

Multⁿ Steel Boiler (N^o. 453) by Mess^{rs} Koss & Duncan
for Mess^{rs} R. Williamson & Son's N^o. 118 Vessel.

115 lbs working pressure.

plate % $\frac{6 \times 9375 \times 100}{6 \times 8125} = 845$ End top $\frac{185 \times 14^2}{17.5^2} = 118 \text{ lbs.}$

Rivet % $\frac{4 \times 69 \times 1.75 \times 85}{6 \times 8125} = 84$ Stay $\frac{4.22 \times 10000}{17.5^2} = 137 \text{ lbs.}$

Shell $\frac{21 \times 84 \times (13-2)}{162} = 120 \text{ lbs.}$ Front tube $\frac{140 \times (11.5)^2}{14.5^2} = 150 \text{ lbs.}$

Turnace $\frac{1075200 \times 625^2}{78 \times 42} = 129 \text{ lbs.}$ Back $\frac{140 \times 11^2}{12.6^2} = 104 \text{ lbs.}$

Comb^{rs} $\frac{120 \times 8^2}{8^2} = 120 \text{ lbs.}$ Stay tubes $\frac{3500(8.95-6.49)}{14.18 \times 9 - 38} = 204 \text{ lbs.}$

" Stays $\frac{99 \times 8000}{8^2} = 123 \text{ lbs.}$ Boiler Back $\frac{135(10+\frac{8}{2})^2}{12^2} = 184 \text{ lbs.}$

Girders $\frac{9000 \times 6.5^2 \times 1.5}{(28.5-8)8 \times 28.5} = 122 \text{ lbs.}$ Stays $\frac{204 \times 9000}{15 \times 8} = 154 \text{ lbs.}$



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