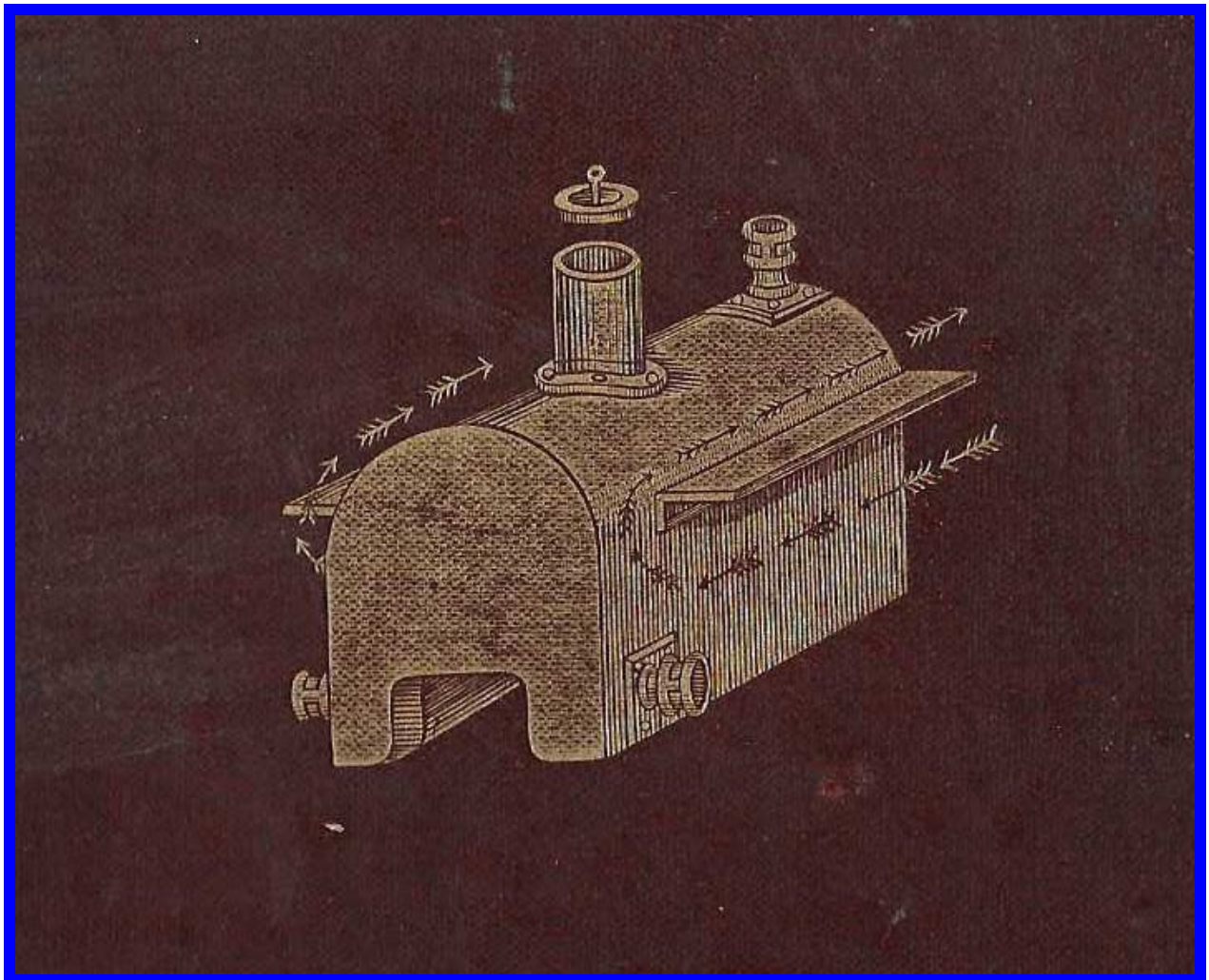


STEAM & HOT WATER BOILERS 1840-1930

Hot Water Boilers

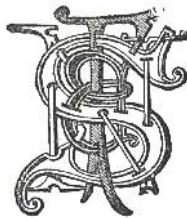


ADVERTS FROM CHAS HOOD TEXTBOOKS OF 1891 & 1897

A
PRACTICAL TREATISE
UPON
WARMING BUILDINGS
BY
HOT WATER,
AND UPON
HEAT AND HEATING APPLIANCES IN GENERAL,
WITH
AN INQUIRY RESPECTING VENTILATION, THE CAUSE AND
ACTION OF DRAUGHTS IN CHIMNEYS OR FLUES,
AND THE LAWS RELATING TO COMBUSTION.

BY
CHAS. HOOD, F.R.S., F.R.A.S., &c.

RE-WRITTEN BY
FREDERICK DYE,
AUTHOR OF 'HOT WATER SUPPLY,' ETC., ETC.



H. & F. N. SPON, 125, STRAND, LONDON.
NEW YORK: 12, CORTLANDT STREET.

1891.

THIS IS THE AGE OF "FIRSTS,"

AND KEITH'S SPECIALTIES.

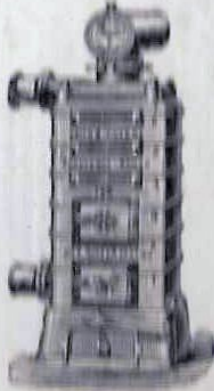
Manufactured under 80 JAMES KEITH PATENTS, in GREAT BRITAIN,
UNITED STATES, and CANADA,

"STAND 'FIRST' OR 'AT THE HEAD'"

IN THE HEATING, GAS, AND HYDRAULIC WORLD.

Awarded TWENTY PRIZE MEDALS

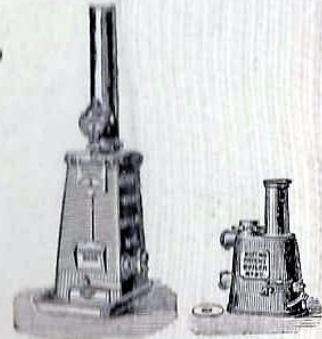
At International Exhibitions at Home and Abroad.



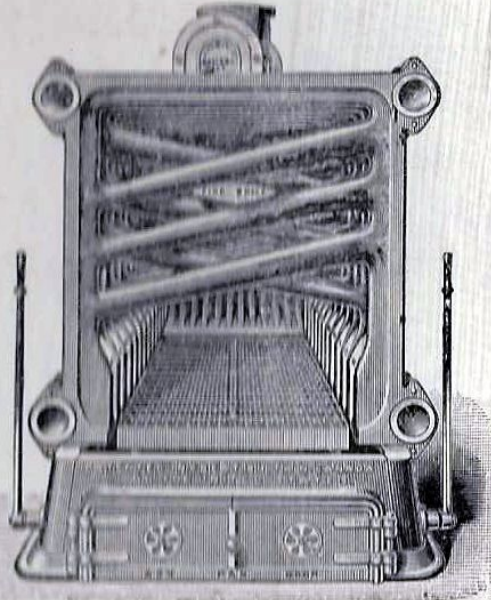
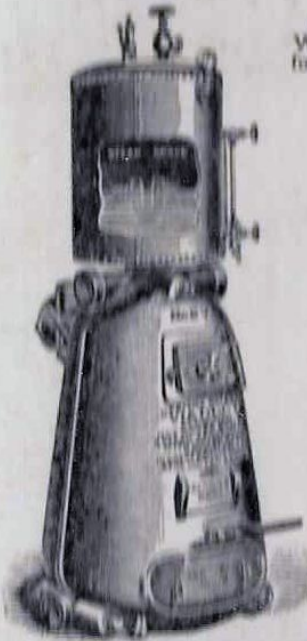
KEITH'S PATENT BOILERS, "CHALLENGE," "VIADUCT," "PYTHON," &C., FOR HOT-WATER HEATING,

require no building work round them, are without rivals in efficiency and economy, and heat respectively from 20 feet up to 20,000 feet of 4-inch pipe, or its equivalent.

KEITH'S PYTHON BOILER, as illustrated below, with front section removed, has 1000 square feet of effective heating surface; heats 20,000 feet of 4-inch pipe, and is the most powerful and complete sectional "special" hot-water heating boiler in the world.

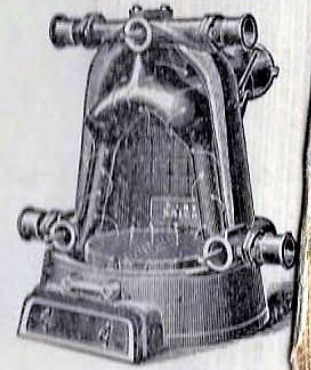


KEITH'S combined Hot-Water and Steam Boiler, in four removable pieces.



KEITH'S BOILERS

are in successful use by the thousands in all parts of the world, and they are almost exclusively used by Her Majesty's Government at the Home Office, for the heating work of the prisons throughout the United Kingdom, in preference to all others.



ESTABLISHED 1823.

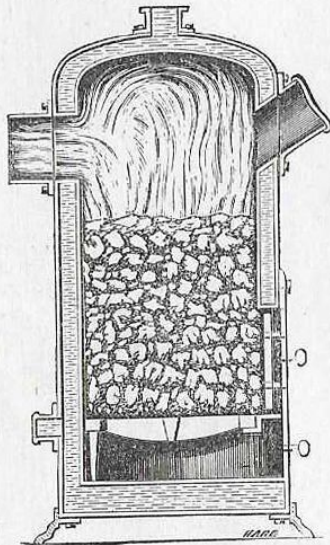
42 PRIZE MEDALS & AWARDS, 1872-1891.

London, Paris, Berlin, Dresden, Melbourne.

HARTLEY & SUGDEN, LIMITED, HALIFAX.

MAKERS OF
WELDED & RIVETED BOILERS
FOR HEATING APPARATUS.

DOME TOP BOILER.

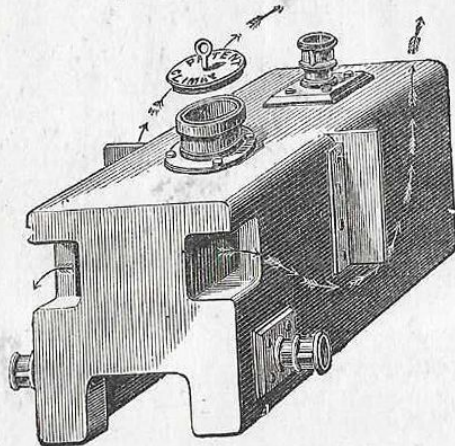


*For Heating by the Circulation of Hot
Water at Low Pressure.*

**THE MOST HEALTHY,
ECONOMICAL, & EFFICIENT
SYSTEM EXTANT.**

Boilers made by this firm are at work in the Imperial Palaces of Great Britain, Germany, and Russia, and several thousands of Boilers for Heating Conservatories and all kinds of Public Buildings throughout the United Kingdom and the Continent, from their Works, are fixed annually.

CLIMAX BOILER.

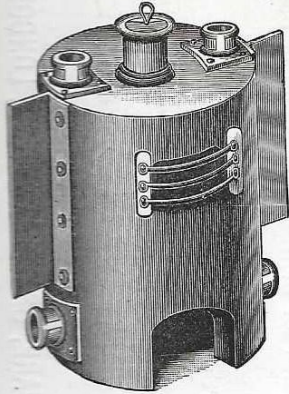


Boilers supplied to
Hot-Water Engineers, Plumbers,
and Ironmongers only.

**CATALOGUES ON
APPLICATION.**

3000 PATENT GOLD MEDAL EXCELSIOR BOILERS

IN USE IN ENGLAND AND ON THE CONTINENT.



NOT ONE FAILURE IN EFFICIENCY AND ECONOMY.

75 PER CENT. of the Board Schools, Churches, Public Buildings, Greenhouses, &c., in Halifax, Bradford, and surrounding districts are heated by it.

CHEAPER THAN ANY OTHER PATENT BOILER.

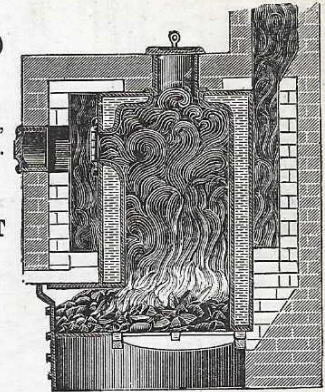
SAVES 15 TO 20 PER CENT. IN FUEL, AND DOES NOT REQUIRE HALF THE ATTENTION.

3 times stronger than Square-shaped Boilers.

CAN BE BANKED UP TO BURN LONGER WITHOUT ATTENTION THAN ANY OTHER BOILER.

MEDALS AWARDED WHEREVER EXHIBITED.

Prices, Catalogues, and all particulars free on application.



ADVERTISEMENTS.

LUMBY, SON & WOOD, LTD.,

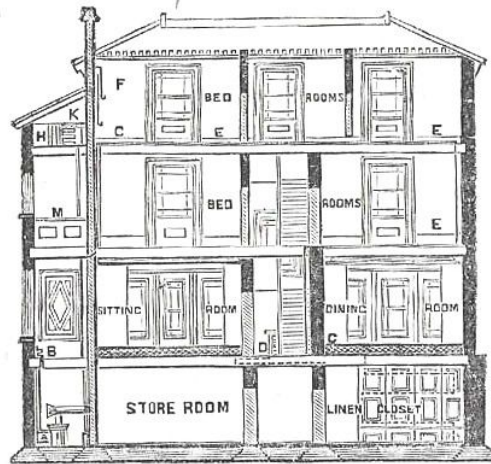
Patentees and Manufacturers of Welded and Riveted Boilers of every description,

FOR HOT WATER OR STEAM HEATING APPARATUS.

WEST GROVE BOILER and SAFE WORKS, HALIFAX.

PERKINS' PATENT HOT-WATER

PERKINS' PATENT SYSTEM



THIS System is **safe, economical, effective, simple, durable, and not liable to get out of order, and can be worked without skilled labour.**

This System has been applied in many thousands of cases in every description of Building, both public and private, during the last 50 years.

It can be applied to heating **Public Buildings, Churches, Chapels, Schools, &c.; Workshops; Private Houses,** large and small, &c., &c.

It can be applied to **Disinfecting Closets,** and **Japanning and Drying Closets** for manufacturing purposes, where heat up to **500 degrees Fahrenheit** is required.

It can also be applied for **melting substances** in open pans or on hot plates.

For further Particulars apply to the
Original Inventors, Patentees and Manufacturers,
A. M. PERKINS & SON,
LIMITED,

43, REGENT SQUARE, GRAY'S INN ROAD, LONDON, W.C.

STEVEN BROS. & CO.

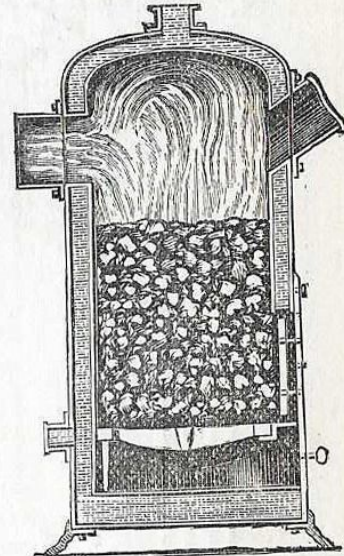
Ironfounders and Manufacturers of Hot-Water Apparatus,
ST. ANDREW'S WHARF, 4, UPPER THAMES ST.,

No. 48.
 CONICAL BOILER.

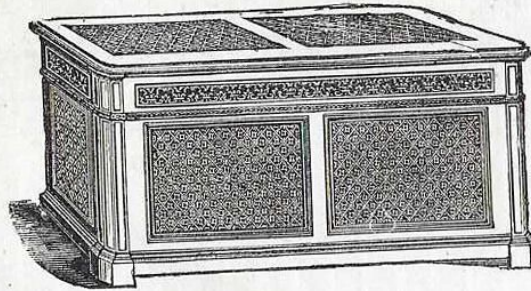


LONDON, E.C.

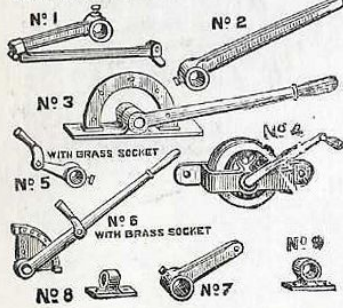
No. 43A. IMPROVED INDEPENDENT
 DOME TOP BOILER, WITH WATERWAY
 BOTTOM.



COIL CASE.



VENTILATING GREEN HOUSE GEARING

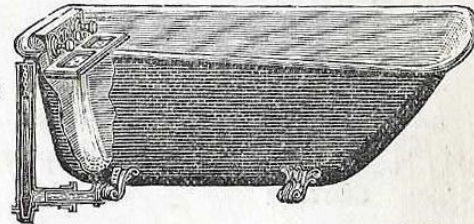


Manufacturers of
**GREENHOUSE
 GEARING,**

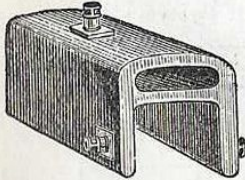
and all requisites
 for the
 Heating of
**CONSERVATORIES,
 HOT HOUSES,**

&c., &c.

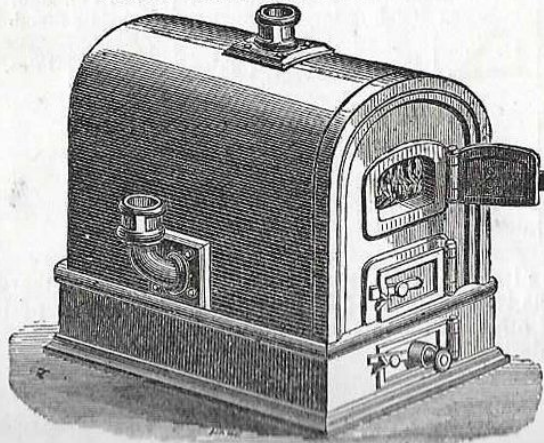
**STEVEN BROS.' PATENT
 BATHS,**
 Complete with Fittings & Soap Tray inside.



No. 28.
 TERMINAL END BOILER.

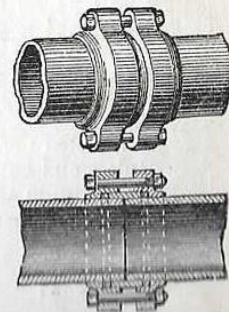


No. 21. INDEPENDENT SADDLE BOILER.

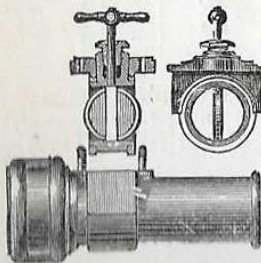


Over 2000 Baths
 in Stock.

PATENT EXPANSION
 JOINT HOT-WATER
 PIPES.



THE MILTON
 HOT-WATER VALVE.



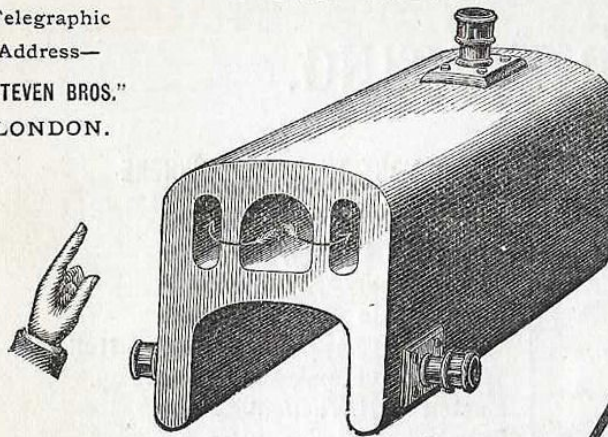
Also, Manufacturers of **STOVES, RANGES, CHIMNEY-PIECES, TILE HEARTHES, CURBS,
 STABLE FITTINGS, and ARCHITECTURAL and CONSTRUCTIONAL IRONWORK.**

SHOW ROOMS—4, UPPER THAMES STREET, LONDON, E.C.

HOT-WATER ENGINEERS, ARCHITECTURAL, SANITARY, & GENERAL IRONFOUNDERS.

Telegraphic
Address—
"STEVEN BROS."
LONDON.

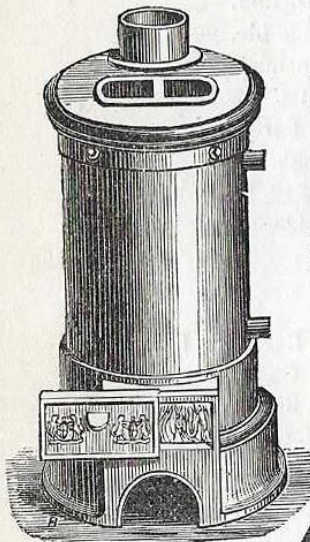
TELEPHONE
No. 1789.



No. 18. GOLD MEDAL BOILER.

No. 51. STAR INDEPENDENT
STOVE BOILER.

Suitable for SMALL
GREENHOUSES,
OFFICES, SHOW-
ROOMS, and
GENERAL
AMATEUR
PURPOSES.



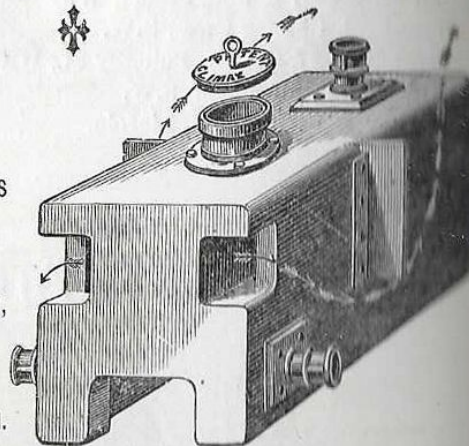
ESTABLISHED
OVER
50
YEARS.

**STEVEN
BROS.**
HAVE THE
LARGEST
AND MOST
VARIED STOCK
IN THE TRADE
OF—

BOILERS,
HOT-WATER PIPES,
CONNECTIONS,
FURNACE FITTINGS,
COILS, COIL CASES,
&c., &c.

STEVEN BROS. & CO.

CUSTOMERS
SENDING
ORDERS BY
POST, TELEGRAM,
TELEPHONE, ETC.,
CAN ALWAYS RELY ON
IMMEDIATE DISPATCH.



No. 47. CLIMAX BOILER.

Estimates given for Heating Churches, Public
Buildings, Conservatories, &c., &c., on application.

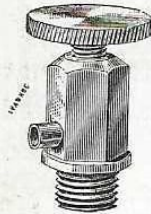
OUR NAME IS A SUFFICIENT GUARANTEE FOR THE
QUALITY OF OUR WORK.

4, UPPER THAMES ST., LONDON, E.C.

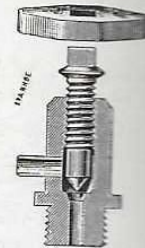
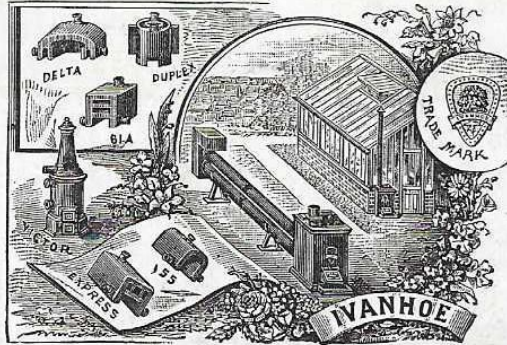
ESTABLISHED 1856.

R. JENKINS & CO., ROTHERHAM.

Registered Design.

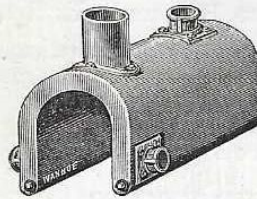


Air Cock,
for Hot-Water
Pipes,
Radiators, &c.

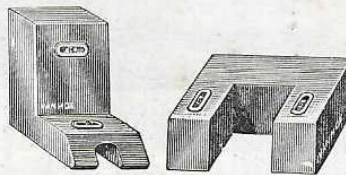


Section of
Air Cock.

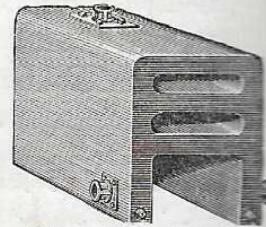
WROUGHT IRON AND STEEL WELDED BOILERS OF SUPERIOR QUALITY AND DESIGN.



Wentworth Boiler.

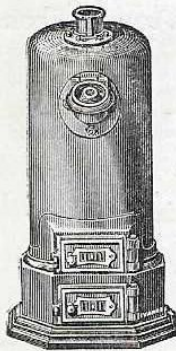


Bath and Range Boilers.

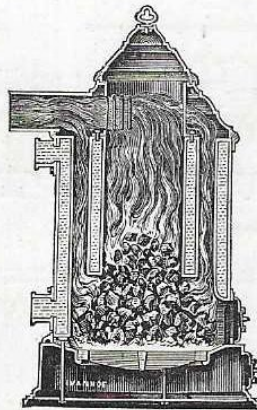


Terminal End Return
Flue Boiler.

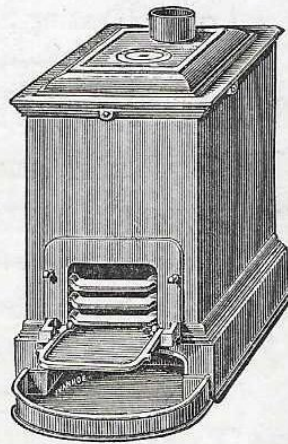
For HEATING by WATER or STEAM.



"Dome Top."



Section "Duplex."



For Harness Rooms, with
Open-Fire Front. Independent
Cylinder Boilers.



Illustrated Catalogue, with 265 Illustrations, forwarded
on receipt of Trade Card.

GOLD MEDAL—MIDLAND COUNTIES EXHIBITION, 1891.

SILVER MEDAL—DERBYSHIRE AGRICULTURAL SOCIETY, 1891.

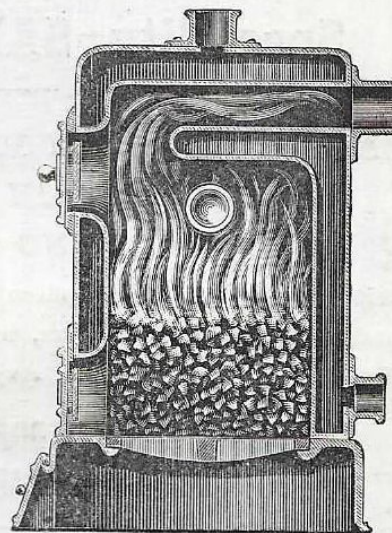
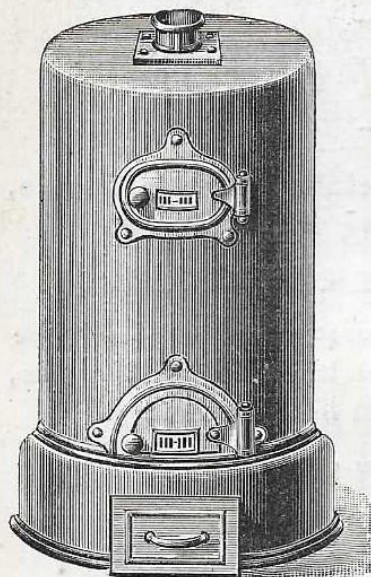
MATHER & KITCHEN,

Severn Boiler and Engineering Works,

TELEGRAMS, "WELDED, DERBY."

DERBY.

TELEPHONE No. 100.



NEW PATENT "SEVERN" HOT-WATER BOILER,

FOR WORKING WITH OR WITHOUT BRICKWORK.

Occupies less space, and has more direct-heating surface than
any other Vertical or Horizontal Boiler.

EVERY PATTERN OF BOILER MADE,* AND A LARGE
ASSORTMENT KEPT IN STOCK.

CATALOGUES AND ALL INFORMATION GRATIS.

GOODS THROUGH THE TRADE ONLY.

A PRACTICAL TREATISE
UPON
WARMING BUILDINGS
BY HOT WATER

AND UPON
HEAT AND HEATING APPLIANCES IN GENERAL

WITH AN ENQUIRY RESPECTING VENTILATION,
THE CAUSE AND ACTION OF DRAUGHTS IN
CHIMNEYS OR FLUES, AND THE LAWS
RELATING TO COMBUSTION

By CHAS. HOOD, F.R.S., F.R.A.S., &c.

REWRITTEN BY
FREDERICK DYE
AUTHOR OF 'HOT WATER SUPPLY,' ETC. ETC.

THIRD NEW EDITION, FULLY REVISED TO DATE



London:
E. & F. N. SPON, LIMITED, 125 STRAND
New York:
SPON & CHAMBERLAIN, 12 CORTLANDT STREET

1897

HARTLEY & SUGDEN, LTD.

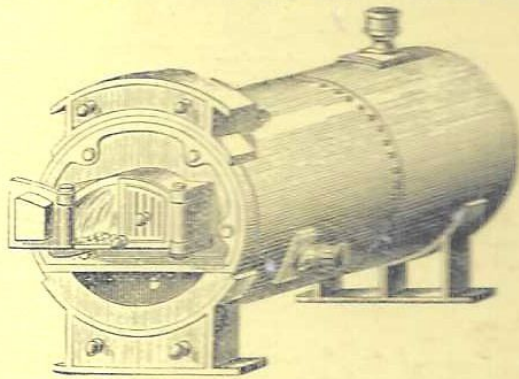
HALIFAX, ENGLAND.

WROUGHT-IRON AND STEEL
WELDED AND RIVETED BOILERS,

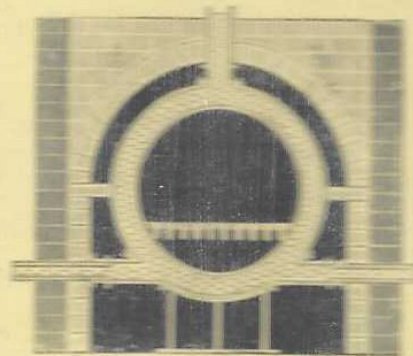
OF EVERY DESCRIPTION, FOR

HOT-WATER AND STEAM HEATING APPARATUS.

CORNISH "TRENTHAM" BOILER.



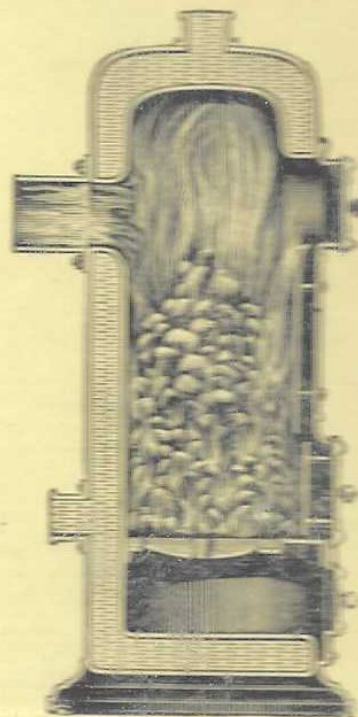
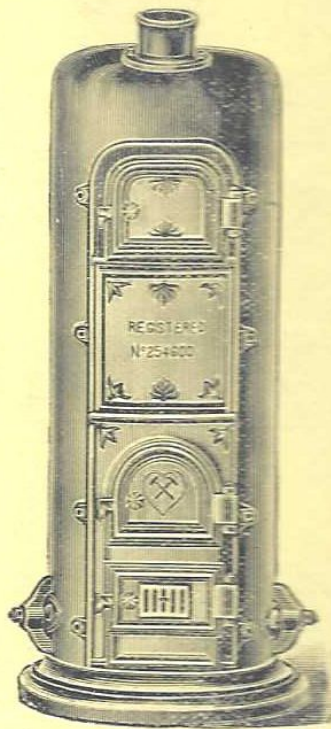
ELEVATION.



CROSS SECTION.

NEW REGISTERED DESIGN
INDEPENDENT DOME TOP BOILER, with Waterway Bottom.

No. 2e.



TRADE MARK
"IVANHOE."

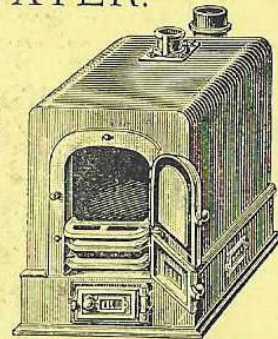
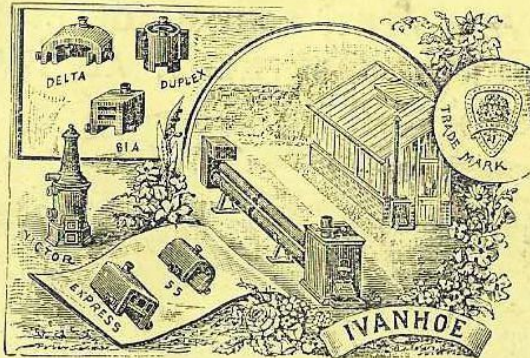
BOILERS

TRADE MARK
"IVANHOE."

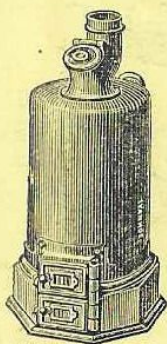
BY STEAM OR HOT WATER.



AMATEUR'S
BOILER.



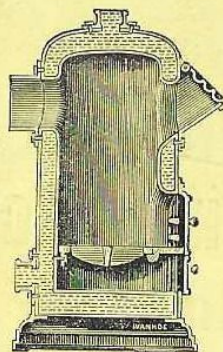
INDEPENDENT
SADDLE BOILERS.



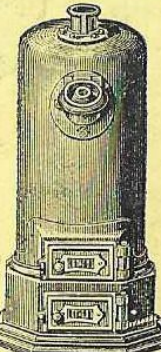
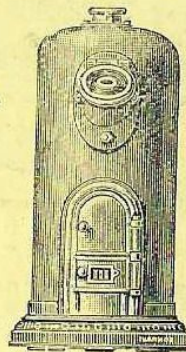
"MONAD."



No. 2 Design.

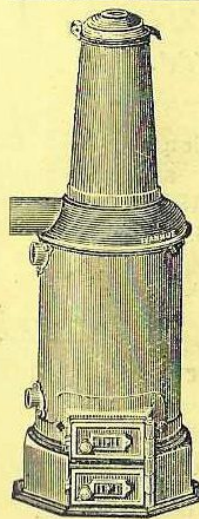


DOME-TOP BOILERS,
with Water-way Bottom.

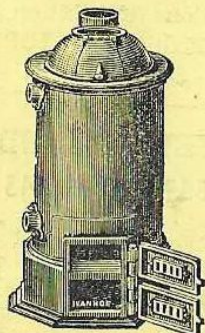


No. 3 Design.

INDEPENDENT BOILERS, SUPERIOR QUALITY,
R. JENKINS & CO., ROTHERHAM.

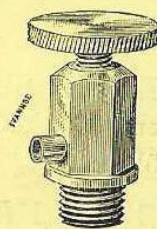


"VICTOR"
BOILERS.



AIR COCKS, with Fast or Loose Keys
for Radiators, &c.

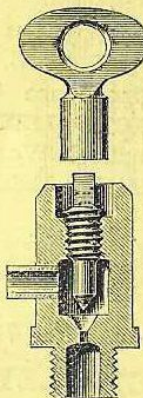
Illustrations
are half size.



No. 1 Elevation.



No. 3 Elevation.



No. 3 Section.

ILLUSTRATED CATALOGUE, showing prices of these and other Boilers in Iron
and Steel, on receipt of Trade Card.

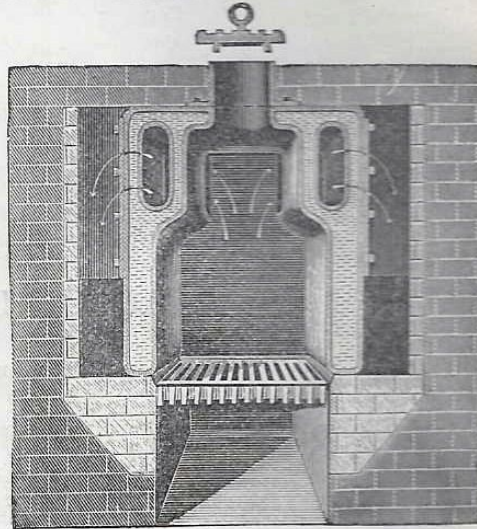
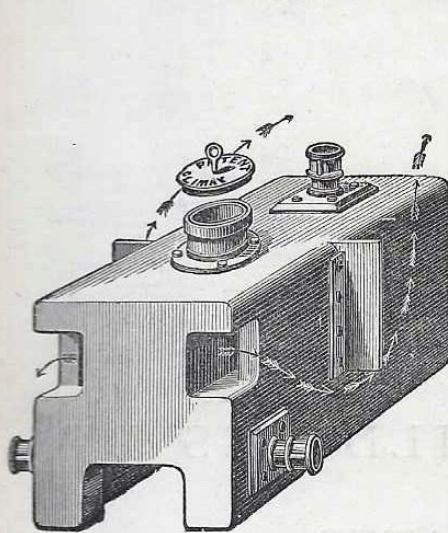
ROTHERHAM.

Telegraphic Address:
"Jenkins, Rotherham."

HARTLEY & SUGDEN, LTD.
HALIFAX, ENGLAND.

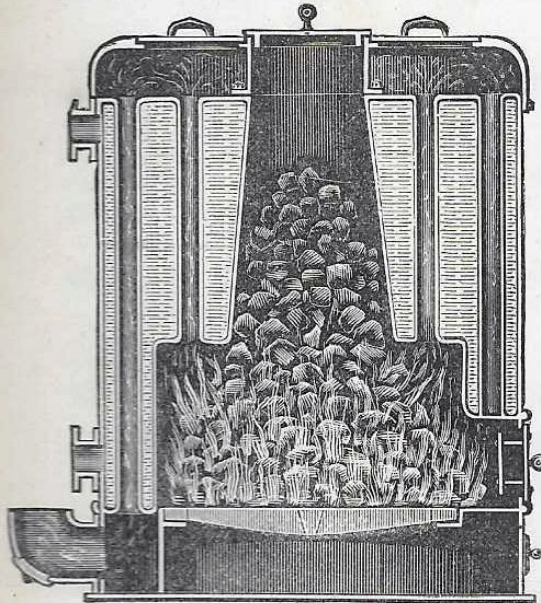
WROUGHT-IRON AND STEEL
WELDED AND RIVETED BOILERS,
OF EVERY DESCRIPTION, FOR
HOT-WATER AND STEAM HEATING APPARATUS.

PATENT "CLIMAX" BOILER.

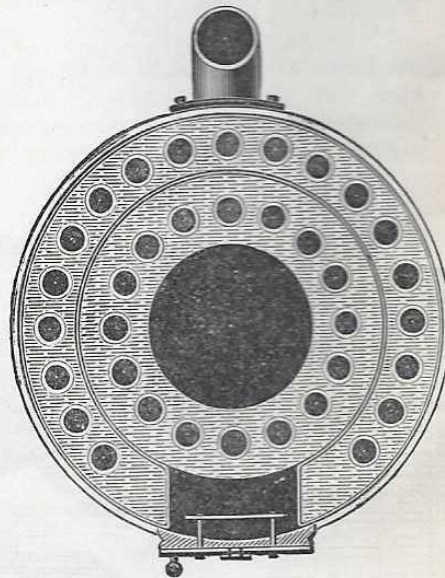


CROSS SECTION.

NEW REGISTERED
INDEPENDENT BASE BURNING BOILER, "THE LION."



SECTIONAL ELEVATION.



CROSS SECTION.

WM. GRAHAM & SONS,

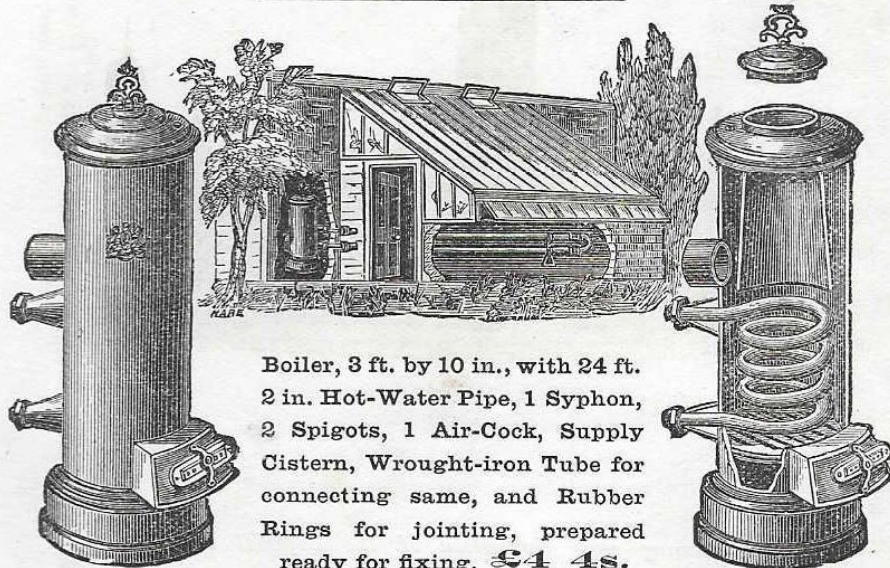
Trig Lane, Castle Yard, & 35 Upper Thames St.

Telegraphic Address: "BAYNARD," LONDON. LONDON, E.C.

HOT-WATER ENGINEERS AND FITTERS.

BOILERS, PIPES, TUBES, COILS,
COIL CASES WITH IRON AND MARBLE TOPS,
AND HOT-WATER FITTINGS.

Ventilating Gearing for Greenhouses.



Boiler, 3 ft. by 10 in., with 24 ft.
2 in. Hot-Water Pipe, 1 Syphon,
2 Spigots, 1 Air-Cock, Supply
Cistern, Wrought-iron Tube for
connecting same, and Rubber
Rings for jointing, prepared
ready for fixing, £4 4s.

ASTON TUBE WORKS, ASTON, near BIRMINGHAM.

Telegraphic Address: "PLUME," BIRMINGHAM.

TUBES AND FITTINGS FOR GAS, STEAM, WATER
AND HEATING PURPOSES.

Tubes Orders over £2 nett value DELIVERED FREE to any
Railway Station in England.

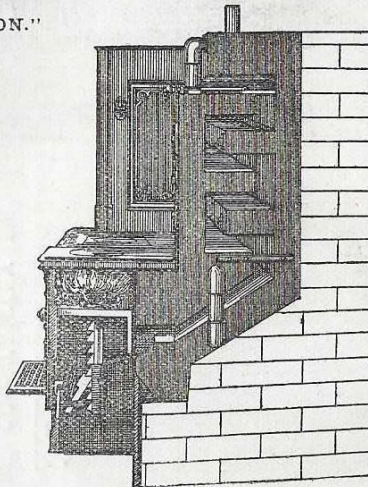
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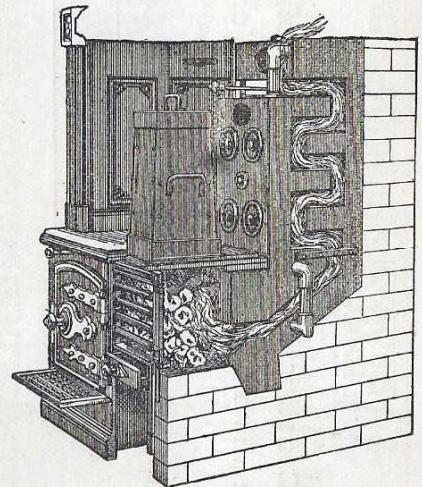
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