

# The Comfort Makers

Brian Roberts

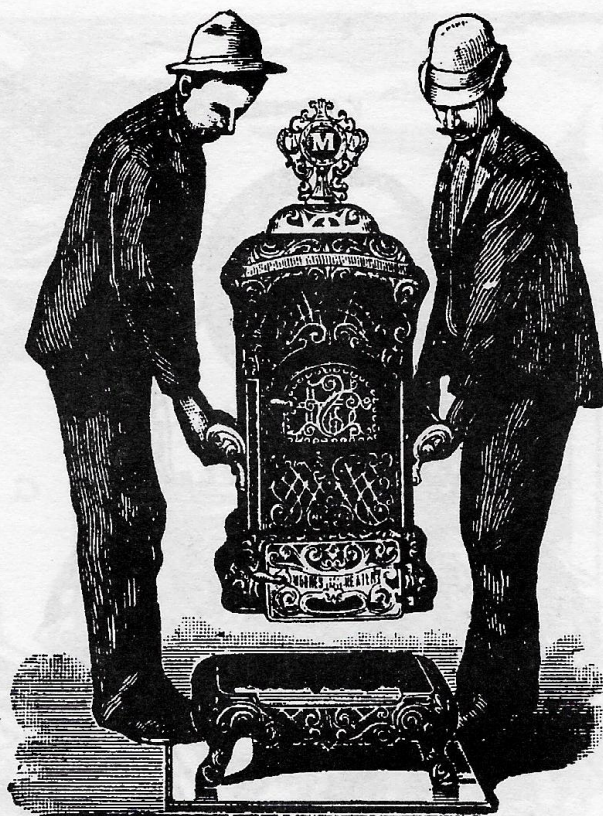


American Society of Heating, Refrigerating  
and Air-Conditioning Engineers, Inc.



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

# The Comfort Makers

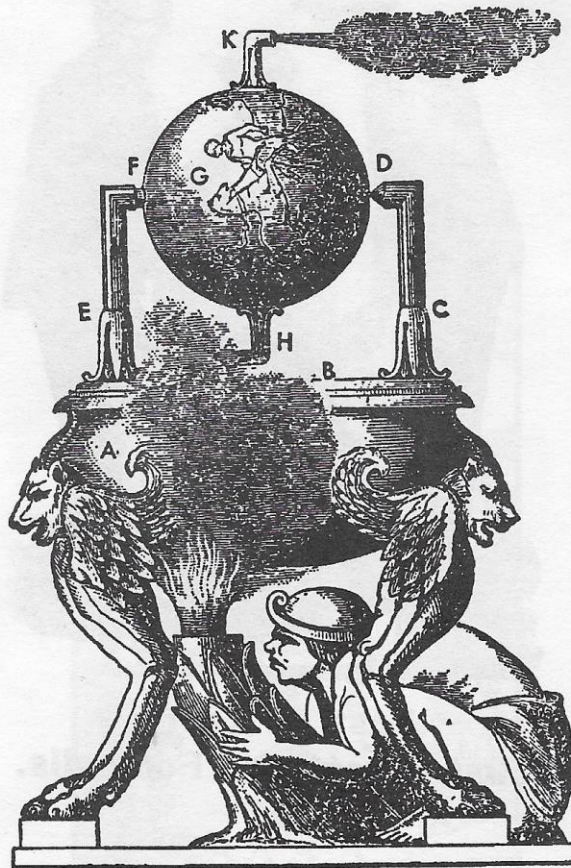


**Easy to Carry,  
Just Invert the Footrails.**

*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.Eng.) 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 co-authored 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.*

**The Comfort Makers** contains information on 270 pioneers who have contributed to our knowledge of heating, ventilating, refrigeration, and air conditioning over two millennia. The story is told in a series of mini-biographies with over 100 portraits and some 40 contemporary illustrations and advertisements.

These pioneers were engineers, architects, and scientists. Some were manufacturers of heating, ventilating, and cooling equipment or were controls specialists. Others were designers or installers. 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. These include doctors, writers, civil engineers, mathematicians, soldiers, horticulturists, a U.S. president, a Bavarian count, statesmen, ironmongers, philosophers, an artist, a curate, a cardinal, an abbot, a railway engineer, a meteorologist, and others from many walks of life or fascinating backgrounds.

To these are added the founders, organizers, and early presidents of some of the institutions, societies, and associations that helped establish the comfort industry: the American Society of Heating and Ventilating Engineers (1894), the American Society of Refrigerating Engineers (1904), and the Institution of Heating & Ventilating Engineers in London (1897).

Today, we take for granted comfort at home, at work, and at play. **The Comfort Makers** reminds us of just some of the people and organizations that made this possible.

# Table of Contents

Acknowledgments.....	ix
Introduction .....	xi
The HEAT MAKERS.....	1
The VENTILATORS.....	21
The COLD MAKERS .....	33
The AIR CONDITIONERS.....	43
The COMFORT CONTROLLERS.....	55
The COMFORT PIONEERS .....	63
Some COMFORT ARCHITECTS.....	81
The COMFORT DESIGNERS.....	93
The COMFORT INSTALLERS.....	103
The COMFORT ORGANIZATIONS.....	111
Index of Biographical Entries.....	127
Bibliography.....	135

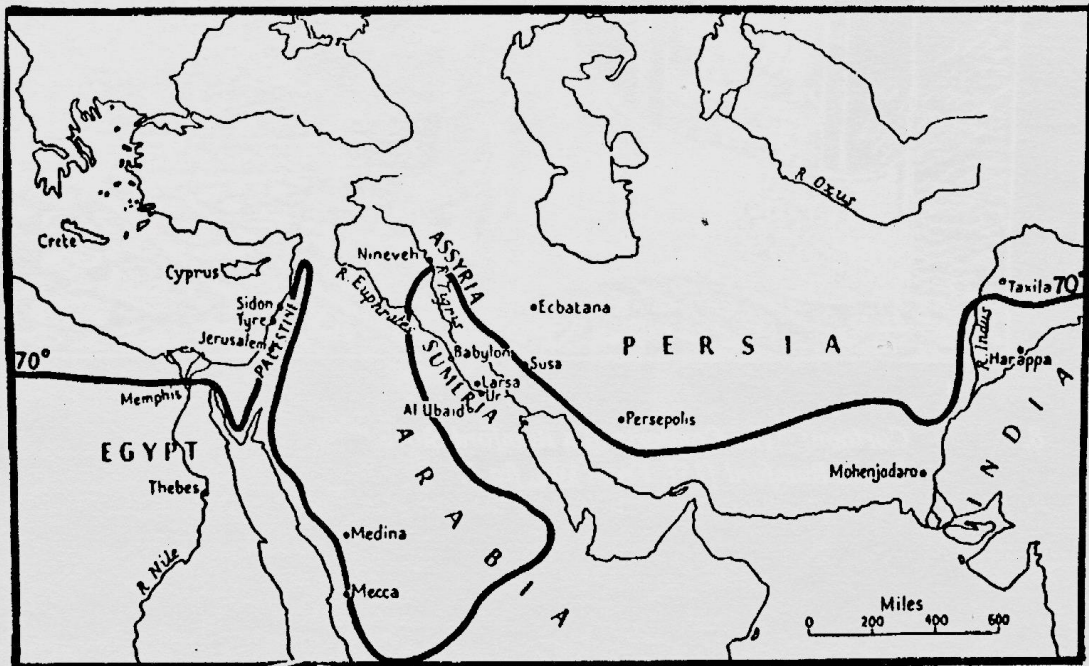
# Introduction

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.



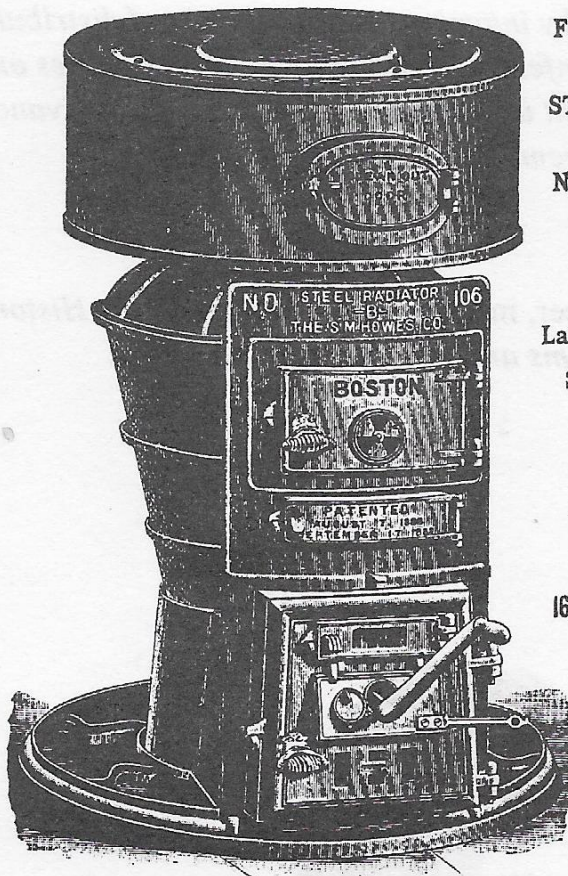
8. *Cartoon: "The Comforts of a Rumford Stove."*  
Count Rumford [15]. From 105, fig.1.

The S. M. Howes Company

# STEEL RADIATOR FURNACE.

## POINTS

Extremely Low Price.  
First-class Manufacture.  
All Practical Selling Features.



FULL CONVERTIBLE FLUE in  
Top Radiator.

STEEL PLATE driven into Cup  
Joints.

No possible chance for gas to  
escape.

Extra Large Combustion  
Chamber.

Large Doors. Solid Front Shield.

Sectional Fire Pot and Dome.

Castings Extra Smooth  
and Perfectly Fitted.

Dust Flue, Water Pan, etc.

SIX SIZES:

16, 18, 20, 22, 24 and 26 inch Fire Pots.

IN EVERY WAY

JUST WHAT THE

TRADE WANTS.

SEND FOR DESCRIPTIVE CATALOGUE AND PRICES.

## The S. M. Howes Company,

40, 42, 44 and 46 Union Street,  
BOSTON, MASS.



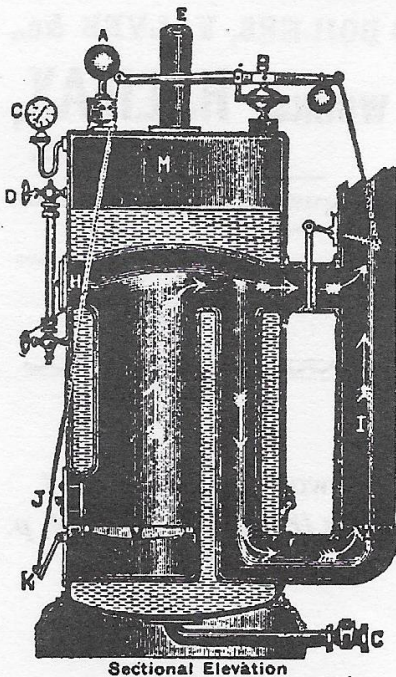
*The Oldest & Largest Makers in the World. Medals awarded wherever exhibited.*

Telegrams: "Lumby, Halifax."

# LUMBY, SON & WOOD, LTD.,

West Grove Boiler and Safe Works, HALIFAX,  
.. ENGLAND.

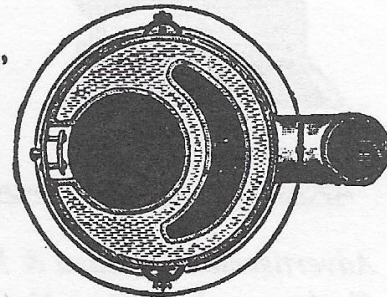
**EFFICIENT, ECONOMICAL,  
AND DURABLE.**



Prices and Particulars on  
Application.

The "Marlor"  
STEAM  
HEATER.

Reg. No 273,408

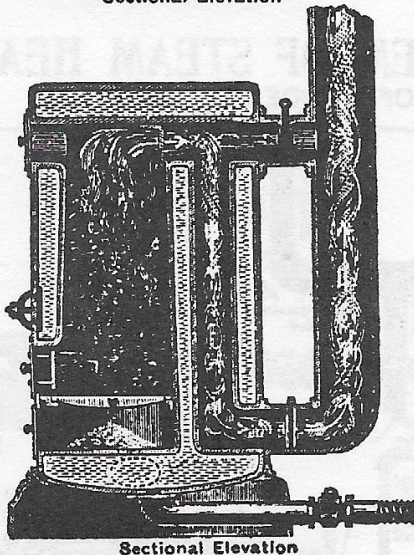


.. Makers of all patterns of ..

**RIVETED AND WELDED BOILERS  
FOR ALL PURPOSES.**

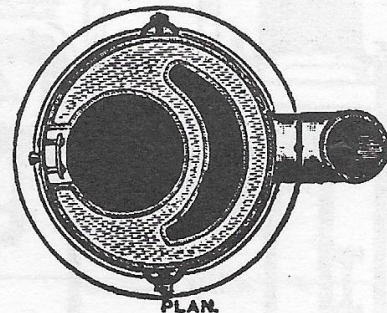
The **LARGEST STOCK** in the Kingdom.

*The most complete Catalogue in the Trade  
post free on receipt of Trade Card.*



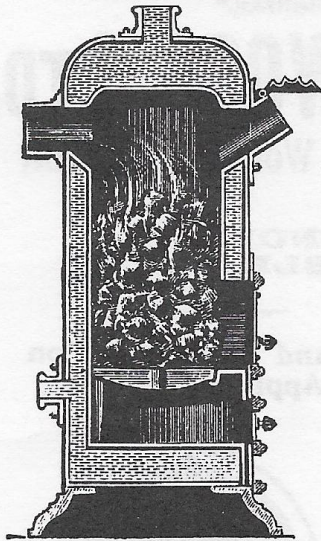
The  
"Marlor"  
HOT WATER  
BOILER.

Reg. No. 271,532



10. *Advertisement: Steam Heaters and Boilers.  
Lumby, Son & Wood, Halifax, founded 1858.  
Domestic Engineering, March 1897, p. 77.*

ESTABLISHED 1854.



Dome Top Boiler  
with water-way base.

# GRAHAM AND FLEMING

(Successors to S. T. Crook's Exors.)

INVENTORS & MAKERS of

## WELDED BOILERS

for Low Pressure Heating,

RIVETTED BOILERS, VALVES &c.,

**PREMIER WORKS, HALIFAX,  
ENGLAND.**

Complete Catalogue Free on application

Boilers quoted for and made to customers' own sketches

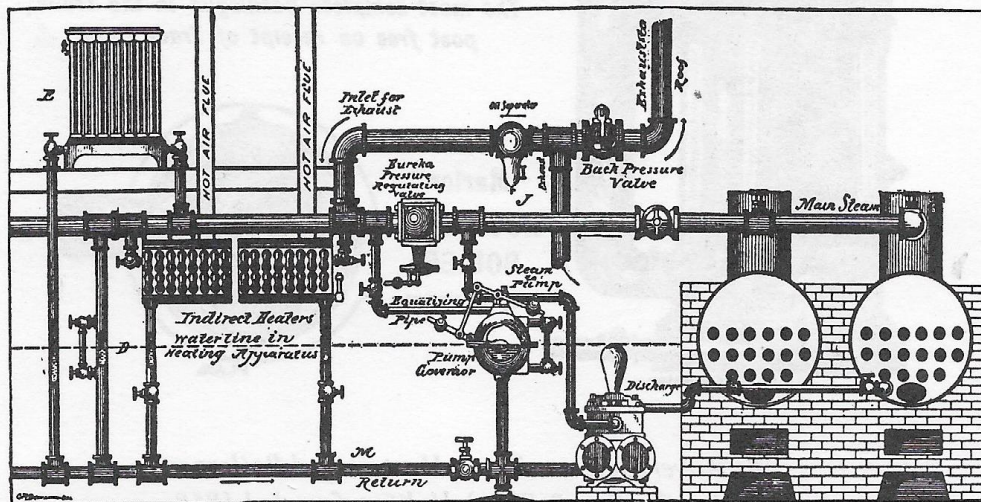
Telegrams:—"GRAHAM, FLEMING," Halifax.  
Telephone No. 39.

### 11. Advertisement: Welded & Rivetted Boilers.

Graham and Fleming, Halifax. The company was founded in 1854.

Heating & Hot Water, Walter Jones (President IHVE, 1899), 1894, p. v.

## KIELEY'S WATER-SEAL SYSTEM OF STEAM HEATING AND AUTOMATIC RETURN OF CONDENSATION.



By the use of this System a large saving of Fuel and a Noiseless Working Apparatus is guaranteed.  
The specialties mentioned on opposite page are required to obtain this system.

**KIELEY & MUELLER, 7 to 11 West 13th Street, New York.**

### 12. Advertisement: Kieley's System of Steam Heating.

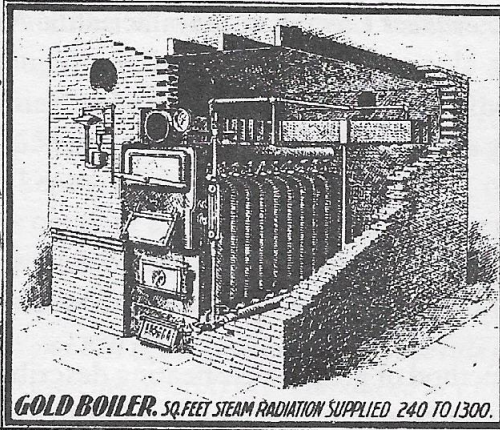
Kieley & Mueller, New York. Baldwin on Heating, William J. Baldwin, 1900, p. iv.

# THE H. B. SMITH CO.

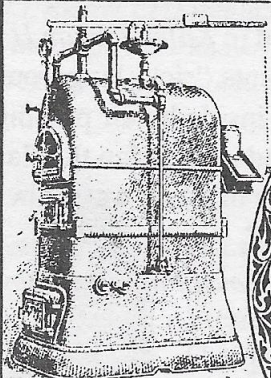
## WESTFIELD, MASS.

EUROPEAN AGENT.  
AUG. EGGERS  
BREMEN  
AND NEW YORK CITY

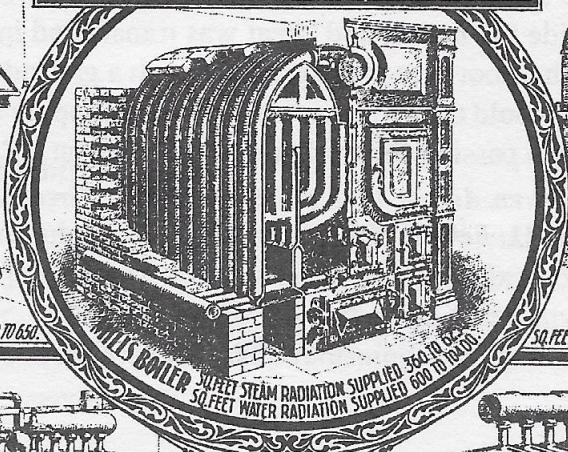
PACIFIC COAST AGENTS.  
HOLBROOK, MERRILL &  
STETSON,  
SAN FRANCISCO, CAL.



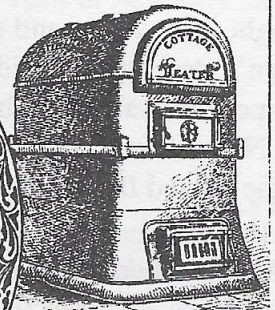
**GOLD BOILER.** SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.



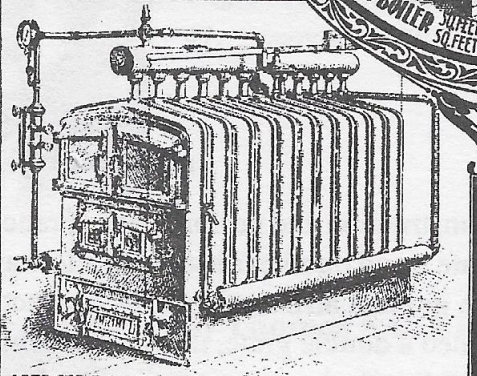
**COTTAGE BOILER.**  
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 650.



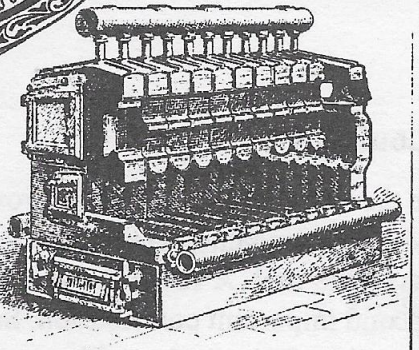
**HILLS BOILER.** SQ. FEET STEAM RADIATION SUPPLIED 350 TO 650.  
SQ. FEET WATER RADIATION SUPPLIED 600 TO 700.



**COTTAGE BOILER.**  
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



**MERCER BOILER.** SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.



**MERCER BOILER.** SQ. FEET WATER RADIATION SUPPLIED 450 TO 6900.

WESTERN AGENTS. WESTERN BRASS MFG. CO, ST. LOUIS, MO.

SALESROOMS

133 CENTRE STREET, NEW YORK CITY. 510 ARCH STREET, PHILADELPHIA, PA.



A—DRUM. B—BOX-SHAPED CASING. C—BLOW-HOLE. D—SECOND HOLE.  
 E—CONDUIT. F—AXLE. G—LEVER OF AXLE. H—RODS.

14. Woodcut: *Manufacture of Fans for Mine Ventilation, Germany, 1556.*  
*De Re Metallica. Georgius Agricola, 1556. From 13, p. 204.*

**AMERICAN BLOWER CO.**

**"A B C" DISC VENTILATING FANS**



are constructed upon scientific principles. Strength, durability and efficiency certainly urge their adoption for Ventilating, Cooling and the many other applications for which they are adapted.

Descriptive catalog and pricing information sent in response to all inquiries.

SEE COPY CATALOG 411-P.

**AMERICAN BLOWER COMPANY**  
 DETROIT, MICH.

New York 141 Broadway      Chicago 4 Marquette Bldg.      London 70 Gracechurch St.

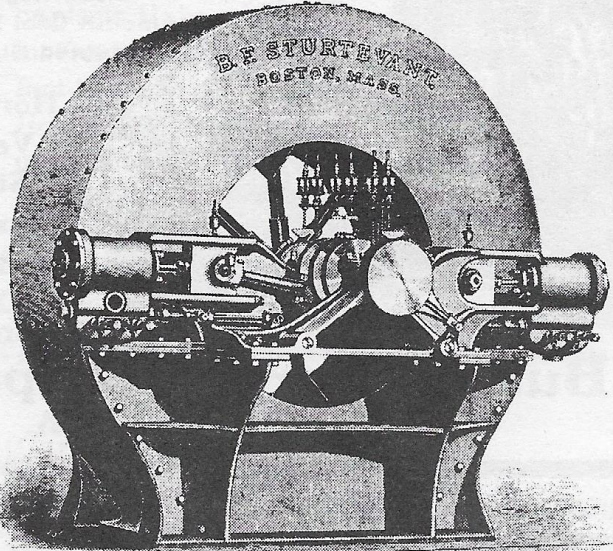
HEATING, VENTILATING AND DRYING ENGINEERS

Manufacturers of Hot Blast Heaters, Steel Plate and Disc Fans, Blowers, Dry Kilns, etc.

NEW YORK      DETROIT      LONDON

15. Advertisement: American Blower Co., Detroit, Mich. Engineering Review, Vol. 12, November 1902.

**B. F. STURTEVANT CO.,** Boston, Mass.



**THE STURTEVANT SPECIAL STEAM FAN.**  
 DOUBLE HORIZONTAL ENGINE.

34 Oliver St., BOSTON, MASS.  
 131 Liberty St., NEW YORK, N. Y.  
 133 North Third St., PHILADELPHIA, PA.

BRANCH STORES.

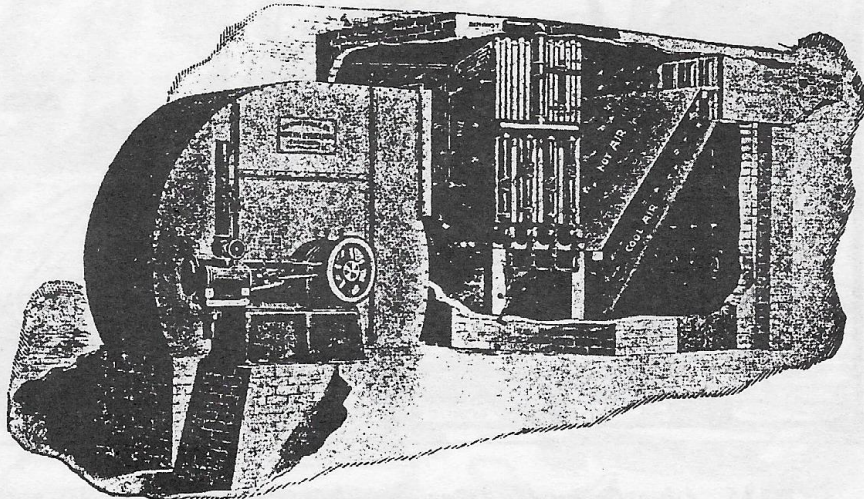
16 South Canal St., CHICAGO, ILL.  
 75 Queen Victoria St., LONDON, E. C., ENG.

21 West Nile St., GLASGOW, SCOTLAND.  
 38 Wilhelmstrasse, BERLIN, GERMANY.  
 2 Kungsholmsborg, STOCKHOLM, SWEDEN.

16. Advertisement: B.F. Sturtevant Co., Boston, Mass. Heating and Ventilation, June 1895, p. xvii.

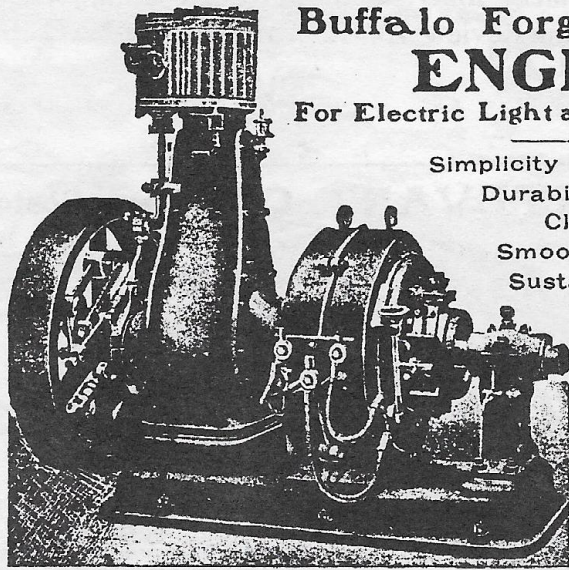
# Buffalo Fan System OF Heating and Ventilating.

*For Schools, Churches, Theatres, and  
all Public and Industrial Buildings.*



## Buffalo Forge Company ENGINES

For Electric Light and Power Service.



Simplicity of Design.

Durability of Construction.

Close Regulation.

Smooth Cool Running at  
Sustained High Speed.

Horizontal,  
Vertical,  
Simple,  
Compound,  
Belted,  
Direct-  
Connected.

**Buffalo Forge Company,**  
BUFFALO, N. Y., U. S. A.

17. Advertisement: Buffalo Fan Systems and Engines.

Buffalo Forge Co., Buffalo, New York State.

Heating & Ventilating Buildings, Rolla C. Carpenter (President ASHVE, 1896), 1910, p. 3.

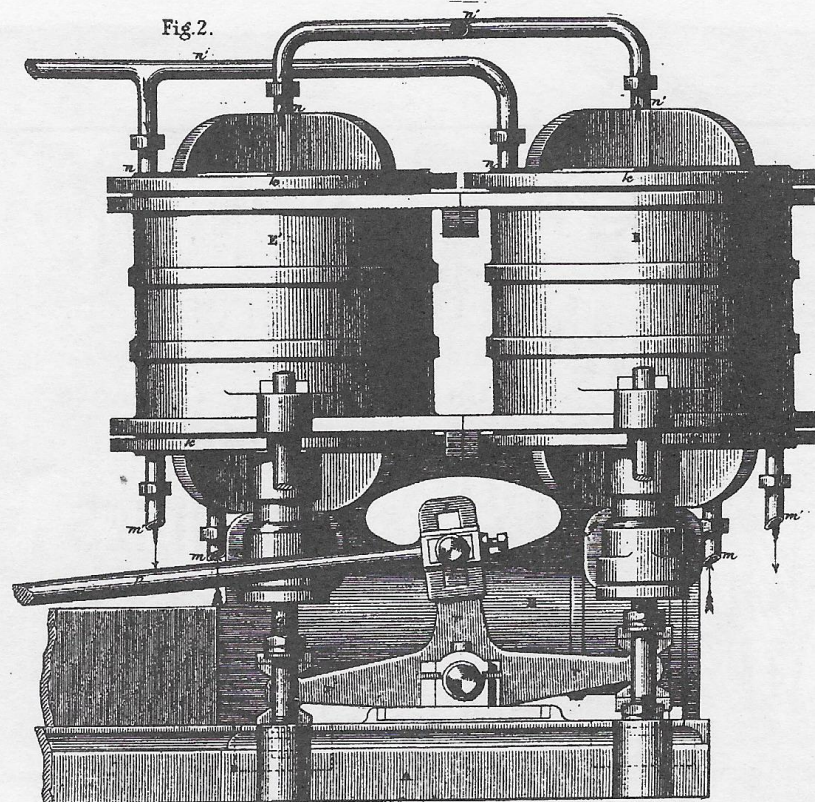
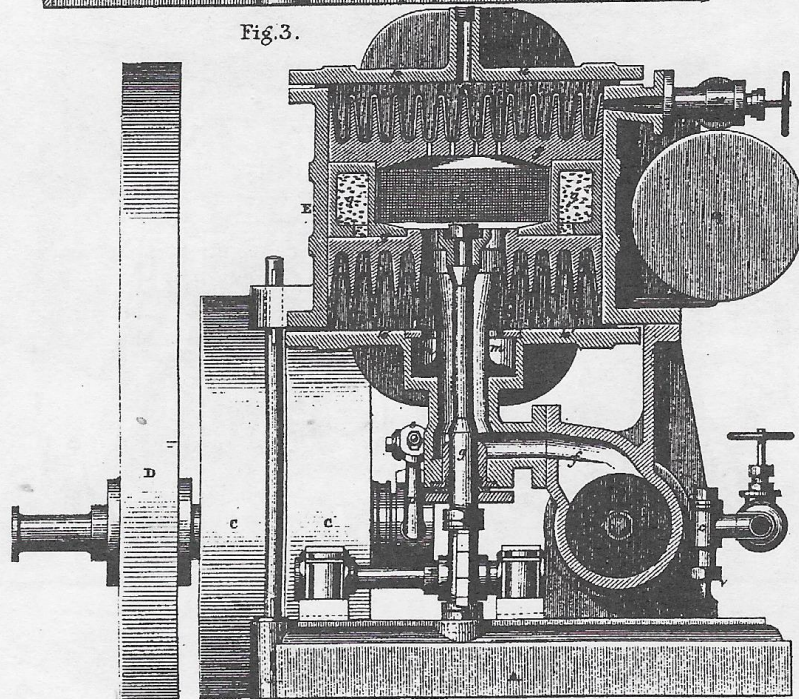
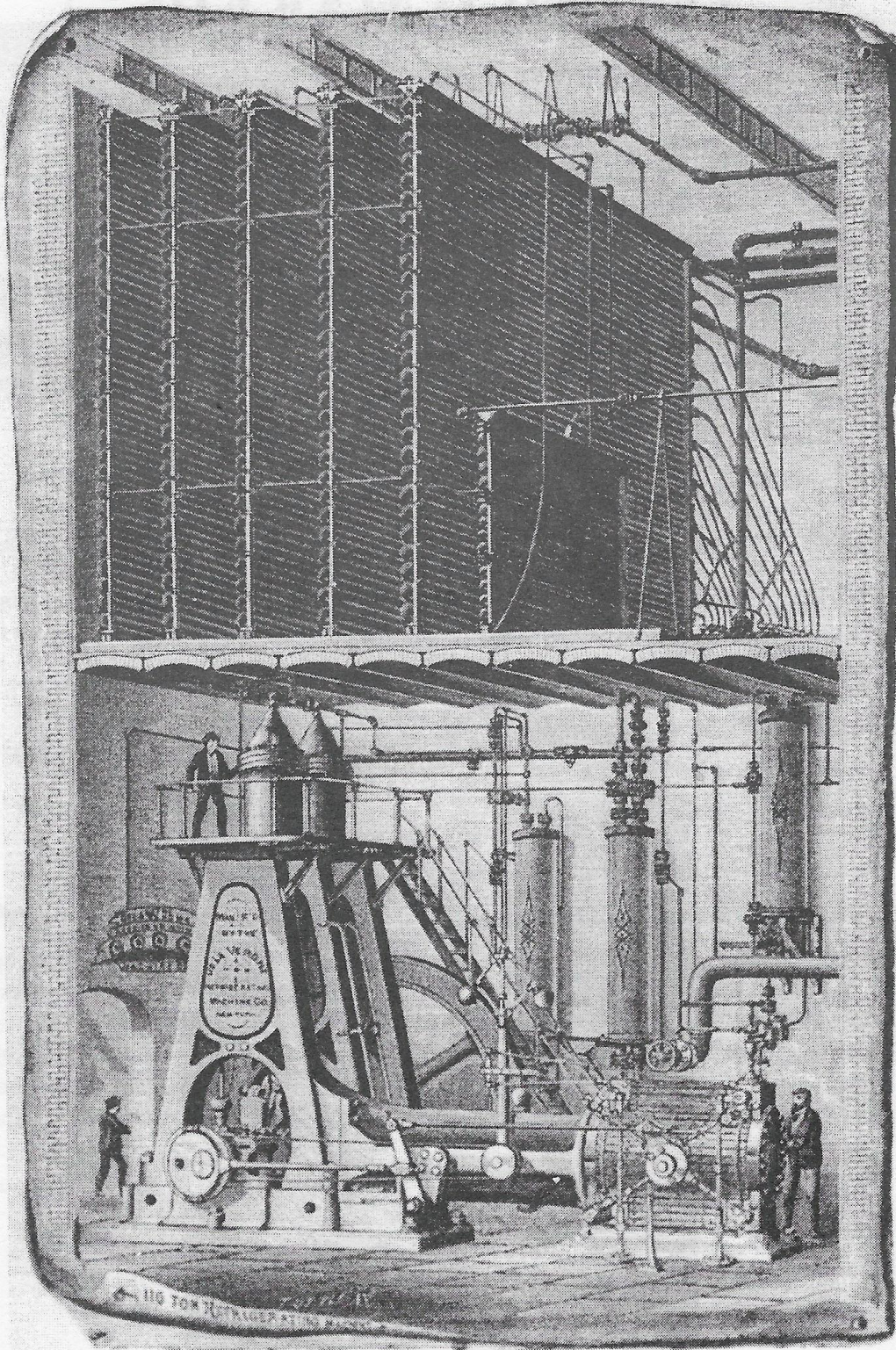


Fig. 3.



18. Bookplate: Refrigerating Apparatus.

*Figs. 2 and 3 from a drawing of unknown origin found in a second-hand bookshop. The apparatus has similarities with the Lightfoot cold-air machine of 1886. (B.M. Roberts Collection)*



19. *Catalog Drawing: A 110-ton Capacity Steam-Driven Ammonia Refrigerating Machine with an "Atmospheric" Water-Cooled Condenser. Mechanical Refrigeration, Processes and Apparatus of the De La Vergne Refrigerating Machine Co., New York, 2nd edition, 1887.*



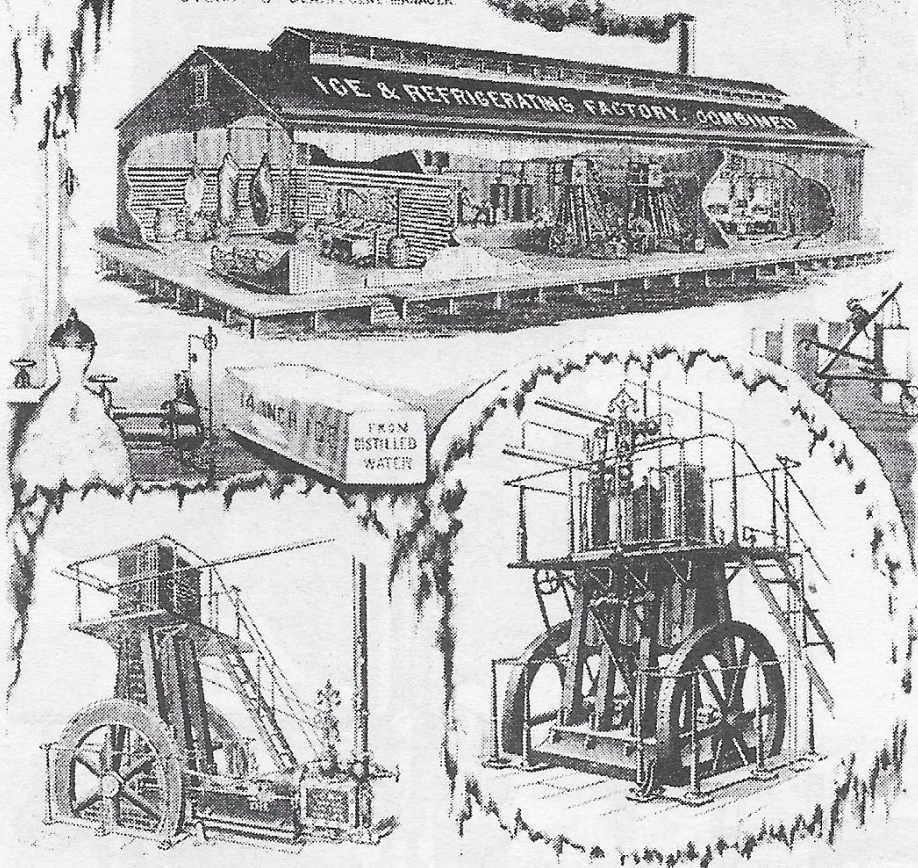
# YORK MANUFACTURING CO. LIMITED

MANUFACTURERS OF THE IMPROVED  
YORK AND ST CLAIR COMPOUND

## ICE REFRIGERATING AND MACHINES

YORK, PA.

P. H. GLATFELTER, PRESIDENT  
G. W. S. LOCKE, SECRETARY  
W. L. GLATFELTER, TREASURER  
STUART S. CLAIR, GENL. MANAGER



20. *Advertisement: Ice Refrigerating Machines.*

*York Manufacturing Co., York, Penn.*

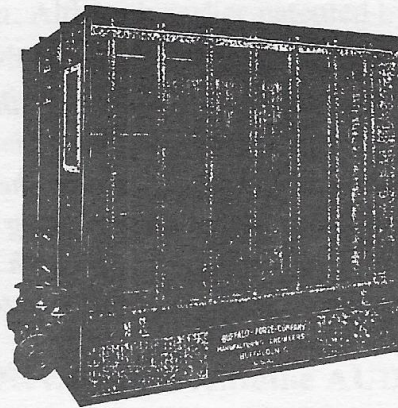
*Ice and Refrigeration, October 1891, inside back cover.*

# Buffalo Air Washer

AND HUMIDIFIER

Humidifies and cools to any desired degree. It also **dehumidifies**, by condensation, air containing too much moisture.

Scientifically adapted to perfect Humidity conditions of Textile Mills.



BUFFALO AIR WASHER

Automatic control.

Adapted to occupy any space.

Simple. Nothing to get out of order. Exceptionally compact and requires minimum attention.

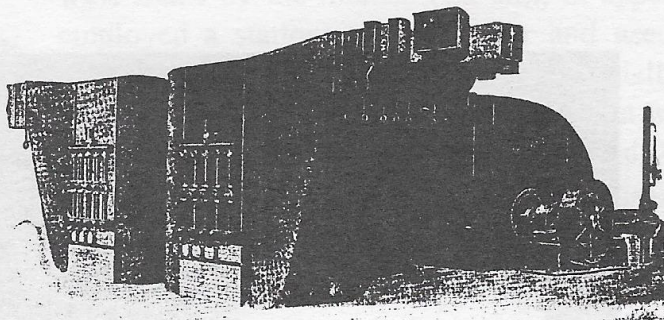
ADJUNCT TO

## Buffalo Fan System of Heating and Ventilating

1. Apparatus and engineering features originated by us.

2. Individual steam connections to each coil.

3. Coil base that gives hot heater pipes always — no cold ones.



4. Uniform wheel proportions thru-out all fan sizes.

5. Proportion method of duct calculation.

6. Tempering coils in air supply.

7. Self-contained Fan Engines with iron sub-base.

BUFFALO FAN SYSTEM APPARATUS

Blow through type with thermostatic control. Single duct system. Air Washer and Humidifier on inlet side of fan.

SEND FOR  
CATALOG  
NUMBER 97

*Buffalo Forge Company*  
*Buffalo, N.Y.*

BRANCHES IN  
ALL THE  
LARGER CITIES

Heating and Ventilating Engineers

THE CANADIAN BUFFALO FORGE CO., MONTREAL, QUEBEC

21. Advertisement: Buffalo Air Washer. Buffalo Forge Company, Buffalo, N.Y. The spray-type air washer was developed by Willis Carrier as part of his system for dew-point control of humidity. *Engineering Reveiw*, June 1906, p. xii.

*The Weather Vein*

ADVENTURES OF  
*The Mechanical Weather Man*  
THE MACARONI CASE



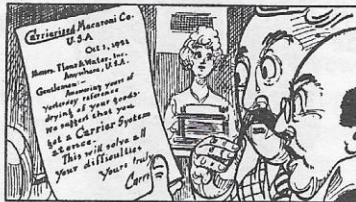
The Messrs. Flour and Water  
are in an awful mood  
The macaroni that they make  
comes back marked "Checked, No good."



They take it to their Foreman,  
"What makes the stuff so bad?"  
He says "If you'll just come with me,  
to show you I'll be glad."



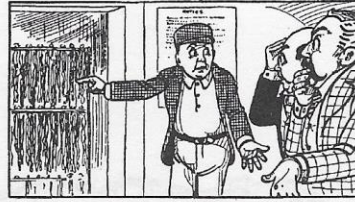
They write the other people  
and ask them please to tell  
What makes their goods so wonderful  
and how they dry so well.



The answer came back quickly  
its wording you can see  
The partners read it hurriedly  
and nodded happily.



They quickly 'phoned to Carrier  
to come and tell them how  
To make their plant a modern one  
as fast as things allow.



"Our dryroom, sirs, is hopeless,  
the goods will check and sour.  
In spite of all that I can do  
we're losing every hour."



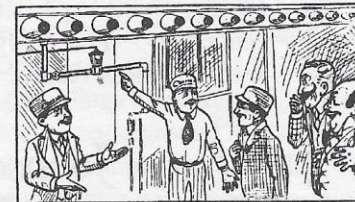
"We either sweat too slowly,  
which sours the stuff, just so,  
Or else we dry so rapidly  
we check it 'fore we know."



The partners then examine,  
some goods the dealers say  
Is just the kind they're looking for,  
the best in every way.



And with his usual promptness  
comes "Mech", his face asmile,  
"We'll have Ejector dryers here  
within a little while."

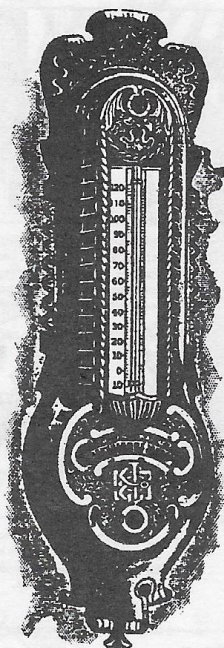


"Mech" kept his word and shortly  
their dryers were complete,  
With automatic instruments  
to regulate the heat.



And now when Flour and Water  
their finished goods inspect,  
They smile at competition for  
their goods have no defect.

## TEMPERATURE REGULATION.



THERMOSTAT.

## THE JOHNSON SYSTEM OF TEMPERATURE REGULATION

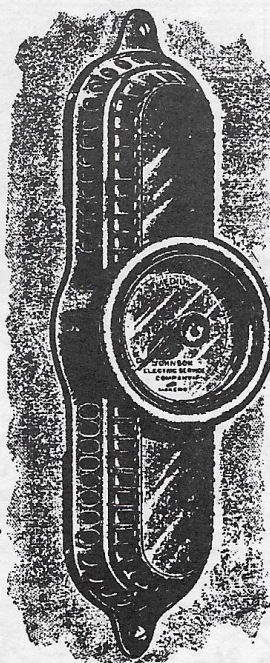
has been in public use since 1885 with ever-increasing favor, and is now used *in all classes* of buildings where heating is required. This is the original and perfectly developed system and is applicable to every kind of heating device.

## THE HUMIDOSTAT

controls the humidity of rooms within 2%, thus securing health, comfort, and economy. The only device made securing these results. Address

Johnson  
Temperature Regulating  
Company,

240 FOURTH AVENUE, NEW YORK CITY.

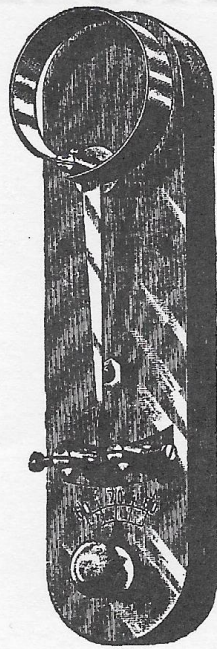


HUMIDOSTAT.

23. Advertisement: Temperature Regulation and the Humidostat.

Johnson Temperature Regulating Co., New York.

Heating & Ventilating Buildings, Rolla C. Carpenter (President ASHVE, 1896), 1910, p. 1.



# GOLD or SILVER

WHICH SHALL BE  
THE STANDARD?

People cannot agree, but everyone agrees that both gold and silver can be saved by using a HEAT REGULATOR to control any style of heating plant, and maintain automatically an EVEN TEMPERATURE.

Well informed people agree also that there is but one "STANDARD" Regulator, which was FIRST and is still BEST. Sold by Heating Trade generally. No Agencies.

SEND POSTAL FOR DISCOUNT AND TERMS.

WM. R. SWEATT, Secretary,

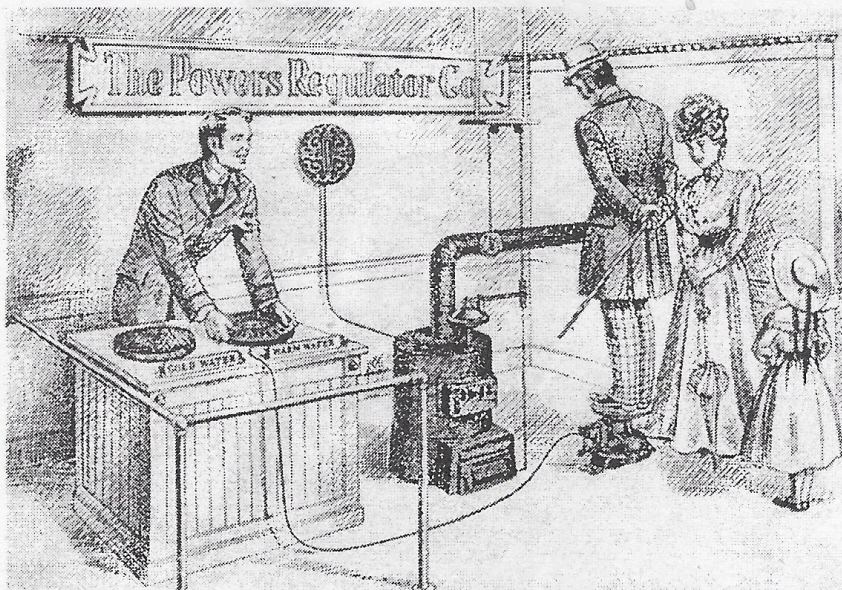
**Electric Heat Regulator Co.**

Twenty-sixth Street and A Ave.

MINNEAPOLIS, MINN.

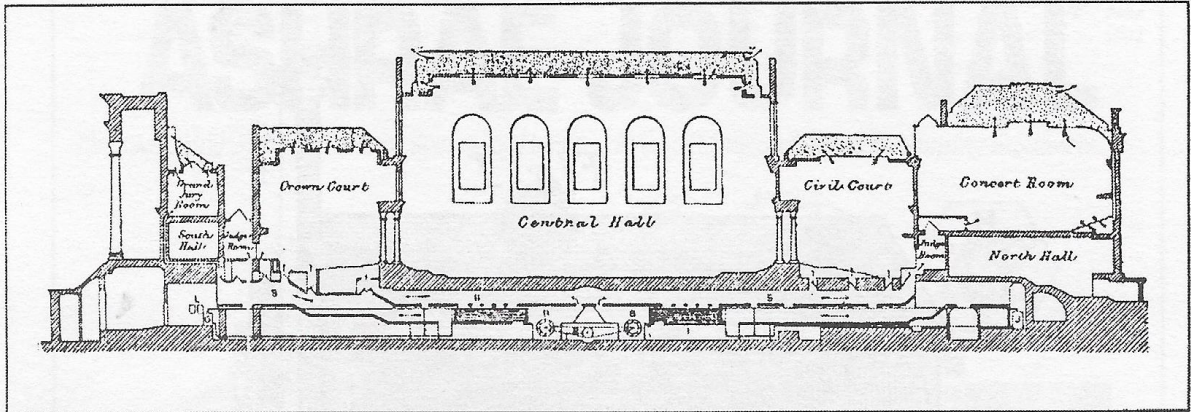
89-91 Centre St., NEW YORK CITY.

24. Advertisement: Electric Heat Regulator Co., New York.  
Domestic Engineering, Vol. 9, June 1985.

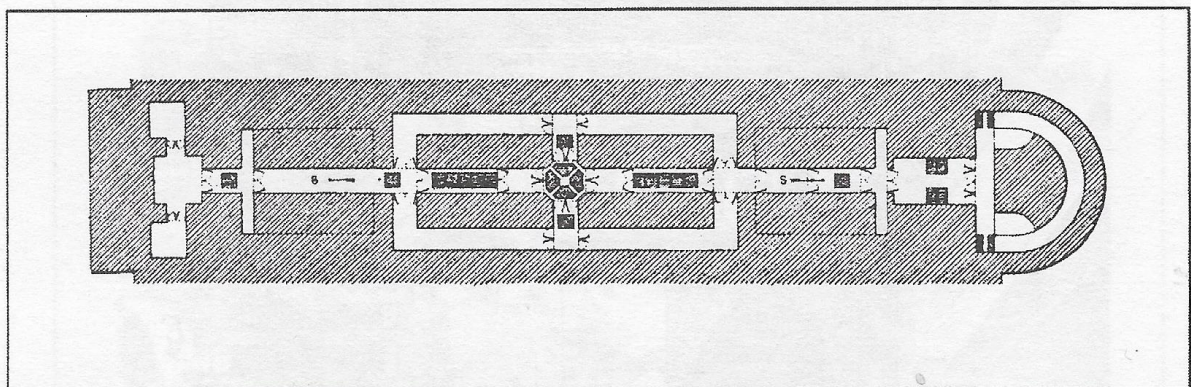


The Powers Regulator Company demonstrates temperature control technology in the 19th Century. (Courtesy of Landis & Gyr Powers.)

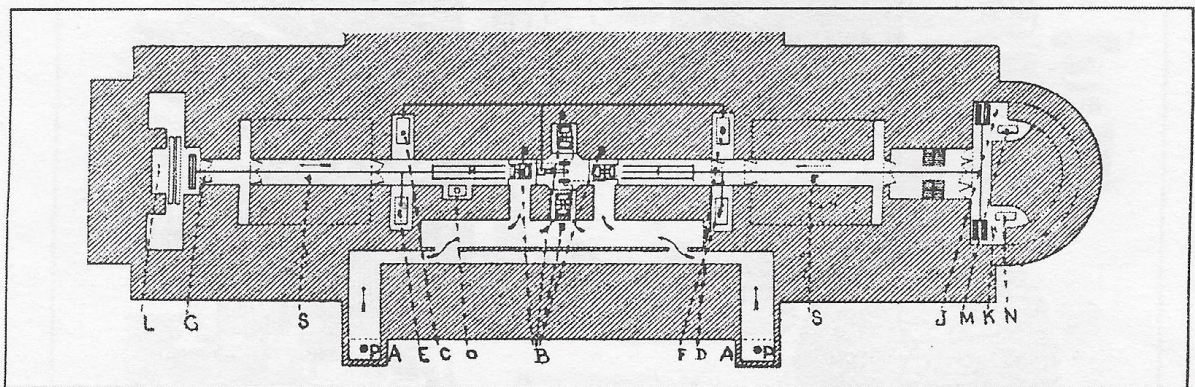
25. An Early Demonstration of Temperature Controls. The Powers Regulator Co., Chicago.  
*The V in ASHRAE: A Historical Perspective*, John E. Janssen, ASHRAE Journal,  
August 1994, p. 130.



a. Longitudinal section of St. George's Hall.



b. Basement plan, St. George's Hall, at level of upper air channels.

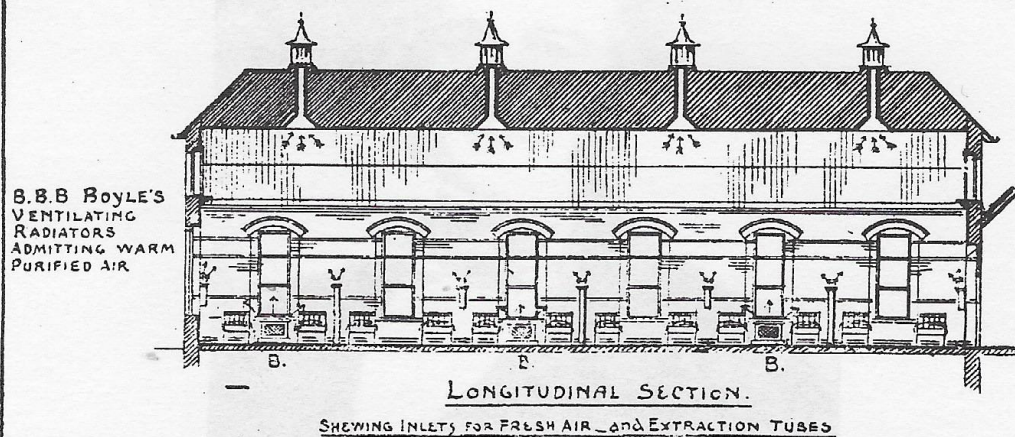
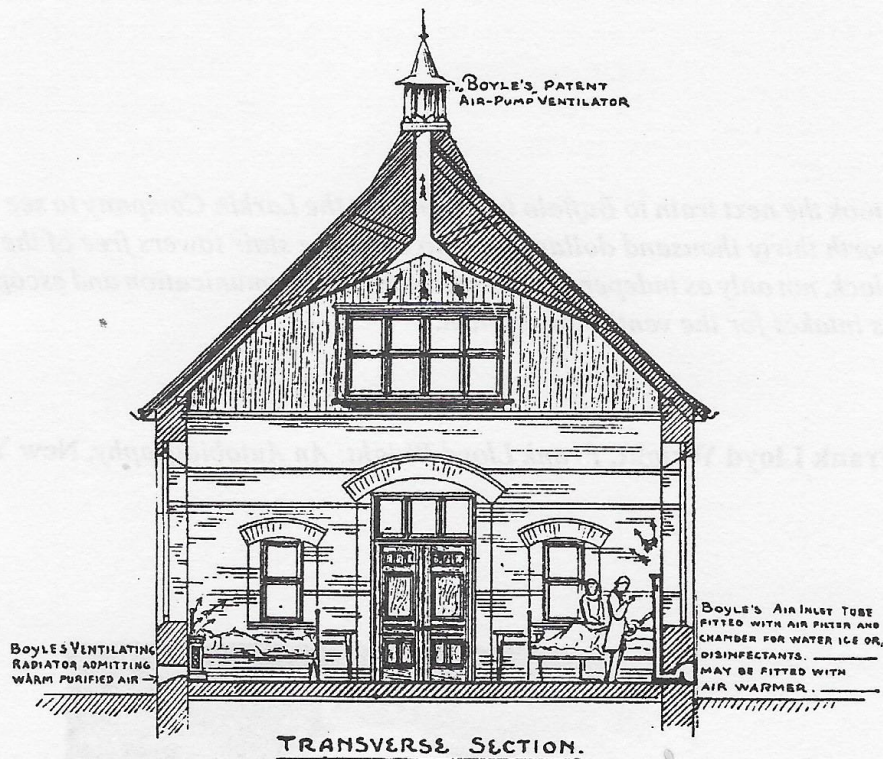


c. Basement plan, St. George's Hall, at level of lower ducts.

28. Section and Plans: St. George's Hall, Liverpool, 1854.  
 The Mechanical Ventilation and Warming of St. George's Hall, Liverpool,  
 The Heating and Ventilating Magazine, October 1907.

# THE "BOYLE" SYSTEM OF VENTILATION

## As applied to an INFECTIOUS DISEASES HOSPITAL.



NOTE.— Fresh purified air warmed  
or cooled, sanitized underneath  
beds where desired.

ROBERT BOYLE & SON, LTD.  
Ventilating Engineers,  
LONDON & GLASGOW.

29. Catalogue Illustration: Natural Ventilation by the Boyle System of the South West Fever Hospital in London. An example of collaboration between architect and ventilation engineer. The Boyle System of Ventilation, Robert Boyle & Son, Ltd., High Holborn, London, c. 1900.

*Cost for Annual Maintenance of Apparatus  
Working all day and night in Winter  
Night only in Summer.*

<i>Fuel for 200 days and nights</i>	} 210 Tons @ 14/	<i>£ s d</i> 168. 0. 0
<i>Warming and Ventilation for heating apparatus</i>		
<i>Fuel for Steam Engine 24 hours</i>	} 84 Tons .	77. 0. 0
<i>365 days including service of Baths</i>		
<i>Two Stokers at 30/- per week</i>		156. 0. 0
<i>Sundries Repairs Oil and Wipings &amp;c</i>		38. 0. 0
		<u>£ 439. 0. 0</u>

*Cost of Warming and Ventilation per bed per annum* } The number of beds in the Hospital being 588 will shew taking into consideration the service of the Baths and Ventilation and Warming of the other Rooms, that the cost would be about 11/8 per bed per annum.

*Cost of the Apparatus* } From the best of my judgment I consider that the cost of the apparatus for carrying out my proposed plan will not exceed the sum of £ 1928. 0. 0

*This sum would include all personal supervision of the Work during the erection of the Building and supplying all the necessary apparatus, Steam Engine, Boilers, Fans, Gearing, Heating apparatus, Cast Iron Air Gratings for Escape and Inlet, Regulating Valves, Indicating Dials &c &c but exclusive of all Brickwork for the formations of Engine Rooms, Air Chambers and Flues and Channels.*

*General Remarks* } This is in a few words the plan, I should propose for the Ventilation and Warming of the new St. Thomas's

30. Handwritten Report: Costs for Annual Maintenance and Apparatus. Proposals for Ventilation and Warming of St. Thomas's Hospital, Lambeth, London. Submitted by the engineer W.W. Phipson, dated 20 November 1865. The scheme was not adopted. (CIBSE Heritage Group Collection)



Schemes and Estimates submitted free of charge for installations of Warm Air, Low Pressure Hot Water or Steam Apparatus.

PERFECT EFFICIENCY GUARANTEED.

# JOHN GRUNDY,

. . . Heating and Ventilating Engineer,

MANUFACTURER AND PATENTEE OF

"HELIOS" and "SIRIUS" Smoke Consuming Grates for Chimney Pieces.  
"HESTIA" slow and Quick Combustion Portable Warming and Ventilating Stoves.  
"CALORIFER" and the well-known "GRUNDY" Smoke Consuming Central Fresh Warmed Air Heating Apparatus for Public Buildings and Private Dwellings.

27 MEDALS HAVE BEEN AWARDED.

## Makers of Boilers, Ward Stoves, Radiators, Ventilators, & Ranges.

BOOK CONTAINING A THOUSAND TESTIMONIALS  
FORWARDED ON APPLICATION.

The well-known firm of HAMPTON & SONS, Pall Mall East, London, S.W.,  
write:

Mr. JOHN GRUNDY, 30, Duncan Terrace, London, N.

Nov. 5th, 1903.

Dear Sir,

In response to your letter of the 3rd inst., we have much pleasure in stating that your Heating Apparatus is used with great success at our Depositories at Battersea. The best proof of our satisfaction is that we are having your Heating Apparatus installed into our additional blocks of Depositories now in course of erection. We are of opinion that for safety, hygienic and all useful purposes, your mode of heating is the best. We have no trouble in working the apparatus, which is simple and very efficient. We have pleasure in giving you this testimonial, and wish you the success your system deserves.

Yours truly,

HAMPTON & SONS,

W. HAMPTON, Managing Director.

Head Office: 30, DUNCAN TERRACE, CITY ROAD, N.

Show Rooms and Work Rooms:

Torrens Street, Islington, N., & 393a, City Road, London, N.

Factory: THE TYLDESLEY IRON WORKS, nr. MANCHESTER.

Telegrams—"JOHN GRUNDY," LONDON.

National Telephone—No. 552, KING'S CROSS.

31. Advertisement: Heating and Ventilating Engineer, Manufacturer and Patentee.  
John Grundy, City Road, London. (Grundy was the first President of IHVE, 1898.)  
Heating by Hot Water, Walter Jones, 1904, p. xv.

# The KAISER I-HIND

INDIAN TRADE & INDUSTRY SUPPLEMENT

No. 3097

BOMBAY, 18TH MAY, 1941.

Vol. LX

## FORTY YEARS OF AIR CONDITIONING PROGRESS INDIA FINDS NEW BENEFITS

### TREMENDOUS AID TO INDUSTRIAL PRODUCTION

IN 1915 the Carrier Corporation was established, with Willis H. Carrier as its head. He had looked into the future and had seen air conditioning as a major

industry.....a vital function in the scheme of things .....influencing life, business, and industry.....

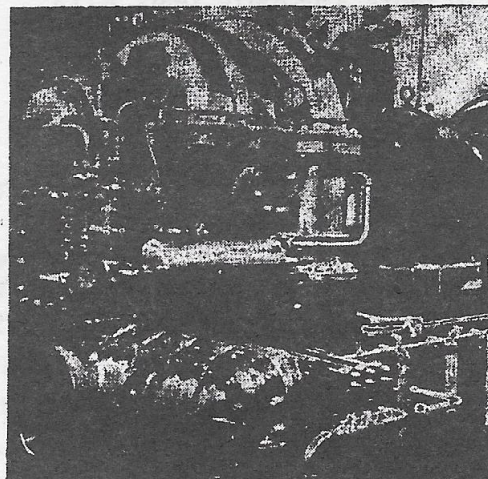
(Continued on page 7)

## CARRIER AIR-CONDITIONING

THE KEY TO BIGGER  
PRODUCTION AND BETTER  
LIVING IN INDIA

### Typical CARRIER Installations

A. I. E., Bombay, Calcutta, Delhi, Madras.  
GRAMOPHONE CO., Dum Dum.  
TOBACCO MANUFACTURERS, Bombay, Chuala.  
H. E. & FUSE FACTORIES, Kirkee.  
GANESH FLOUR MILLS, Cawnpore, Delhi, Lyallpur.  
H. J. FOSTER & CO., Bombay.  
TATA SONS, Bombay, Calcutta, Jamshedpur.  
COUNCIL CHAMBERS, Bombay, Calcutta, Delhi.  
AIR FORCES INDIA, Lahore, Ambala, Peshawar.  
L. W. HOSPITALS, Lahore, Jaipur.  
KODAK LTD., Bombay, Lahore, Madras.  
FILM STUDIOS, Bombay, Poona, Madras.



Carrier Centrifugal Compressor as installed in Metro Cinema, Bombay.

and

MORE THAN 100 COTTON MILLS



**CARRIER AIR-CONDITIONING**  
HAS BEEN INSTALLED IN OVER 500 OFFICES  
AND HOMES IN BOMBAY AND CALCUTTA  
ALONE

BY

**Volkart Brothers**

Bombay, Calcutta, Madras, Karachi, Lahore



32. Advertisement: Carrier Air Conditioning by Volkart Brothers, Bombay.  
The Kaiser I-Hind newspaper, 18 May 1941.  
(CIBSE Heritage Group Collection)

To the Institute of  
Heating and Ventilating Engineers

Whereas:

The American Society of  
Heating and Ventilating Engineers  
is assembled in its 35th Semi-Annual Meeting, and

Whereas:

For the first time in its history the Society is meeting  
outside the limits of the United States, and

Whereas:

This most successful and delightful event is being  
held under the auspices of the Ontario Chapter and with-  
in the confines of the British Empire; therefore, be it

Resolved:

That the greetings of this Society be extended to the  
members of the

Institution of Heating and Ventilating  
Engineers of Great Britain;

and be it further

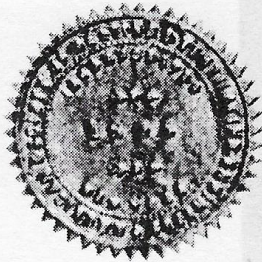
Resolved:

That as an additional mark of our esteem these  
Greetings be personally conveyed and delivered to  
the President of the British Institution of Heating and  
Ventilating Engineers by the President of this Society,  
Mr. Thornton Lewis.

June 26, 1929

President

Secretary



33. Greeting from ASHVE to the Institute (sic) of Heating and Ventilating Engineers.  
From the 35th Semi-Annual Meeting held in Ontario, Canada, signed by ASHVE President  
Thornton Lewis, 26 June 1929. Proclaiming the Truth, ASHRAE, 1994, p. 82.



34. Council of the Institution of Heating and Ventilating Engineers, 1910.

(left to right, from top row) John S. PALMER [244] Robert E. ATKINSON\*  
 Walter JONES [240] Chas MASON Walter YATES [74]  
 Thos POTTERTON [41] E.W. MAYNER [238] Louis F. PEARSON [243]  
 W.R. MACGUIRE [241] C. Ingham HADEN [269] S. NAYLOR [49]  
 John GRUNDY [239] C.T.O. TROTMAN George CRISPIN [245] E. TAYLOR  
 W. Nelson HADEN [246] J. Nelson RUSSELL [242] J.N. GREENHALL  
 A.B. SIMPSON [247] A.B. TAYLOR J.L. SAUNDERS

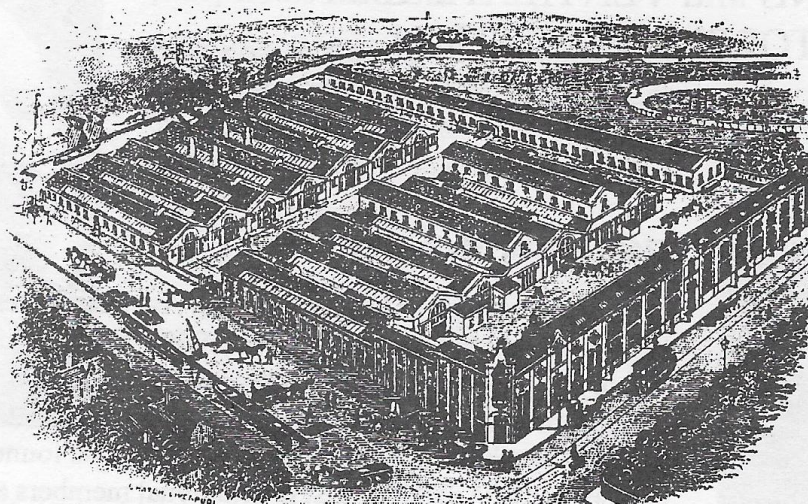
*This composite picture includes nine of the first ten IHVE Presidents, plus two later Presidents. The exception is David Nesbit\* [268] whose portrait is on the title page.*

*Communications as a Means to Survival, K.W. Dale, IHVE Presidential Address, IHVE Journal, May 1974, p. 28.*

*(\*Nesbit and Atkinson were the first and second U.K. engineers, respectively, to join the ASHVE.)*



35. Portraits of the first ten Presidents of ASHVE.  
Proclaiming the Truth, ASHRAE, 1994, p. 4.



JONES & ATTWOOD. TITAN WORKS. STOURBRIDGE.

## Heating Specialists and Consulting Engineers.

**We manufacture** at the Works illustrated above.

**Heating Appliances** of every description.

**Estimates for Heating** by High Pressure, Low Pressure, or Steam.

**Plans and Specifications** prepared for the Trade by trained Experts.

**1,000 Boilers** from 50 to 5,000 feet **Heating Power** always in stock.

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**Hot Water Supply** a Speciality.

**Our Indirect System** is a safe cure for trouble caused by sediment deposit.

**We examine and report** on any existing apparatus.

**We undertake** to turn failures into successes.

**We guarantee** to correct any defects, however serious.

**Arbitrations undertaken** in case of disputes.

**Inspection invited.** Orders promptly executed. **Success guaranteed.**

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**STOURBRIDGE**

36. Advertisement: Heating Specialists and Consulting Engineers.

*Jones & Attwood, Stourbridge. Mr. Walter Jones (second IHVE President, 1899) was a pioneer investigator into the causes of boiler explosions.*

*Heating by Hot Water, Walter Jones, 1904, p. xxxii.*



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37. Advertisement: The Chimney Sweep, France.  
Chaud-Froid-Plomberie, No. 316, Sept. 1972, p. 200.