

REPORT ON MACHINERY.

No. *5871* (Received at London Office 19th Oct. 1882)
 No. in Survey held at *Dumbarton* Date, first Survey *20. 10. 81* Last Survey *13. 10 1882*
 Reg. Book. *S.S. "Hawoto"* Tons *1988.24*
 on the *S.S. "Hawoto"* Tons *1275.86*
 Master *J. Fielding* Built at *Dumbarton* When built *1882*
 Engines made at *Dumbarton* By whom made *Denny & Co.* when made *1882*
 Boilers made at *"* By whom made *"* when made *1882*
 Registered Horse Power *250* Owners *Union S.S. Co. New Zealand* Port belonging to *Dunedin*

ENGINES, &c.—

Description of Engines *Compound Inverted Direct Acting*
 Diameter of Cylinders *38" & 68"* Length of Stroke *40"* No. of Rev. per minute *65* Point of Cut off, High Pressure *7/10* Low Pressure *6/10*
 Diameter of Screw shaft *12 1/16"* Diameter of Tunnel shaft *11 1/2"* Diameter of Crank shaft journals *12 1/2"* Diameter of Crank pin *12 1/2"* size of Crank webs *8 1/4" x 15"*
 Diameter of screw *16 0"* Pitch of screw *21 0"* No. of blades *4* state whether moveable *yes* total surface *65 sq. ft.*
 No. of Feed pumps *two* diameter of ditto *4 1/4"* Stroke *22 3/4"* Can one be overhauled while the other is at work *yes*
 No. of Bilge pumps *two* diameter of ditto *4 1/4"* Stroke *22 3/4"* Can one be overhauled while the other is at work *yes*
 Where do they pump from *Holds, Engine room, Storehold & Tunnel*
 No. of Donkey Engines *two* Size of Pumps *8" & 9"* Where do they pump from *One from Sea, Hotwell*
Holds, Engine room, Storehold & Tunnel. The other for ballast tank only.
 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 *below*
 No. of bilge injections *One* and sizes *5"* Are they connected to condenser, or to circulating pump *Circulating pumps.*
 How are the pumps worked *by eccentrics on crankshaft*
 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 *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*
 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 *before launching*
 Is the screw shaft tunnel watertight *yes* and fitted with a sluice door *yes* worked from *top platform*

BOILERS, &c.—

Number of Boilers *One* Description *Cyl. double ended Multitubular all steel*
 Working Pressure *44 lbs.* Tested by hydraulic pressure to *150 lbs.* Date of test *28th of August. 1882.*
 Description of superheating apparatus or steam chest *None.*
 Can each boiler be worked separately *"* Can the superheater be shut off and the boiler worked separately *"*
 No. of square feet of fire grate surface in each boiler *141 sq. ft.* Description of safety valves *direct spring*
 No. to each boiler *three* area of each valve *23 3/4 sq. in.* 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 *9 1/2"*
 Diameter of boilers *15' 10 1/2"* Length of boilers *17 5/4"* description of riveting of shell long. seams *double butt circum. seams double. Lap*
 Thickness of shell plates *3/16"* diameter of rivet holes *1 1/8"* whether punched or drilled *drilled* pitch of rivets *4 1/2" x 2 1/2"*
 Lap of plating *12 1/4"* percentage of strength of longitudinal joint *75% 92% 92%* working pressure of shell by rules *83 lbs.*
 Size of manholes in shell *14" x 13"* size of compensating rings *32" x 30" x 1 1/2"*
 No. of Furnaces in each boiler *three* outside diameter *39" 17 1/4"* length, top *6' 4 3/8"* bottom *8' 4 3/8"*
 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 *"*
 Combustion chamber plating, thickness, sides *1/2"* back *"* top *1/2"*
 Pitch of stays to ditto sides *10" x 9"* back *"* top *Guides*
 If stays are fitted with nuts or riveted heads *Nuts.* working pressure of plating by rules *44 lbs.*
 Diameter of stays at smallest part *1 1/4"* working pressure of ditto by rules *98 lbs.*
 End plates in steam space, thickness *3/4"* pitch of stays to ditto *14" x 16"* how stays are secured *Double Nuts &*
 Working pressure by rules *74 lbs.* diameter of stays at smallest part *2 1/8"* working pressure by rules *105 lbs.*
 Front plates at bottom, thickness *3/4"* Back plates, thickness *"* greatest pitch of stays *"* working pressure by rules *"*

5871 gls

Diameter of tubes $3\frac{1}{2}$ " pitch of tubes $4\frac{3}{4}$ " thickness of tube plates, front $\frac{3}{4}$ " back $\frac{1}{16}$ "
How stayed *by tubes* pitch of stays $15\frac{1}{2}$ " width of water spaces $6\frac{1}{2}$ "
Diameter of Superheater or Steam chest " length "
Thickness of plates " description of longitudinal joint " diameter 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 "

DONKEY BOILER— Description *Vertical, with internal inverted cone.*
Made at *Simbarou* By whom made *Denny & Co.* when made *1885*
Where fixed *Upper deck* working pressure *40 lbs* Tested by hydraulic pressure to *140 lbs* No. of Certificate *835*
Fire grate area *15.2 sq. ft.* Description of safety valves *direct spring* No. of safety valves *two* area of each *7.06 sq. in.*
If fitted with easing gear *yes* If steam from main boilers can enter the donkey boiler *no*
Diameter of donkey boiler *6' 0 1/4"* Height *11' 2 1/4"* description of riveting *double & single lap joint*
thickness of shell plates *5 1/2"* diameter of rivet holes *1 1/2"* whether punched or drilled *drilled*
pitch of rivets *3 1/4"* lap of plating *4 1/4"* per centage of strength of joint *75 plate 80 rivet*
thickness of ~~shell~~ crown plates *1 1/2"* stayed by *4 cord stays 2 5/8" dia.*
Diameter of furnace, top *4' 4"* bottom *5' 3"* length of furnace *5' 3"*
thickness of plates *7/16"* description of joint *single lap*
thickness of furnace crown plates *7/16"* stayed by *4 cord stays 2 5/8" dia.*
Working pressure of shell by rules *83 lbs* working pressure of furnace by rules *40 lbs.*
diameter of uptake *16"* thickness of plates *3/8"* thickness of water tubes "

The foregoing is a correct description,

Denny & Co. Manufacturer.

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

The above Engines & Boilers have been specially surveyed during construction. The workmanship and materials are good, and these having been seen under steam are now in good and safe working condition, and in my opinion eligible to be noted in the Register Book.

The amount of Entry Fee .. £ *3 : 4 :* " received by me,

Special .. £ *32.10.0*

Certificate (if required) .. £ *gratis Oct 17 1882*

To be sent as per margin.

(Travelling Expenses, if any, £ ..)

Committee's Minute

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