

REPORT ON MACHINERY.

No. **6635**

Port of **Dublin**

Received at London Office **THUR. 8 JUL 1909**

No. in Survey held at **Dublin**
Reg. Book. **N.P.S. "Otranto"**

Date, first Survey **5 May 1908** Last Survey **20 June 1909**
(Number of Visits **181**)

Master **Belfast** Built at **Belfast** By whom built **Warkman Clark & Co** Gross **12124** Tons Net **7433** Tons When built **1909**

Engines made at **Belfast** By whom made **-** when made **1909**

Wheels made at **-** By whom made **-** when made **-**

Registered Horse Power **-** Owners **Arvent Steam Navigation Co** Belonging to **Belfast**

Nom. Horse Power as per Section 28 **1974** Is Refrigerating Machinery fitted for cargo purposes **Yes** Is Electric Light fitted **Yes**

Types, &c.—Description of Engines **Two Screw Quadruple Expansive Cylinders** No. of Cranks **8**

No. of Cylinders **29-41-59-84** Length of Stroke **60** Revs. per minute **80** Dia. of Screw shaft as per rule **16.9** Material of screw shaft as fitted **18.1** **Steel**

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 **Yes**

Is the propeller boss **Yes** If the liner is in more than one length are the joints burned **Yes** 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 **Yes** If two shafts are fitted, is the shaft lapped or protected between the liners **Yes** Length of stern bush **6'-0"**

Dia. of Tunnel shaft as per rule **15.8** Dia. of Crank shaft journals as per rule **16.6** Dia. of Crank pin **18"** Size of Crank web **24 1/2 x 18** Dia. of thrust shaft under screw shafts **17 1/2** Dia. of screw **8'-6"** Pitch of Screw **27'-6"** No. of Blades **3** State whether moveable **Yes** Total surface **90 sq ft**

No. and size of Suctions connected to both Bilge and Donkey pumps **See other sheet**

Engine Room **41-3 1/2** In Holds, &c. **12-3 1/2**

of Bilge Injections **2** sizes **12"** Connected to condenser, or to circulating pump **Yes** Is a separate Donkey Suction fitted in Engine room & size **Yes 4 1/2 x 5 1/2**

Are the roses in Engine room always accessible **Yes** Are the sluices on Engine room bulkheads always accessible **Yes**

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**

How are they protected **Wood casings**

all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times **Yes**

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 **27-3-09** of Stern Tube **18-3-09** Screw shaft and Propeller **18-3-09**

Is the Screw Shaft Tunnel watertight **Stated to be** it fitted with a watertight door **Yes** worked from **Engine Room Top Platform**

MANUFACTURERS, &c.—(Letter for record **S**) Manufacturers of Steel **Permanence & Co**

Total Heating Surface of Boilers **24708 sq ft** Forced Draft fitted **Yes** No. and Description of Boilers **4-Double End Cylind.**

Working Pressure **215 lbs** Tested by hydraulic pressure to **430 lbs** Date of test **26-1-09** No. of Certificate **415**

Can each boiler be worked separately **Yes** Area of fire grate in each boiler **1465 sq ft** No. and Description of Safety Valves to each boiler **Two - Direct Spring** Area of each valve **12.56 sq in** Pressure to which they are adjusted **215 lbs** Are they fitted with easing gear **Yes**

Smallest distance between boilers or uptakes and bunkers or woodwork **18 in** Mean dia. of boilers **16'-4 1/2"** Length **20'-2"** Material of shell plates **Steel**

Thickness **1/2"** Range of tensile strength **3 1/2 - 55 tons** Are the shell plates welded or flanged **No** Descrip. of riveting: cir. seam **L. Rivet**

Long. seams **Butt** Diameter of rivet holes in long. seams **1 1/4"** Pitch of rivets **10"** Lap of plates or width of butt straps **23 1/2"**

Percentage of strength of longitudinal joint rivets **102.5%** Working pressure of shell by rules **251 lbs** Size of manhole in shell **16" x 12"**

Size of compensating ring **M. Neils** No. and Description of Furnaces in each boiler **8 - Rectangular** Material **Steel** Outside diameter **44 1/2"**

Length of plain part top **2"** bottom **8"** Thickness of plates crown **3/4"** bottom **5/8"** Description of longitudinal joint **Weld** No. of strengthening rings **27 on C.C. bottom**

Working pressure of furnace by the rules **234 lbs** Combustion chamber plates: Material **Steel** Thickness: Sides **3/2"** Back **1"** Top **3/2"** Bottom **1"**

Pitch of stays to ditto: Side **8 1/2" x 7 1/2"** Back **8 1/2" x 6 1/2"** Top **8 1/2" x 6 1/2"** Are stays fitted with nuts or riveted heads **Nuts inside** Working pressure by rules **233 lbs**

Material of stays **Steel** Diameter at smallest part **1 1/2"** Area supported by each stay **62%** Working pressure by rules **251 lbs** End plates in steam space: Material **Steel** Thickness **1/2"** Pitch of stays **20 1/2" x 16"** How are stays secured **Nuts & Washers** Working pressure by rules **217 lbs** Material of stays **Steel**

Diameter at smallest part **2 1/2"** Area supported by each stay **330 sq in** Working pressure by rules **247 lbs** Material of Front plates at bottom **Steel**

Thickness **1"** Material of Lower back plate **Steel** Thickness **1"** Greatest pitch of stays **1"** Working pressure of plate by rules **227 lbs**

Diameter of tubes **2 1/2"** Pitch of tubes **3 1/2" x 8 1/2"** Material of tube plate **Steel** Thickness: Front **3/2"** Back **1/2"** Mean pitch of stays **7 1/2" x 7 1/2"**

Pitch across wide water spaces **13 1/2"** Working pressures by rules **259 lbs** Chamber tops: Material **Steel** Depth and thickness of girder at centre **9 1/2" x 1/2" x 2"** Length as per rule **53 1/2"** Distance apart **8 1/2" x 7 1/2"** Number and pitch of stays in each **6-6 1/2"**

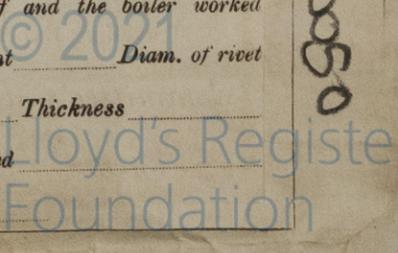
Working pressure by rules **227 lbs** Superheater or Steam chest; how connected to boiler **-** Can the superheater be shut off and the boiler worked separately **Yes**

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 easing gear **-**

12806-0050



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 _____

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 _____ Lay 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:— Piston and nuts; 2 pairs bottom end
 brasses; 4 pair top end brasses; 2 pair guide shoes; 2 screws & 2
 nuts; 2 slide valves & spindles; 2 sets packing rings & pumps for 4 pistons
 1 set packing rings for 2 piston valves; 4 thrust block shoes; 2 pumps
 blades; 2 screws for pumps etc, and all fees
 2 days valves additional.

The foregoing is a correct description,
FOR WORKMAN, CLARK & CO., LIMITED
 Manufacturer.

Dates of Survey while building	During progress of work in shops - -	1908. May 5. 8. 13. 18. 21. 22. 29 June 2. 9. 12. 15. 17. 19. 23 July 1. 3. 8.
	During erection on board vessel - -	24. 28. 30 Aug 5. 11. 14. 20. 24 up to 30 th June 1909.
	Total No. of visits	131

Is the approved plan of main boiler forwarded herewith _____

Is the approved plan of donkey boiler forwarded herewith _____

Dates of Examination of principal parts—Cylinders 9-6-08 Covers 10-1-09 Pistons 10-1-09 Rods 10-1-09

Connecting rods 10-3-09 Crank shaft 20-6-08 Thrust shaft 20-6-08 Tunnel shafts 20-6-08 Screw shaft 2-1-09 Propeller 24-1-09

Stern tube 18-1-09 Steam pipes tested 24-2-09 Engine and boiler seatings 21-4-09 Engines holding down bolts 14-6-09

Completion of pumping arrangements 31-5-09 Boilers fixed 21-4-09 Engines tried under steam 4-6-09

Main boiler safety valves adjusted 4-6-09 Thickness of adjusting washers 65/16"

Material of Crank shaft I. S. S. Identification Mark on Do. 20/11/08 Material of Thrust shaft I. S. S. Identification Mark on Do. 12-1-09

Material of Tunnel shafts I. S. S. Identification Marks on Do. 12-1-09 Material of Screw shafts I. S. S. Identification Marks on Do. 12-1-09

Material of Steam Pipes R. Iron Test pressure 650 lbs.

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

The machinery of this vessel has been examined under Special Licence, and in accordance with the Rules. It has been securely fitted on board, and on trial under steam, it worked satisfactorily, with the exception of the main boiler safety valves. Provided these be overhauled and retightened as detailed in my letter to the Secretary of 1st July, I am of opinion this vessel will merit the favourable opinion of the Committee for record + L.M.C. (with date); also notation "Forced Draft" "Electric Light".

It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 4.0.09
 APR 7. D. Ref. mch. 29.7.09

The amount of Entry Fee... £ 3 : 0 :	When applied for, 4-7-09
Special ... £ 16 : 14 :	When received, 6-4-09
Donkey Boiler Fee ... £ :	
Travelling Expenses (if any) £ :	

R. J. Bennett
 Engineer/Surveyor to Lloyd's Register of British & Foreign Ships

Committee's Minute FRI. 30 JUL 1909

FRI. 1 OCT 1909

Assigned + hmc 7.09



This office

Certificate (if required), to be sent to the office of the Surveyors requested not to write on or below the space for Committee's Minutes.

to completion of 1st entry.