

The Comfort Makers

Brian Roberts



American Society of Heating, Refrigerating
and Air-Conditioning Engineers, Inc.

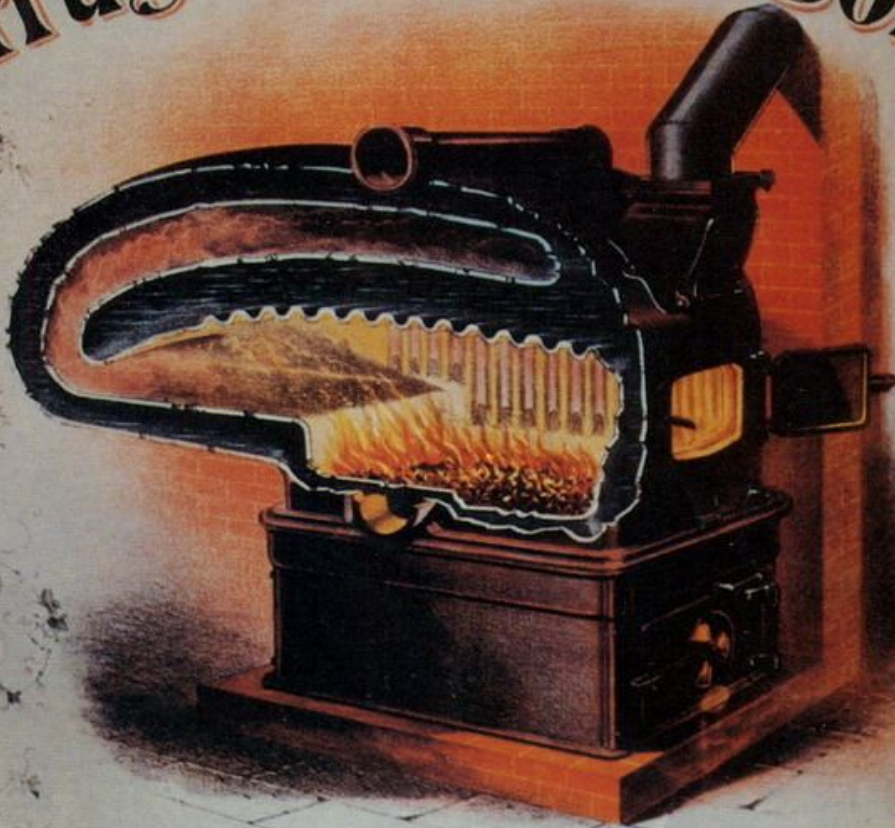


Woodcut: Ventilating Machines (Wind Collectors) for Mines, Germany.
De Re Metallica, Georgius Agricola [51], 1556. From 13, p. 201.

HITCHINGS & CO'S

Corrugated Fire Box Boiler.

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



FACTORY
and OFFICE:
233 Mercer St.
NEW YORK.

Patented July 23d, 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 metal 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.

Bituminous, or other of the hardest varieties of Anthracite Coal, is the best and most economical fuel; when that cannot be obtained, Bituminous Coal or Coke, or Coal and Coke mixed, may be used. (If Anthracite, Stone or Rag size is best for the small boilers, while the size known as Purbeck or Broken Coal is best for the larger ones; coal that in burning leaves a refuse of cinders, slate or stone, is not good for the purpose.)

To obtain the best results, keep the fire-box, flues and ash-pit of the boiler clean; before kindling a new fire, turn the grate over and remove all cinders and dirt; if inferior coal is used, this must be done every day; do not turn the grate over while hot, as it is then liable to break. See that the flue 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 varies with the kind of fuel used.

When kindling the fire, open the damper in the collar to the flue, and open the ash-pit door sufficiently to give the necessary draft; after the fire is established, the damper should be partially closed. When leaving the fire for the night, fill the fire-box with coal nearly level with the fire-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 ventilator in it; but in all cases use the damper as the first and principal 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 rust during the summer months far more than by the winter's use, and every care should be taken to diminish the corrosion. When the season for firing has passed, let water remain in the boiler and pipes; thoroughly clean the rust and dirt from every part of the fire-box, flue and ash-pit, and let the doors and dampers remain open, and keep 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 flanges and joints of the boiler and ash-pit, should be thoroughly oiled.

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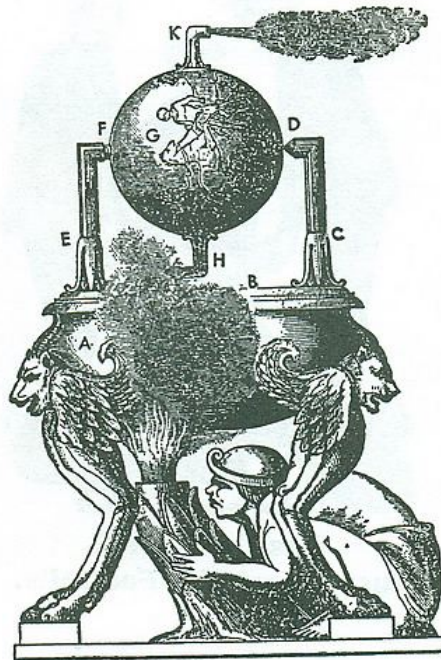


**Easy to Carry,
Just Invert the Footralls.**

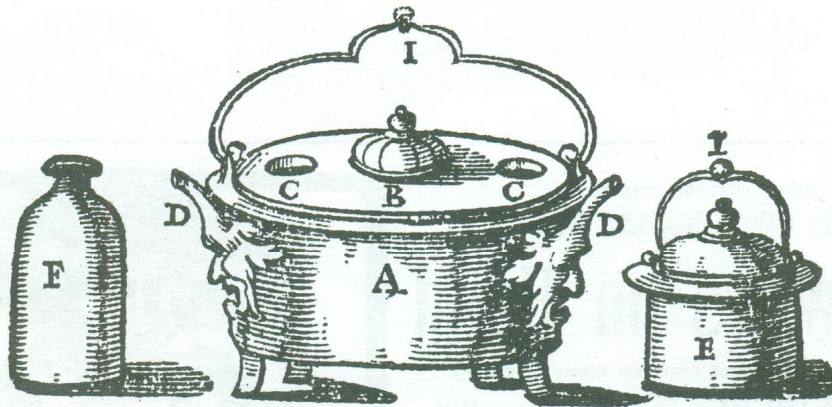
*Advertisement: Moore's Air Tight Heater.
Joliet Stove Works, Illinois, USA.
The Metal Worker, 3 July 1897, p. 9.*

About the Author

Brian Roberts, C.Eng., is a consultant in Surrey, England. He has been chief engineer for two major U.K. design-contractors and technical director of an air-handling unit manufacturer. He has been an ASHRAE member since 1973 and has served on ASHRAE committees and contributed to *ASHRAE Transactions*. Mr. Roberts is also a European Engineer (Eur.Ing.) and a Fellow of CIBSE. In the U.K., he has served on technical committees of CIBSE, the Heating and Ventilating Contractors' Association, the Building Research and Information Association, and the British Standards Institution. He has coauthored a textbook on air conditioning and a history of building services, written some 70 technical and historical papers, lectured extensively, and is the author of the CIBSE Centenary book, *The Quest for Comfort*. He is chairman of the CIBSE Heritage Group, is CIBSE Hon.Librarian, and in 1994 was awarded the CIBSE Silver Medal.



Steam Engine (Aeolipile) by the Greek engineer Hero [1], c. 50 AD. From 2, p. 64.



*Cooling Device (Scacchi's Frigidarium), Italy, 1622.
An ingenious apparatus for cooling beverages. From 20, p. 23.*

No matter what the weather is
The "WINCHESTER" Heater is

Always on Hand

If the house was warm last winter there was a
"WINCHESTER" in the cellar.

Smith & Thayer Co.

Boston, Mass.

NEW YORK OFFICE: FULLER BUILDING.



*Advertisement: "The Winchester Heater," Smith & Thayer Co., Boston, Mass.
From 99, p. 87 (Engineering Review, February 1904).*

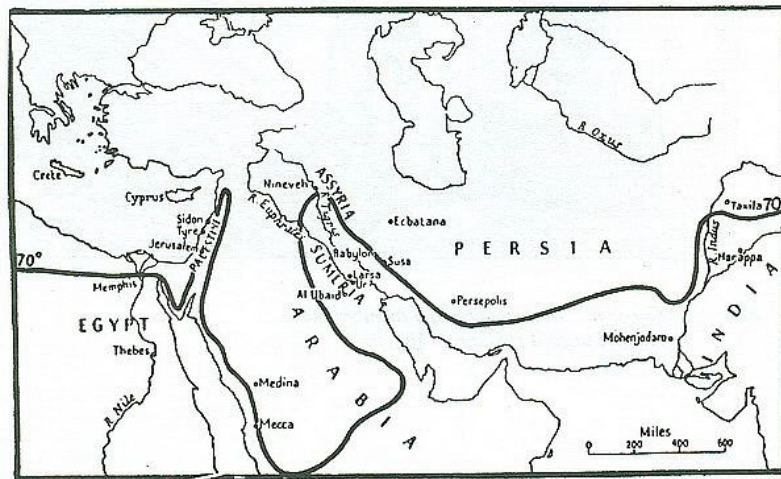
Introduction

As ancient civilizations moved away from the warmer climates, the heating industry was born. This book contains information on 270 comfort makers who have contributed to our knowledge of heating, ventilating, refrigeration, and air conditioning over two millennia.

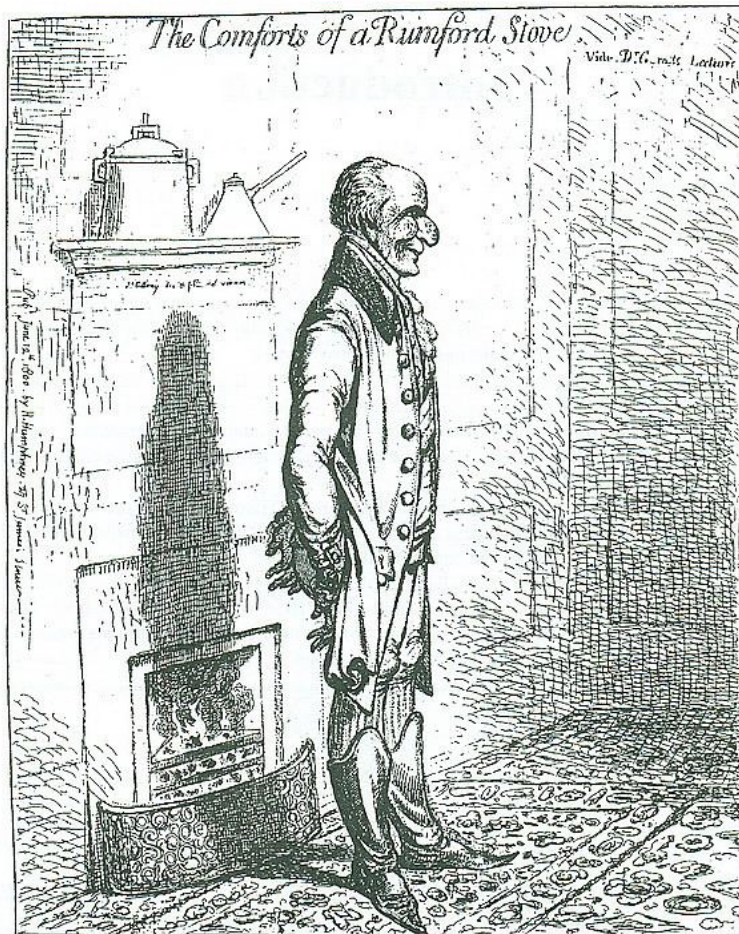
These pioneers were engineers, architects, and scientists. Some were manufacturers, designers, installers, or control specialists. The biographies include many people famous in the HVAC&R field; others are virtually unknown. A number are world-famous for notable achievements in science or other areas and are included because of a particular contribution, often largely unrecognized, to the development of comfort engineering.

The comfort makers are the personal choice of the author. There are many others deserving of recognition, but not overlooked are the founders and early presidents of some of the institutions, societies, and associations who helped to organize the comfort industry.

This book is a companion to the ASHRAE Centennial (1994) publications *Heat & Cold: Mastering the Great Indoors* and *Proclaiming the Truth* and to the CIBSE Centenary (1997), book *The Quest for Comfort*. These have been extensively cross-referenced in the biographical entries as readily accessible sources of additional information and matching illustrations.



7. *The 70°F Isotherm Related to Ancient Civilizations.*
Climate & Man, Neville Billington (President IHVE, 1970),
Building Services (IHVE Journal), July 1984, p. 53.



8. *Cartoon: "The Comforts of a Rumford Stove."
Count Rumford [15]. From 105, fig. 1.*