

# REPORT ON MACHINERY.

14093

THURS 28 OCT 1886

No. 6209  
 No. in Survey held at *Hartlepool & Sunderland* Date, first Survey *27<sup>th</sup> Oct 1885* Last Survey *18<sup>th</sup> Oct 1886*  
 Reg. Book. *"Federation"* (Number of Visits *fifty two* 2472.36  
 on the *Screw Steamer* Tons *1578.40*  
 Master *Parkham* Built at *Sunderland* By whom built *J. L. Thompson & Sons* When built *1886*  
 Engines made at *Hartlepool* By whom made *J. Richardson & Sons* when made *1886*  
 Boilers made at *Hartlepool* By whom made *J. Richardson & Sons* when made *1886*  
 Registered Horse Power *300* Owners *Angier Bros.* Port belonging to *London*.

ENGINES, &c.—  
 Description of Engines *Inverted, Triple Expansion, 3 Cylinders & 3 Cranks.*  
 Diameter of Cylinders *24", 39", 64"* Length of Stroke *42"* No. of Rev. per minute *70* Point of Cut off, High Pressure *1/2 stroke* Low Pressure *1/2 stroke*  
 Diameter of Screw shaft *11 1/2"* Diam. of Tunnel shaft *11"* Diam. of Crank shaft journals *11 1/2"* Diam. of Crank pin *11 1/2"* size of Crank webs *16 1/2" x 7 1/2"*  
 Diameter of screw *16.6"* Pitch of screw *17.0"* No. of blades *4* state whether moveable *yes* total surface *85 sq. ft.*  
 No. of Feed pumps *2* diameter of ditto *3 1/2"* Stroke *27"* Can one be overhauled while the other is at work *yes.*  
 No. of Bilge pumps *2* diameter of ditto *3 3/4"* Stroke *27"* Can one be overhauled while the other is at work *yes.*  
 Where do they pump from *For<sup>2</sup> and after holds, after well and engine room.*  
 No. of Donkey Engines *2* Size of Pumps *(7 1/2" x 9") (3 1/2" x 7")* Where do they pump from *(all the ballast tanks, sea, & bilge injection) (sea, hotwell, all bilges, & main boilers.)*  
 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 *2* and sizes *3 1/2"* 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 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 *Bilge suction to For<sup>2</sup> hold* How are they protected *by ceiling.*  
 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 *16<sup>th</sup> July 1886*  
 Is the screw shaft tunnel watertight *yes* and fitted with a sluice door *yes* worked from *Upper platform of engine room.*

BOILERS, &c.—  
 Number of Boilers *Two* Description *Cyl. Mult.<sup>2</sup> Double Ended* Whether Steel or Iron *Steel.*  
 Working Pressure *147 lbs.* Tested by hydraulic pressure to *294 lbs.* Date of test *26<sup>th</sup> January 1886.*  
 Description of superheating apparatus or steam chest *none*  
 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 *63* Description of safety valves *spring* No. to each boiler *2*  
 Area of each valve *11.04* 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 *21"* Diameter of boilers *11.9"*  
 Length of boilers *15.3"* description of riveting of shell long. seams *double butt* circum. seams *double lap* Thickness of shell plates *3/32"*  
 Diameter of rivet holes *1"* whether punched or drilled *drilled* pitch of rivets *long 6 3/16", trans 3 3/4"* Lap of plating *8 1/2"*  
 Per centage of strength of longitudinal joint *85.3* working pressure of shell by rules *152 lbs.* size of manholes in shell *16 3/4" x 13"*  
 Size of compensating rings *2.6" x 2.3"* No. of Furnaces in each boiler *4*  
 Outside diameter *3.2"* length, top *5.0"* bottom *5.7"* thickness of plates *1/2"* description of joint *welded* if rings are fitted *no*  
 Greatest length between rings *—* working pressure of furnace by the rules *157 lbs.* combustion chamber plating, thickness, sides *1/32"* back *—* top *1/32"*  
 Pitch of stays to ditto, sides *1 1/2" x 1 1/4"* back *—* top *1 1/2" x 1 1/4"* If stays are fitted with nuts or riveted heads *nuts.* working pressure of plating by rules *154 lbs.* Diameter of stays at smallest part *1 3/8"* working pressure of ditto by rules *157 lbs.* end plates in steam space, thickness *1"*  
 Pitch of stays to ditto *14 3/4" x 14 3/4"* how stays are secured *double nut & washers* working pressure by rules *164 lbs.* diameter of stays at smallest part *2 1/2"* working pressure by rules *169 lbs.* Front plates at bottom, thickness *3/4"* Back plates, thickness *—*  
 Greatest pitch of stays *—* working pressure by rules *—* Diameter of tubes *3" 8 ft.* pitch of tubes *4 1/4" x 4 1/8"* thickness of tube plates, front *3/4"* back *1/8"* how stayed *stay tubes* pitch of stays *8 1/2" x 8 1/2"* width of water spaces *1 1/4"*  
 Diameter of Superheater or Steam chest *—* length *—* thickness of plates *—* description of longitudinal joint *—* diam. of rivet holes *—*  
 Pitch of rivts *—* 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 *—*



**DONKEY BOILER**— Description *Circular, Multitubular, (Cochran's Patent)*  
 Made at *Birkenhead* by whom made *Messrs. Cochran & Co.* when made *24.9.86* where fixed *On deck*  
 Working pressure *80 lbs.* tested by hydraulic pressure to *160 lbs.* No. of Certificate *582* fire grate area *20 sq. ft.* description of safety valves *Spring* No. of safety valves *2* area of each *7.07* if fitted with easing gear *Yes* if steam from main boilers can enter the donkey boiler  
 Thickness of shell plates *9/16"* diameter of rivet holes *3/4"* whether punched or drilled *punched* pitch of rivets *2 1/2"* lap of plating *4"* per centage of strength of joint *53* thickness of crown plates *1 3/32"* stayed by *Hemispherical*  
 Diameter of furnace, top *Hemispherical* bottom *5.4"* length of furnace *3.4"* thickness of plates *9/32"* description of joint *Single riv. lap*  
 Thickness of furnace crown plates *17/32"* stayed by *Hemispherical shape* working pressure of shell by rules *82 lb.*  
 Working pressure of furnace by rules *90 lbs.* diameter of uptake *24"* thickness of plates — thickness of water tubes —

**SPARE GEAR.** State the articles supplied:— *1 set of connecting rod bolts, 2 main bearing bolts, 1 set of coupling bolts, 1 set of feed & bilge pump valves, 1 set of air & circulation pump valves, 2 sets of valves for donkey engines, 2 main feed & 2 donkey feed check valves, 1 set of piston springs. Bolts & nuts assorted, Iron assorted*  
*The foregoing is a correct description,*  
*J. Richardson & Sons, Manufacturers of Engines & Main Boilers.*

**General Remarks** (State quality of workmanship, opinions as to class, &c.)  
*The machinery and boilers of this vessel have been constructed under Special Survey and of a good quality of workmanship, they have been tried under steam and found to work well, and are now in safe and efficient condition and eligible, in my opinion, to have the notification *L.M.C. 10.86.* recorded in the Register of this Society.*

*It is submitted that this vessel is eligible to have the notification + L.M.C. 10.86 recorded.*  
*R.P.*  
*29/10/86*

The amount of Entry Fee .. £ *3 : 0 : 0* received by me, *R.P.*  
 Special .. £ *35 : 0 : 0*  
 Donkey Boiler Fee .. £ : :  
 Certificate (if required) .. £ : : *25.10.1886*  
 To be sent as per margin.  
 (Travelling Expenses, if any, £ *10* ..)

Committee's Minute *FRIDAY 29 OCT 1886*  
*+ L.M.C.*

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