

19517 Iron

Port

of Newcastle

Oct 11th 1877
Ren 29/10/77

Details of Main Boilers of the Steam Ship

"Research"

1296.00 tons

Diameter

11' 3"

Length

10' 10"

Thickness of shell plates

 $\frac{21}{32}'' + \frac{13}{16}''$

Description of riveting of longitudinal joints

tube zigzag

of circumferential joints

double zigzag

Pitch of rivets

ditto

3.4

ditto

3.14

Diameter of rivets

ditto

 $\frac{15}{16}''$

ditto

 $1\frac{1}{8}''$

Lap of plating

ditto

 $5\frac{3}{4}''$

ditto

 $4\frac{3}{4}''$

Size of manholes in circular shell

12 + 16

How compensated for

wrought iron plate $6' \times \frac{24}{32}''$

Number of furnaces in boiler

121

Diameter of furnaces

 $3' 2\frac{1}{8}''$

Length of furnaces

 $8' 0\frac{1}{2}''$

Thickness of furnace plates

 $\frac{7}{16}''$ top which is flanged & riveted about middle
 $\frac{9}{16}''$ at bottom

Description of joint of furnaces

single riveted lap $\frac{3}{4}''$ rivets 2 pitch

Whether strengthened with rings

none

Greatest length between rings

Thickness of combustion chamber plating

 $\frac{1}{2}''$

Diameter of screw stays to ditto

 $1\frac{3}{16}''$

pitch of stays

 $9' \times 9' + 11' \times \frac{1}{2}''$

End plates, thickness

 $\frac{1}{2}''$

Diameter of longitudinal stays to end plates

 $1\frac{3}{4}''$ square

pitch of ditto

16 horizontal 12 vertical

How stays are secured

by Pals & $14\frac{1}{8}''$ rivets

Diameter of tubes

 $3\frac{1}{2}''$

pitch of tubes

 $4\frac{5}{8}'' + 4\frac{3}{4}''$

Thickness of tube plates

 $\frac{3}{4}''$

Stayed by

Tube stays $\frac{3}{16}''$ thick

pitch of stays

 $13\frac{7}{8}'' + 14\frac{1}{4}''$

Description of steam receiver

Dome with contracted neck

Diameter of ditto

 $3' 11''$

length of ditto

 $5' 6\frac{1}{2}''$

Thickness of plating of ditto

 $\frac{1}{2}''$

ends

 $\frac{1}{2}''$

Ends, how stayed

(4) stays 2" dia with double nuts & washers

$$\frac{51520 \times 1.68 + 72}{135 + 6.15} = 416 \text{ lbs.}$$

Working pressure Cylindrical shell

$$\frac{51520 \times 1.62 + 72}{133.3 + 6.15} = 69 \text{ lbs.}$$

ditto " ditto

$$\frac{84600 \times .31}{38 + 8.0} = 91 \text{ lbs.}$$

ditto " Furnace flue

$$\frac{12 \times 16 \times 70}{3.06} = 4392 \text{ lbs.}$$

ditto " main stays & cross pieces

$$\frac{9 \times 9 \times 70}{9.1} = 3154 \text{ lbs.}$$

ditto " Cor- Chamber stays

$$\frac{100 \times 64}{85.5} = 14 \text{ lbs.}$$

ditto " Flat plates main stays

$$\frac{120 \times 64}{121} = 63.4 \text{ lbs.}$$

ditto " ditto cor Chambers

George W. Mansel.

Engineer Surveyor to Lloyd's Register of Shipping.

North Shields

Smallest space between Coal Bunkers & Boilers N
H.W.M.



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