

16072 *Lea Rec 31/3/13*
Dundee 24th March 1876Two Boilers

Port

Dundee

24th March

1876

Details of Main Boilers of the Steam Ship "Hawk" 375.26 kts 648.47 tons

Diameter 10' 9 $\frac{3}{4}$ " outside of shell Length 9' 0" outside of platesThickness of shell plates $\frac{13}{16}$ " inches

Description of riveting of longitudinal joints Double riveted of circumferential joints Double riveted

Pitch of rivets ditto 3 $\frac{3}{4}$ " inches ditto 3 $\frac{3}{4}$ " inches

Diameter of rivets ditto 1" inch diam ditto 1" inch

Lap of plating ditto Double butt Straps 9 $\frac{1}{2}$ " ditto 4" inches

No. Size of manholes in circular shell 15" x 12" inches

How compensated for by Angle iron Ring 3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x $\frac{5}{8}$ " inches

Number of furnaces in boiler Two in each Boiler

Diameter of furnaces 3' 1" at front 2' 9" at back end Length of furnaces 6' 2 $\frac{1}{2}$ " inchesThickness of furnace plates $\frac{3}{8}$ " inches

Port Description of joint of furnaces Welded at joints

Whether strengthened with rings Flanged at Centers Greatest length between rings 3' 3" inches

Thickness of combustion chamber plating $\frac{7}{16}$ " inchesDiameter of screw stays to ditto 1 $\frac{3}{32}$ " at bottom of thread pitch of stays 9 $\frac{3}{4}$ " x 7" inchesEnd plates, thickness $\frac{9}{16}$ " inchesDiameter of longitudinal stays to end plates 2 $\frac{3}{16}$ " inches pitch of ditto 17" x 15" inches

How stays are secured through end plates with nuts & washers on both sides

Diameter of tubes 3" inches outside No 10 & 9. pitch of tubes 4 $\frac{1}{4}$ " x 4 $\frac{1}{4}$ " inchesThickness of tube plates $\frac{5}{8}$ " inchesStayed by Tube Stays $\frac{1}{4}$ " thick & nuts pitch of stays 12 $\frac{3}{4}$ " x 12 $\frac{3}{4}$ " inches

Description of steam receiver Horizontal with flat ends

Diameter of ditto 3' 10" at front 3' 8 $\frac{1}{4}$ " at back end length of ditto 9' 6"Thickness of plating of ditto $\frac{7}{16}$ " inches ends $\frac{9}{16}$ " inches

Ends, how stayed with four longitudinal bolt stays $\frac{1}{16}$ " diam with nuts & washers on both sides of plates each receiver fixed to boiler by boiler plate hoops $\frac{3}{4}$ " thick 9" diam welded at joints and flanged outwards Manhole doors 15" x 12" inches strengthened by angle iron rings 3" x 3" x $\frac{5}{8}$ " Cast iron seats riveted on for Valves

Working pressure of shell $\frac{51520 \times \frac{13}{16} \times 73}{128 \times 6.5} = 73.2 \text{ lb}$ do do flat plates bolt stay $\frac{100 \times \frac{7}{16}^2}{17 \times 15} = 31.4420 \text{ lb}$ do do flanged $\frac{100 \times \frac{7}{16}^2}{9 \frac{3}{4} \times 7} = 71.77 = 4770 \text{ lb}$ do furnace $\frac{89600 \times \frac{3}{8}^2}{6.2 \times 35} = 55.6 \text{ lb for whole length}$

Engineer Surveyor to Lloyd's Register of Shipping.

John Sturrock

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16091 *Ln*

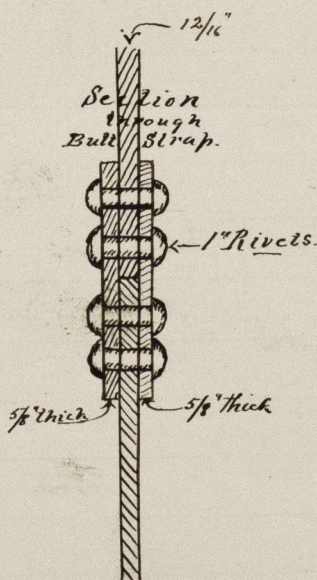
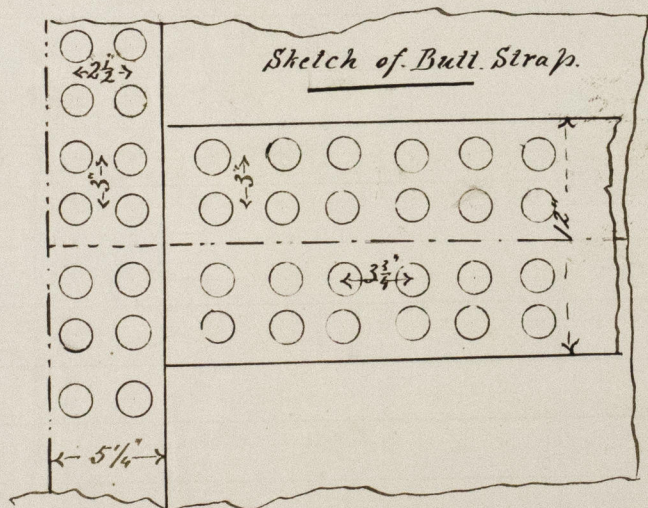
Boiler shell plates $\frac{51,520 \times 2T \times C}{S \times 6.5} = 60 \text{ lbs.}$ Working pressure

Percentage of strength in joints $\left\{ \frac{(P-d) \times 100}{P} = 66\% \right.$

Percentage of strength in rivets $\left\{ \frac{(a \times N) \times 100}{P \times T} = 67\% \right.$

Flat plates between screwed stays $\left\{ \frac{100 \times T^2}{P^2} = 76 \text{ lbs.} \right.$

Circular flues $\left\{ \frac{89,600 \times T^2}{L \times D} = 76 \text{ lbs.} \right.$



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