

STEAM & HOT WATER BOILERS 1840-1930

The Quest for

COMFORT



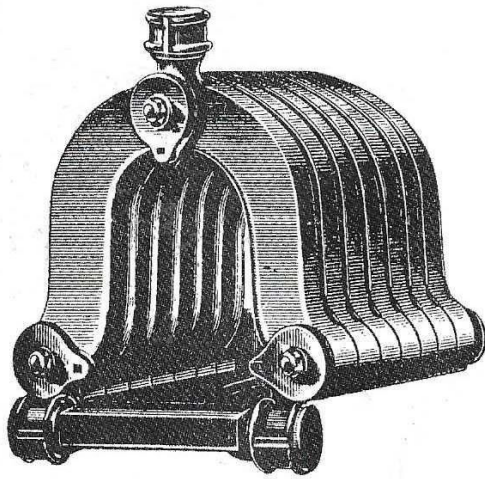
A selective pictorial history of the early days of
building services to mark the Centenary of the
Chartered Institution of Building Services Engineers
1897-1997

1997

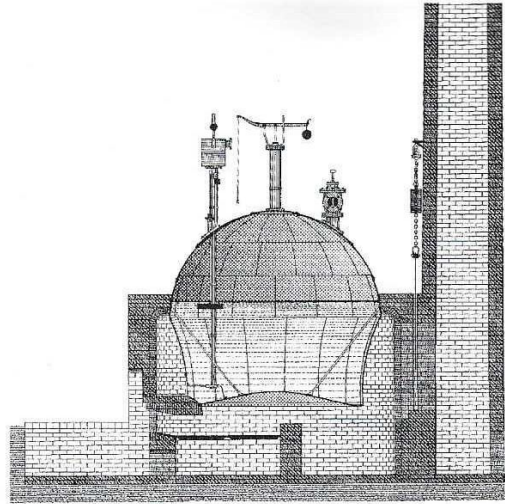


The Quest for

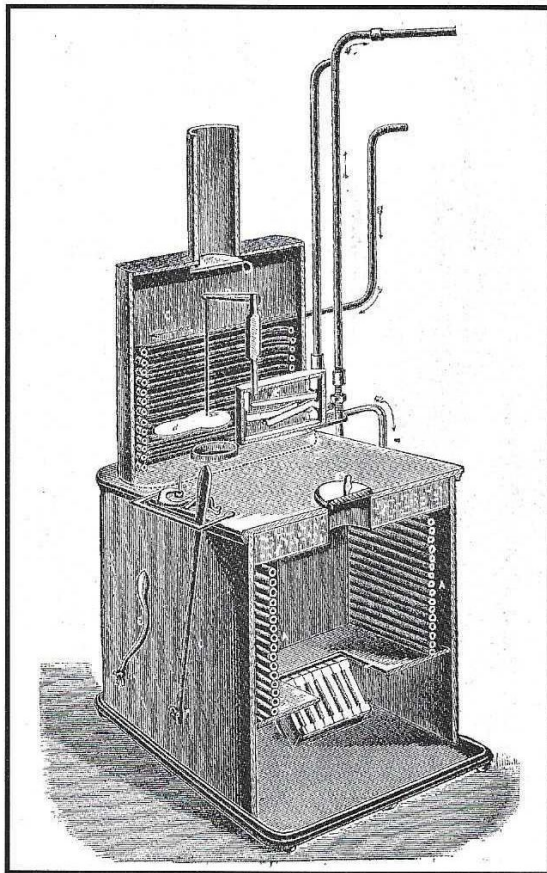
COMFORT



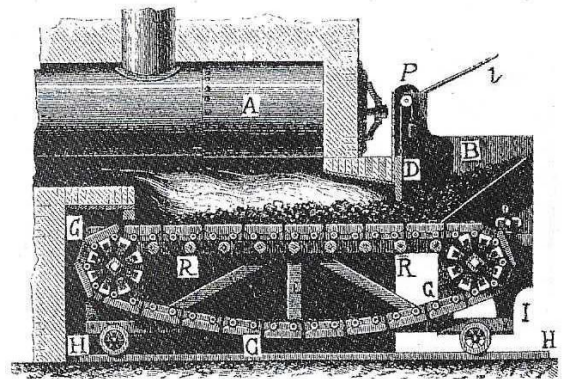
23. Wagstaff's Sectional Saddle Boiler, 1874.
J G Wagstaff Ltd. BSE: p135.



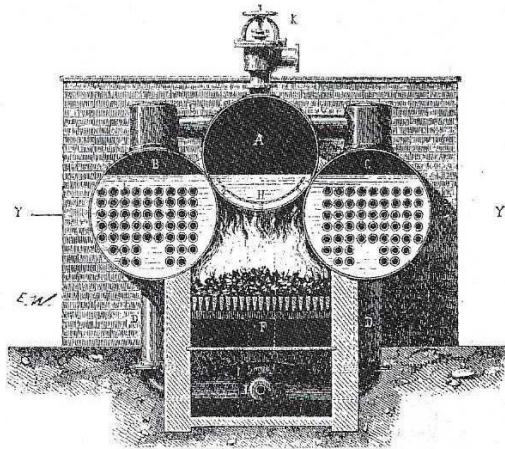
24. Haystack Steam Boiler, 18th century.
The Archaeology of the Industrial Revolution,
B Bracegirdle, 1974, p110.



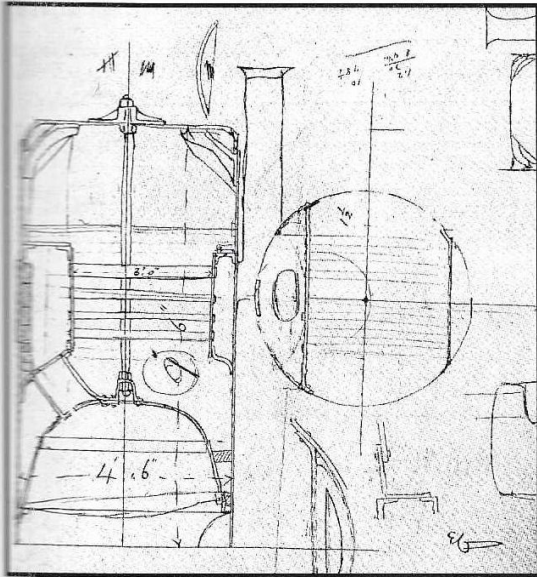
25. High Pressure Hot Water Heating Boiler.
(A M Perkins' Improved Patent Apparatus for Warming
and Ventilating Buildings, 1840) HHW: p11.



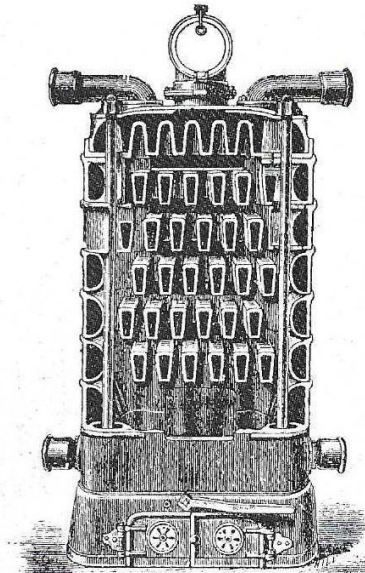
26. Jucke's Chain-Grate Stoker, 1841. BSE: p142.



27. Holcroft & Hoyle's Steam Boiler, 1854. BSE: p130.



28. Original Sketch: Patent Steam Boiler, 1878. This vertical multi-tubular design was conceived by Edward Crompton. Fifty Years at Annan 1899/1949, Cochran & Co, Scotland, p3.



29. Keith's Challenge Sectional Boiler, 1875. James Keith Co, later Keith Blackman. BSE: p135.

vii

HARTLEY & SUGDEN, LTD.,
HALIFAX.

WROUGHT-IRON & STEEL
WELDED AND RIVETTED BOILERS,
OF EVERY DESCRIPTION FOR
Hot-Water Heating Apparatus, Steam Heating, &c.
PATENT
"CLIMAX" BOILER.

ELEVATION

CROSS SECTION

ELEVATION.

NEW INDEPENDENT
"CHATSWORTH"
BOILER.

SECTION.

NEW ILLUSTRATED CATALOGUE ON APPLICATION.

30. Advertisement: Welded & Rivetted Boilers, 1894. Hartley & Sugden Ltd, Halifax. HHW: p.vii.

JOHN J. ROYLE,
DALHAM ENGINEERING WORKS,
GREAT BRIDGEWATER STREET,
MANCHESTER.

PATENTEE AND MANUFACTURER OF
STEAM TRAPS,
Reducing Valves,
THE
'ROW' HEATING TUBE
AS APPLIED TO:-
FEED WATER HEATERS,
CALORIFIERS,
&c.

The "ROW" Heating Tube has twice the efficiency of the same area of plain surface and is unequalled for heating or boiling by **STEAM.**

The Woodcut shows one of the "ROW" Tubes detached and a Row **CALORIFIER** with automatic attachment for controlling the steam and keeping a uniform temperature in the service.

LISTS ON APPLICATION. CORRESPONDENCE INVITED.

31. Advertisement: Steam Traps & Calorifiers, 1894. It is said the word calorifier was originated by Royles. John J Royle, Manchester. HHW: p. ix.

. . . . it has been shown how engineering knowledge and skill have triumphed over superstition and ignorance in explaining and preventing lethal boiler explosions such as those of the last century. *JHVE*, 33, November 1965, p13.

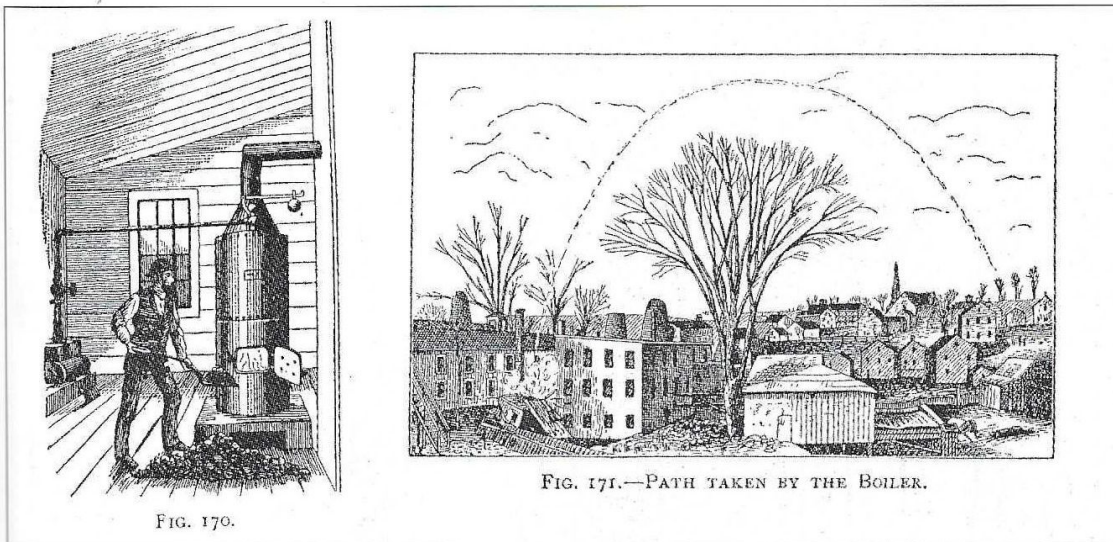


FIG. 170.

FIG. 171.—PATH TAKEN BY THE BOILER.

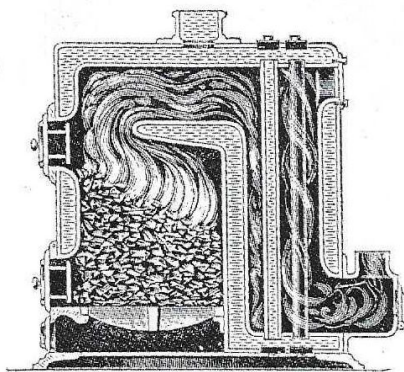
33. *The Disastrous Effects of a Boiler Explosion, c1890. In Great Britain, between 1882 and 1893, there were 660 boiler explosions, resulting in 313 deaths. Heating and Ventilating Buildings, R C Carpenter, 1910, p205.*

IMPROVED PATENT SEVERN BOILER

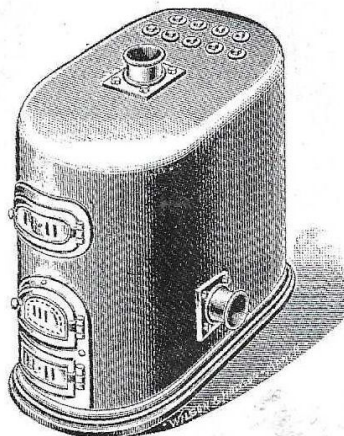
Most Compact, Powerful, & Economical Independent Boiler.

Suitable
for
all descriptions
of
HEATING.

Testimonials,
Sizes and Prices
on
application.



SECTION.



ELEVATION.

ALL OTHER
DESIGNS
OF
BOILERS
SUPPLIED.

COMPLETE
CATALOGUE
FREE
ON
APPLICATION.

MATHER & KITCHEN, DERBY.

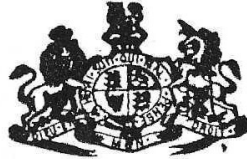
34. *Advertisement: Improved Patent Severn Boiler, 1894. Mather & Kitchen, Derby. HHW:p.xiii.*



(Their) recollection of central heating is mainly based on a night they spent in a hotel in Worthing for Ada's wedding in November 1902. They occupied the royal suite, which contained the hotel's only radiator. This radiator, of Persian design, was the sort of thing over which savages would have built a temple. It hissed and gurgled and spat – at noon it boiled – at night it froze solid, and housemaids approached it on tiptoe with nervous giggles.

A Thatched Roof, Beverley Nichols, (quoted in Heating and Air Conditioning of Buildings, Faber & Kell, 2nd Edition, 1943).

N° 5182



A.D. 1894

Date of Application, 13th Mar., 1894—Accepted, 30th June, 1894

COMPLETE SPECIFICATION.

An Improvement in Boilers for Heating Greenhouses and other Structures.

I, THOMAS POTTERTON, of "Norman Hurst," 122 Cavendish Road, Balham in the County of Surrey, Hot Water Engineer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 Usually the flue from an independent hot water boiler passes away at the top, there being a clear way to same directly over the fire, by which much of the heat is conducted away and wasted. My invention relates to a boiler by which I avoid this waste of heat, as I shall describe in accompanying drawings.

Fig. 1 is a vertical section, and Fig. 2 is a sectional plan of a boiler according to
10 my invention.

I make the boiler in two sections, right and left hand, which are bolted together K K, each part having zig-zag projections A. B. C. over fire. The top part of each section is made parallel to the part over the fire, thus forming a zig-zag flue D. E. F.

15 A feed hole H, and clinker door J are provided in front. A flow pipe G from top of each section, and return pipe R from side of each section, provide for water circulation. These two parts are made so that these pipes may have the same or independent circulation.

Having now particularly described and ascertained the nature of my said
20 invention, and in what manner the same is to be performed, I declare that what I claim is:—

A boiler having zig-zag projections over fire, and constructed to a form a zig-zag flue, to act substantially and for the purpose set forth.

Dated this 13th day of March 1894.

25

THOMAS POTTERTON.

London: Printed for Her Majesty's Stationery Office, by Darling & Son, Ltd.—1894

40. Thomas Potterton's Patent Specification for Boiler Improvement. British Patent No. 5182, 1894.
The Heatmakers No. 4, Thomas Potterton. A history wallet. Thomas Potterton Ltd, London.



A.D. 1894. MARCH 13. N^o 5182.
POTTERTON'S COMPLETE SPECIFICATION.

(1 SHEET)

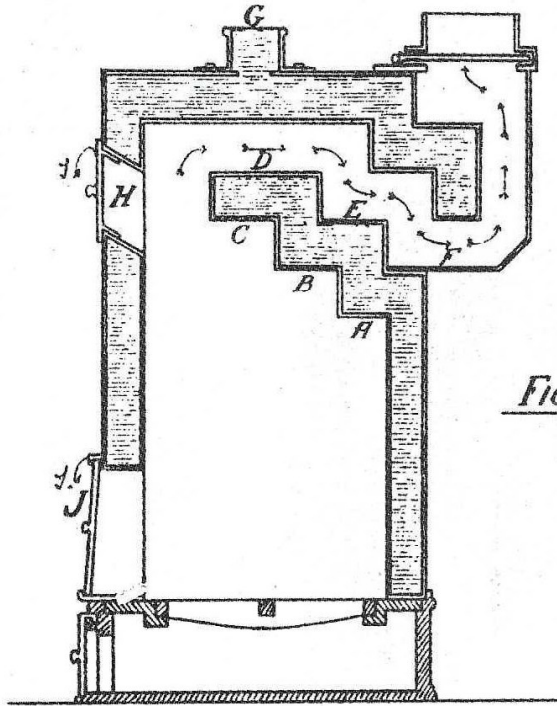


FIG. 1.

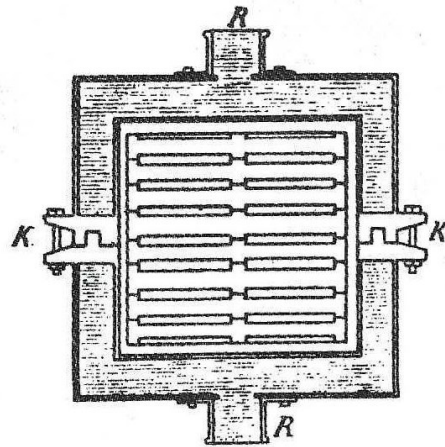


FIG. 2.

[This Drawing is a reproduction of the Original on a reduced scale.]

LONDON. Printed by DARLING and SON LD.
for Her Majesty's Stationery Office. 1894.

Mulby & Sons, Photo-Litho.



The Quest for Comfort

It . . . must have been well understood in early days, that the greater the heating surface, the greater the amount of heat transferred, but it was George Stephenson, in his Rocket locomotive of 1833 who provided smoke tubes and produced not only the locomotive boiler, but also founded the conception of multitubular boilers Boilers for Space Heating, H M Simpson & D C Gunn, JIHVE, 33, November 1965.

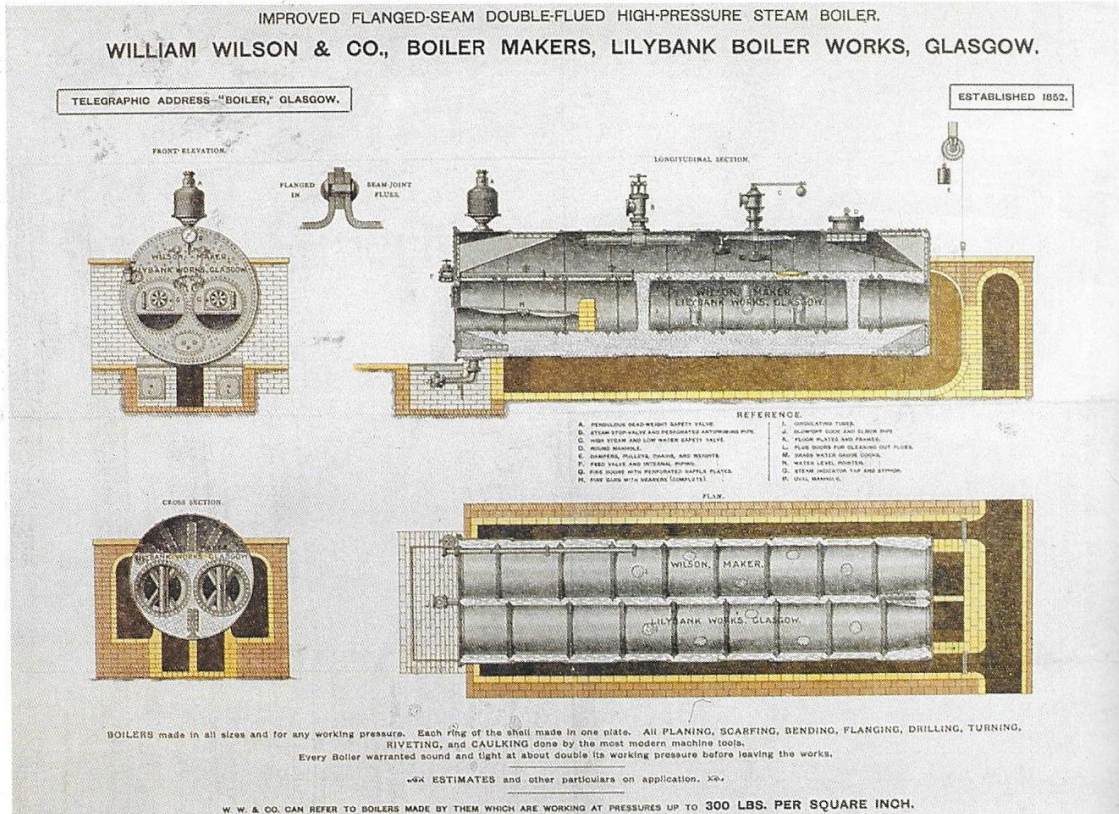


Plate 12. Framed Print: Steam Boilers, c1900. William Wilson & Co, Boiler Makers, Lilybank Boiler Works, Glasgow, Paul Yunnie Collection.

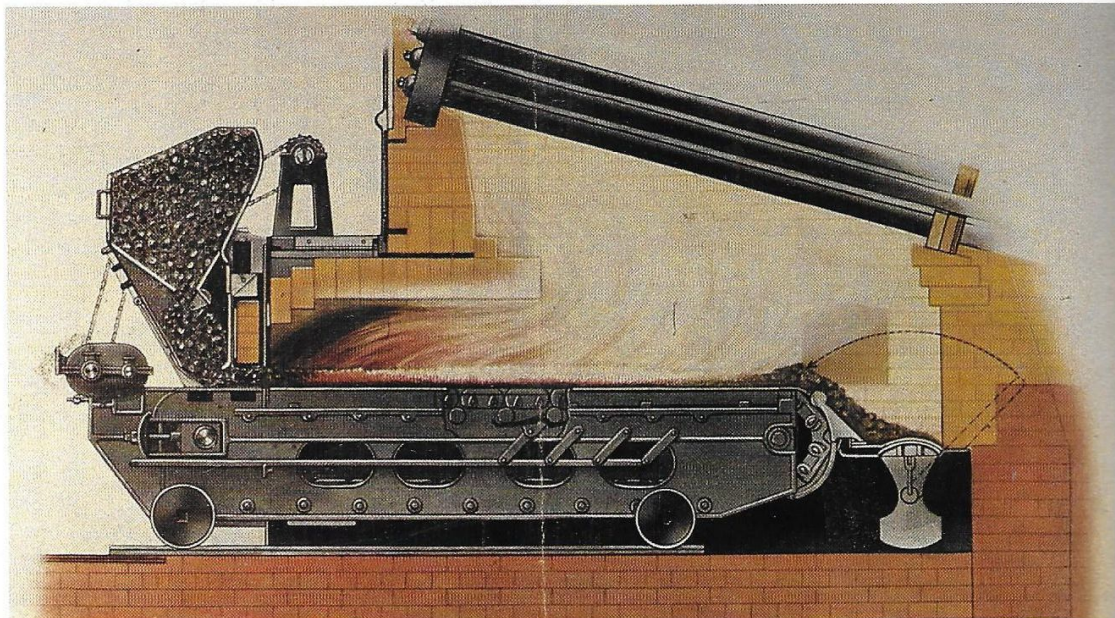
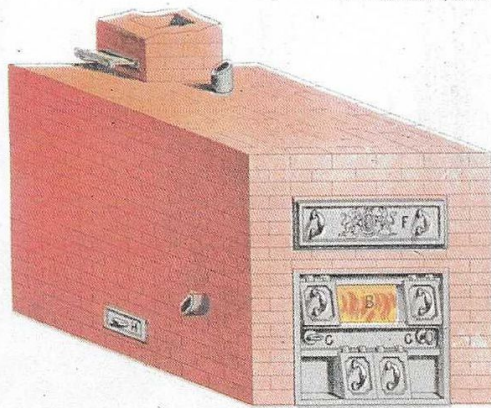


Plate 13. Leaflet: Smoke Abatement, Patent Mechanical Chain Grate Stoker, c1912. Babcock & Wilcox, Renfrew, Scotland (Leaflet No. 610). Paul Yunnie Collection.

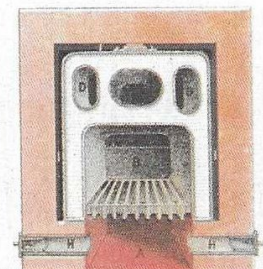
HARTLEY & SUGDEN'S
 IMPROVED WROUGHT WELDED SADDLE BOILER
 TO WHICH THE
GOLD MEDAL.
 WAS AWARDED AT THE
 ROYAL HORTICULTURAL SOCIETY'S SHOW,
 AT BIRMINGHAM, JUNE, 1872.



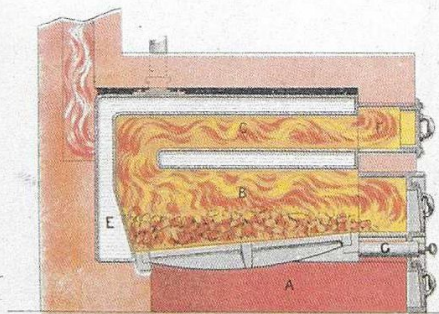
"GOLD MEDAL BOILER"
 REGISTERED TITLE.



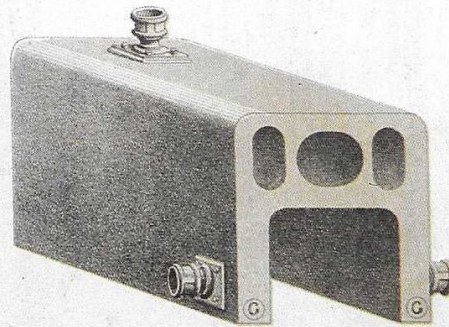
ELEVATION. IN BRICKWORK.



CROSS SECTION.



LONGITUDINAL SECTION.



ELEVATION. WITHOUT BRICKWORK.

- | | | |
|-----------------------------|---|---|
| A Ashes Pit | F Sliding Soot Door for Cleansing Flues, with Fire Brick Casing | H Regulating Flues |
| B Fire | G Sludge Plugs for cleansing internal part of Boiler | I Hollow Space round Boiler utilizing Heat given off from external surface of Boiler. |
| C Centre Flue | | |
| D Right & Left Return Flues | | |
| E Water-way Terminal End | | |

ENTERED AT STATIONERS' HALL.

Plate 14. Catalogue: Gold Medal Boiler, 1872. Improved Wrought Welded Saddle Boiler. Hartley & Sugden, Atlas Works, Halifax. Paul Yunnice Collection.

