

of deficiencies? *Yes*
h. If of Iron or Steel give
sprit are constructed, showing

LOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S REPORT ON MACHINERY.

ENGINES.

Description *2 cyls. High pressure inverted*
Made by *Messrs. Pattison & Atkinson*
When *July 28th 1877* At *Newcastle*
Diameter of cylinders *12"* Length of stroke *16"*
No. of revolutions per minute *100*
Point of cut off *5/8th of stroke*
Diameter of screw shaft *4"*
Diameter of crank shaft journals *3 1/8"*
Diameter of screw, ~~or of paddle wheel~~ *6' - 3"*
Pitch of screw *4' - 6"*
No. of blades, *(3)* Total surface *11 sq. ft.*
No. of bilge pumps *(1)* and sizes *3" dia. 3 1/4" stroke*
Do they pump from each compartment *Engine room only*

Are all the bilge suction pipes fitted with roses *Yes*
No. of feed pumps *(1)* and sizes *3" dia 3 1/4" stroke*
What gauges are there attached to the engines and boilers ... *1 Steam gauge*
Description and size of Donkey Pump ... *Vertical single action 2 1/2" dia 5" stroke*
Where does ~~it~~ pump from ... *Sea. Eng. room bilge & tanks*
No. of bilge injections *none* and sizes *—*
Are they connected to air, or circulating pumps *—*
Is there a hand pump in the engine room *No*
Can it be worked by the main engines *—*
Is there a deck hose of sufficient length to reach to any part of the vessel *No*

MAIN BOILERS.

Number *(1)* Description *Cylindrical tubular*
Made by *Softley & Son*
When *July 28th 1877* At *North Shields*
Working pressure *55 lbs*
Tested by hydraulic pressure to *110 lbs*, Date *June 24th 77*
Description of super-heating apparatus *None*
Can each boiler be worked separately *one boiler only*

Can the super-heater be shut off and the boilers worked separately *None*
Description and area of safety valves on boiler ... *Two dead weight each 2 1/2" dia = 7.8 sq. inches*
No. of square feet of fire-grate surface in each boiler *13.4 sq. ft.*
Are there separate blow off and brine cocks on each boiler, independent of those on the vessel's skin *Yes*
Are all pipes, cocks, roses, and pumps in connection with the machinery accessible at all times. *Yes*

DONKEY BOILER.

Description
Where fired
Working pressure

Tested by hydraulic pressure to , Date
Description and area of safety valves
No. of square feet of fire grate

PIPES, COCKS, AND CONNECTIONS.

Are all connections with the sea direct on the skin of the ship *Yes*
Are the Kingston valves or common cocks ... *Common cocks*
Are they fixed sufficiently high on the ship's side to be seen without lifting the stoke hold plates ... *Yes*
Are the discharge pipes above or below the deep water line *Bilge discharge above*
Are they each fitted with a discharge valve on the plating of the vessel *No*

What pipes are carried through the bunkers *None*
How are they protected *✓*
When were the stern tube, propeller, screw shaft, and all connections examined in dry dock *June 24th 1877*
Are the pipes, cocks, and valves arranged so as to prevent an unintentional connection between the sea and the bilge *Yes*
Is the screw shaft-tunnel water tight and fitted with a sluice door on bulkhead *Yes*

(Signed) *Pattison & Atkinson* Manufacturer.

I hereby certify that the whole of the above are correct particulars of the Machinery and Boilers of the Iron (or Wood) Screw (or Paddle) Steam Vessel *Lizzie & Annie* owned by *J. H. Williams & Co.*
of the Port of *Liverpool* of *62.40* Tons Register, and *25* Registered Horse Power,
and that they have been carefully inspected and examined by me at *Newcastle & North Shields*
and found to be at this date, viz., *July 28th 1877* in good order and safe working condition.

(Signed) *George W. Mansel*
Engineer Surveyor to Lloyd's Register of Shipping.