

LLOYD'S REGISTER OF BRITISH AND FOREIGN SHIPPING.

ENGINEER SURVEYOR'S REPORT ON MACHINERY.

ENGINES.

Rev 8/12/76

Description *Inverted Compound Surface Condensing.*
 Made by *W. G. Clark*
 When *Nov. 1876* At *Sunderland.*
 Diameter of cylinder *26" x 4"* Length of stroke *36"*
 (one of each)
 No. of revolutions per minute *65*
 Point of cut off *3/4 of stroke.*
 Diameter of screw shaft *8 3/4"*
 Diameter of crank shaft journals *8 3/4"*
 Diameter of screw, or of paddle wheel *11' 6"*
 Pitch of screw *14' 0"*
 No. of blades, *4* Total surface *33 sq. feet.*
 No. of bilge pumps *1* and sizes *4 1/2" dia. x 18" stroke.*
 Do they pump from each compartment *Engine room. Aft well. Fore hold.*

Are all the bilge suction pipes fitted with roses *yes.*
 No. of feed pumps *1* and sizes *4 1/2" dia. x 18" stroke.*
 What gauges are there attached to the engines and boilers ... *1 steam on boiler in stokehold & 1 in the engine room. 1 vacuum gauge.*
 Description and size of Donkey Pumps ... *2 inverted double acting. 8" dia. x 10" stroke. x 4" dia. x 6" stroke. large one from the ballast tanks. Aft. and sea. The small one from the sea. bilges & forewell.*
 Where do they pump from
 No. of bilge injections *one* and sizes *4" dia.*
 Are they connected to air, or circulating pumps *to circulating pump*
 Is there a hand pump in the engine room *no (donkey can be used)*
 Can it be worked by the main engines *no.*
 Is there a deck hose of sufficient length to reach to any part of the vessel *yes & iron pipe*

MAIN BOILERS.

Number *one* Description *Cylindrical Multitubular.*
 Made by *W. G. Clark.*
 When *Nov. 1876* At *Sunderland.*
 Working pressure *70 lbs per sq. inch*
 Tested by hydraulic pressure to *140 lbs*, Date *Oct 28th 76*
I was present. W. G. Clark.
 Description of super-heating apparatus *none.*
 Can each boiler be worked separately *only 1 boiler*

Can the super-heater be shut off and the boilers worked separately }
 Description and area of safety valves on each boiler *2 spring safety valves 4 1/2" dia. = 35.4 sq. in. Area.*
 No. of square feet of fire-grate surface in each boiler *54.*
 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. *all except bilge suction in the fore hold (when filled)*

DONKEY BOILER.

Description *Upright Cylindrical with 3 cross tubes.*
 Where fixed *in the stokehold.*
 Working pressure *45 lbs per sq. inch*

Tested by hydraulic pressure to *100 lbs*, Date *Oct 17th 76*
reported loaded direct 3 dia. 16 lbs weight 3" = 14 area
 Description and area of safety valves
 No. of square feet of fire grate *14.*

PIPES, COCKS, AND CONNECTIONS.

Are all connections with the sea direct on the skin of the ship *yes.*
 Are they Kingston valves or common cocks *stop valves & 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 *at the deep lead line*
 Are they each fitted with a discharge valve on the plating of the vessel *yes.*

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 *new.*
 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 *sluice door fitted Tunnel Caulked.*

W. G. Clark, W. G. Clark

Manufacturer.

Except of the I was present when the steam was raised & the engines worked. Steam 70 lbs. back 2 1/2" revs 94 all worked very satisfactory. Nov. 18th 76.

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 *"Armstrong"* owned by *James Wait* of the Port of *North Shields* of *597.09* Tons Register, and *99* Registered Horse Power, and that they have been carefully inspected and examined by me at *Sunderland.* and found to be at this date, viz., *Dec. 4th* 1876 in good order and safe working condition.

Amount of Fee for Survey ... £ 4 : 19 :

(Travelling Expenses, if any, £ *Certified 5*)

(1000/31/7/76.)

William Allison. Engineer Surveyor to Lloyd's Register of Shipping.

5 1/4 not paid. Paid v. de letter 18/12/76

750N46A-0226