

REPORT ON MACHINERY.

No. 5234

No. in Reg. Book.

Survey held at

Stockton-on-Tees

Date, first Survey

22 February

(Received at London Office)

Rec'd 19th JULY, 1883.

Last Survey

10 July 1883

on the

S.S. "Cairngowan"

Master

John Anderson

Built at

Sunderland

When built, 1883

Tons

1386

827

Engines made at

Stockton-on-Tees

By whom made

Hair-C (Lm)

when made 1883

Boilers made at

Do

By whom made

Do

when made Do

Registered Horse Power

99

Owners

Thomas Cairns

Port belonging to

Newcastle

Engines, &c.—

Description of Engines Compound. Inverted. Surface Condensing

Diameter of Cylinders 28 1/2 x 53 Length of Stroke 33 No. of Rev. per min 65 Point of Cut off, High Pressure 1/2 stroke Low Pressure 1/2 stroke

Diameter of Screw shaft 10 Diameter of Tunnel shaft 9 3/8 Diameter of Crank shaft journals 9 3/4 Diameter of Crank pin 10 1/4 size of Crank webs 13 1/2 x 7

Diameter of screw 13 0 Pitch of screw 16 0 No. of blades 4 state whether moveable No total surface Not ascertained

No. of Feed pumps 2 diameter of ditto 3 1/2 Stroke 24 Can one be overhauled while the other is at work Yes

No. of Bilge pumps 2 diameter of ditto 3 1/2 Stroke 24 Can one be overhauled while the other is at work Yes

Where do they pump from Wind pump from ballast tanks engine room after the well. After pump from engine room after the well.

No. of Donkey Engines 2 Size of Pumps 1/2 inch x 9 1/2 inch Where do they pump from Large donkey from ballast tanks

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

No. of bilge injections One and sizes 6 Are they connected to condenser, or to circulating pump Circulating pump

Are the pumps worked By hand worked from overhead on low pressure Piston rod

Are all connections with the sea direct on the skin of the ship Yes Are they Valves or Cocks Stop valves & 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

Are all pipes carried through the bunkers None How are they protected

Are all pipes, cocks, valves, and pumps in connection with the machinery accessible at all times Yes

Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilges Yes

Were stern tube, propeller, screw shaft, and all connections examined in dry dock New

Is the screw shaft tunnel watertight Said to be and fitted with a sluice door Yes worked from top platform in engine room

Boilers, &c.—

No. of Boilers One Description Cylindrical. Multitubular

Working Pressure 80 lbs Tested by hydraulic pressure to 160 lbs Date of test 5.5.83 Certificate No. 935

Description of superheating apparatus or steam chest Horizontal steam receiver.

Can each boiler be worked separately Yes Can the superheater be shut off and the boiler worked separately No Super-heater

Area of square feet of fire grate surface in each boiler 60 Description of safety valves Spring. Made by Hair-C (Lm)

No. of safety valves to each boiler Two area of each valve 19.63 sq in Are they fitted with easing gear Yes

No. of safety valves to superheater One area of each valve Are they fitted with easing gear Yes

Least distance between boilers and bunkers or woodwork About 18"

Diameter of boilers 15 x 3 3/8 Length of boilers 10.9 description of riveting of shell long. seams Double

Thickness of shell plates 1 3/16 diameter of rivet holes 1 3/16 whether punched or drilled Drilled pitch of rivets 4 1/8

Percentage of plating 11 1/2 per centage of strength of longitudinal joint 10.9 working pressure of shell by rules 91.4 lbs

Size of manholes in shell 16 x 12 size of compensating rings Rectangular plate 28 x 24 x 1 1/8

No. of Furnaces in each boiler Four outside diameter 3.5 length, top 6.9 bottom 9.5

Thickness of plates 1/2 description of joints All shop. Sglt. pt. If rings are fitted No greatest length between rings

Pressure on separate forming pressure of furnace by the rules 102.4 lbs bottom 89.8 lbs

Question chamber plating, thickness, sides 1/2 back 1/2 top 1/2

Pitch of stays to ditto sides 8 x 8 back 8 1/2 x 8 top Curved

Are stays fitted with nuts or riveted heads Riveted heads. Part painted working pressure of plating by rules 88.5

Diameter of stays at smallest part 1 5/16 working pressure of ditto by rules 119.3

Thickness of plates in steam space, thickness 1/8 pitch of stays to ditto 15 x 14 1/2 how stays are secured Hook-bush

Working pressure by rules 121.9 lbs diameter of stays at smallest part 2 1/2 working pressure by rules 135.3 lbs

Thickness of plates at bottom, thickness 1/8 Back plates, thickness 1/8 greatest pitch of stays 1 1/2 x 8 1/2 working pressure by rules 135.3 lbs

Stays 1 5/16 inch

001224-002313-0008

Diameter of tubes $3\frac{3}{4}$ pitch of tubes $5 \times 5\frac{1}{8}$ thickness of tube plates, front $\frac{1}{8}$ back $\frac{1}{8}$
How stayed *Stay tubes* pitch of stays $15 \times 10\frac{1}{4}$ width of water spaces $1\frac{1}{4}$ between tubes $4\frac{1}{2}$ between furnace
Diameter of ~~Superheater or~~ Steam chest $3\frac{1}{4}$ length $5\frac{1}{2}$
Thickness of plates $\frac{1}{2}$ description of longitudinal joint *Lap double* diameter of rivet holes $\frac{3}{16}$ pitch of rivets $3\frac{1}{8}$
Working pressure of shell by rules $126\frac{1}{2}$ Diameter of flue $\frac{1}{2}$ thickness of plates $\frac{1}{2}$
If stiffened with rings ☒ distance between rings ☒ Working pressure by rules ☒
End plates of superheater, or steam chest; thickness $5\frac{1}{8}$ How stayed *Four Stays $2\frac{1}{4}$ dia*
Superheater or steam chest; how connected to boiler *By small diameter neck pipe with flange to dome. Valve*

DONKEY BOILER—

Description *Vertical water tubes in furnace*
Made at *Loughrea* By whom made *Clarke Chapman & Co* when made *1883*
Where fixed *Wokehole* working pressure $60\frac{1}{2}$ lbs. Tested by hydraulic pressure to $120\frac{1}{2}$ lbs. No. of Certificate *1115*
Fire grate area $15\cdot9\frac{1}{2}$ Description of safety valves *Spring* No. of safety valves *One* area of each $9\cdot62$
If fitted with easing gear *No* If steam from main boilers can enter the donkey boiler *No*
Diameter of donkey boiler $6\cdot6$ length $12\cdot0$ description of riveting *Lap Double*
thickness of shell plates $\frac{3}{8}$ diameter of rivet holes $\frac{3}{4}$ whether punched or drilled *Punched*
pitch of rivets 3 lap of plating $3\frac{1}{8}$ per centage of strength of joint $\frac{1}{5}$
thickness of crown plates $\frac{1}{16}$ stayed by *Five stays $1\frac{3}{8}$ dia*
Diameter of furnace, top $4\cdot2\frac{1}{4}$ bottom $4\cdot\frac{1}{8}$ length of furnace $4\cdot\frac{1}{2}$
thickness of plates $\frac{1}{16}$ description of joint *Lap single riveted*
thickness of furnace crown plates $\frac{1}{16}$ stayed by *as above*
Working pressure of shell by rules $66\frac{1}{2}$ lbs. working pressure of furnace by rules $62\frac{1}{2}$ lbs.
diameter of uptake 14 thickness of plates $\frac{3}{8}$ thickness of water tubes $\frac{3}{8}$

The foregoing is a correct description,

*Robt Blair & Co
2/19 Blair*

Manufacturers of Engines & Boilers only

*The above particulars of donkey boiler are correct
a report herewith attached received from the Surveyor
Jury of Port of Newcastle under whose survey the boiler*

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

*Natural workmanship good
The furnace crown plates, back tube plates & combustion
chamber plating of main boiler are of steel manufactured by
J. & W. Beardmore Glasgow
The Engines & Boilers have been constructed under
special survey and are in good order & safe working order
and in my opinion eligible for the notification ** L.M.C.*
*y. 83. in the Register Book**

The amount of Entry Fee .. £ 1 : : : received by me,

Special .. £ 14 : 19 : :

Certificate (if required) .. £ : : : 17 July 1883

To be sent as per margin,

(Travelling Expenses, if any, £ 10 : : :)

Committee's Minute

FRIDAY 20 JULY 1883

18