

# REPORT ON MACHINERY

608

No. 7608

Port of *West Harbours*

Received at London Office

TRADE BE

No. in Survey held at *Stockton & Middleham* Date, first Survey *7<sup>th</sup> Nov. 1888* Last Survey *7<sup>th</sup> Aug 1889*

Reg. Book.

(Number of Visits *31*)

Tons *2359.61*

on the *Screw Steamer "Ironopolis"*  
Master *H. Paulson* Built at *Middleham* By whom built *Messrs. R. Dixon & Co* When built *1889*

Engines made at *Stockton* By whom made *Messrs. Blair & Co. Ltd.* when made *1889*

Boilers made at *Stockton* By whom made *Messrs. Blair & Co. Ltd.* when made *1889*

Horse Power by Rule *223*

Registered Horse Power *200*

Manufacturers " " *180*

Owners *J. M. Leonard & Sons*

Port belonging to *Middleham*

## ENGINES, &c.—

Description of Engines *Inverted, Simple Expansion, 3 Cylinders, & 3 Cranks.*

Diameter of Cylinders *22 $\frac{1}{2}$ , 26 $\frac{1}{2}$ , 60* Length of Stroke *39* No. of Rev. per minute *62* Point of Cut off, High Pressure  *$\frac{1}{2}$  stroke* Low Pressure  *$\frac{1}{2}$  stroke*

Diameter of Screw shaft *12* Diam. of Tunnel shaft *11 $\frac{1}{2}$*  Diam. of Crank shaft journals *11 $\frac{3}{4}$*  Diam. of Crank pin *12 $\frac{1}{4}$*  size of Crank webs *19 $\frac{1}{2}$  x 8 $\frac{3}{8}$*

Diameter of screw *16.0* Pitch of screw *17.0* No. of blades *4* state whether moveable *yes* total surface *62.5 sq. ft.*

No. of Feed pumps *2* diameter of ditto *3 $\frac{1}{4}$*  Stroke *28* Can one be overhauled while the other is at work *yes*

No. of Bilge pumps *2* diameter of ditto *4 $\frac{1}{2}$*  Stroke *28* Can one be overhauled while the other is at work *yes*

Where do they pump from *Engine room, after well, sea, and tanks.*

No. of Donkey Engines *2* Size of Pumps *(7 $\frac{1}{2}$  x 9") (4 x 8")* Where do they pump from *(Ballast tanks, sea, & bilges) (Sea, hotwell & 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 dia* Are they connected to condenser, or to circulating pump *Circulating pump.*

How are the pumps worked *By levers from the after piston rod crosshead*

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 stow hold 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 *3<sup>rd</sup> June 1889.*

Is the screw shaft tunnel watertight *yes* and fitted with a sluice door *yes* worked from *Top platform of engine room*

## BOILERS, &c.—

Number of Boilers *Two* Description *Cyl. built. Single Ended* Whether Steel or Iron *Steel*

Working Pressure *160 lbs.* Tested by hydraulic pressure to *320 lbs.* Date of test *5<sup>th</sup> April 1889*

Description of superheating apparatus or steam chest *none* Heating surface *3350*

Can each boiler be worked separately *yes* Can the superheater be shut off and the boiler worked separately *no superheater*

No. of square feet of fire grate surface in each boiler *48.5* Description of safety valves *Spring* No. to each boiler *2*

Area of each valve *7.07* 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 *11"* Diameter of boilers *13.9 $\frac{1}{2}$ "*

Length of boilers *10.0"* description of riveting of shell long. seams *double butt straps* circum. seams *double riv. lap* Thickness of shell plates *1 $\frac{1}{2}$ "*

Diameter of rivet holes *1 $\frac{1}{4}$ "* whether punched or drilled *drilled* pitch of rivets *1 row 8", 2 rows 4"* Lap of plating *9"*

Percentage of strength of longitudinal joint *84.3* working pressure of shell by rules *161 lbs.* size of manholes in shell *16" x 12"*

Size of compensating rings *28" x 24" x 1 $\frac{1}{2}$ "* No. of Furnaces in each boiler *3*

Outside diameter *3.2"* length, top *6.3"* bottom *6.3"* thickness of plates  *$\frac{3}{32}$ "* description of joint *welded* if rings are fitted *no*

Greatest length between rings — working pressure of furnace by the rules *171 lbs.* combustion chamber plating, thickness, sides  *$\frac{9}{16}$ "* back  *$\frac{9}{16}$ "* top  *$\frac{9}{16}$ "*

Pitch of stays to ditto, sides  *$\frac{1}{4}$  x  $\frac{1}{4}$ "* back  *$\frac{1}{2}$  x  $\frac{1}{4}$ "* top  *$\frac{1}{4}$  x  $\frac{1}{4}$ "* If stays are fitted with nuts or riveted heads *nuts* working pressure of plating by rules *161 lbs.* Diameter of stays at smallest part *1 $\frac{1}{2}$ "* working pressure of ditto by rules *192 lbs.* end plates in steam space, thickness *1 $\frac{1}{8}$ "*

Pitch of stays to ditto *16 $\frac{1}{4}$ " x 15"* how stays are secured *double nut & wash.* working pressure by rules *171 lbs.* diameter of stays at smallest part *2 $\frac{1}{2}$ "* working pressure by rules *181 lbs.* Front plates at bottom, thickness *1"* Back plates, thickness *1"*

Greatest pitch of stays *11 $\frac{3}{4}$ "* working pressure by rules *185 lbs.* Diameter of tubes *3 $\frac{1}{4}$ "* pitch of tubes *4 $\frac{1}{2}$  x 4 $\frac{1}{2}$ "* thickness of tube plates, front *1"* back  *$\frac{1}{8}$ "* how stayed *stay tube.* pitch of stays *9 $\frac{1}{4}$  x 9"* width of water spaces *1 $\frac{1}{4}$ "*

Diameter of Superheater or Steam chest — length — thickness of plates — description of longitudinal joint — diam. of rivet holes —

Pitch of rivets — working pressure of shell by rules — diameter of flue — thickness of plates — If stiffened with rings —

Distance between rings — working pressure by rules — end plates of superheater, or steam chest; thickness — how stayed —

Superheater or steam chest; how connected to boiler

(State if Report is also sent on the Hull of the Ship)

[Form No. 8—2000—17/8/89—T.R.S.—Transfer Ink.]

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Lloyd's Register Foundation



DONKEY BOILER— Description *Vertical, multitubular, Blake's Patent (Steel)*  
Made at *Manchester* by whom made *James Blake* when made *8.7.89* where fixed *In stock hold*  
Working pressure *80 lb.* tested by hydraulic pressure to *160 lb.* No. of Certificate *809* fire grate area *16 sq. ft.* description of safety  
valves *Spring* No. of safety valves *2* area of each *7.0* if fitted with easing gear *yes* if steam from main boilers can  
enter the donkey boiler *no* diameter of donkey boiler *6.4* length *13.6* description of riveting *dalle riv. 10 lb. jo.*  
Thickness of shell plates *13/32* diameter of rivet holes *13/16* whether punched or drilled *drilled* pitch of rivets *2 1/8* lap of plating *4*  
per centage of strength of joint *71* thickness of crown plates *13/32* stayed by *Hemispherical*  
Diameter of furnace, top *2.3* bottom *1.3* length of furnace *3.3* thickness of plates *9/16* description of joint *single riv. lap*  
Combustion chamber *9/16* stayed by *3 gusset stays from crown* working pressure of shell by rule *215*  
Thickness of furnace crown plates *9/16* Working pressure of furnace by rules *85 lb.* diameter of uptake *1.9* thickness of plates *3/16* thickness of water tubes *as reported by h.*

SPARE GEAR. State the articles supplied:— *One propeller, One screw shaft, A set of tools  
nuts for a connecting rod, Main bearing, and shaft coupling, A  
valves for a feed & bilge pumps, bilge pump valves, One set of d.p.  
springs, 120 Bolts & nuts assorted, Iron bars assorted*


The foregoing is a correct description,

*Geo Blair & Co Ltd*  
*Geo Blair*

Manufacturer. of Engines & main boilers.

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

*Main steam pipes tested by hydraulic pressure to 320 lb. per square  
inch and found tight.*

*The engines and boilers of this vessel have been constructed  
under Special Survey and of a good quality of workman  
ship, they have been tried under steam and found to work  
and are now in safe and efficient working condition,  
eligible, in my opinion, to have  L. R. C. 8. 89. recorded  
in the Register of this Society*

*It is submitted that this vessel is  
eligible to have + L.M.C. & P.G.  
recorded. W.A.  
16.8.89*

The amount of Entry Fee .. £ 2 : 0 : 0 received by me,

Special .. £ 30 : 0 : 0

Donkey Boiler Fee .. £ : : :

Certificate (if required) .. £ : : : 15.8.1889

To be sent per margin.

(Travelling Expenses, if any, £ )

Committee's Minute

TUES 20 AUGUST 1889

+ L.M.C. & P.G.

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



Lloyd's Register  
Foundation