

# REPORT ON MACHINERY.

No. 1943

SAT. OCT. 26 1912

Port of PHILADELPHIA.

Received at London Office

No. in Survey held at Camden N.J. U.S.A. Date, first Survey 30-12-1911 Last Survey Oct 4 1912

Reg. Book. 173 on the S.S. RAYO

(Number of Visits 47)

Master F. Feylon Built at Camden By whom built New York Shipbuilding Co. Tons Gross 3663.78 Net 2223.00

Engines made at Camden By whom made New York Shipbuilding Co. When built 1912-10

Boilers made at Camden By whom made - do - do - when made 1912-10

Registered Horse Power 318 Owners Standard Oil Co. Port belonging to New York

Dom. Horse Power as per Section 28 318 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Triple No. of Cylinders 3 No. of Cranks 3

Dia. of Cylinders 21"-35"-58" Length of Stroke 42" Revs. per minute 80 Dia. of Screw shaft 13.00 as per rule 12.4 Material of screw shaft 0.4 steel as fitted 12.62

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 soldered

Is the propeller boss yes If the liner is in more than one length are the joints burned no 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 fitted close

If two liners are fitted, is the shaft lapped or protected between the liners yes Length of stern bush 5'-1"

Dia. of Tunnel shaft as per rule 11.24 as fitted 11.24 Dia. of Crank shaft journals as per rule 11.75-11.80 as fitted 12.0 Dia. of Crank pin 1/2" Size of Crank webs 25'-8 1/4" Dia. of thrust shaft under

rollers 12" Dia. of screw 15'-0" Pitch of Screw 15'-0" No. of Blades 4 State whether moveable yes Total surface 60 sq ft

No. of Feed pumps 2 Diameter of ditto see note on other side Can one be overhauled while the other is at work yes

No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 20" Can one be overhauled while the other is at work yes

No. of Donkey Engines 5 Sizes of Pumps Duplex 6" x 4 1/2" x 16" 7 1/2" x 5" x 10" No. and size of Suctions connected to both Bilge and Donkey pumps 0 1/6" x 0 1/4" 1/2" x 8" 1/2"

Engine Room 6'-3 1/2" In Holds, &c. A. Peak 1-3" F Hold 2-6" F.P. 1-4"

Pump room two 3 1/2" Two duplex cargo pumps 16" x 12" x 18"

No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump pump 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 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

How are they protected none

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 22-5-12 of Stern Tube 22-5-12 Screw shaft and Propeller 10-6-12

Is the Screw Shaft Tunnel watertight no tunnel Is it fitted with a watertight door worked from

MATERIALS, &c.—(Letter for record T) Manufacturers of Steel North Bros. Coatesville Pa. Approved 29/11

Total Heating Surface of Boilers 5762 sq ft Is Forced Draft fitted no No. and Description of Boilers 2 Mult-Tuple ended

Working Pressure 200 lbs Tested by hydraulic pressure to 300 lbs Date of test 29-4-12 No. of Certificate 32

Can each boiler be worked separately yes Area of fire grate in each boiler 80 sq ft No. and Description of Safety Valves to

each boiler 2 direct-spring Area of each valve 8'-29" Pressure to which they are adjusted 200 lbs Are they fitted with easing gear yes

Smallest distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 16'-1 1/2" Length 11'-6" Material of shell plates steel

Thickness 1 1/2" Range of tensile strength 29, 32 tons Are the shell plates welded or flanged no Descrip. of riveting: cir. seams Lap J.R.

g. seams DBS, T.R. Diameter of rivet holes in long. seams 1 7/16" Pitch of rivets 9 3/4" Lap of plates or width of butt straps 22 3/4"

Percentages of strength of longitudinal joint rivets 89.8 plate 83.9 Working pressure of shell by rules 209 lbs Size of manhole in shell 16' x 12'

Size of compensating ring 36 1/2" x 32 1/2" x 1 1/2" No. and Description of Furnaces in each boiler 4 Morrison Material steel Outside diameter 44 3/16"

Length of plain part top 4 1/2" bottom Thickness of plates crown 19 bottom 32 Description of longitudinal joint welded No. of strengthening rings

Working pressure of furnace by the rules 213 lbs Combustion chamber plates: Material steel Thickness: Sides 5" Back 5" Top 5" Bottom 5 1/4"

Pitch of stays to ditto: Sides 7' x 6 1/2" Back 7' x 6 1/2" Top 7' x 7 1/2" If stays are fitted with nuts or riveted heads none Working pressure by rules 247 lbs

Material of stays iron Diameter at smallest part 1'-8 1/16" Area supported by each stay 54'-2 1/2" Working pressure by rules 250 lbs End plates in steam space:

Material steel Thickness 1 1/2" Pitch of stays 16 1/2" x 15 1/4" How are stays secured N.Y.N Working pressure by rules 231 lbs Material of stays steel

Diameter at smallest part 2 3/4" Area supported by each stay 251" Working pressure by rules 259 lbs Material of Front plates at bottom steel

Thickness 3/4" Material of Lower back plate steel Thickness 5/8" Greatest pitch of stays 14 1/2" Working pressure of plate by rules 364 lbs

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

Each across wide water spaces 14' dbl Working pressures by rules 231 lbs Girders to Chamber tops: Material steel Depth and

Thickness of girder at centre 9' x 2" Length as per rule 35" Distance apart 7 1/2" Number and pitch of stays in each 4'-7"

Working pressure by rules 252 lbs Superheater or Steam chest; how connected to boiler none Can the superheater be shut off and the boiler worked

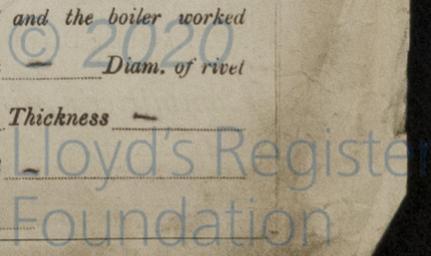
separately - Diameter - Length - Thickness of shell plates - Material - Description of longitudinal joint - Diam. of rivet

plates - Pitch of rivets - Working pressure of shell by rules - Diameter of flue - Material of flue plates - Thickness -

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 -

1500-4951



**VERTICAL DONKEY BOILER—**

Manufacturers of Steel *see New York report no 9369*

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

Made at \_\_\_\_\_ By whom made \_\_\_\_\_

Working pressure tested by hydraulic pressure to \_\_\_\_\_ Date of test \_\_\_\_\_ When made \_\_\_\_\_ Where fixed \_\_\_\_\_

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

If fitted with casing 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:— 1 tail shaft, 1 section crank shaft, one propeller  
 boss & 2 blades, 4 main bearing bases, 2 crank pin & 2 crosshead base  
 1 set coupling bolts, 2 crosshead bolts, 2 crank pin bolts, 2 main  
 bearing bolts, 1 piston rod. Complete set feed bilge valves

The foregoing is a correct description,

Manufacturer. *J. Hallagoun*

|                                |                                      |   |
|--------------------------------|--------------------------------------|---|
| Dates of Survey while building | During progress of work in shops - - | Dec 20-1911, Jan 11-19, 31, Feb 6-16, 26-28, M. 14-20, 28, A. 3-16, 23-29, M. 13-17, 22-31, J. 6-10, 14, 19, 25 |
|                                | During erection on board vessel - -  | Jy. 2-10, 18, 24, 28, 29, Ag 2-6, 12, 23, 26, 29, Sept. 3-10, 16, 18, 21, 25, 27, Oct. 1-2, 4-19, 12            |
|                                | Total No. of visits                  | 47  |

Is the approved plan of main boiler forwarded herewith *no*

|   |                   |                                |   |                            |         |                             |         |             |         |
|---|-------------------|--------------------------------|---|----------------------------|---------|-----------------------------|---------|-------------|---------|
| Dates of Examination of principal parts—Cylinders | 22-5-12           | Slides                         | 22-5-12   | Covers                     | 22-5-12 | Pistons                     | 22-5-12 | Rods        | 22-5-12 |
| Connecting rods                                   | 22-5-12           | Crank shaft                    | 31-5-12   | Thrust shaft               | 31-5-12 | Tunnel shafts               | —       | Screw shaft | 31-5-12 |
| Stern tube  | 22-5-12           | Steam pipes tested             | 13-8-12   | Engine and boiler seatings | 10-6-12 | Engines holding down bolts  | 10-7-12 | Propeller   | 10-6-12 |
| Completion of pumping arrangements                | 1-10-12           | Boilers fixed                  | 10-6-12   | Engines tried under steam  | 2-10-12 |                             |         |             |         |
| Main boiler safety valves adjusted                | 1-10-12           | Thickness of adjusting washers | P.B.F. $\frac{29}{32}$ A $\frac{29}{32}$ S.B. F1" A $\frac{13}{16}$ |                            |         |                             |         |             |         |
| Material of Crank shaft                           | Steel             | Identification Mark on Do.     | 759   | Material of Thrust shaft   | Steel   | Identification Mark on Do.  | 759     |             |         |
| Material of Tunnel shafts                         | —                 | Identification Marks on Do.    | —   | Material of Screw shafts   | Steel   | Identification Marks on Do. | 759     |             |         |
| Material of Steam Pipes                           | Solid drawn steel | Test pressure                  | 300 lbs   |                            |         |                             |         |             |         |

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
 Feed pumps (main) two, Alberger patent four stage steam turbine pumps, discharge opening 2 1/2" diameter. These pumps were tested & found to work satisfactory against full pressure. The feed line is also connected up to a duplex pump 4 1/2" x 5" x 10". The engines & boilers of this vessel has been constructed & installed under special survey, the workmanship is sound & good throughout. The machinery has all been examined under steam & found to work well which in my opinion renders the vessel eligible for the record of + L.M.C 10.12 in the Register Book.

It is submitted that this vessel is eligible for THE RECORD + L.M.C 10.12. Subject to the screw shaft being specially surveyed before the expiration of 10.14.

|                                |                          |
|--------------------------------|--------------------------|
| Water tube D.P.                | Subject to annual survey |
| The amount of Entry Fee..      | \$ 15: 00                |
| Special .....                  | \$ 180: 00               |
| Donkey Boiler Fee .....        | £ :                      |
| Travelling Expenses (if any) £ | 4: 00                    |

Committee's Minute *FRI. NOV. 22 1912*  
 Assigned *+ L.M.C. 10.12*  
 note lines. *subject*

*Robert Haig*  
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.



Certificate (if required) to be sent to

The Surveyors are to write on or below the space for Committee's Minute.

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