

# STEAM & HOT WATER BOILERS 1840-1930

**HITCHINGS & CO'S**  
**Corrugated Fire Box Boiler.**

FOR HEATING GREEN HOUSES, GRAPERIES & C. & C.

FACTORY and OFFICE: 233 Mercer St. NEW YORK.

Patented July 25d. 1867.

**DIRECTIONS FOR SETTING AND USE.**

Place the boiler on a brick base, raised a few inches above the floor of the pit or cellar, with the top of the boiler as much below the level of the heating pipes as is practicable. Let all the pipes (both flow and return) have a slight descent, so that their entire contents will drain and empty into the boiler. In preparing the pit for the boiler, bear in mind that the force of the circulation is increased by increasing the depth of the boiler below the level of the heating pipes.

To secure a good draft, place the boiler near the chimney and avoid the use of horizontal pipes or flues. A brick chimney is preferable to any kind of duct or clay pipes. For the large size boilers, it should be twelve inches square inside; for the smaller ones, eight by twelve inches, or eight inches square, inside, and carried up three or four feet above the ridge of the roof and above any surrounding objects.

Anthracite, or either of the hardest varieties of a sub-bituminous coal, is the best and most economical fuel; when that cannot be obtained, bituminous coal or coke, or coal mixed with a refuse of cinders, shales or slates, is not good for the purpose.

To obtain the best results, keep the fire-box, front and ash-pit of the boiler clean; before kindling a new fire, turn the grate door and remove all cinders and dirt; if inferior coal is used, this must be done every day; do not throw the grate cover while hot, as it is liable to break. See that the fire at the back of the fire-box is not obstructed, and occasionally open the upper door and clean the upper flue; this should be done as often as necessary to prevent the accumulation of dirt, and remove with the kind of fuel used.

When kindling the fire, open the damper in the cellar to the flue, and open the draft door sufficiently to give the necessary draft; when the fire is established, the damper should be partially closed. When leaving the fire for the night, fill the fire-box with coal (not level with the door) regulate the direction of the fire by closing the damper more or less, as may be found necessary. If this does not give sufficient control, then close the ash-pit door and regulate the draft by it, but in all cases use the damper as the most and preferable means of controlling the fire. The fire must not be made unless the boiler and pipes are filled with water so as to secure a free circulation; nor must the boiler and pipes be exposed to frost, without a fire, while filled with water.

A boiler is damaged by most starting the engine without first seeing that the water is on, and every care should be taken to discharge the super-heater. When the means for firing have passed, let water remain in the boiler and pipes; thoroughly clean the front and draft from every part of the fire-box, the ash-pit, and let the doors and dampers remain open, and have a free circulation of air through the boiler pit or cellar. In case the boiler is placed in an extremely damp pit, the interior of the fire-box and flue, and also the flues and interior of the boiler and ash-pit, should be thoroughly dried.

Figure VIII Nineteenth-century advertising broadside for a "saddleback" steam boiler (from ASHRAE Centennial collection, donated by Ms. Janet Afford)

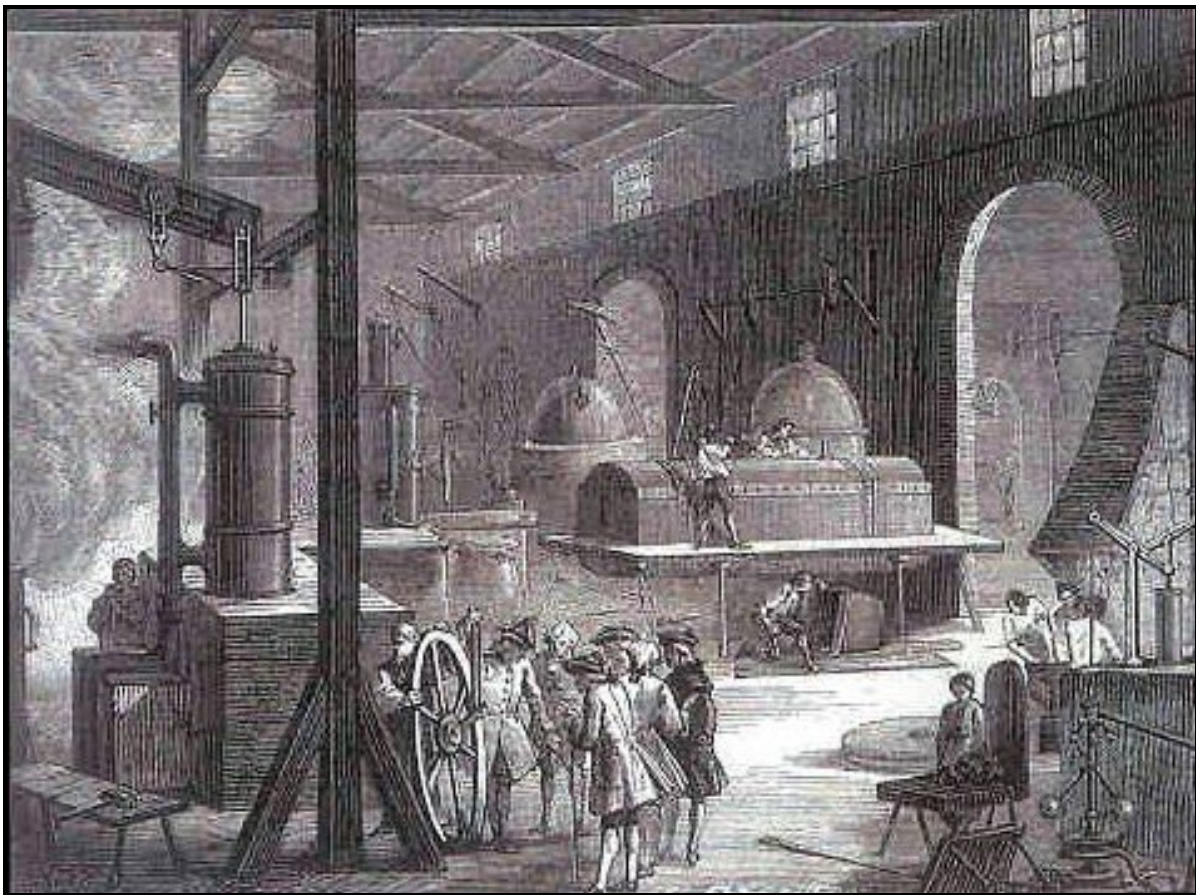
**Eur Ing BRIAN ROBERTS CEng HonFCIBSE  
Life Member ASHRAE**

**CIBSE HERITAGE GROUP**

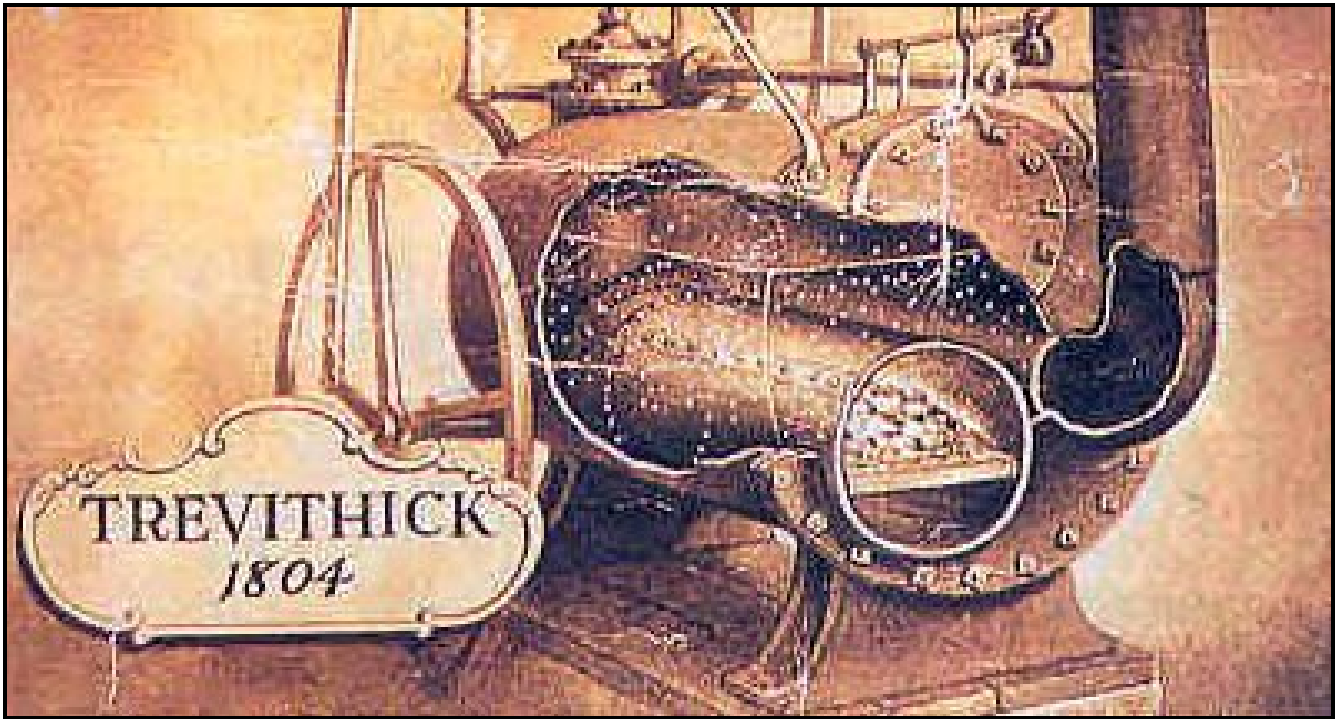
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## Introduction

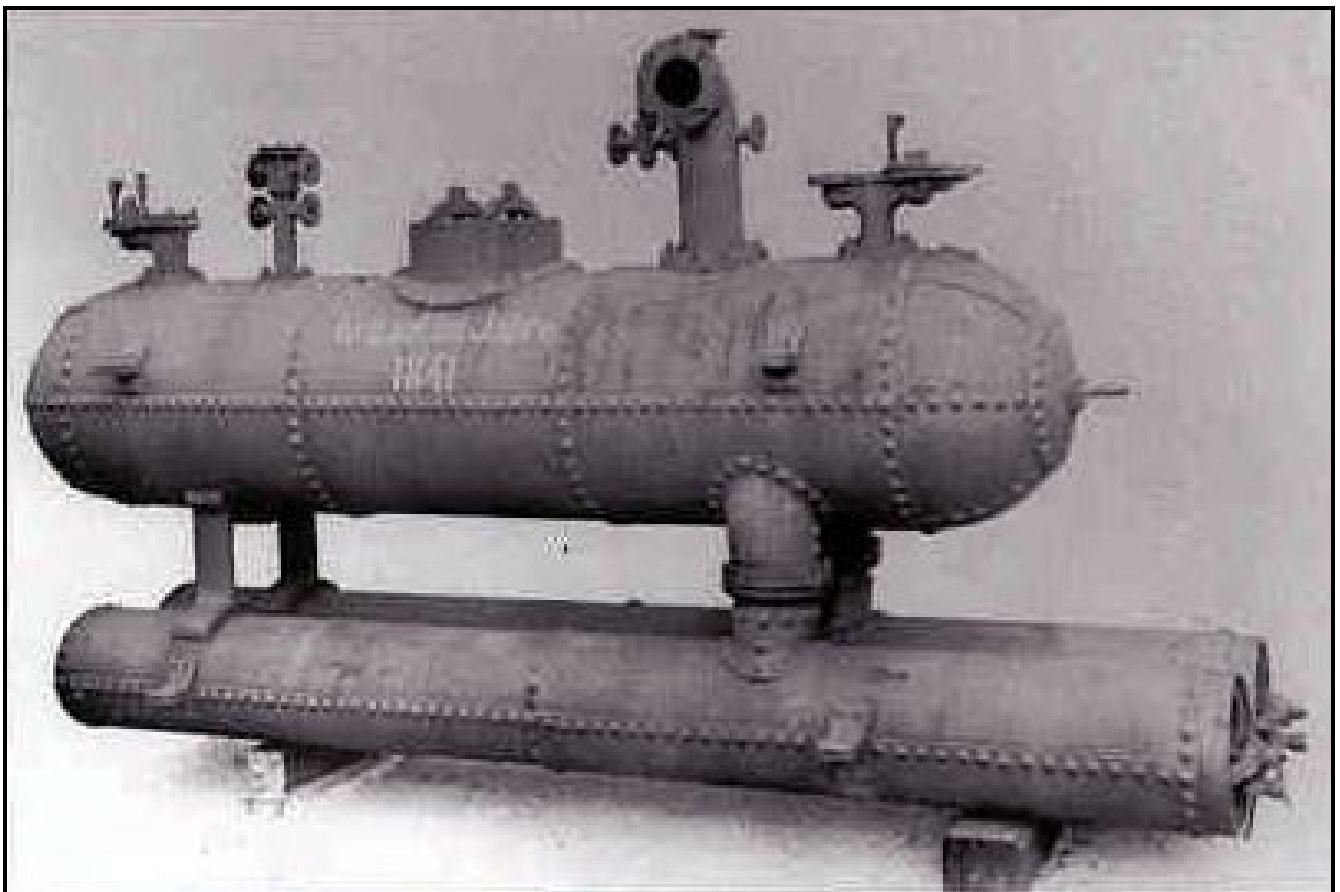
The CIBSE Heritage Group Archive, compiled over some forty-five years, holds a modest, but important collection of books and information on Steam and Hot Water Boilers. The effective use of steam dates back to about 1800 when boilers were introduced by Bolton & Watt and Richard Trevithick in England and by Oliver Evans in America. From the 1840s onwards steam boilers were developed by many engineers and companies. Some of these are shown on the Heritage Group website under [Electronic Books/A Parcel of Boilers](#). Further examples are given in the illustrations which follow while a representative selection of extracts from boiler textbooks and catalogues is given in the various sections of this ebook. The final section of this ebook titled *Sources of Information* provides a list of References to books and technical papers on Steam and Hot Water Boilers.



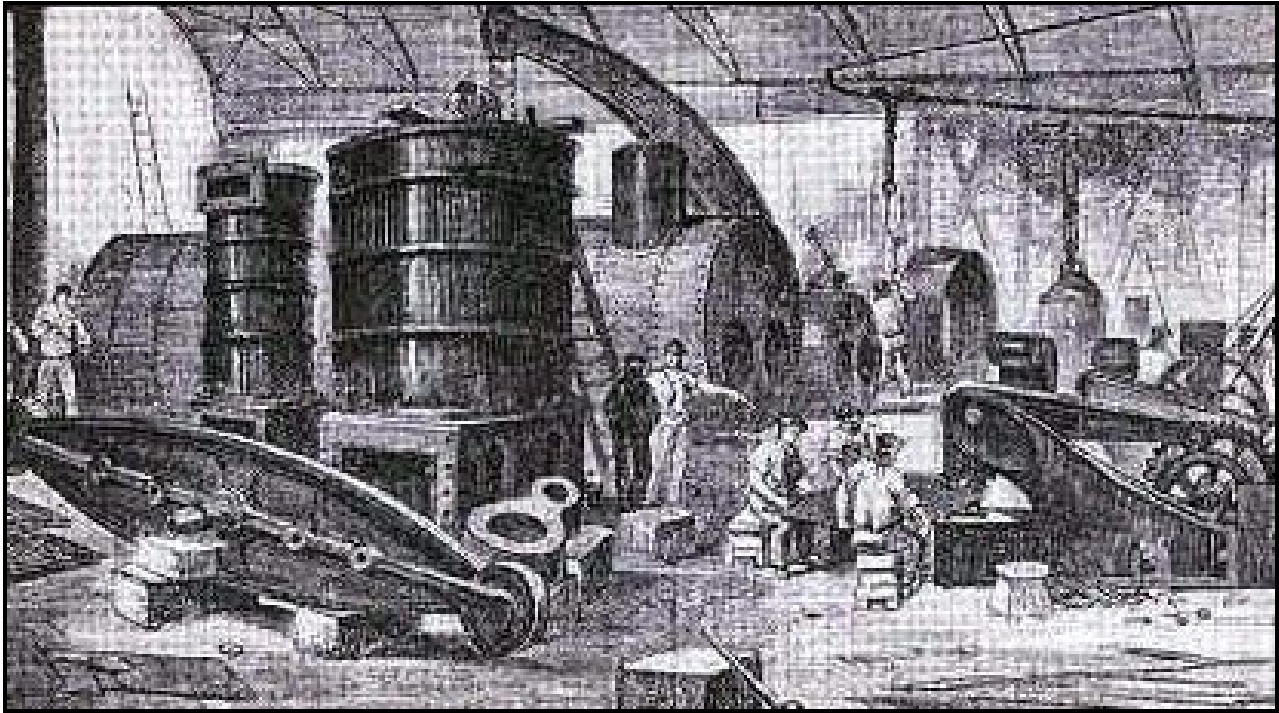
Manufacturing boilers at Boulton & Watt, about 1800



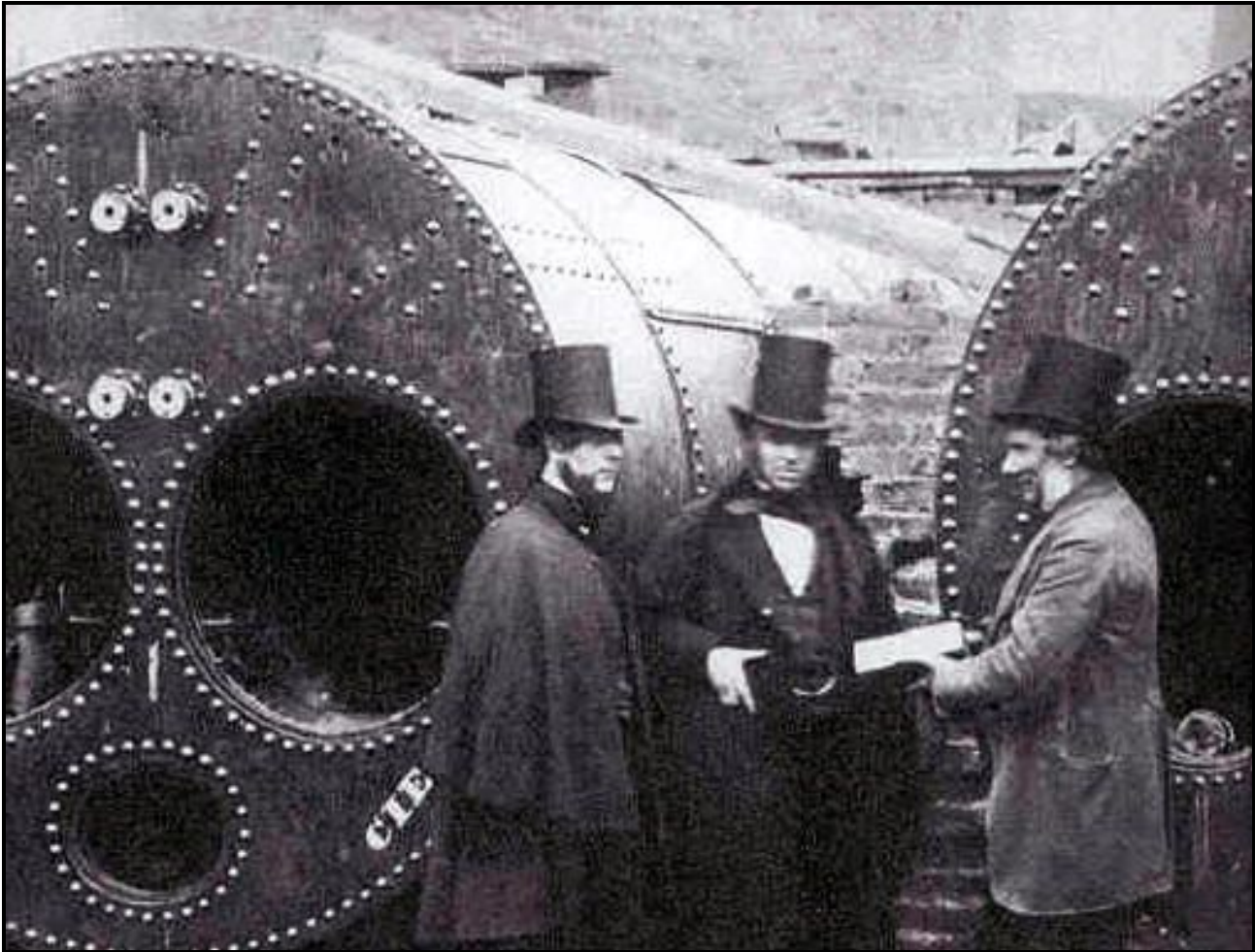
The Trevithick Cornish Boiler of 1804



A Sulzer boiler of 1841



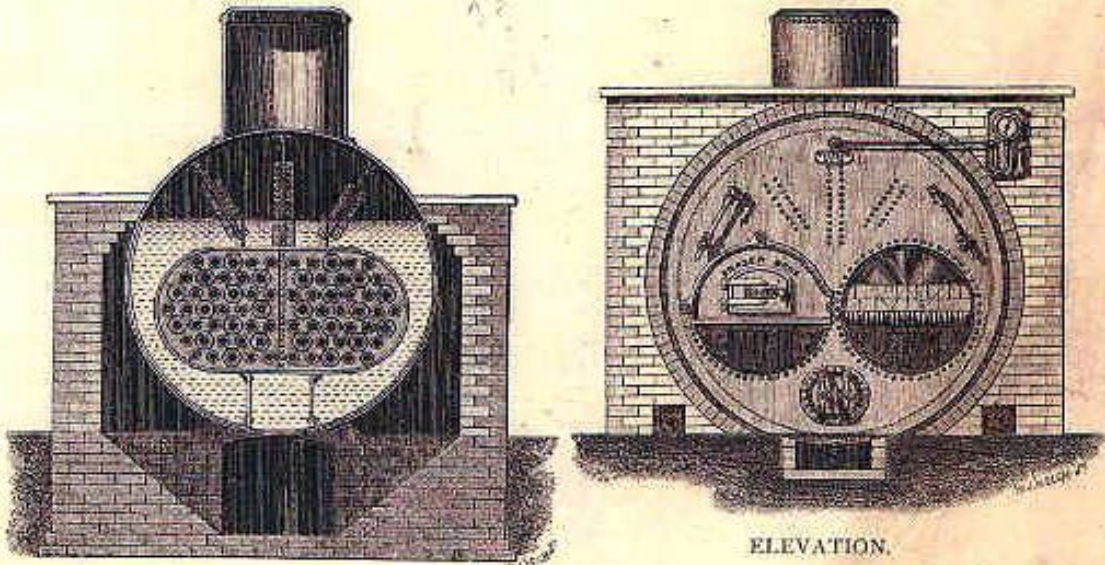
Making Lancashire boilers at the Fairbairn factory in Manchester, 1861



Inspecting boilers at the London Exhibition of 1862

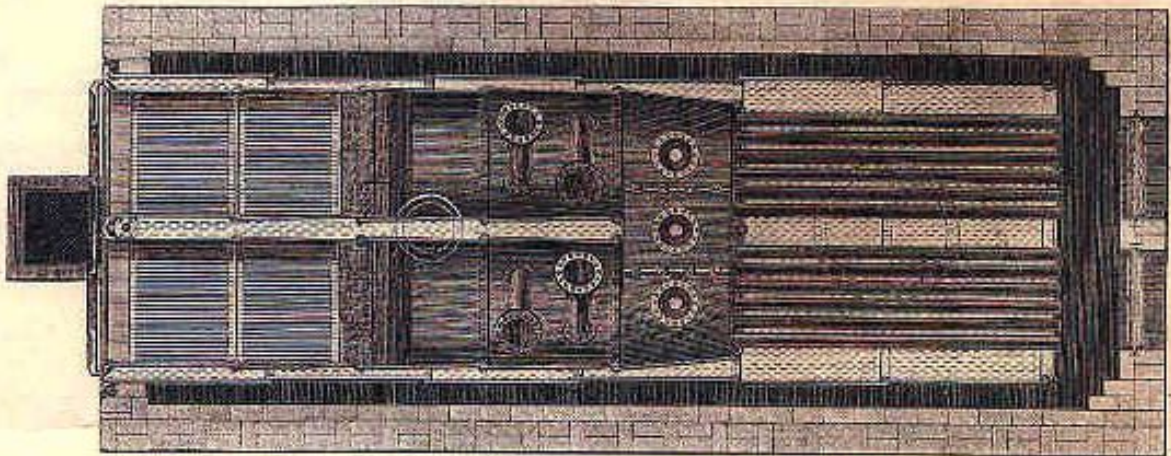
# FRASER'S SPECIAL COMPOUND BOILER.

STRONGLY RECOMMENDED FOR ECONOMY OF FUEL.



SECTION.

ELEVATION.



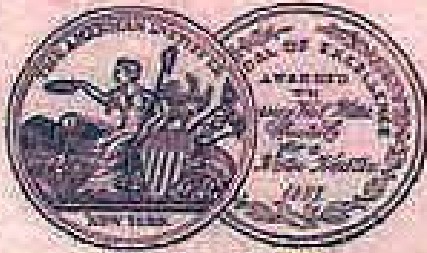
SECTIONAL PLAN.

FRASER BROTHERS,  
BROMLEY-BY-BOW, LONDON, E.

THE WARMING AND VENTILATION OF BUILDINGS.

PLATE No. 21.

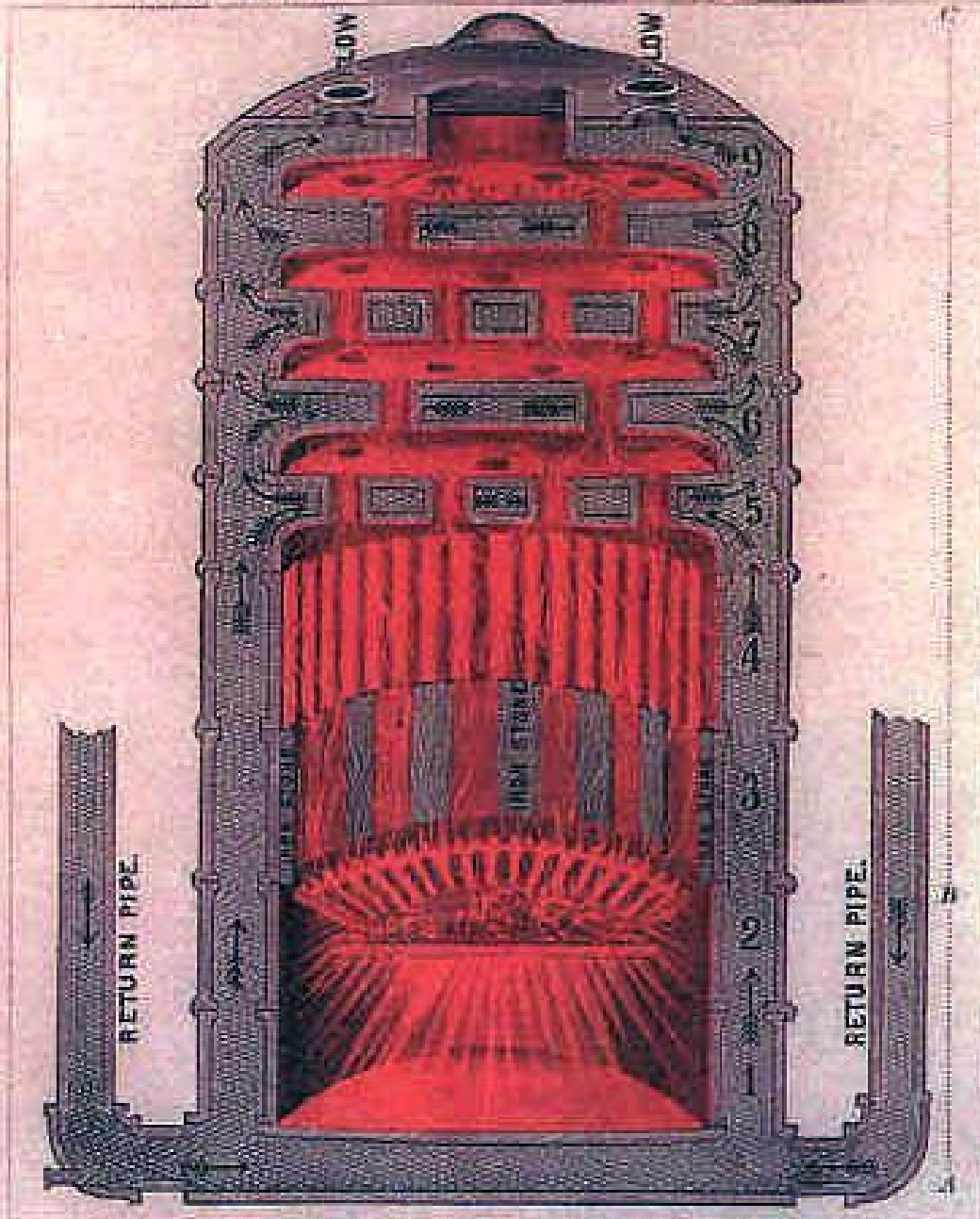
# GURNEY'S NEW PORTABLE HOT-WATER BOILER.



HIGHEST AWARD.

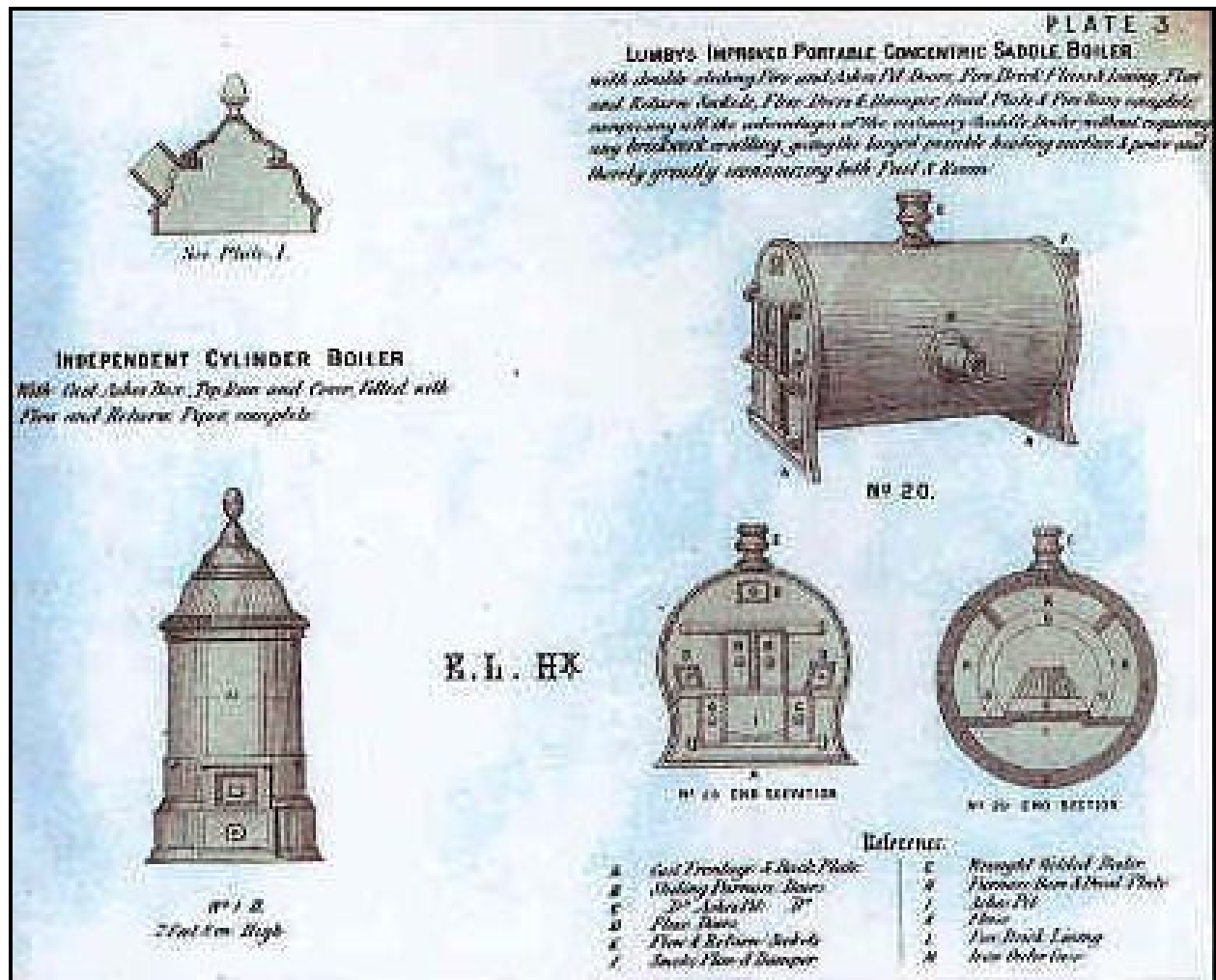


GOLD MEDAL.



Sectional Elevation, showing the New Water Base.

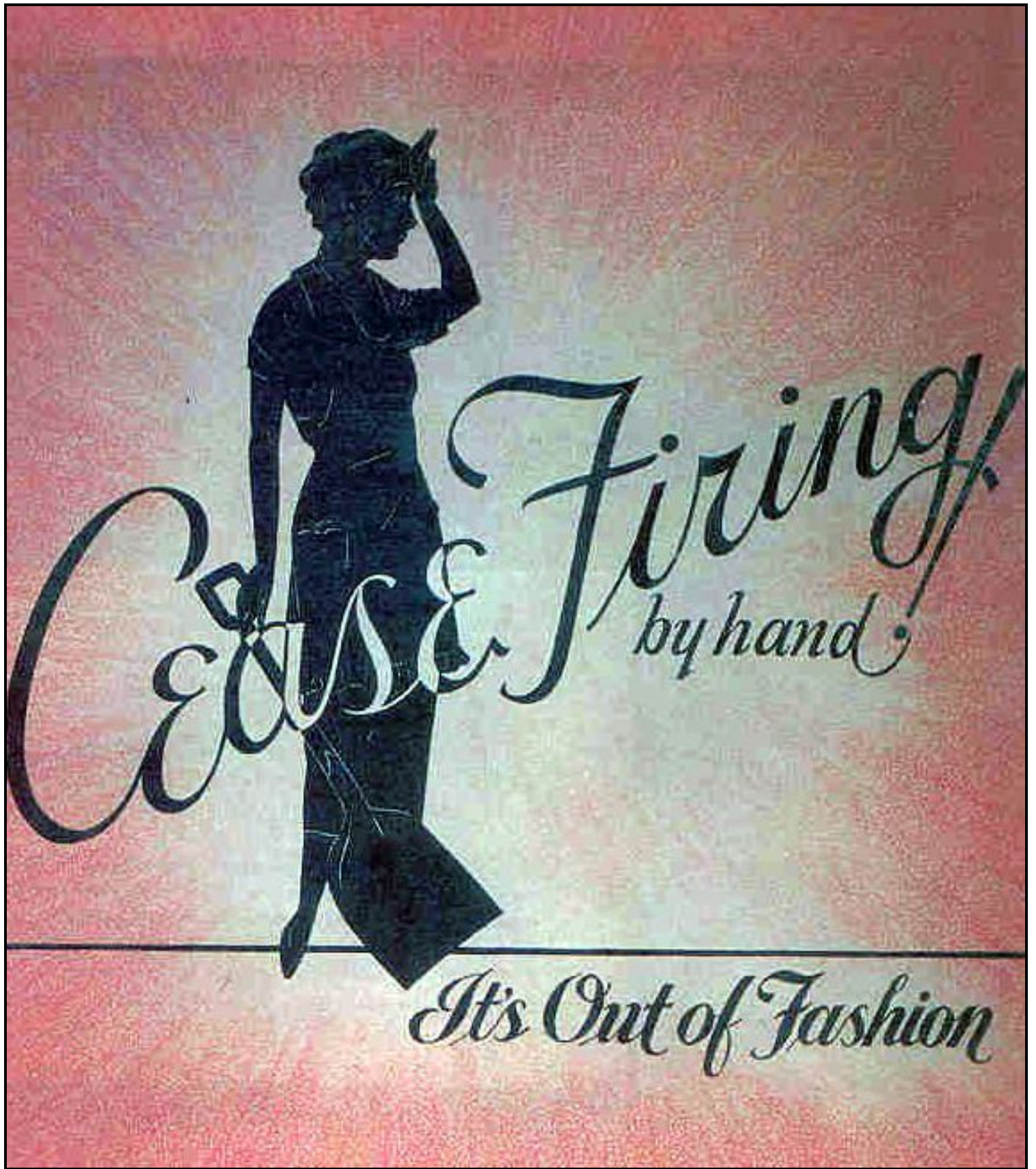
The Gurney Hot Water boiler of the 1890s



The Lumby boiler of 1861

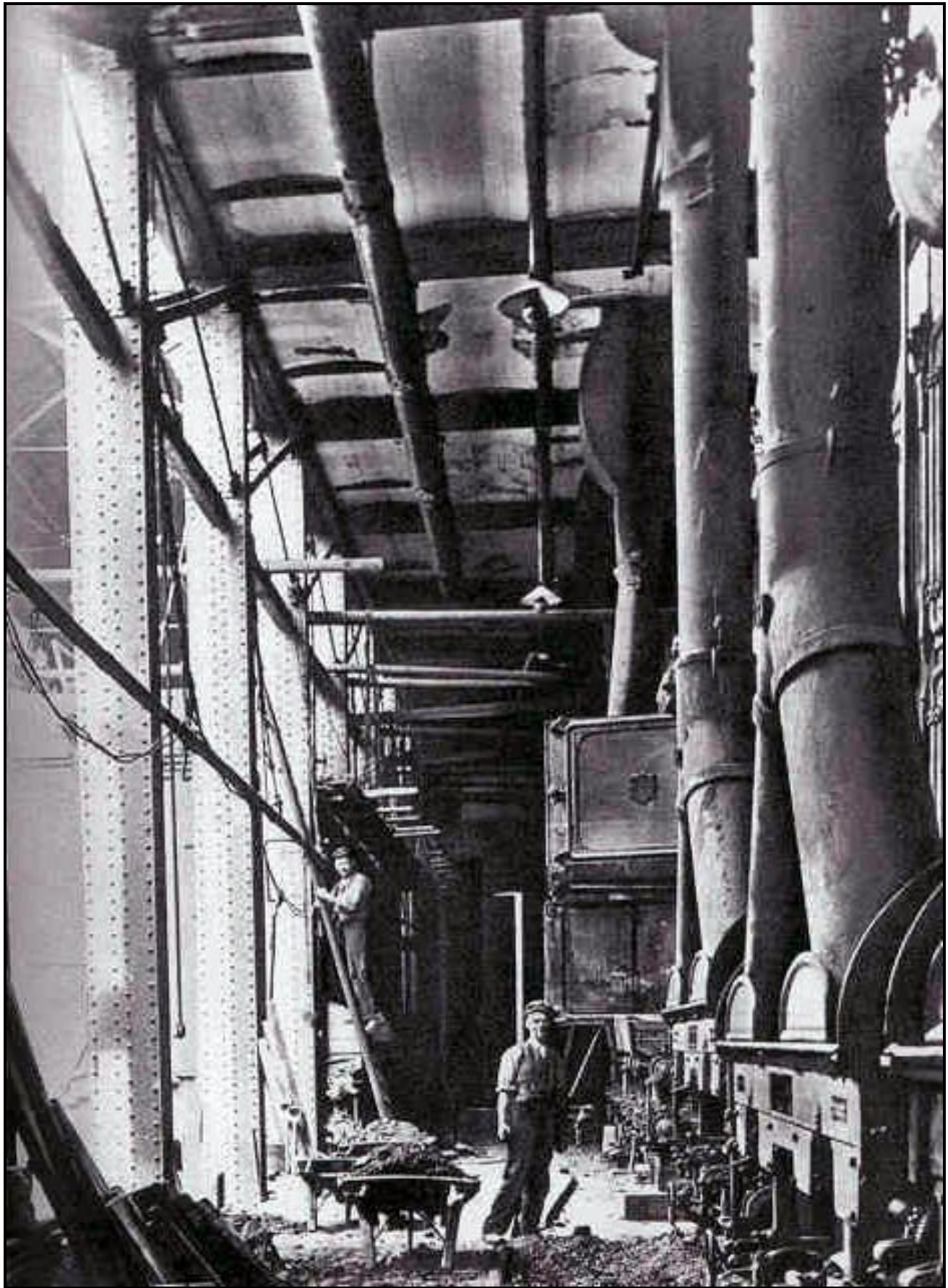


A John Thompson boiler being transported across Chile in the 1920s



American advertisement from 1936





Boiler house of the City of London Electric Lighting Company in Bankside, probably 1890s

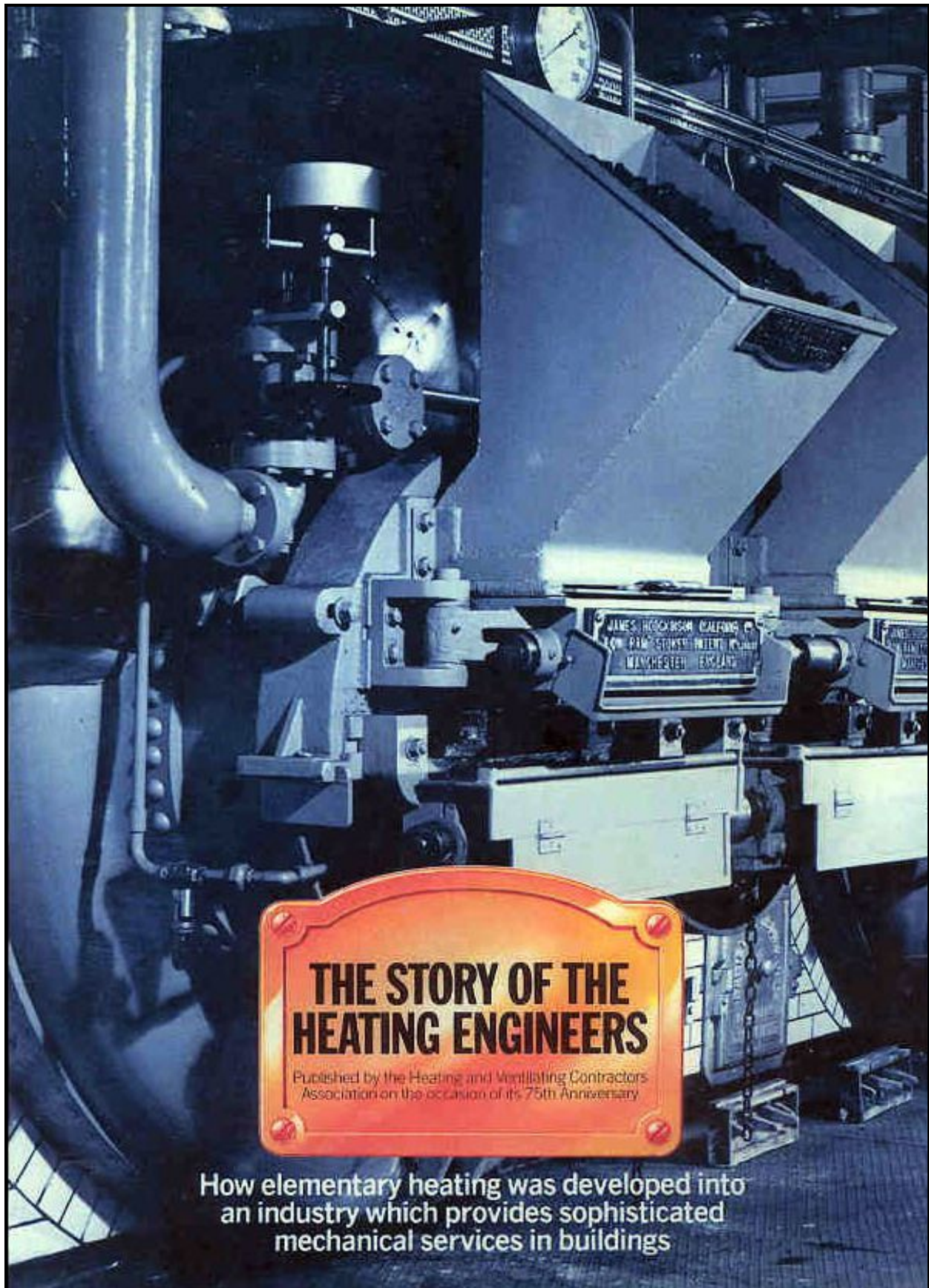
**When Summer breezes blow;  
remember Winter's icy blasts-**

**Insure complete  
home comfort  
and cut your  
heating costs  
*with a*  
Weil-McLain Boiler**



**Weil-McLain**  
**SCIENTIFIC COMBUSTION**  
**BOILERS**

American advertisement for Weil-McLain boilers, date unknown



HVAC 75<sup>th</sup> Anniversary Brochure of 1979