Chapter 3 Part 2
HEATING

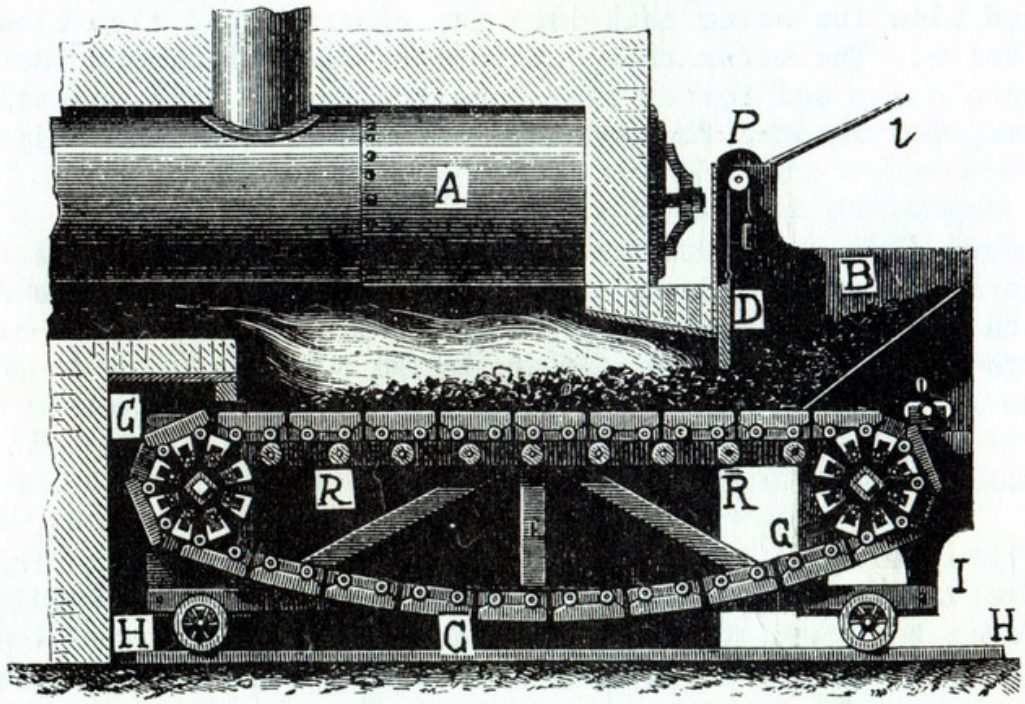


Fig. 3.27. Juckes' chain grate stoker (mid nineteenth century).

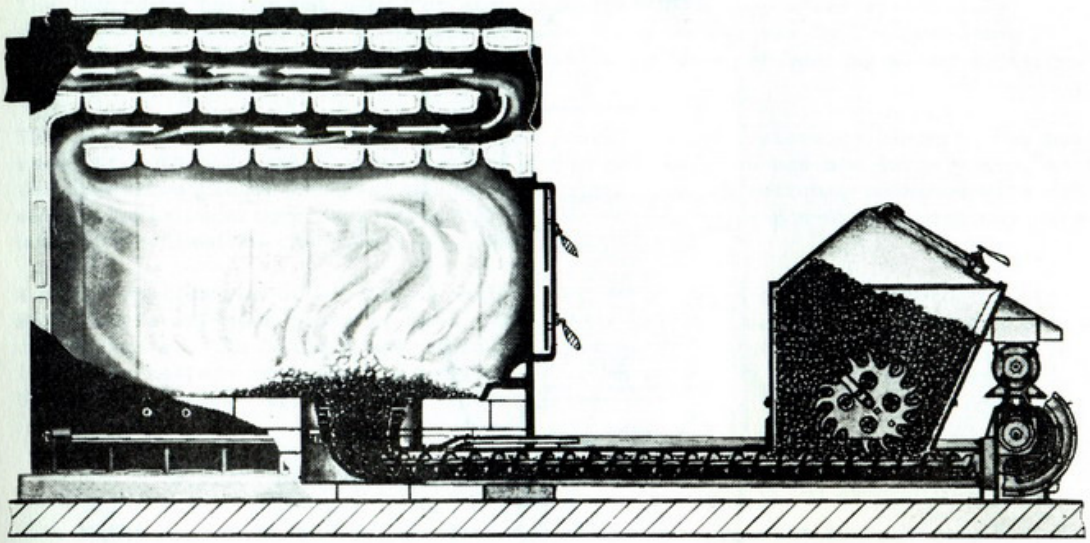


Fig. 3.28. Automatic screw stoker (*ca.* 1937). (Courtesy, Crane Ltd.)

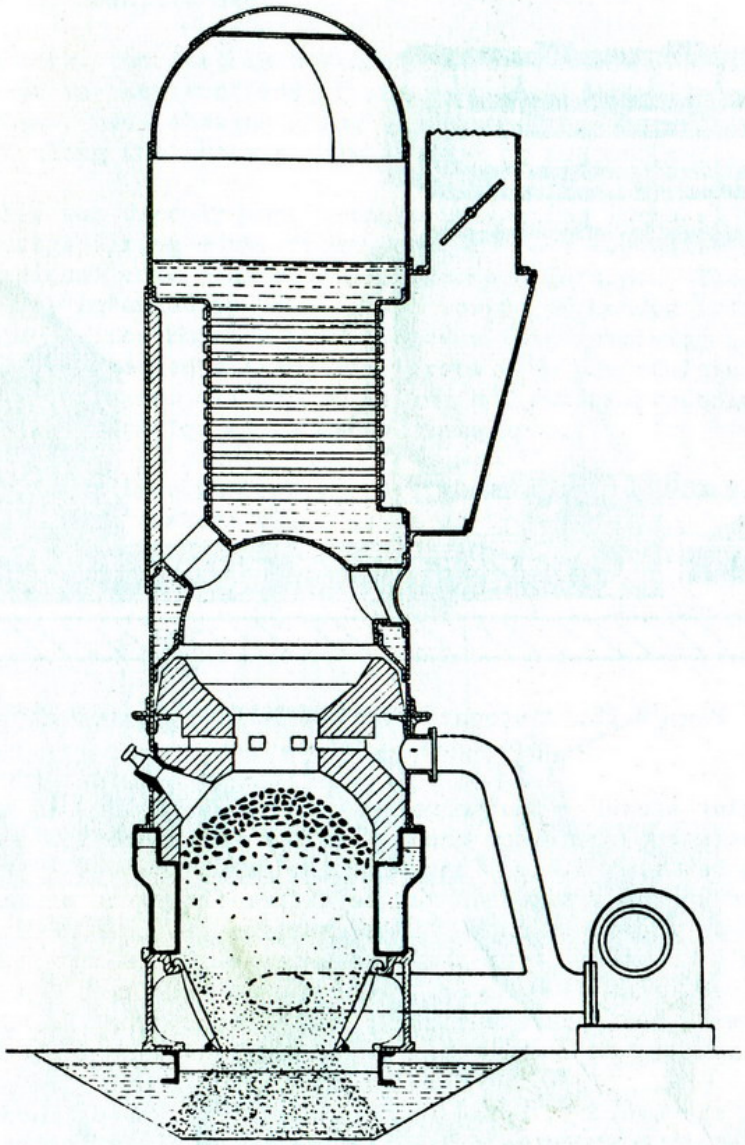


Fig. 3.29. Wollaston's gas producer and boiler (*ca.* 1910). (Courtesy, CIBS)

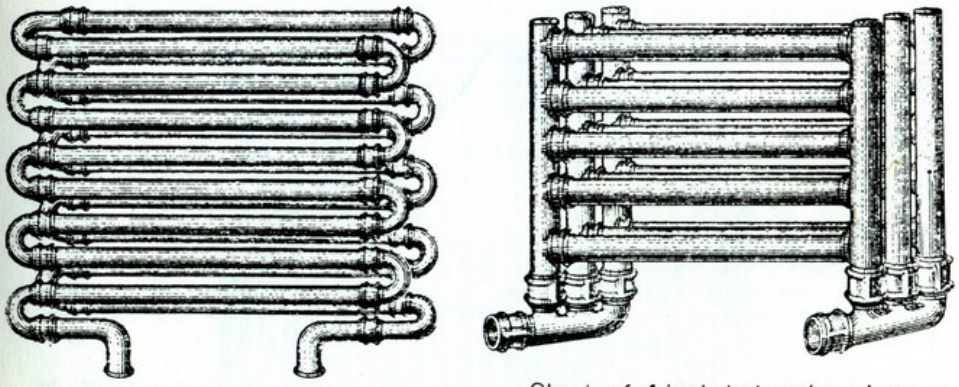


Fig. 3.30. Return-bend and box-end coils for heating

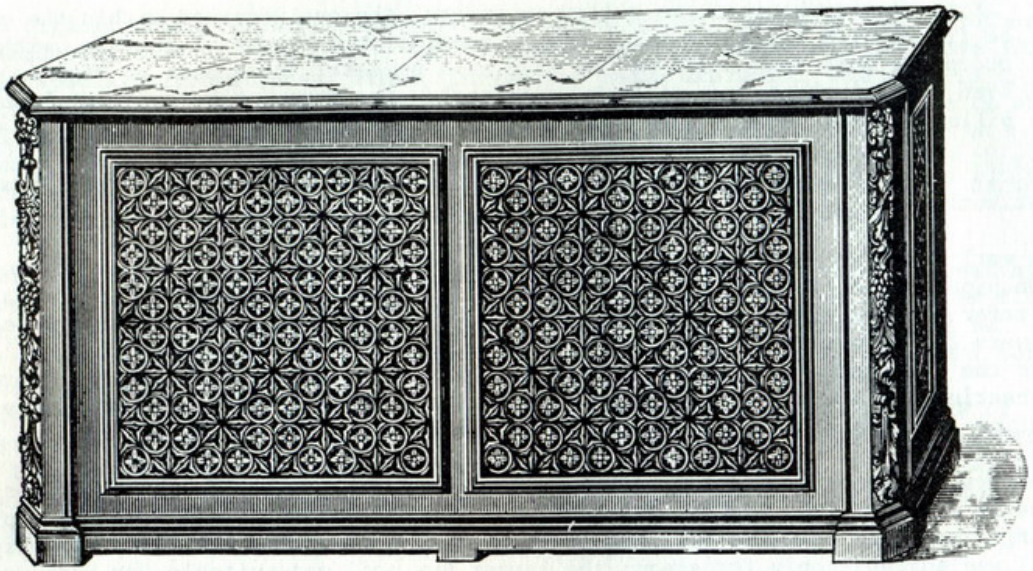


Fig. 3.31. Coil case.

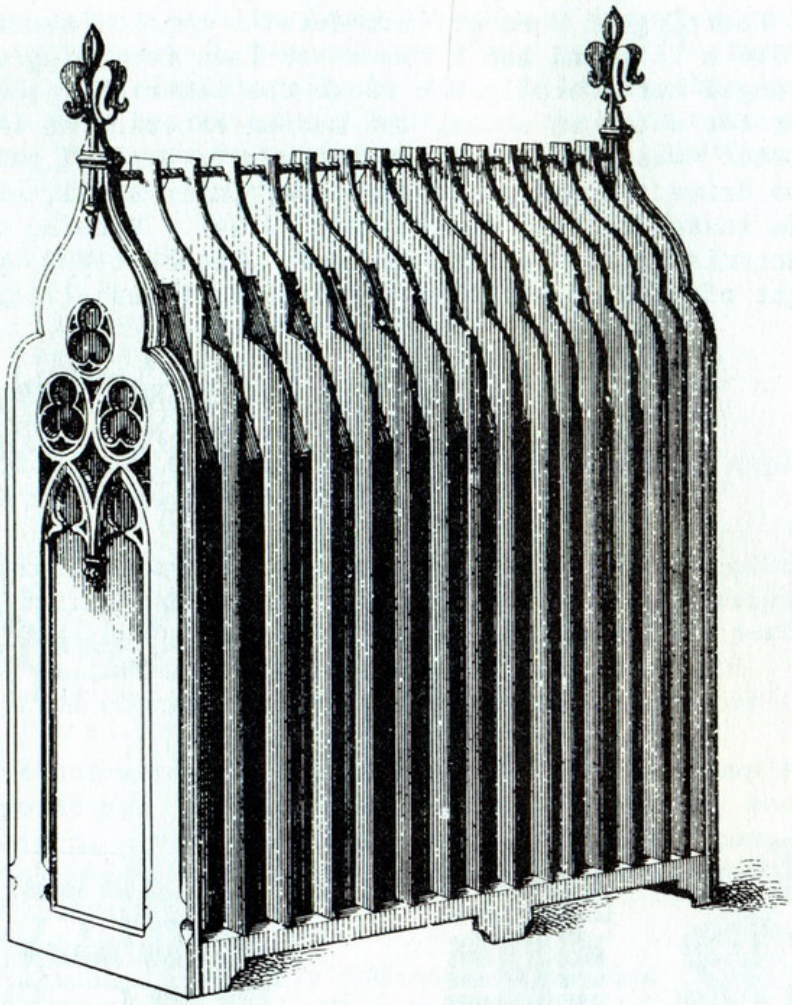


Fig. 3.32. Gothic hot water or steam stove (*ca.* 1867). (Courtesy, Rosser and Russell)

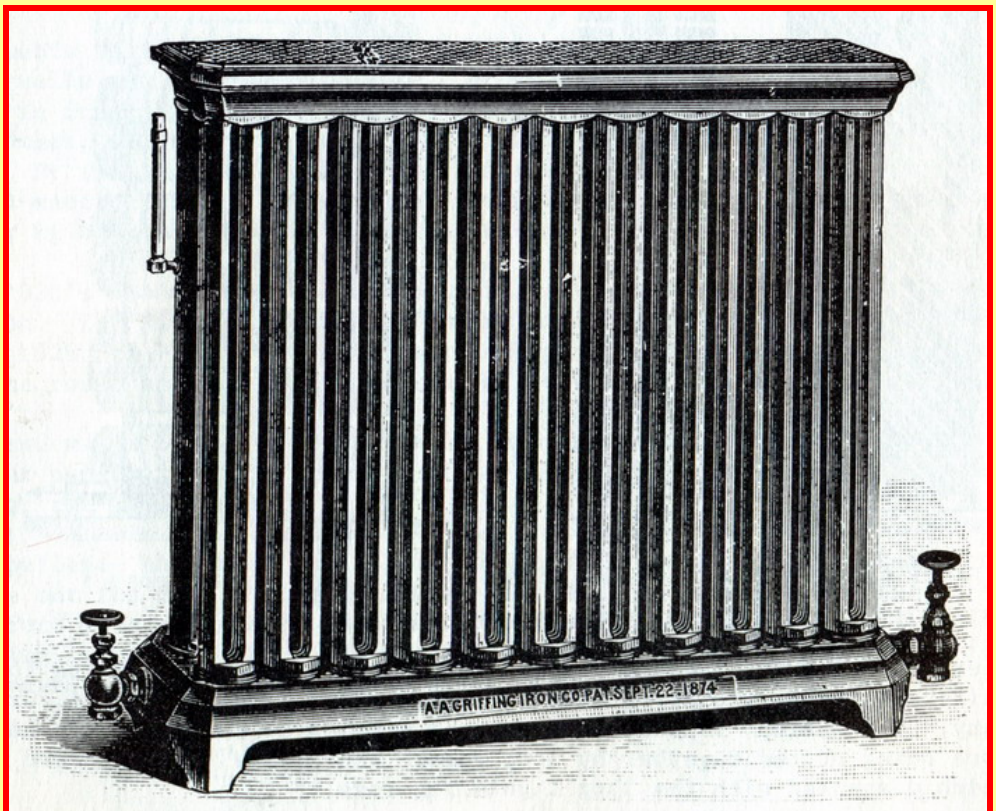
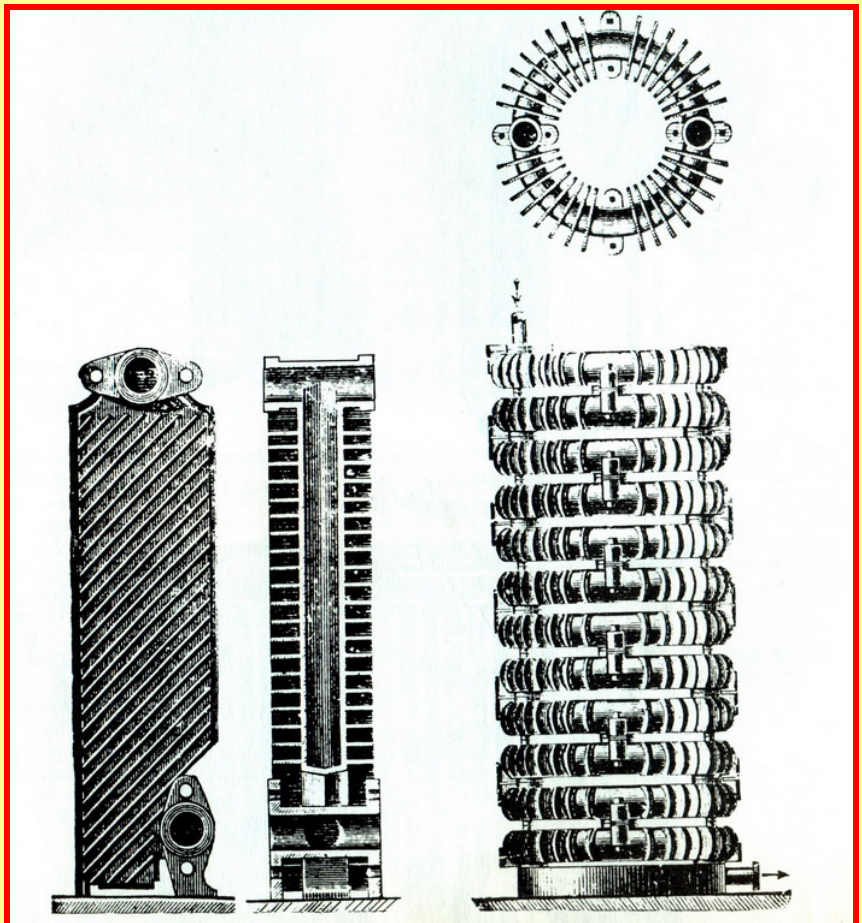


Fig. 3.33. "Bundy" radiator.



Vertical element with diagonal fins Annular elements

Fig. 3.34. Two Koerting radiators.

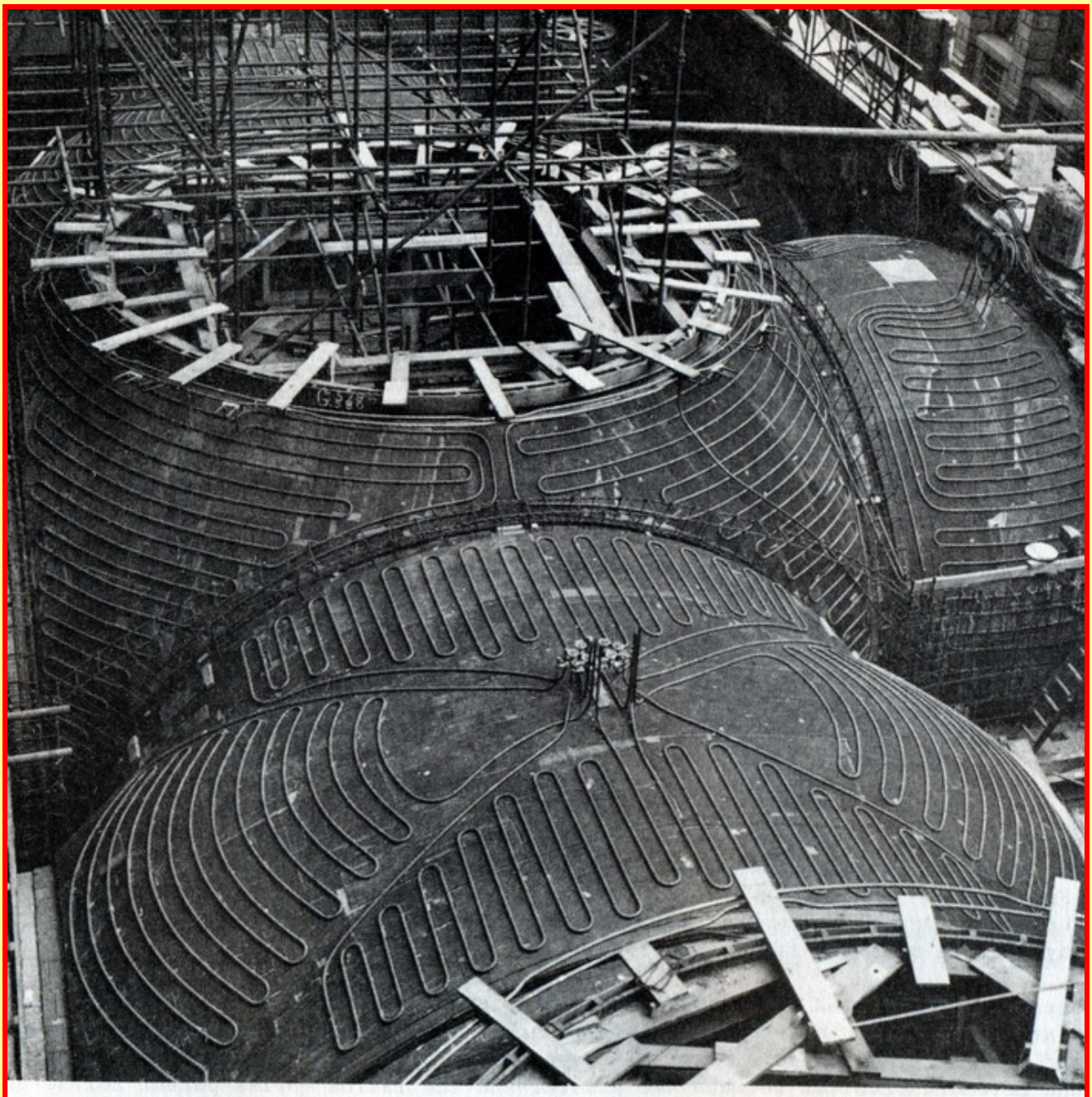


Fig. 3.35. Installing ceiling heating in Bank of England. (HUCA booklet.)(Courtesy, Rosser and Russell)

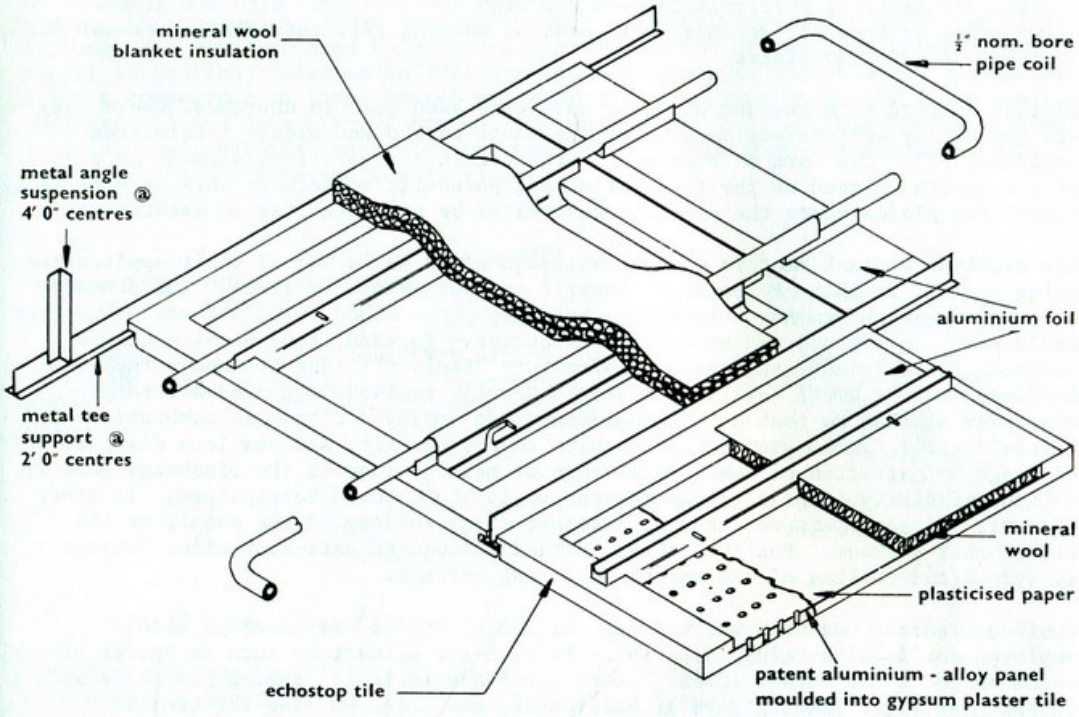


Fig. 3.36. Stramax heating panel with acoustic tiles and topside insulation.

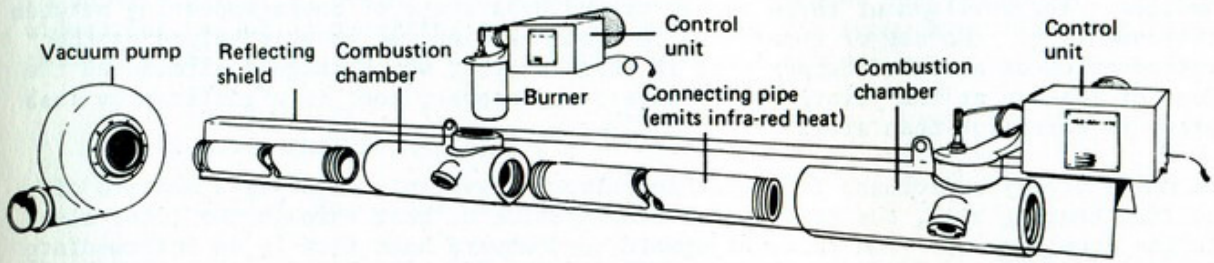


Fig. 3.37. Nor-ray Vac gas-fired air-heated overhead radiant system (1967). General arrangement (schematic).

DRAKE & GORHAM, Ltd.

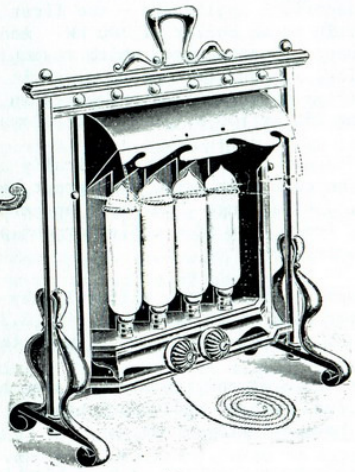
ELECTRIC RADIATORS—*continued.*

Type 433.

Type 433.—Louis XV. French Type Fan-shaped Patent Coppered Reflector with yellow copper frame, green, bronze and copper ornaments, highly artistic type in the French Rococo style.

Recommended for Drawing Rooms and Reception Rooms.

Price £15 15 0



Type 500A.

Type 500A.—As above, but with movable canopy, as shown.

Price £11 11 0

Type 500.—English Square Type Brass Frame Coppered Reflector, with fixed canopy.

Price £10 10 0

Price for other types on application.

DRAKE & GORHAM, Ltd., 66, VICTORIA STREET, LONDON, S.W.

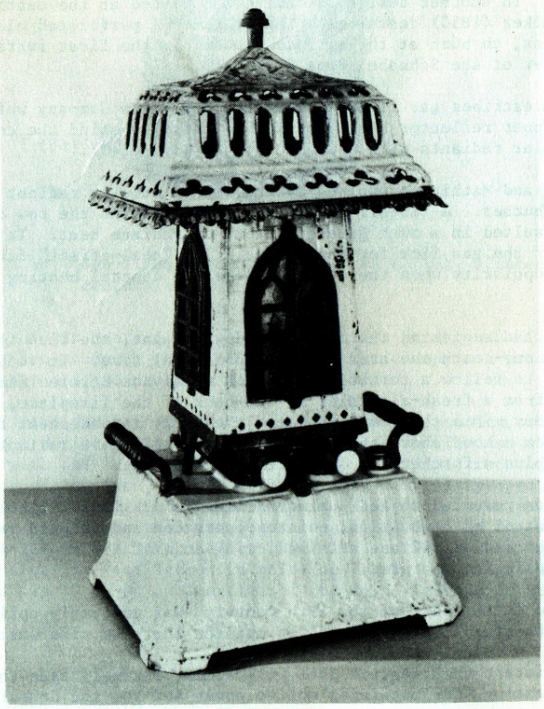


Fig. 3.39. Oil heating stove, 1890. Twin-wick ornamental paraffin stove by John Harper of Willenhall. (Photo courtesy, Science Museum, London)

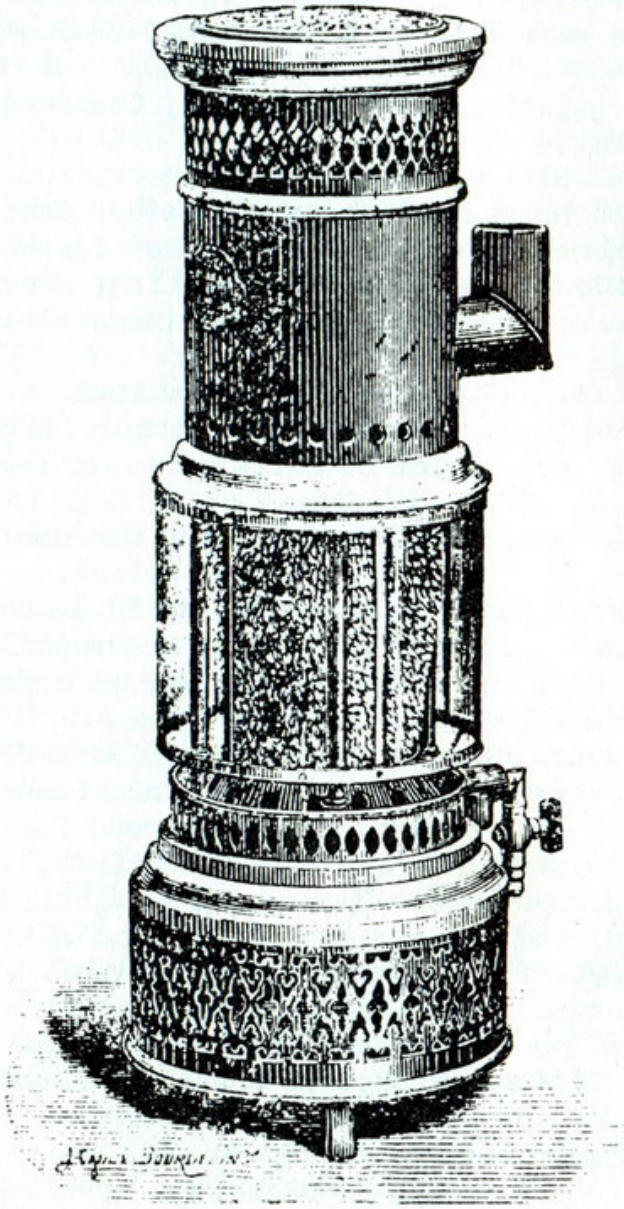


Fig. 3.40. Gas-fired radiant stove (France, late nineteenth century).

REFERENCES

1. Anon (1906) *Old English Country Cottages*, C. Holme (Ed.), Studio, London.
2. Anon (1954) Appareils de chauffage et de ventilation employés par les romains, *Chauff.Vent.Condit.*, 31 (4) and (5) 14.
3. Anon (1842) Heating, Lighting and Ventilation, Chambers' Information for the people No.92, Edinburgh.
4. Anon (1977) Highlights of 120 years, *The Engineer*.
5. Anon (1955) History of baths, toilets and heating, *Sanit.Heiz.Tech.*, 20 (1) 1.
6. Anon (1905) ICS Reference Library, International Textbook Co., Scranton.
7. Ackery, E.M. (1964) Electricity and space heating, *Proc.I. E.E Conf*.
8. Angus, A.R(1954) Dual circulation in a small industrial water-tube boiler, *Eng.Bo.Ho.Rev*, May, 69, 137.
9. Baldwin, W.J. (1883) *Steam Heating*, Wiley, New York.
10. Baldwin, W.J. (1889) *Hot water heating and fitting* Engng.Bldg.Record, London.
11. Barker, A.H. (1931/32) Principles of calculation of low-temperature radiant heating, *Proc.IHVE*, 30, 208.
12. Barker, A.H. (1920) *Domestic Fuel Consumption*, Constable.
13. Beaver, P. and Evelyn, H. (1970) *The Crystal Palace*.
14. Beckmann, J. (1846) *History of Inventions* (4th Ed.), Bohn, London.
15. Bernan, W. (1845) *History and Art of Warming and Ventilation*, Bell.
16. Borodin, I.V. (1970) *Pipelines and Plumbing Installation*, MIR Publ., Moscow.
17. Box, T. (1868) *Practical Treatise on Heat*, Spon.
18. Braudel, F. (1973) *Capitalism and Material Life 1400-1800*, Weidenfeld.
19. Brown, R. (1852) *Domestic Architecture*, Quaritch, London.
20. Brownlie, D. (1925/26) J.G. Bodmer, *Trans.Newcomen Soc.*, 6, 86,
21. Bruce, H.H. (1959) Off-peak floor heating, *JIHVE*, 27, 121.
22. Buchanan, R. (1810) *Essays on the Economy of Fuel*, Longman, Glasgow.
23. Carpenter, R.C. (1910) *Heating and Ventilating Buildings*, Wiley, New York.
24. Chadwick, E. (1965) *Report on the Sanitary Condition of the Labouring Population of Great Britain*, Ed Flint, Edinburgh U.P.
25. Constantine, J. (1881) *Practical Ventilation and Warming*, Churchill.
26. Collins, J.F. (1959) History of district heating, *IDHAJ*.
27. Cook, O. (1968) *The English Home through 7 Centuries*, Nelson.
28. Croome, D. (1966) Chimney design, *JIHVE*, 34, 165.
29. Debesson, G. (1908) *Chauffage des Habitations*, Dunod, Paris.
30. Derry, T.K. and Williams, T.I. (1960) *Short History of Technology*, O.U.P.
31. Dollman, F.T. and Jobbins, J. (1861) *Ancient Domestic Architecture*, Atchley, London.
32. Dufton, A.F. (1944) A fireside talk, *JIHVE*, 11, 214.
33. Dye, F. (1917) *Warming Buildings by Hot Water*, Spon, London.
34. Edwards, F. (1882) *Ventilation and Heating*, Longman.
35. Faber, A. (1957) *Die Entwicklungsstufen der häuslichen Heizung*, Oldenbourg, Munich.
36. Fishenden, M. (1925) *House Heating*, Witherby.
37. Fitzmaurice, R. (1938) *Principles of Modern Building*, HMSO, London.
38. Forbes, R.J. (1958) *Man the Maker*, Constable.
39. Fox, S. (1930) Half a Century of Boiler Making, *Proc.IHVE*, 29, 14.
40. General Board of Health (1857) Report by the Commissioners appointed to enquire into the warming and ventilation of dwellings, HMSO, London.
41. Grindrod, A.E. (1899) Fire insurance companies and high-pressure heating apparatus, *Proc.IHVE*, 1, 44.
42. Guthrie, J. (1971) *History of Marine Engineering*, Hutchinson.
43. Haden, C.I. (1903) The Reck System, *Proc.IHVE*, 4, 85.
44. Harrison, J.R., Ackery, E.M. and Wills, D.R. (1952/53) Symposium on church heating, *JIHVE*, 20, 71.
45. Hoffman, J.D. and Raber, B.F. (1913) *Handbook for Heating and Ventilating Engineers*, McGraw Hill, New York.
46. Haden, W.N. (1903/4) Evidence to Royal Commission on coal supplies, *Proc.IHVE*, 5, 231.

47. Honiball, C. (1906) Warming of steamships, *Proc.IHVE*, 7, 62.
48. Inoue, U. (1979) Private communication.
49. Jamieson, H.C. (1954/55) Heated aluminium ceilings, *JIHVE*, 22 (2), 47.
50. Jamieson, J. (1945) Heating by electrode boilers without thermal storage, *JIHVE*, 13, 121.
51. Johnson, P. (1978) *National Trust book of British castles*, Book Club Associates.
52. Jones, W. (1904) *Heating by Hot Water*, Crosby Lockwood.
53. Junk, D.V. (1894) *Wiener Bauratgeber* (5th Ed.) Speilhagen, Vienna.
54. Kell, J.R. (1958/59) A survey of methods of pressurisation, *JIHVE*, 26, 1.
55. Kollmar, A. and Liese, W. (1957) *Die Strahlungsheizung*, Oldenbourg, Munich.
56. Kretzschmer, F. (1957) Bauformen und Wirkungsweise antiker Heizungen, *Gesundh-Ing*, 78, (23/24), 353.
57. Larsen, E. (1953) *An American in Europe*, Rider, London.
58. Markham, S.F. (1947) *Climate and the Energy of Nations*, Oxford.
59. Monroe, W.S. (1902) *Steam Heating and Ventilation*, McGraw-Hill.
60. McGuire, W.R. (1901) Heating in France and Italy, *Proc.IHVE*, 3, 70.
61. Moorhouse, W.E. (1940/41) Growth in design and construction of boilers, *JIHVE*, 8, 319.
62. Nash, J. (Ed. C. Holme) (1906) *Mansions of England*, Studio, London.
63. National Radiator Company (1930) *"Ideal" Manual*, The company.
64. Peabody, E.A. (1942) Oil Fuel, *Trans.Newcomen Soc.*
65. Pearson, L.F. (1902) Old and new boilers, *Proc.IHVE*, 3, 31.
66. Péclet, E. (1861) *Traité de la Chaleur*, (3rd Ed.), Massone, Paris.
67. Phillips, E.G. (1928) Importance of thermal storage to industry, *Proc.IHVE*, 27, 221.
68. Picard, Ph. (1897) *Chauffage et Ventilation*, Baudry, Paris.
69. Pickup, G.A. (1977) Efficient use of gas for heating buildings, *Proc. Energy Show Conf.*, London.
70. Raynes, F.W. (1913) *Heating Systems*, Longman, Green.
71. Reck, A.B. (1910) *Catalogue*, Copenhagen.
72. Richardson, C.J. (1837) *Warming and Ventilation of Buildings*, Weale, London.
73. Rietschel, H. (1911) *Traité Théorique et Pratique de Chauffage*, Beranger, Paris.
74. Robertson, P. (1974) *Shell Book of Firsts*, Michael Joseph.
75. Rooley, G. (1978) Private communication.
76. Rosser and Russell (1975) *The First 200 Years*, The Company, London.
77. Royal College of Physicians (1936) Domestic heating by gas, considered from the point of view of health and comfort, London.
78. Schwitz, H. (1978) Niedertemperatur Heizsysteme, *Heiz.Lüft.Haustech.*, 29, (12), 452.
79. Schulz, W. (1931/32) Entwicklung der elektrische Heizung in 19-Jahrhundert, *BGT*, 21, 12.
80. Seelmeyer, G. (1956) Zur Entwicklungsgeschichte der Heizungstechnik, *Heiz.Lüft.Haustech.*, 7 (4), 57.
81. Shaw, W.F.B. (1954) History of the development of domestic solid fuel appliances, *Coal Merchant and Shipper*, May-Dec.
82. Shepherd, L. (1958) Space heating by means of electrical thermal storage heaters of the block type, *JIHVE*, 26, 97.
83. Smith, F.C. (1934) *Warming Buildings by Electricity*, Spon.
84. Solomon, H.G. (1927) *Domestic Electric Heating*, Crosby Lockwood.
85. Stewart, G. (1958) *Town Gas*, HMSO, London.
86. Smith, D.V.H. (1935) *Some Modern Heating Installations*, privately printed.
87. Thomas, J.W. (1906) *Ventilation, Heating and Lighting of Dwellings*, Longman, Green.
88. Thompson, N.S. (1912) *Mechanical Equipment of Federal Buildings*, David Williams, New York.
89. Tomlinson, C. (1850) *Rudimentary Treatise on Warming and Ventilation*, Weale, London.
90. Tredgold, T. (1824) *Principles of Warming and Ventilating*, Arch.Lib., London.

91. Verein Schweiz. centralheizungs Industriellen, Zur 25-jahrigen Bestehen 1906-1931 (The Verein, Zurich, 1932).
92. Vetter, H. (1911) Zur Geschichte der Zentralheizungen bis zum Übergang in der Neuzeit, *BGT*, 3, 276.
93. Walker, W. (1850) *Useful Hints on Ventilation*, Parkes, Manchester.
94. Wilkinson, G. (1928) Economic application of electricity to low-temperature heating processes, *Proc.IHVE*, 27, 259.
95. Williams, S.A. (1960) Off-peak electric heating by hot water methods, *JIHVE*, 27, 337.
96. Wright, L. (1964) *Keep the Home Fires Burning*, Routledge.
97. Powles, H.H.P. (1905) *Steam boilers - their history and development*, Constable, London.
98. Lew, I. (1890) *Die Feverungen mit flussigen Brennmaterialen*, Cotta Verlag, Stuttgart.