw shaft and Propeller 26-11-04

Is the Screw Shaft Tunnel watertight Steel plate

is it fitted with a watertight door Yes

worked from Top platform E. Room

## BOILERS, &c.—(Letter for record S)

Manufacturers of Steel Bennett & Co

Total Heating Surface of Boilers 5082 sq ft.

Forced Draft fitted No

No. and Description of Boilers 3 - Single End Cylind<sup>r</sup>

Working Pressure 200 lbs

Tested by hydraulic pressure to 400 lbs

Date of test 2-12-04

No. of Certificate 426

Can each boiler be worked separately Yes

Area of fire grate in each boiler 47 1/2 sq ft.

No. and Description of Safety Valves to

each boiler Two - Worcester

Smallest distance between boilers or uptakes and bunkers or woodwork 18 in

Mean dia. of boilers 14-8

Length 10-4

Material of shell plates Steel

Thickness 1 1/16

Range of tensile strength 28-32 tons

Are the shell plates welded or flanged No

Descrip. of riveting: cir. seams L.D.R.

long. seams Butt Joints

Diameter of rivet holes in long. seams 1 1/16

Pitch of rivets 9 3/16

Lap of plates or width of butt straps 20 1/16

Per centages of strength of longitudinal joint

rivets 88.1

plate 84.9

Working pressure of shell by rules 233 lbs

Size of manhole in shell 16" x 12"

Size of compensating ring 3 - 10 in

No. and Description of Furnaces in each boiler 3 - Mansard

Material Steel

Outside diameter 42 1/4

Length of plain part

top 4

bottom 9

Thickness of plates

crown 3 1/16

bottom 3 3/16

Description of longitudinal joint Well

No. of strengthening rings ✓

Working pressure of furnace by the rules 223 lbs

Combustion chamber plates: Material Steel

Thickness: Sides 3/16

Back 3/16

Top 3/16

Bottom 3/16

Working pressure by rules 204 lbs

Pitch of stays to ditto: Sides 8 1/2 x 7 1/2

Back 8 1/2 x 8

Top 8 1/2 x 7 1/2

Bottom 8 1/2 x 7 1/2

Are stays fitted with nuts or riveted heads Nuts in side

Working pressure by rules 204 lbs

Material of stays Steel

Diameter at smallest part 1 1/2

Area supported by each stay 68 sq in

Working pressure by rules 231 lbs

Material of stays Steel

Material Steel

Thickness 1 1/16

Pitch of stays 20 1/2 x 13 1/4

How are stays secured Nuts

Working pressure by rules 210 lbs

Material of stays Steel

Diameter at smallest part 2 1/4

Area supported by each stay 274 sq in

Working pressure by rules 235 lbs

Material of Front plates at bottom Steel

Thickness 1

Material of Lower back plate Steel

Thickness 1

Greatest pitch of stays 16

Working pressure of plate by rules 215 lbs

Diameter of tubes 3 1/4

Pitch of tubes 4 1/2 x 4 1/2

Material of tube plates Steel

Thickness: Front 1 1/16

Back 1 1/16

Mean pitch of stays 13 1/8 x 9

Pitch across wide water spaces 14 1/2

Working pressures by rules 38 1/2

Material of Chamber tops: Material Steel

Depth and

thickness of girder at centre 7 1/8 x (3/4 x 2)

Length as per rule 29 1/2

Distance apart 7 1/8 x 7 1/8

Number and pitch of stays in each 2-8 1/2

Working pressure by rules 221 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

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 easing gear

W590-0175

VERTICAL DONKEY BOILER— Manufacturers of Steel

No. \_\_\_\_\_ Description \_\_\_\_\_

Made at \_\_\_\_\_ By whom made \_\_\_\_\_ When made \_\_\_\_\_ Where fixed \_\_\_\_\_

Working pressure tested by hydraulic pressure to \_\_\_\_\_ Date of test \_\_\_\_\_ No. of Certificate \_\_\_\_\_ Fire grate area \_\_\_\_\_ Description of Safety Valves \_\_\_\_\_

No. of Safety Valves \_\_\_\_\_ Area of each \_\_\_\_\_ Pressure to which they are adjusted \_\_\_\_\_ Date of adjustment \_\_\_\_\_

If fitted with easing gear \_\_\_\_\_ If steam from main boilers can enter the donkey boiler \_\_\_\_\_ Dia. of donkey boiler \_\_\_\_\_ Length \_\_\_\_\_

Material of shell plates \_\_\_\_\_ Thickness \_\_\_\_\_ Range of tensile strength \_\_\_\_\_ Descrip. of riveting long. seams \_\_\_\_\_

Dia. of rivet holes \_\_\_\_\_ Whether punched or drilled \_\_\_\_\_ Pitch of rivets \_\_\_\_\_ Lap of plating \_\_\_\_\_ Per centage of strength of joint \_\_\_\_\_ Rivets \_\_\_\_\_ Plates \_\_\_\_\_

Working pressure of shell by rules \_\_\_\_\_ Thickness of shell crown plates \_\_\_\_\_ Radius of do. \_\_\_\_\_ No. of stays to do. \_\_\_\_\_ Dia. of stays \_\_\_\_\_

Diameter of furnace Top \_\_\_\_\_ Bottom \_\_\_\_\_ Length of furnace \_\_\_\_\_ Thickness of furnace plates \_\_\_\_\_ Description of joint \_\_\_\_\_

Working pressure of furnace by rules \_\_\_\_\_ Thickness of furnace crown plates \_\_\_\_\_ Stayed by \_\_\_\_\_

Diameter of uptake \_\_\_\_\_ Thickness of uptake plates \_\_\_\_\_ Thickness of water tubes \_\_\_\_\_ Dates of survey \_\_\_\_\_

SPARE GEAR. State the articles supplied:— / One piston shaft and boss. Piston Top and braces, pair bottom end do, air pump rod, head valve seat and set valves, Centrifugal pump impeller & spindle, set H.P. pump packing rings, eccentric pulley & strap, and all plan to Lloyd's Rules Extra.

The foregoing is a correct description,  
**FOR WORKMAN, CLARK & CO., LIMITED**  
*M. H. Bell* Manufacturer.

Dates of Survey while building: During progress of work in shops - 1909: June 23, July 5, Sep: 3, 8, 13, 14, 22, Oct: 12, 15, 20, 22. Nov 2, 10, 15, 16, 19, 22, 23, 24, 26, 30 up to 8<sup>th</sup> Feb<sup>y</sup> 1910

During erection on board vessel - 2, 10, 15, 16, 19, 22, 23, 24, 26, 30 up to 8<sup>th</sup> Feb<sup>y</sup> 1910

Total No. of visits 39

Is the approved plan of main boiler forwarded herewith *JCS*

Dates of Examination of principal parts—Cylinders 3 - 30-1909 Covers Piston Rods

Connecting Rods 2 - 04 Crank shaft 2 - Thrust shaft Tunnel shafts 5 Screw shaft 13-12-09 Propeller 22-11-09

Stern tube 22-11-09 Steam pipes tested 12-1-10 Engine and boiler seatings 10-1-10 Engines holding down bolts 10-1-10

Completion of pumping arrangements 31-1-10 Boilers fixed 19-1-10 Engines tried under steam 2-2-10

Main boiler safety valves adjusted 2-2-10 Thickness of adjusting washers 5-6/16

Material of Crank shaft *A. Steel* Identification Mark on Do. *LLOYDS 7-5-09* Material of Thrust shaft *Do* Identification Mark on Do. *LLOYDS 7-5-09*

Material of Tunnel shafts *No* Identification Marks on Do. *LLOYDS 7-5-09* Material of Screw shafts *Do* Identification Marks on Do. *Do*

Material of Steam Pipes *W. Swan* Test pressure *600 lbs per sq. in.*

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

The machinery of this vessel has been examined under Special Survey, and in accordance with the Rules. The materials and workmanship are of good description, and on trial under steam in Belfast Lough, the machinery worked satisfactorily. In my opinion, it is eligible for record + L.M.C. 2-10 with notation "Ductus Ligno"

It is submitted that this vessel is eligible for THE RECORD, + LMC 2. 10.

*R. F. Bennett*  
 10-2-10  
 H.L.D.

Certificate (if required) to be sent to this office

The amount of Entry Fee..	£ 3 : 0 :	When applied for,
Special .. .. .	£ 35 : 1 - :	9-2-10
Donkey Boiler Fee .. .. .	£ :	When received,
Travelling Expenses (if any) £	:	12-2-10

*R. F. Bennett*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

Committee's Minute  
 Assigned  
 FRI. 11 FEB 1910  
 + LMC 2 10

