

REPORT ON MACHINERY.

No. 4490

(Received in London Office 10/5/80)

No. in Survey held at Glasgow & Port Glasgow Date, first Survey 27. 2. 80 Last Survey 5th May 1880
 Reg. Book. 432. 31

on the S. S. Harley Tons 281.58

Master J. Creamer Built at Port Glasgow When built 1880

Engines made at Glasgow By whom made Walker Henderson & Co. when made 1880

Boilers made at Glasgow By whom made Walker Henderson & Co. when made 1880

Registered Horse Power 85 Owners J. A. Harley & Co. Port belonging to Coast

ENGINES, &c.—

Description of Engines Compound Inverted Direct Acting

Diameter of Cylinders 24 & 44 Length of Stroke 30 No. of Rev. per minute 90 Point of Cut off, High Pressure 1/8 Low Pressure 1/8

Diameter of Screw shaft 8 Diameter of ^{intermediate} Tunnel shaft 8 Diameter of Crank shaft journals 8 Diameter of Crank pin 8 size of Crank webs 1 1/2 x 5

Diameter of screw 9. 7/8 Pitch of screw 13. 11 No. of blades Four state whether moveable Yes total surface 28. 0 feet

No. of Feed pumps one diameter of ditto 4 Stroke 15 Can one be overhauled while the other is at work —

No. of Bilge pumps one diameter of ditto 4 Stroke 15 Can one be overhauled while the other is at work —

Where do they pump from For² Ballast Tank, Main Hold & Engine Room

No. of Donkey Engines one Size of Pumps 3 1/2 Stroke 10 Where do they pump from Sea, Hot well, Ballast-
Tank, Main Hold & Engine Room.

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 2 1/2 inch Are they connected to condenser, or to circulating pump to Circ. Pump

How are the pumps worked by Levers from Piston rod Crosshead

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

What pipes are 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

When were stern tube, propeller, screw shaft, and all connections examined in dry dock on Ship before ship was launched

Is the screw shaft ^{into Tunnel} Bulkhead watertight Bulkhead and fitted with a sluice door — worked from —

BOILERS, &c.—

Number of Boilers one Description Round Horizontal, Multitubular

Working Pressure 75 lbs per inch Tested by hydraulic pressure to 150 lbs per inch Date of test 25. 3. 80

Description of superheating apparatus or steam chest Vertical Dome Receiver

Can each boiler be worked separately — Can the superheater be shut off and the boiler worked separately No Superheater

No. of square feet of fire grate surface in each boiler 51 Description of safety valves Direct Spring, Pattison Hewitt & Co.

No. to each boiler Two area of each valve 12.56 inch Are they fitted with easing gear Yes

No. of safety valves to superheater — area of each valve — are they fitted with easing gear —

Smallest distance between boilers and bunkers or woodwork 5

Diameter of boilers 13. 0 Length of boilers 10. 5 description of riveting of shell long. seams quadruple Lap circum. seams Double riveted

Thickness of shell plates 7/8 diameter of rivet holes 1 1/8 whether punched or drilled punched pitch of rivets 4 5/8

Lap of plating 1 1/4 per centage of strength of longitudinal joint 78 working pressure of shell by rules 74.3 lbs

Size of manholes in shell 17 x 13 size of compensating rings 6 1/2 x 3 1/4

No. of Furnaces in each boiler Three outside diameter 37 length, top 6. 10 bottom 9. 7

Thickness of plates top 7/8 Bottom 9/16 description of joint double butt strap if rings are fitted No greatest length between rings —

Working pressure of furnace by the rules 88 lbs for top 79 lbs for bottom

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

Pitch of stays to ditto sides 10 x 10 back 10 x 10 top 9 x 8

If stays are fitted with nuts or riveted heads Nuts working pressure of plating by rules 76.8 lbs for sides & back 94.8 for top

Diameter of stays at smallest part 1 3/8 working pressure of ditto by rules 88.8 lbs

End plates in steam space, thickness 3/4 pitch of stays to ditto 16 x 14 how stays are secured Double Nuts & Washers

Working pressure by rules 78 lbs diameter of stays at smallest part 2 working pressure by rules 84 lbs

Front plates at bottom, thickness 5/8 Back plates, thickness 5/8 greatest pitch of stays 10 working pressure by rules 109 lbs

IRON 492-0278



Diameter of tubes $3\frac{1}{2}$ pitch of tubes 5 thickness of tube plates, front $\frac{1}{16}$ back $\frac{5}{8}$
 How stayed *Three 1 5/8 bar stays* pitch of stays 10 Sub stays 4 1/2 bar stays width of water spaces $7\frac{1}{2}$ 26506. Iron.
 Diameter of Superheater or Steam chest $3\frac{1}{2}$ length 5.0
 Thickness of plates $\frac{1}{16}$ description of longitudinal joint *Lap double riveted* diameter of rivet holes $\frac{3}{4}$ pitch of rivets $2\frac{1}{2}$
 Working pressure of shell by rules 105.3 lbs Diameter of flue *No Flue* thickness of plates
 If stiffened with rings distance between rings Working pressure by rules
 End plates of superheater, or steam chest; thickness $\frac{9}{16}$ How stayed *Three 1 5/8 bar stays*
 Superheater or steam chest; how connected to boiler *By flanged neck piece double riveted to shell*

DONKEY BOILER— Description *Vertical Flue*
 Made at *Glasgow* By whom made *Walker Henderson & Co* when made 1880
 Where fixed *in Stevedore* working pressure 60 lbs per inch Tested by hydraulic pressure to 120 lbs No. of Certificate
 Fire grate area 9 feet Description of safety valves *Direct Spring* No. of safety valves one area of each $7\frac{1}{2}$
 If fitted with easing gear *Yes* If steam from main boilers can enter the donkey boiler *Yes if screw down valves in place*
 Diameter of donkey boiler $4\frac{1}{2}$ length 8.6 description of riveting *Single*
 thickness of shell plates $\frac{1}{2}$ diameter of rivet holes $\frac{7}{8}$ whether punched or drilled *punched*
 pitch of rivets $2\frac{1}{2}$ lap of plating 3 per centage of strength of joint 18
 thickness of crown plates $\frac{1}{2}$ stayed by *Flue*
 Diameter of furnace, top $3\frac{1}{2}$ bottom $3\frac{1}{2}$ length of furnace 6.0
 thickness of plates $\frac{1}{16}$ description of joint *Lap single riveted*
 thickness of furnace crown plates $\frac{1}{2}$ stayed by *Flue*
 Working pressure of shell by rules 72.9 lbs per inch working pressure of furnace by rules 70.9 lbs per top 65.2 per bottom
 diameter of uptake $4\frac{1}{2}$ Bottom $4\frac{1}{2}$ thickness of plates $\frac{1}{2}$ thickness of water tubes $\frac{3}{8}$ *Five tubes 1 1/2 diam*

The foregoing is a correct description,
Walker Henderson & Co Manufacturer.

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

The Engines and Boilers have been carefully inspected and examined by me the workmanship is good. The Machinery & Boilers are in good order and safe working condition and are in my opinion eligible to be noted in the Register Book. *W. M. O.*
 5-80

*This submitted that was
 vessel's eligible to have
 the notification of Lloyd's
 Inc. 5-80 recorded in the
 Register Book
 M. 16/5/80*

The amount of Entry Fee .. £ 2 : - : - received by me.
 Special £ 12 : 15 : *at Greenock*
 Certificate (if required) .. £ *Gratis* : - : - *May 1880*
 To be sent as per margin
 (Travelling Expenses, if any, £ *Subscribed*)

Committee's Minute
 Tuesday, May 11th 1880.
Lloyd's Register

Andrew C. Heron
 Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.

