

# REPORT ON MACHINERY.

No. 461 (Nwe)  
 No. in Survey held at *Newcastle & Sunderland* Date, first Survey *16 August 1880* Last Survey *16 March 1881*  
 Reg. Book.  
 on the *Iron Screw Steamer "Gordonia"* Tons *2056*  
*1352*

Master *— Ross* Built at *Sunderland* When built *1881*  
 Engines made at *Newcastle* By whom made *Black Hawthorn* when made *1881*  
 Boilers made at *Do* By whom made *Do* when made *1881*  
 Registered Horse Power *200* Owners *Gordon & Stamps* Port belonging to *London*

## ENGINES, &c.—

Description of Engines *Inverted Compound Surface Condensing*  
 Diameter of Cylinders *37 & 68* Length of Stroke *45* No. of Rev. per minute *60* Point of Cut off, High Pressure *3/8* Low Pressure *1/2*  
 Diameter of Screw shaft *12 1/4* Diameter of Tunnel shaft *11 3/4* Diameter of Crank shaft journals *12 1/4* Diameter of Crank pin *12 1/4* size of Crank webs *15 1/2 x 8 1/2*  
 Diameter of screw *15-0* Pitch of screw *18-0* No. of blades *4* state whether moveable *No* total surface *66 Sq. ft*  
 No. of Feed pumps *Two* diameter of ditto *4 1/2* Stroke *22 1/2* Can one be overhauled while the other is at work *yes*  
 No. of Bilge pumps *Two* diameter of ditto *4 1/2* Stroke *22 1/2* Can one be overhauled while the other is at work *yes*  
 Where do they pump from *Fore hold (1), Engine space (4), Well in tunnel (1), & all tanks*  
 No. of Donkey Engines *Two* Size of Pumps *10 x 1 1/2 & 5 x 6* Where do they pump from *Fore hold (1), Engine space (4), Well in tunnel (1), Fore tank (3), After tank (3), Aftermost tank (1), Sea, Hotwell.*  
 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 *1* and sizes *5 dia* Are they connected to condenser, or to circulating pump *no*

How are the pumps worked *Lever over Condenser*  
 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 *new*

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 *Cylindrical return tubes*  
 Working Pressure *80 lbs* Tested by hydraulic pressure to *160 lbs* Date of test *15th Feb'y 1881*  
 Description of ~~superheating apparatus~~ steam chest *None, contracted neck*

Can each boiler be worked separately *yes* Can the superheater be shut off and the boiler worked separately *—*  
 No. of square feet of fire grate surface in each boiler *48* Description of safety valves *Spring, Cockburns Patent*  
 No. to each boiler *Two* area of each valve *12.5"* 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 *10"*

Diameter of boilers *14-6* Length of boilers *10-6* description of riveting of shell long. seams *Triple Lap* circum. seams *Double Lap*  
 Thickness of shell plates *1"* diameter of rivet holes *1 3/8"* whether punched or drilled *Drilled* pitch of rivets *5 1/4"*  
 Thickness of plating *9"* percentage of strength of longitudinal joint *73* working pressure of shell by rules *80 lbs*

No. of manholes in shell *10 x 12* size of compensating rings *6 x 3/8"*  
 No. of Furnaces in each boiler *3* outside diameter *40"* length, top *7'-0"* bottom *9'-9"*  
 Thickness of plates *1/2" & 3/16"* description of joint *welded* if rings are fitted *half* greatest length between rings *—*

Working pressure of furnace by the rules *80 lbs*  
 Combustion chamber plating, thickness, sides *1/2"* back *1/16"* top *1/16"*  
 Thickness of stays to ditto sides *5 1/2" x 8 1/2"* back *4 3/8" x 7 3/8"* top *curved*  
 Are stays fitted with nuts or riveted heads *Riveted heads* working pressure of plating by rules *80 lbs*

Diameter of stays at smallest part *1 1/16"* working pressure of ditto by rules *90 lbs*

Shipping plates in steam space, thickness *25/32" & 7/8"* pitch of stays to ditto *14 1/2" x 14 1/2"* how stays are secured *8 nuts & washers*  
 Working pressure by rules *96 lbs* diameter of stays at smallest part *2 3/8"* working pressure by rules *92 lbs*  
 Thickness of plates at bottom, thickness *3/16"* Back plates, thickness *3/16" & 3/4"* greatest pitch of stays *14 5/8"* working pressure by rules *80 lbs*



Diameter of tubes  $3\frac{1}{2}$  pitch of tubes  $5\frac{1}{2} \times 4\frac{3}{4}$  thickness of tube plates, front  $\frac{3}{4}$  back  $\frac{3}{4}$   
 How stayed *Tubes* pitch of stays  $15\frac{3}{4}$  width of water spaces  $11\frac{1}{2}$   
 Diameter of Superheater or Steam chest  $3-6$  length  $6-0$   
 Thickness of plates  $\frac{7}{16}$  description of longitudinal joint *Double Lap* diameter of rivet holes  $\frac{7}{8}$  pitch of rivets  $5\frac{3}{8}$   
 Working pressure of shell by rules  $120\text{ lbs}$  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  $\frac{9}{16}$  How stayed *Drilled to 3 ft 6 in radius*  
 Superheater or steam chest; how connected to boiler *Contracted neck 18 x 15 x  $\frac{1}{8}$*

**DONKEY BOILER**— Description *Vertical grate tubes in furnace*  
 Made at *Middlesbrough* By whom made *A. Johnson* when made *1881* Tested *12.1.81*  
 Where fixed *Stokehold* working pressure *Rated 80 lbs* Tested by hydraulic pressure to *160 lbs* No. of Certificate *469*  
 Fire grate area *30.5 sq ft* Description of safety valves *1 dead weight* No. of safety valves *Two* area of each *9.6 sq in*  
 If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no*  
 Diameter of donkey boiler *4.6* length *14.0* description of riveting *Lap. Double riveted*  
 thickness of shell plates  $\frac{9}{16}$  diameter of rivet holes  $1\frac{1}{16}$  whether punched or drilled *Punched*  
 pitch of rivets  $3\frac{1}{4}$  lap of plating  $4\frac{3}{4}$  per centage of strength of joint *67*  
 thickness of crown plates  $\frac{9}{16}$  stayed by *Ten stays 1 $\frac{1}{4}$  dia*  
 Diameter of furnace, top *5.10* bottom *6.11* length of furnace *7.2* *Furnace plating supported by 4 rows secured stays 6 $\frac{3}{16}$  dia drilled*  
 thickness of plates  $\frac{9}{16}$  description of joint *Lap. Single riveted*  
 thickness of furnace crown plates  $\frac{9}{16}$  stayed by *Ten stays 1 $\frac{1}{4}$  dia*  
 Working pressure of shell by rules *84 lbs* working pressure of furnace by rules *88 lbs*  
 diameter of uptake *20* thickness of plates  $\frac{9}{16}$  thickness of water tubes  $\frac{3}{8}$

The foregoing is a correct description,  
 for *Black Hawthorn & Co* Manufacturer of engines & marine boilers only  
*Jacob Mallan*

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

*The machinery of this vessel has been constructed under special survey. The materials and workmanship are sound and satisfactory, and eligible in my opinion to have the notation + Lloyd's M.C. in the Society's Register Book.*

*It is submitted that this vessel is eligible to have the notation + Lloyd's M.C. 3,81. recorded in the Register Book.*  
*C.S.S.*  
*4/4 81.*

**Fees.**  
*Sunderland account* Advising on specification previous to contract  $\pounds 2.2.0$  Expenses to Gateshead  $\frac{1}{2}$   
*Shields account.*  
 The amount of Entry Fee ..  $\pounds 3$  : - : - received by me,  
*Special* .. ..  $\pounds 30$  : - : - and remitted to Shields office *H.W.*  
 Certificate (if required) *gratis* - : - : *31<sup>st</sup> March 1881.*  
 To be sent as per margin.  
 (Travelling Expenses, if any,  $\pounds 2.2.0$ )

Committee's Minute *Tuesday April, 5th 1881.*  
*+ Lloyd's M.C.*  
*Robert Edmund Taylor & Son Printers, 29, Old Street, Goswell Road, London, E.C.*

*26/4/81*  
*W.H.*  
*1/5/81*