

# COCHRAN PATENT VERTICAL MULTITUBULAR BOILER.

PLAIN TUBE HOLES BORED  $2\frac{1}{2}$ " DIA. IN BACK TUBE PLATE. PLAIN TUBE HOLES BORED  $2\frac{1}{2}$ " DIA. IN FRONT TUBE PLATE.

HORIZONTAL FLUE TUBES.

STAY TUBE HOLES SCREWED  $2\frac{1}{2}$ " DIA. IN BACK TUBE PLATE. STAY TUBE HOLES SCREWED  $2\frac{1}{2}$ " DIA. IN FRONT TUBE PLATE. 11-THREADS PER INCH. SCALE  $\frac{1}{2}$ " = 1 FOOT.

| HEATING SURFACE |             |
|-----------------|-------------|
| TUBES.          | 626 sq. Ft. |
| PLATE.          | 104 "       |
| TOTAL.          | 730 "       |
| GRATE AREA.     | 31.5 "      |

| LLOYDS.  |   |
|--|---|
| PLATE.   | $2\frac{1}{2}$ x 28 x 5625 x 100 = 65 %       |
| RIVETS.  | $2\frac{1}{2}$ x 28 x 5625 = 69 %             |
| FRONT TUBE PLATE.  | $4\frac{1}{2}$ x 28 x 5625 x 100 = 35.1 %     |
| BACK TUBE PLATE.   | $4\frac{1}{2}$ x 28 x 5625 x 100 = 37.5 %     |
| SHELL.   | $20\frac{1}{2}$ (16-2) 35.1 x 28 = 103 LBS.   |
| FRONT TUBE PLATE.  | $20\frac{1}{2}$ (16-2) 35.1 x 28 = 103.8 LBS. |
| BACK TUBE PLATE.   | $20\frac{1}{2}$ (16-2) 37.5 x 28 = 104.2 LBS. |
| FURNACE.   | $1250 \times 9 \times 21 = 112$ LBS.          |
| <i>Open Ring</i> $576 \times 14 \times 90 \times (90-75) = 104$ LBS. |   |

| BOARD OF TRADE.   |   |
|-------------------|---|
| PLATE.            | $2\frac{1}{2}$ x 28 x 5625 x 100 = 65 %             |
| RIVETS.           | $2\frac{1}{2}$ x 28 x 5625 x 100 = 72.8 %           |
| FRONT TUBE PLATE. | $4\frac{1}{2}$ x 28 x 5625 x 100 = 35.1 %           |
| BACK TUBE PLATE.  | $4\frac{1}{2}$ x 28 x 5625 x 100 = 37.5 %           |
| SHELL.            | $28 \times 2240 \times 65 \times 2.5625 = 104$ LBS. |
| FRONT TUBE PLATE. | $30 \times 8125 \times 4.5 \times 100 = 138$ LBS.   |
| BACK TUBE PLATE.  | $26 \times 2240 \times 47.5 \times 100 = 170$ LBS.  |
| FURNACE.          | $14000 \times 9 \times 78 \times 16 = 101$ LBS.     |

| BUREAU VERITAS.   |  |
|-------------------|--|
| SHELL.            | $65 \times 2 \times 28 \times 2240 (5625 - 1.04) = 118$ LBS. |
| RIVETS.           | $2 \times 2 \times 28 \times 2240 = 1093$ LBS.               |
| FRONT TUBE PLATE. | $10400 \times 9375 \times (4 \times 2.5625) = 129$ LBS.      |
| BACK TUBE PLATE.  | $10400 \times 9375 \times (4 \times 2.5) = 1149$ LBS.        |
| FURNACE.          | $600 \times 9 \times 39 = 1078$ LBS.                         |

COCHRAN & CO ANNAN LTD.  
ENGINEERS & BOILERMAKERS  
ANNAN, SCOTLAND.

| BRITISH CORPORATION. |   |
|----------------------|---|
| PLATE.               | $2\frac{1}{2}$ x 28 x 5625 x 100 = 65 %   |
| RIVETS.              | $2\frac{1}{2}$ x 28 x 5625 x 100 = 66.8 % |
| FRONT TUBE PLATE.    | $4\frac{1}{2}$ x 28 x 5625 x 100 = 35.1 % |
| BACK TUBE PLATE.     | $4\frac{1}{2}$ x 28 x 5625 x 100 = 37.5 % |
| SHELL.               | $19 \times 9 \times 1065 = 186$ LBS.      |
| FRONT TUBE PLATE.    | $15 \times 8125 \times 2 = 151$ LBS.      |
| BACK TUBE PLATE.     | $13025 \times 15 \times 375 = 184$ LBS.   |
| FURNACE.             | $1250 \times 9 \times 76 = 112$ LBS.      |

Patented 14-10-16.  
**PATENT BOILER No 8254**

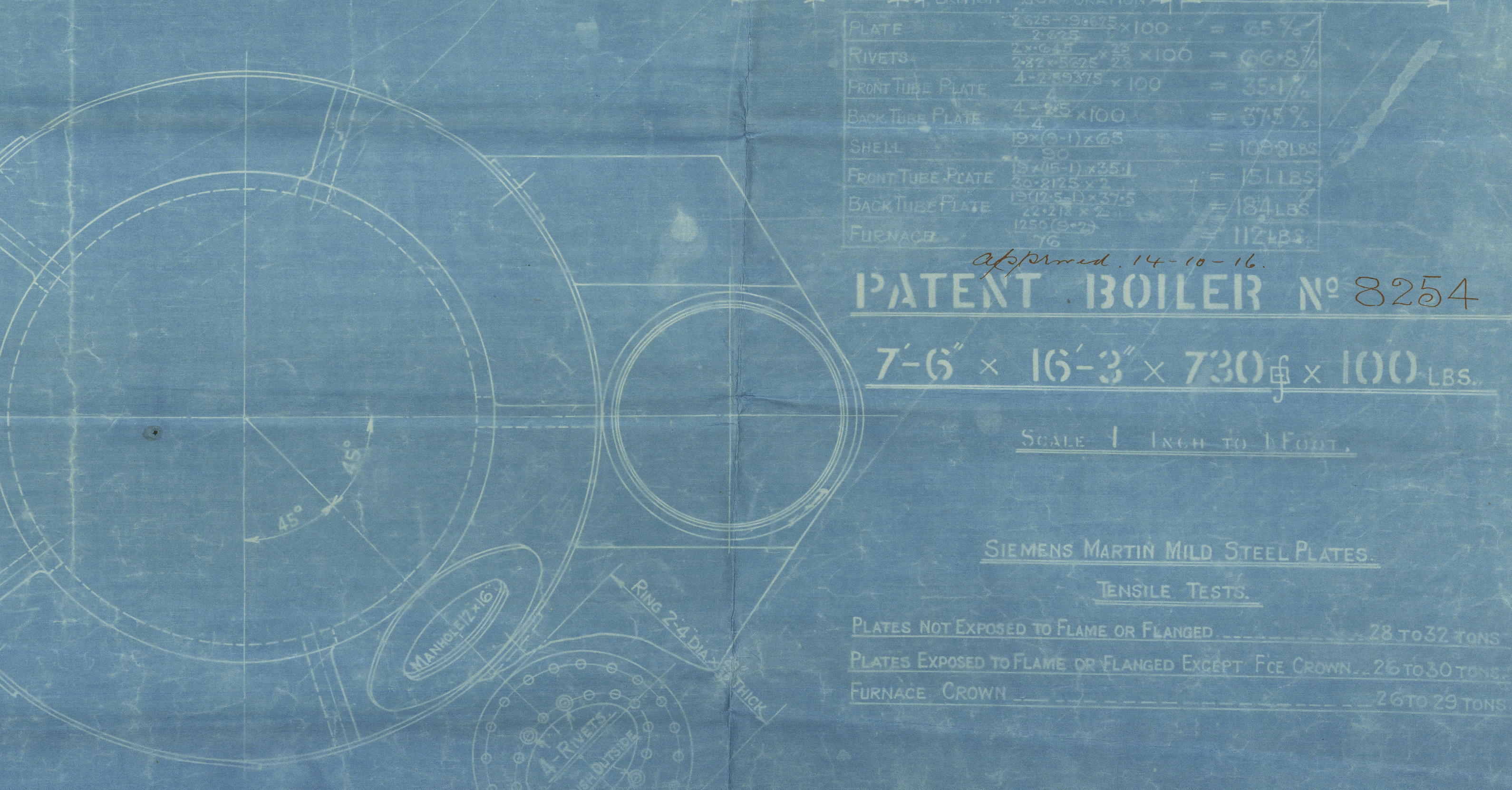
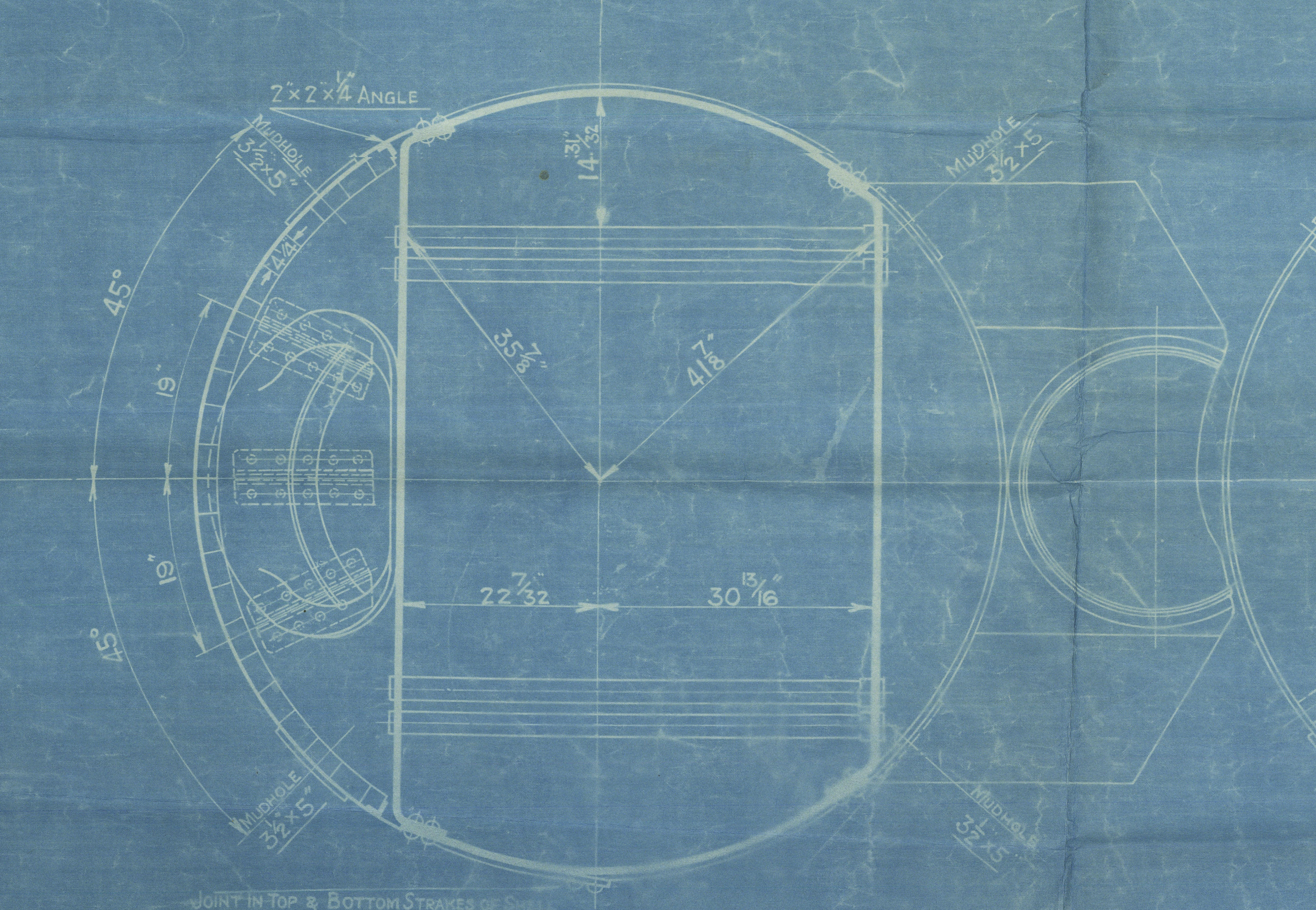
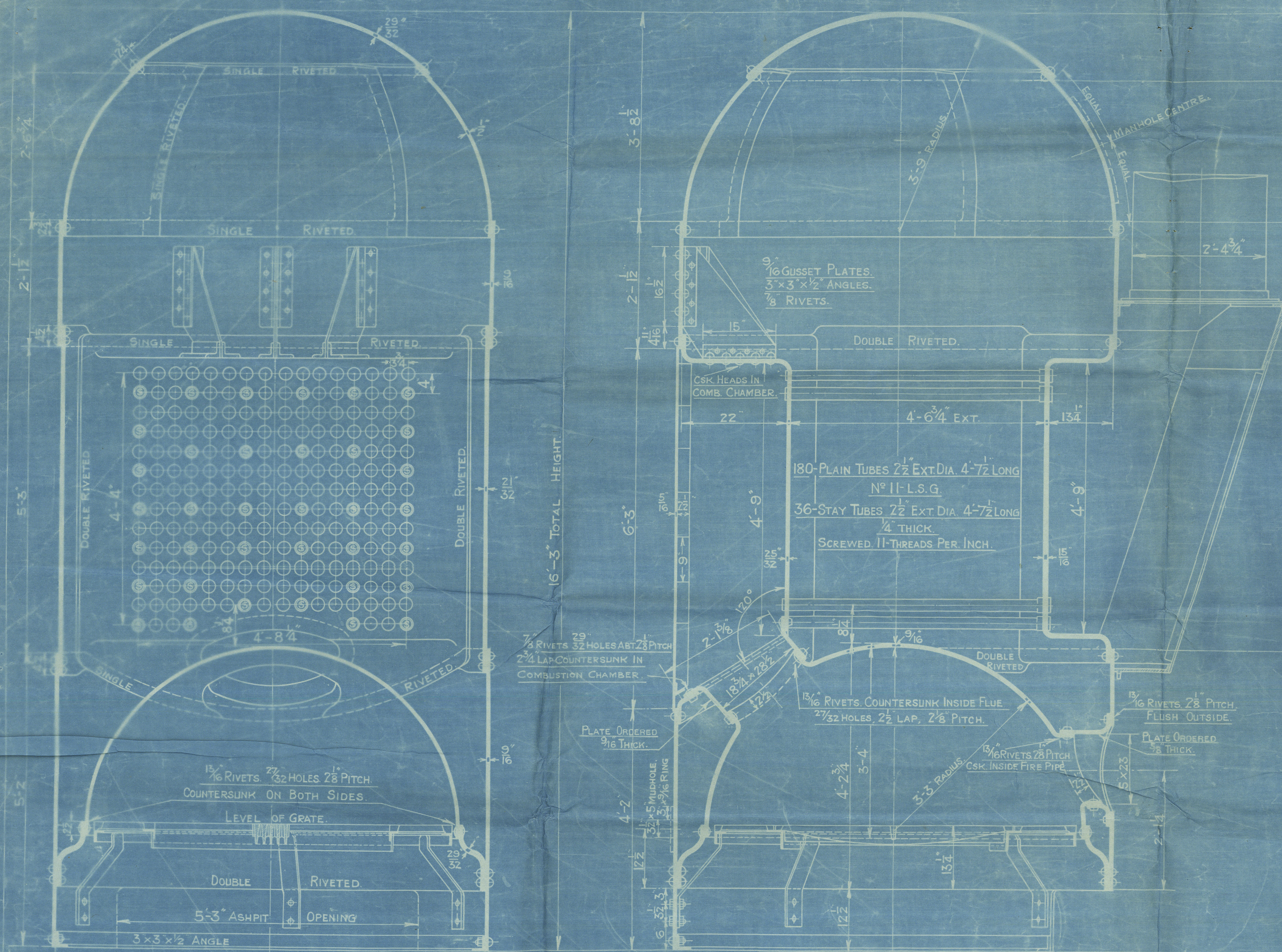
**7'-6" x 16'-3" x 730# x 100 LBS.**

SCALE 1 INCH TO 1 FOOT.

SIEMENS MARTIN MILD STEEL PLATES.

TENSILE TESTS.

PLATES NOT EXPOSED TO FLAME OR FLANGED 28 TO 32 TONS.  
PLATES EXPOSED TO FLAME OR FLANGED EXCEPT FIRE CROWN 26 TO 30 TONS.  
FURNACE CROWN 26 TO 29 TONS.





COCHRAN & CO., ANNUN. LD.

Letter No. 8254

Drawing No. 11165

100 lbs per sq inch

mark on boiler:—

No 15137  
Lloyds Test  
200 lbs  
11? 100 lbs  
P.M.G. 19/12/19

GLASGOW REPORT No. 3914/19.



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