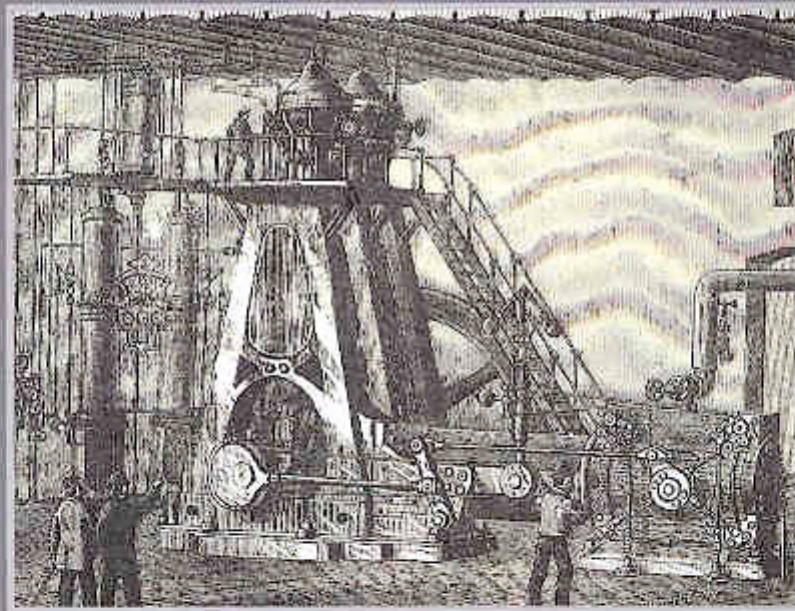


Industrial Refrigeration and Air Conditioning



Part 1.4 Refrigerating Systems

Part 1.4 Refrigerating Systems

Illustrations in following order

VAPOUR-COMPRESSION MACHINES

Jacob Perkins

James Harrison

Daniel Holden

De La Vergne

Unknown

J & E Hall

Haslam Foundry & Engineering Company

Liverpool Refrigeration Company

L Sterne

Carrier Engineering Corp installations

COLD AIR MACHINES

Dr John Gorrie

Haslam Foundry & Engineering Company

ABSORPTION MACHINES

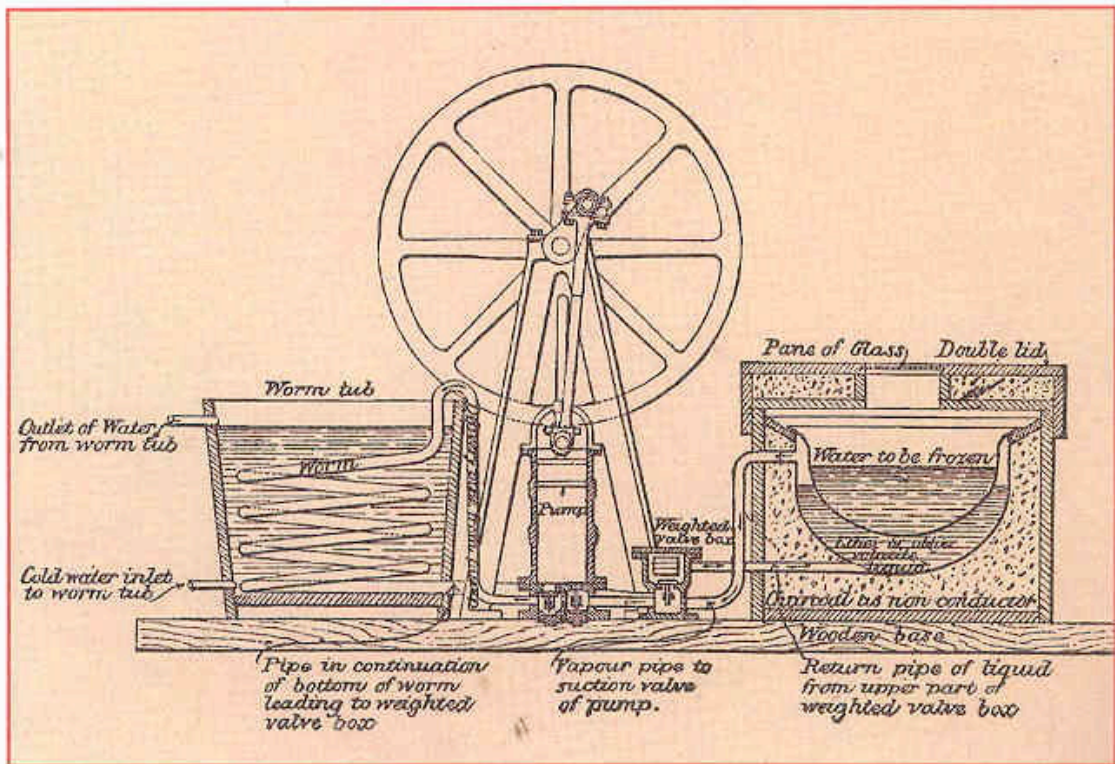
Ferdinand Carré

Unknown

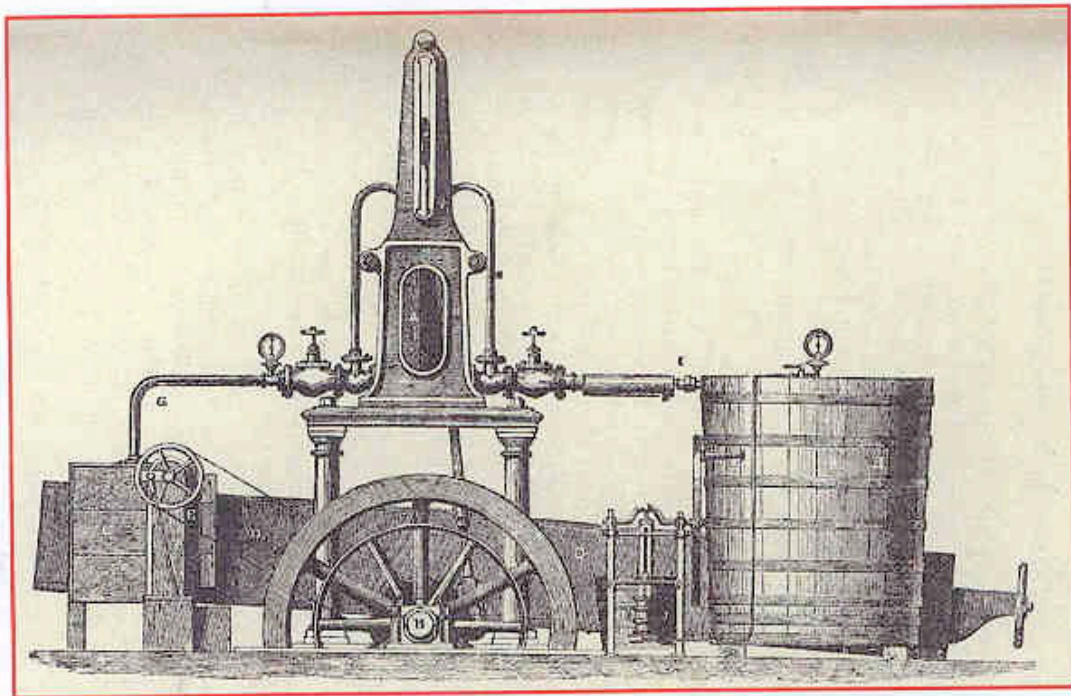
Ransome & Rapier

CENTRIFUGAL MACHINES

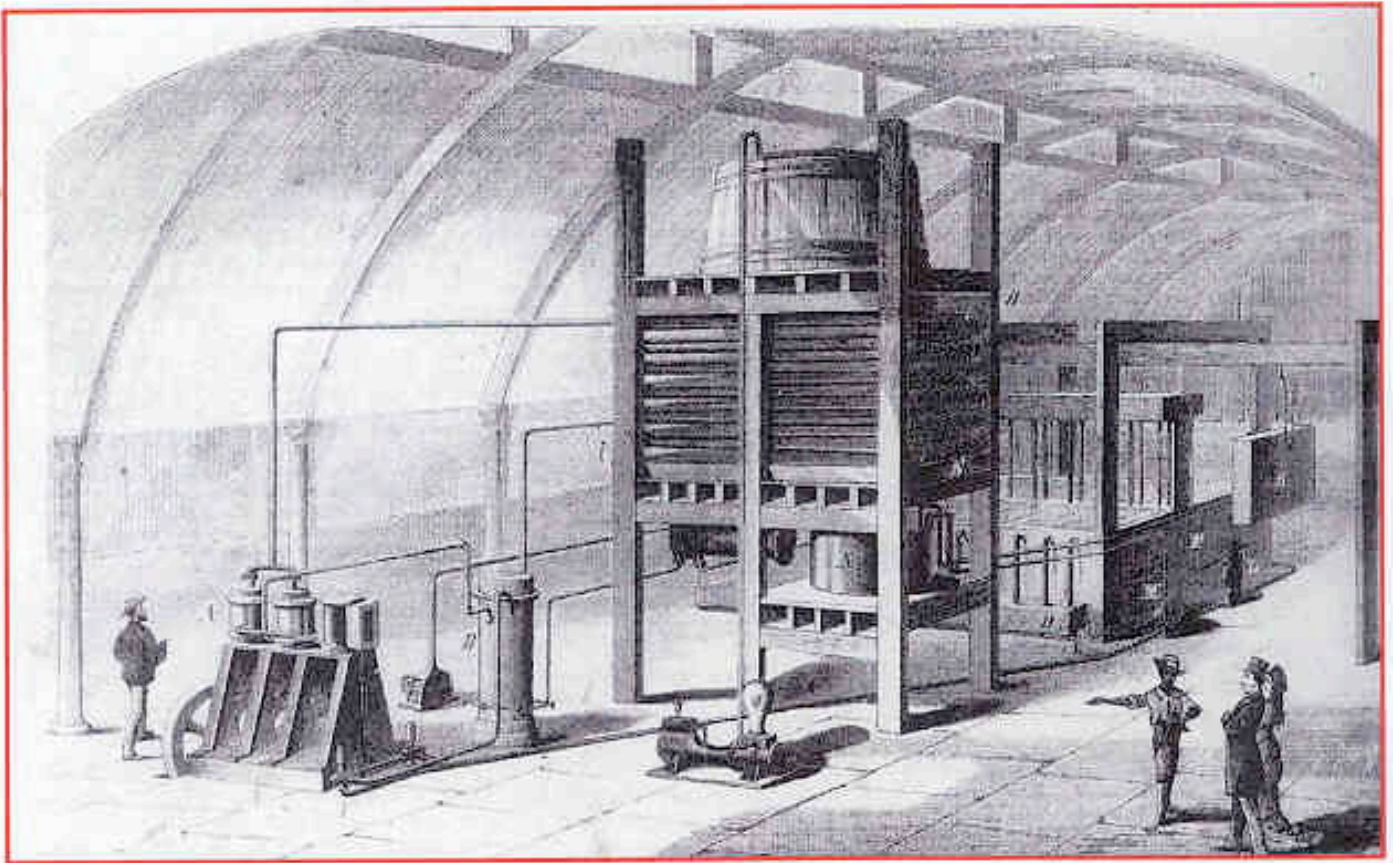
Carrier Engineering Corporation



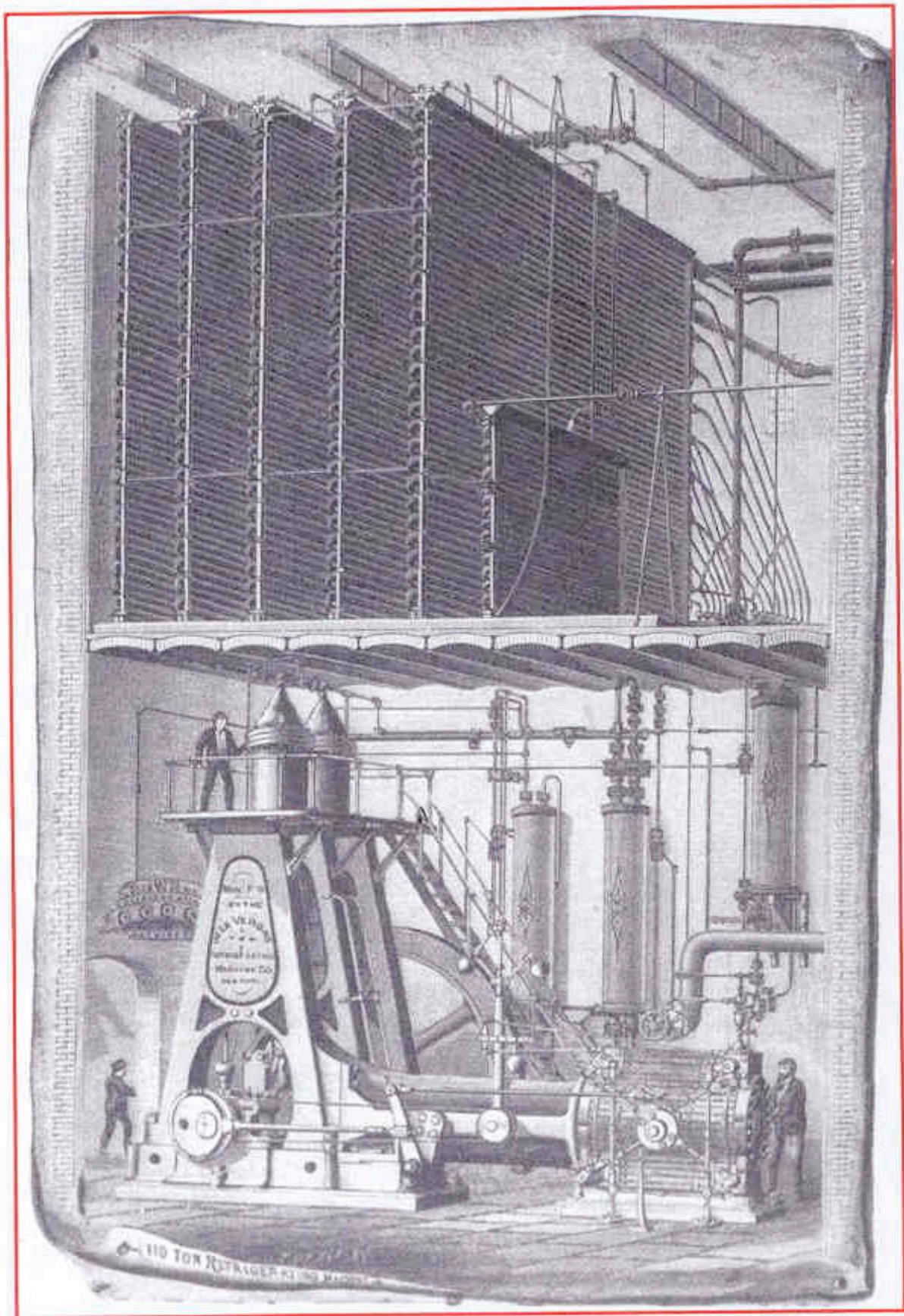
*Jacob Perkin's vapour-compression ice machine, 1834
[ASHRAE Journal, Show Guide, undated]*



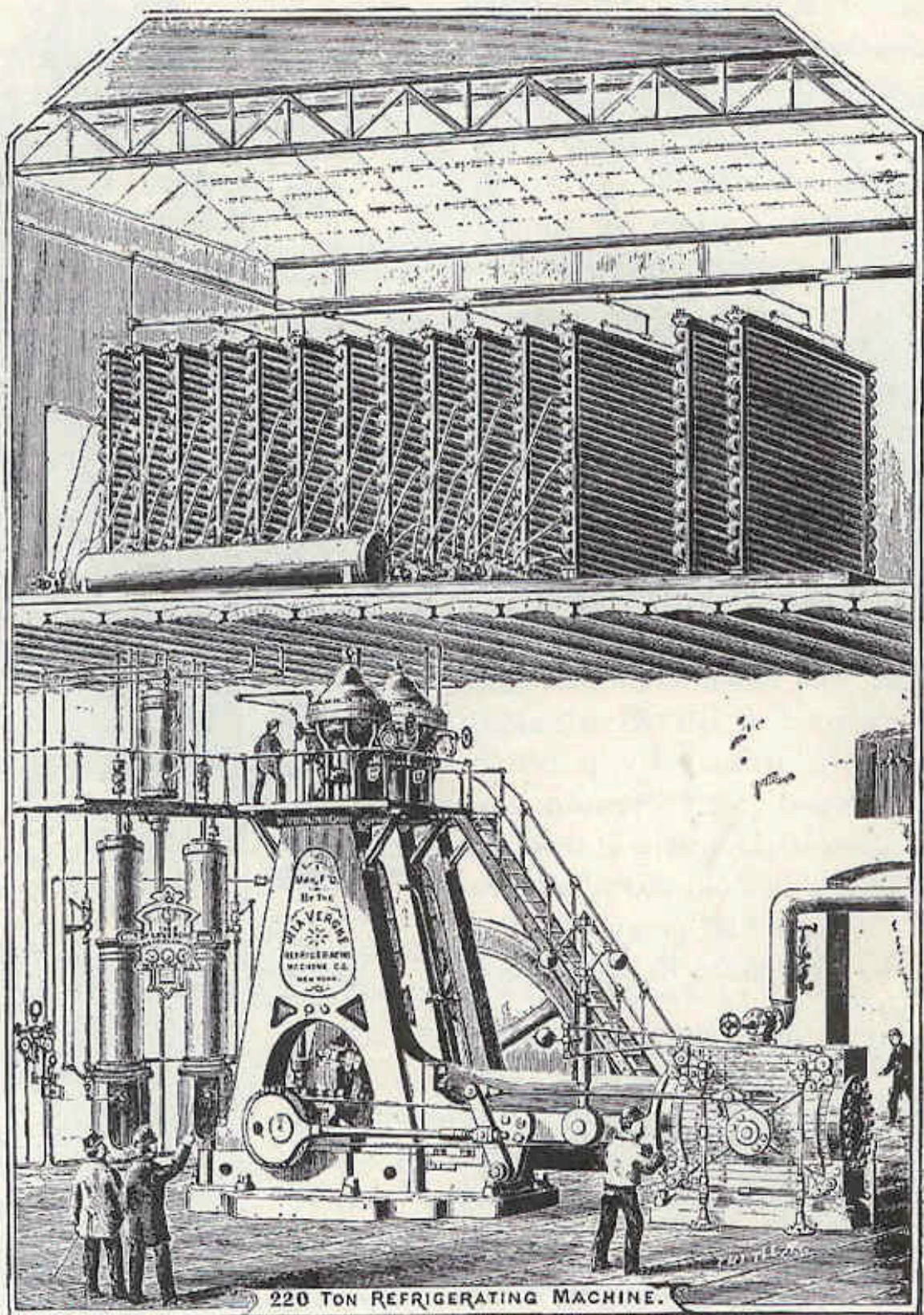
*Harrison ether machine as exhibited by Siebe & Company, 1851
[Cold Storage and Ice Making, p.7]*



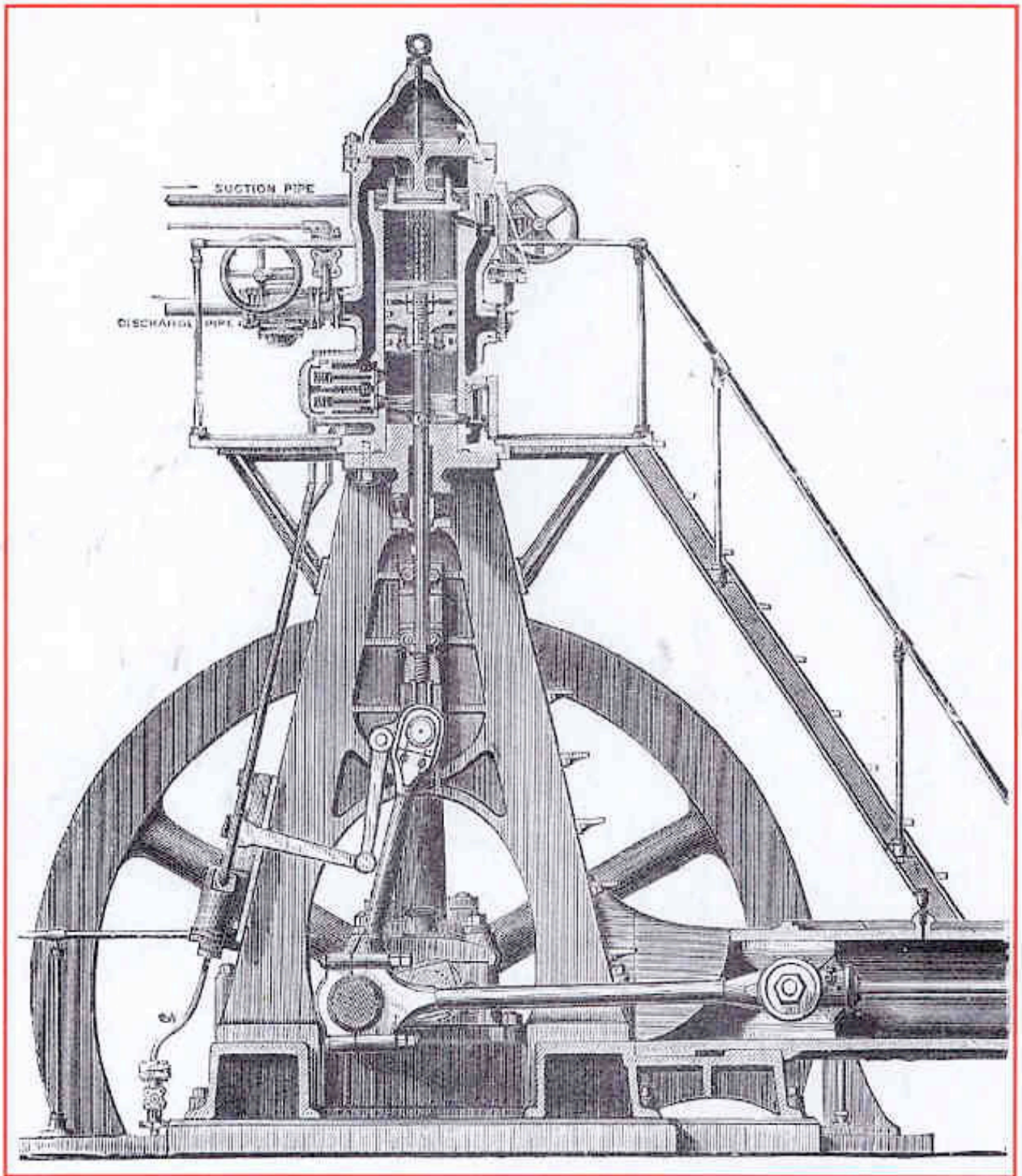
*Holden's improved ice-making plant
[Scientific American, 22 May 1880]*



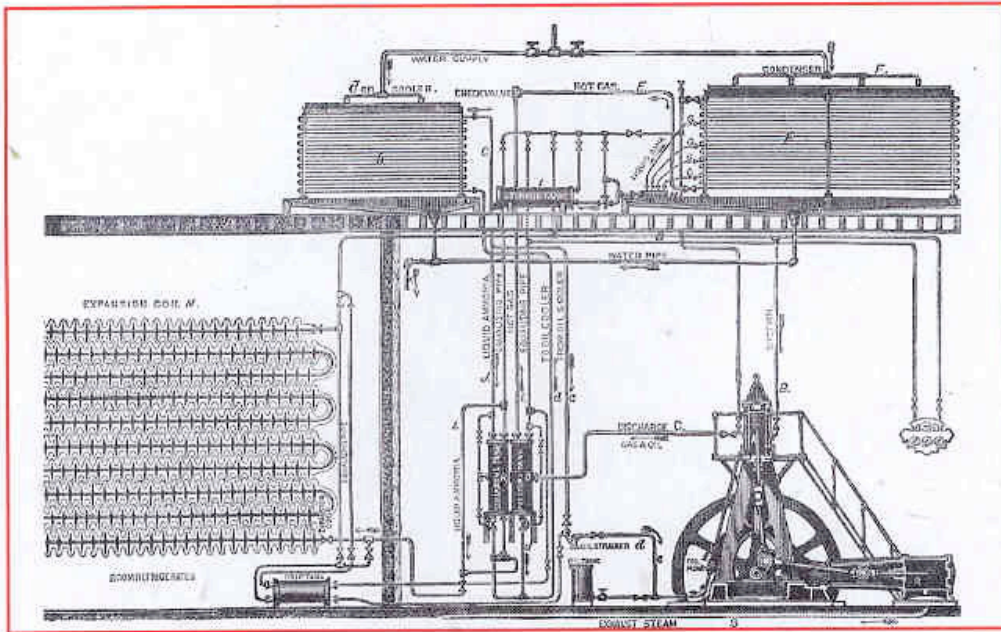
De La Vergne 110 TR refrigerating machine with 5 large and 1 small atmospheric condensers where the cooling water was dispensed from an overhead trough, tricking down the outside of the refrigerant tubes [Mechanical Refrigeration, Processes and Apparatus of the De La Vergne Refrigerating Machine Company, New York, 1887].



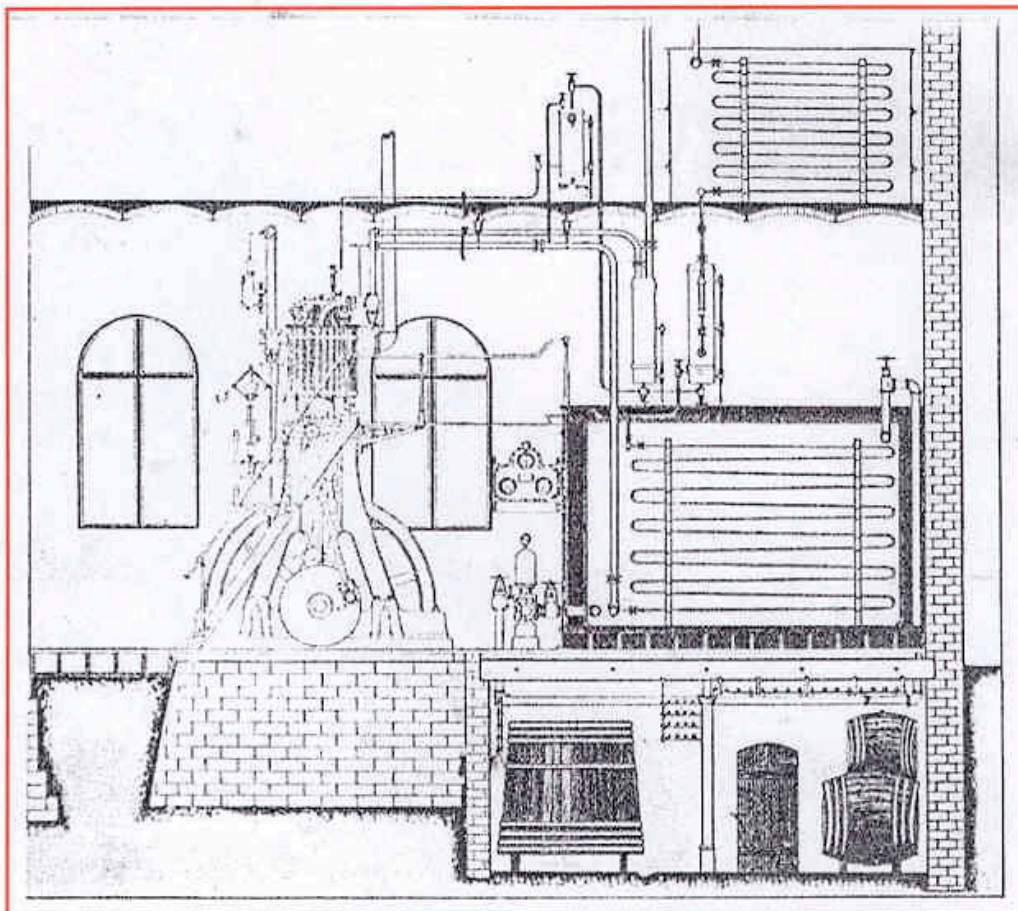
De La Vergne 220 TR refrigerating machine with 14 atmospheric condensers, probably c.1890 [Refrigeration and Air Conditioning, p.10]



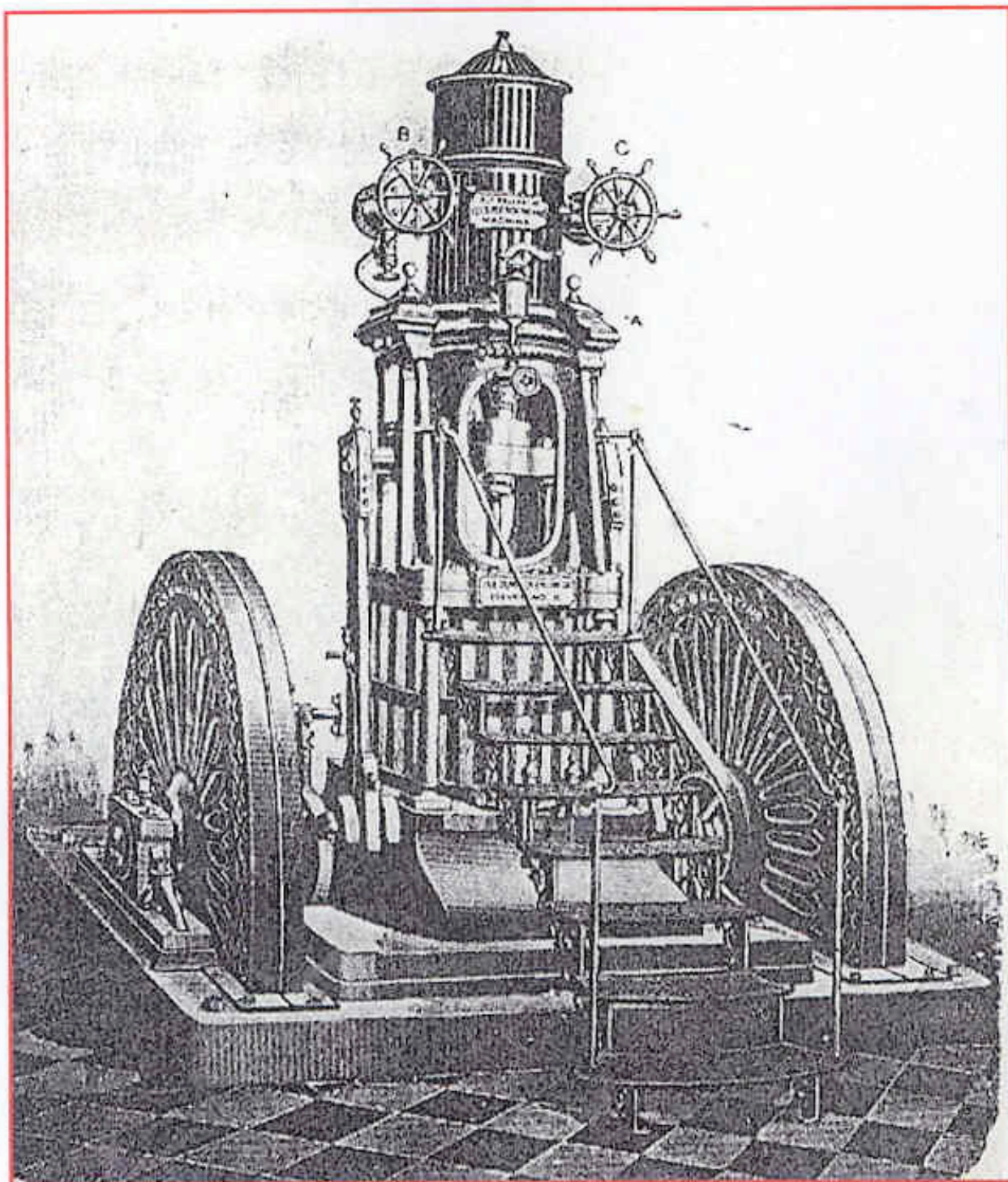
*Double-acting De La Vergne compressor, 1902
[Refrigerating and Ice-Making Machinery, p.43]*



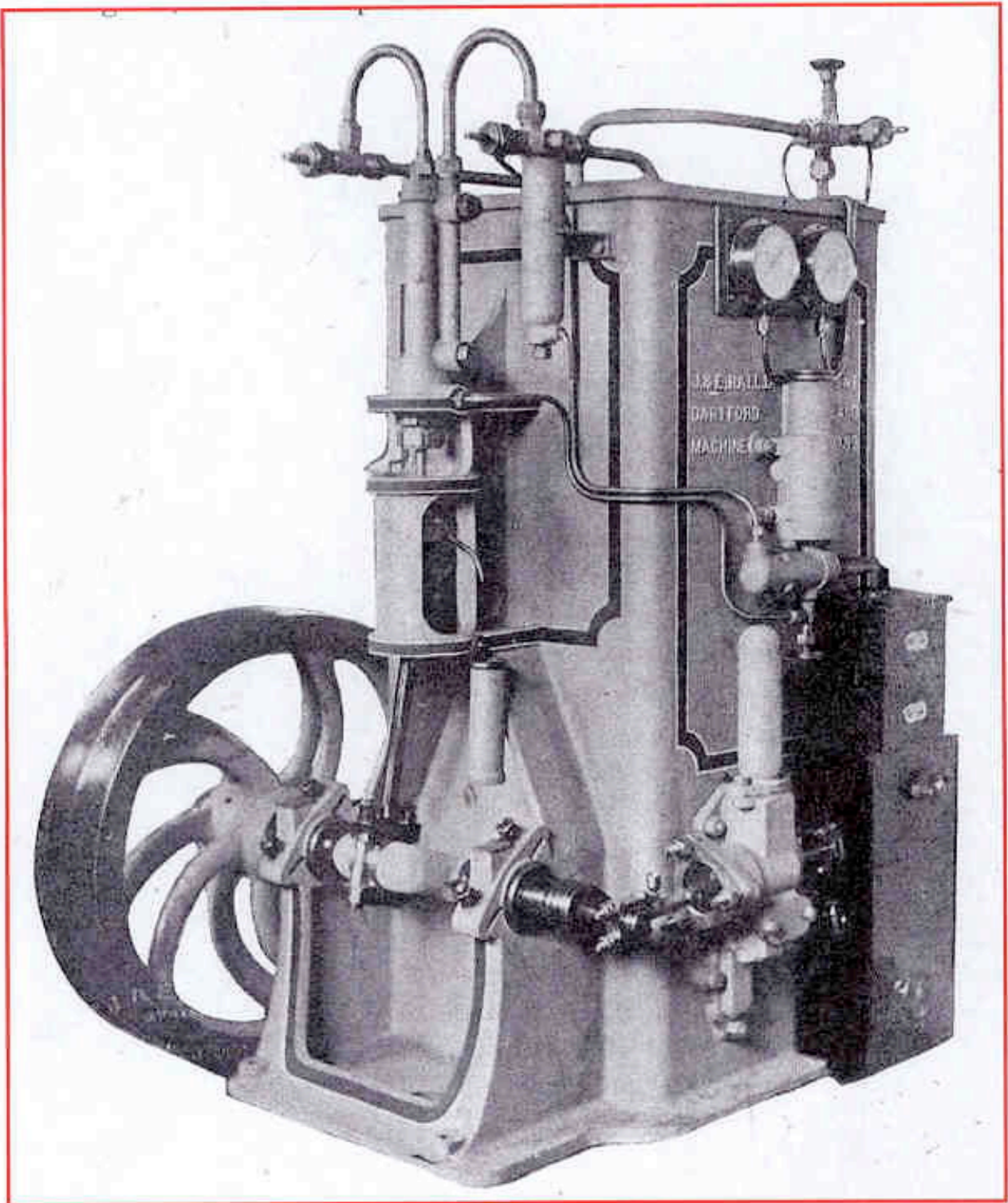
*De La Vergne ammonia refrigerating plant with atmospheric condensers, 1902
[Refrigerating and Ice-Making Machinery, p.47]*



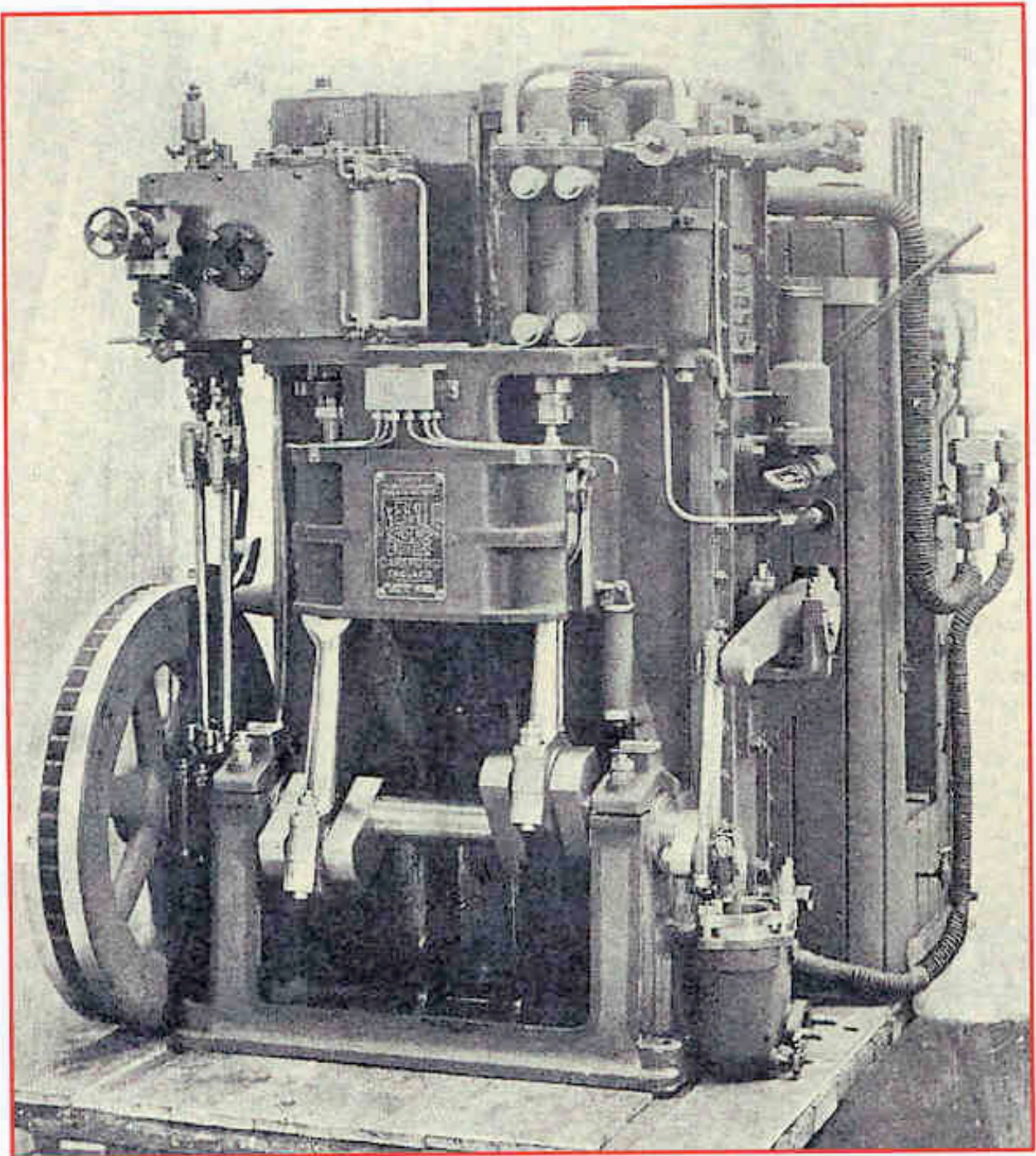
Compression system, c.1890 [Refrigeration in the Gay Nineties, p.360]



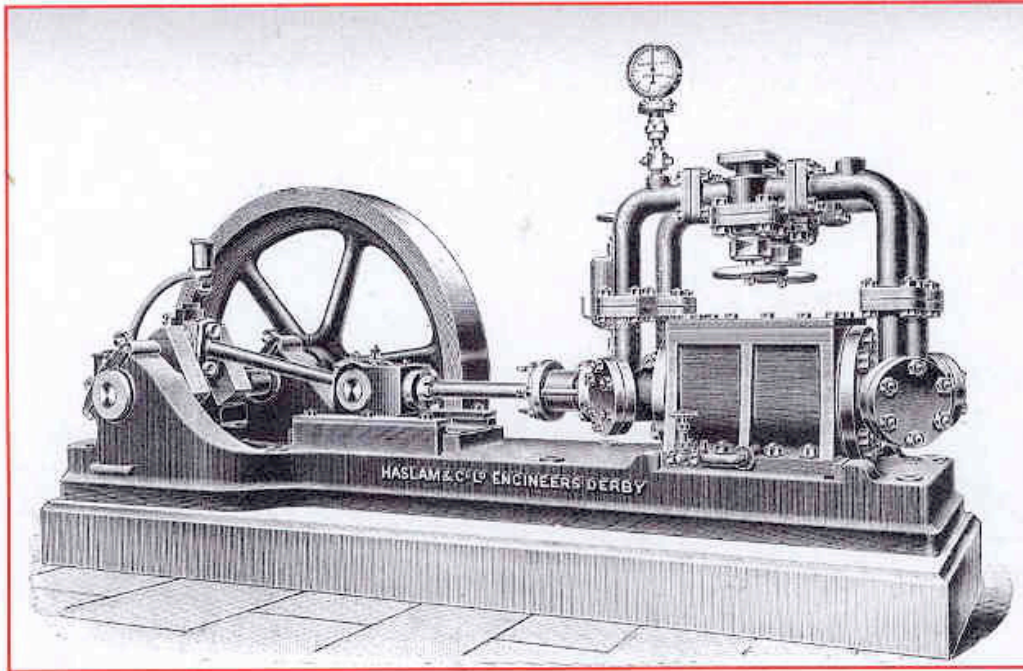
A decorative compressor, c.1900 [Refrigeration in the Gay Nineties, p.360]



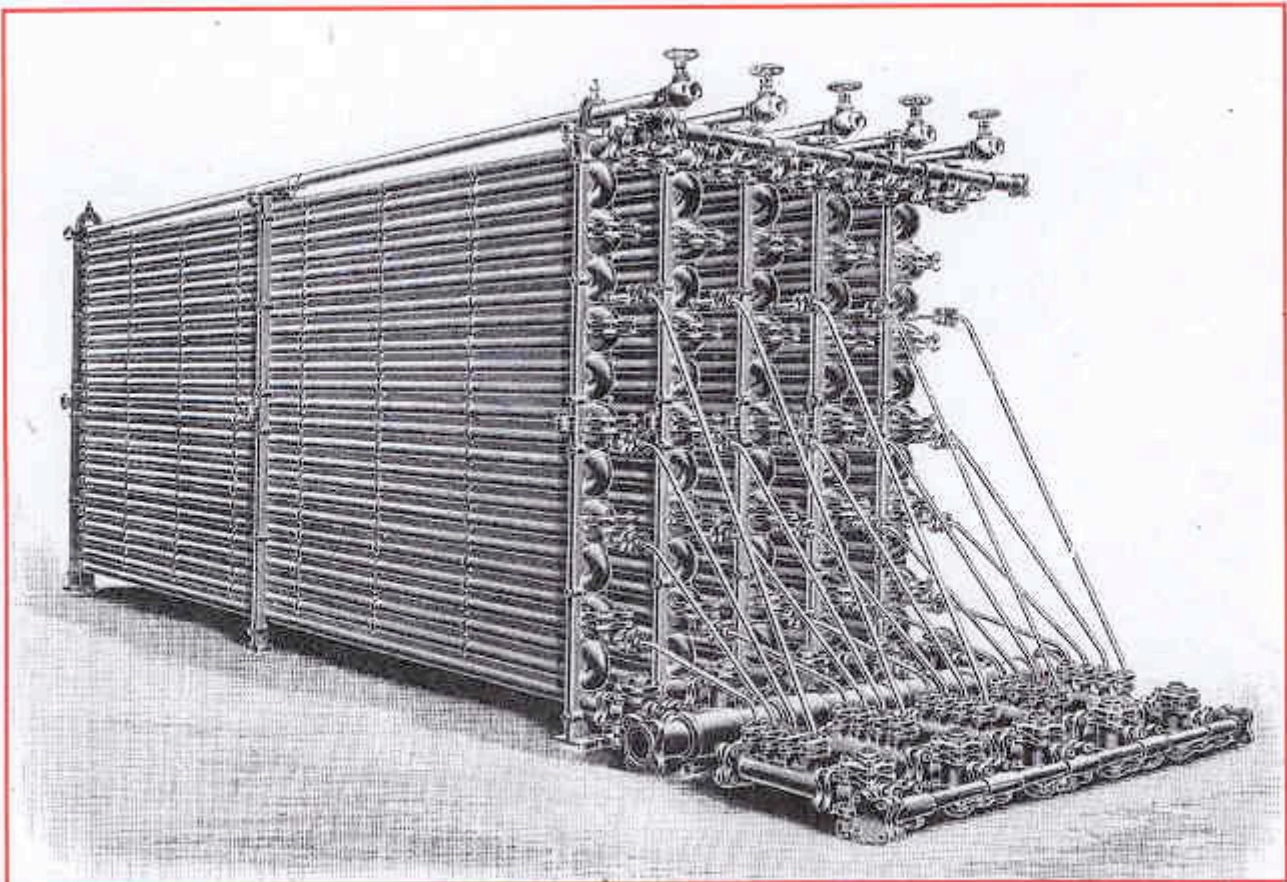
*J & E Hall patent dry air CO₂ belt-driven machine, 1908,
complete with integral steam engine
[Refrigeration, p.102]*



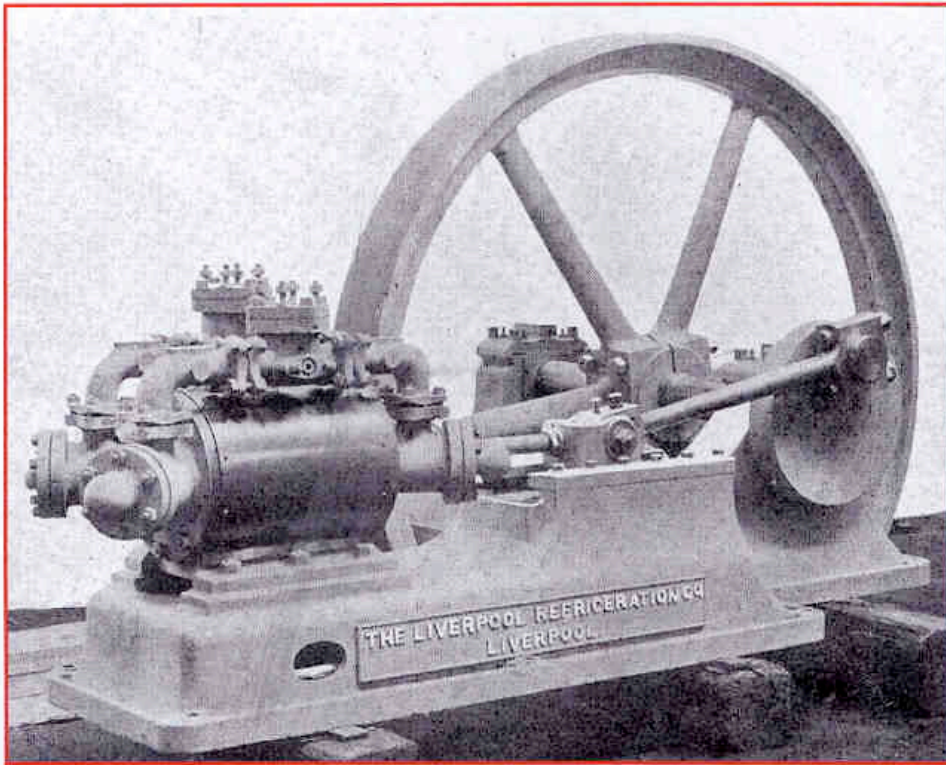
*J & E Hall CO₂ belt-driven No.8 vertical marine type machine, 1908
complete with integral steam engine [Refrigeration, p.103]*



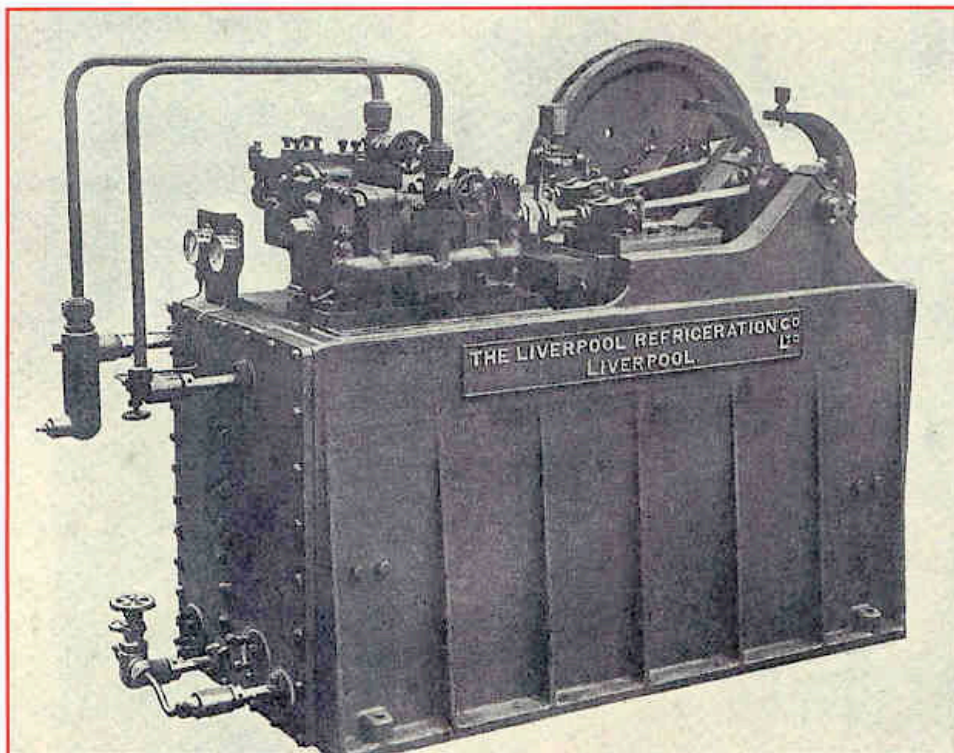
*Haslam belt-driven compressor, 1908
[Refrigeration, p.97]*



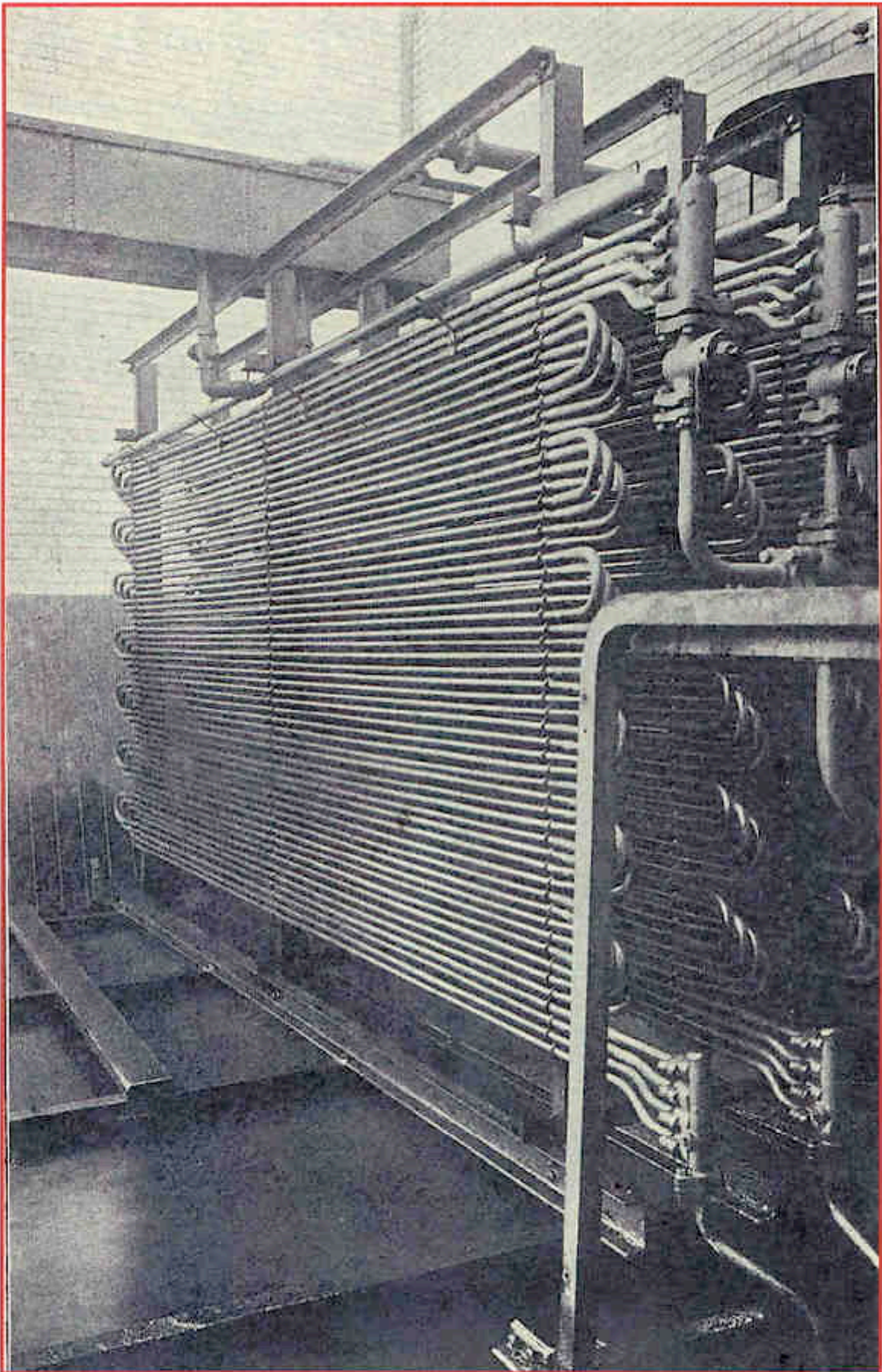
Haslam atmospheric condenser, 1908 [Refrigeration, p.106]



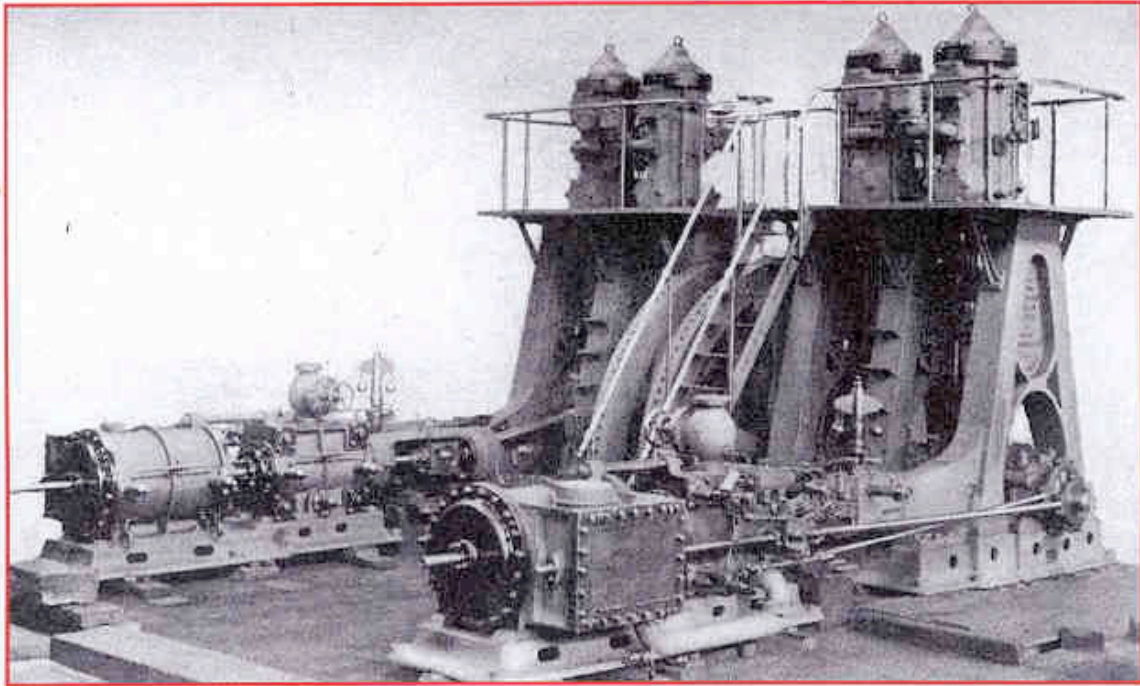
*Liverpool Refrigeration Company belt-driven compressor, 1908
[Refrigeration, p.96]*



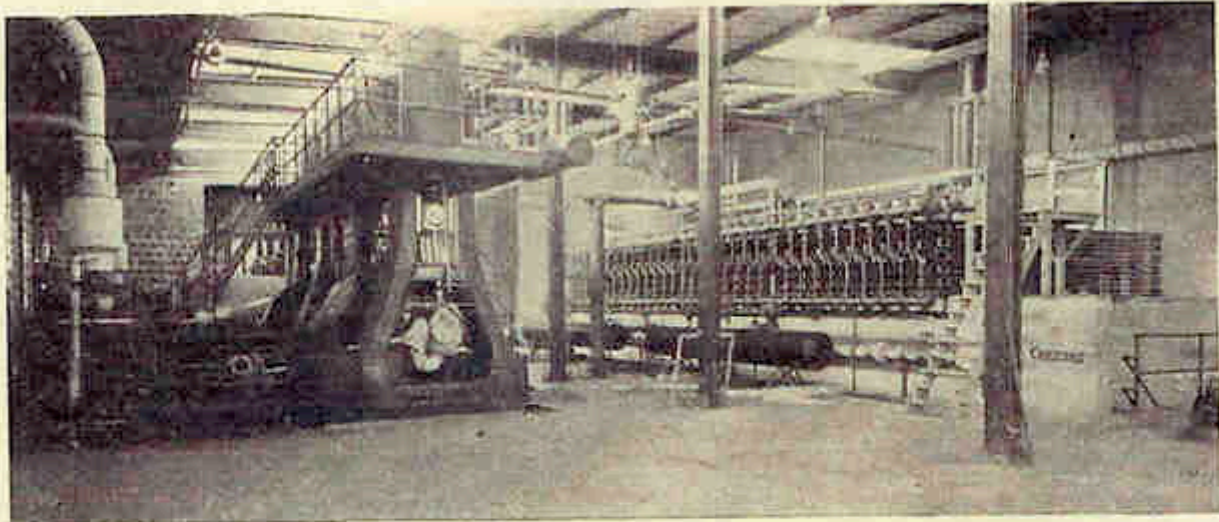
*The Liverpool Refrigeration Company marine refrigerating unit
of the submerged condenser type [Refrigeration, p.104]*



*The Liverpool Refrigeration Company atmospheric or open-air condenser
as installed at Ruddin & Sons, Central Cold Store, Liverpool, 1908
[Refrigeration, p.107]*

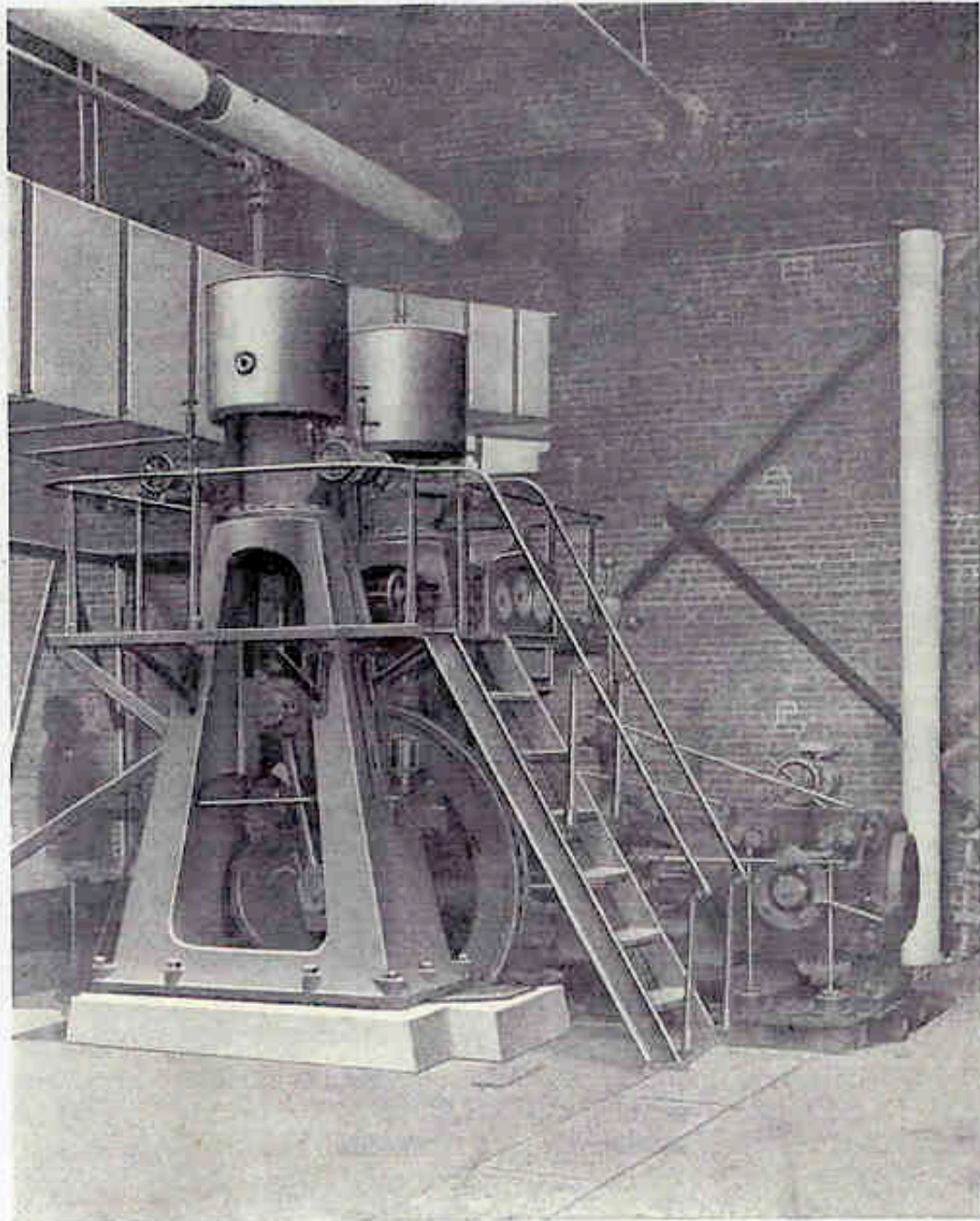


Sterne refrigerating plant with two compound horizontal engines driving two vertical double-acting compressors [Refrigeration, p.99]



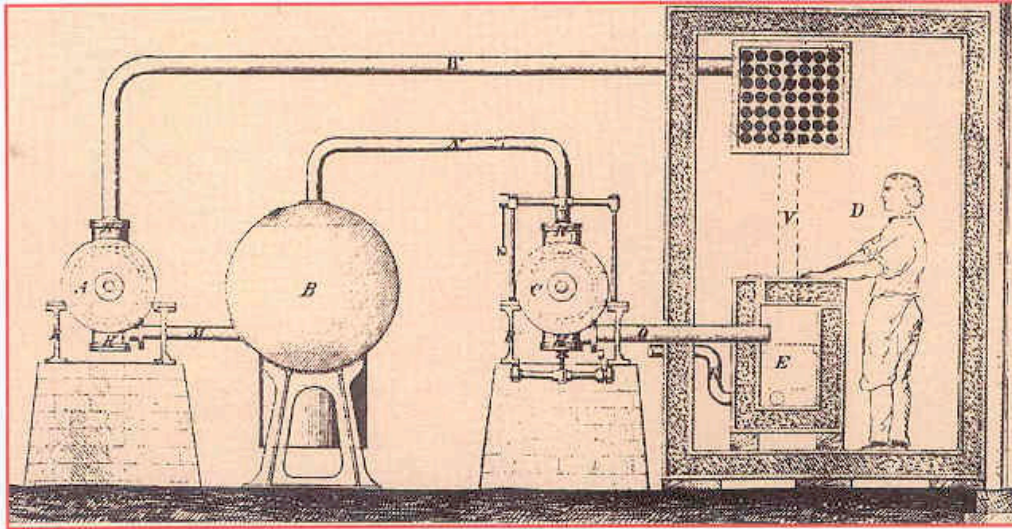
One of the Refrigerating Units which help the Dehumidifiers to Manufacture Cold Weather during the Summertime. The total Capacity of the two Units is equivalent to the melting of Seven Hundred Tons of Ice every Day.

[Weather, Carrier Eng Corp, 1913, 46]

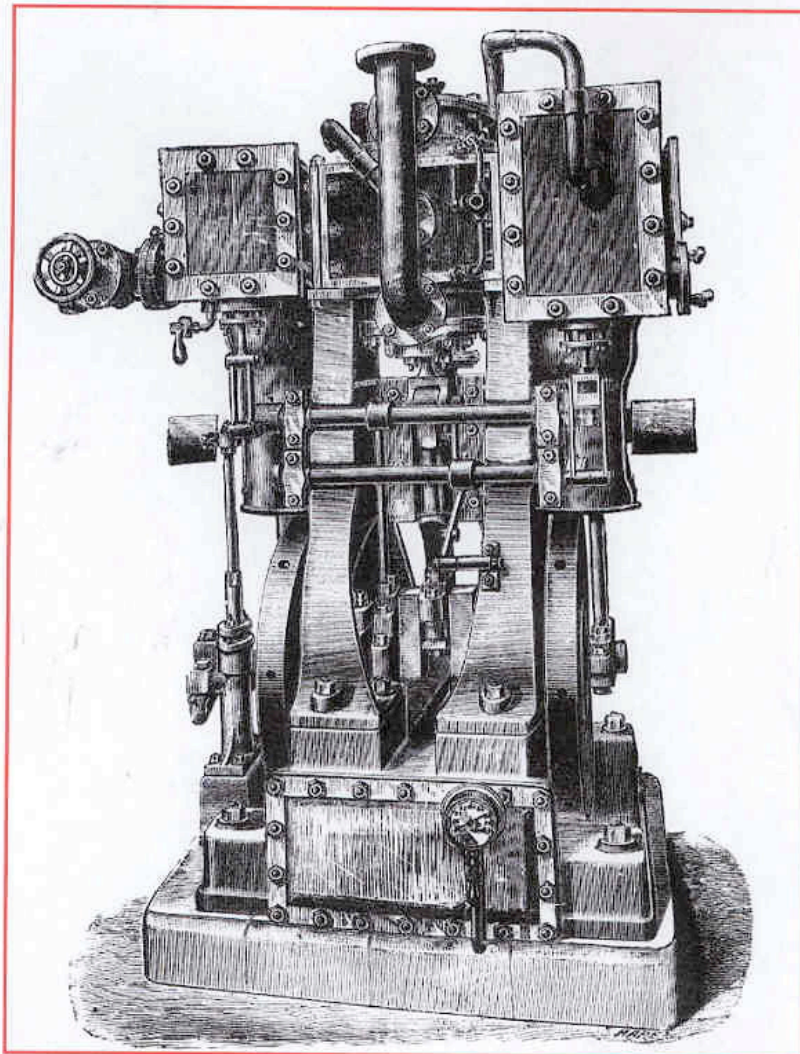


One of three Vertical Single-Acting Ammonia Compressors with Horizontal Corliss Engine installed by Us in the Plant of British Munitions, Ltd., Montreal.

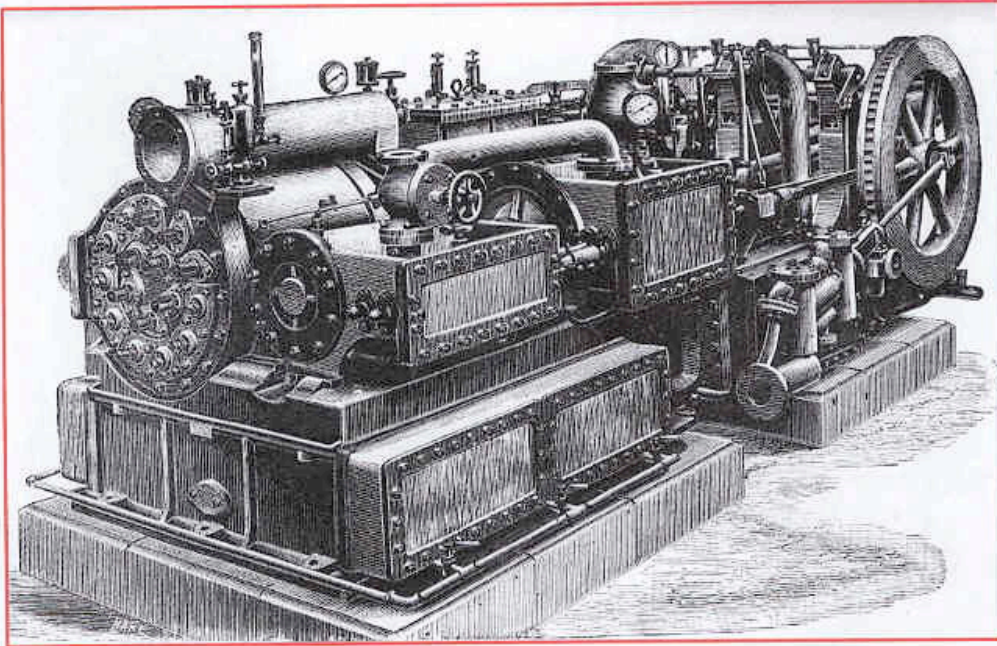
[Carrier Dehumidifying Equipment, Carrier Eng Co Ltd, Treatise No.300, reprint of US booklet, 1920, p.48]



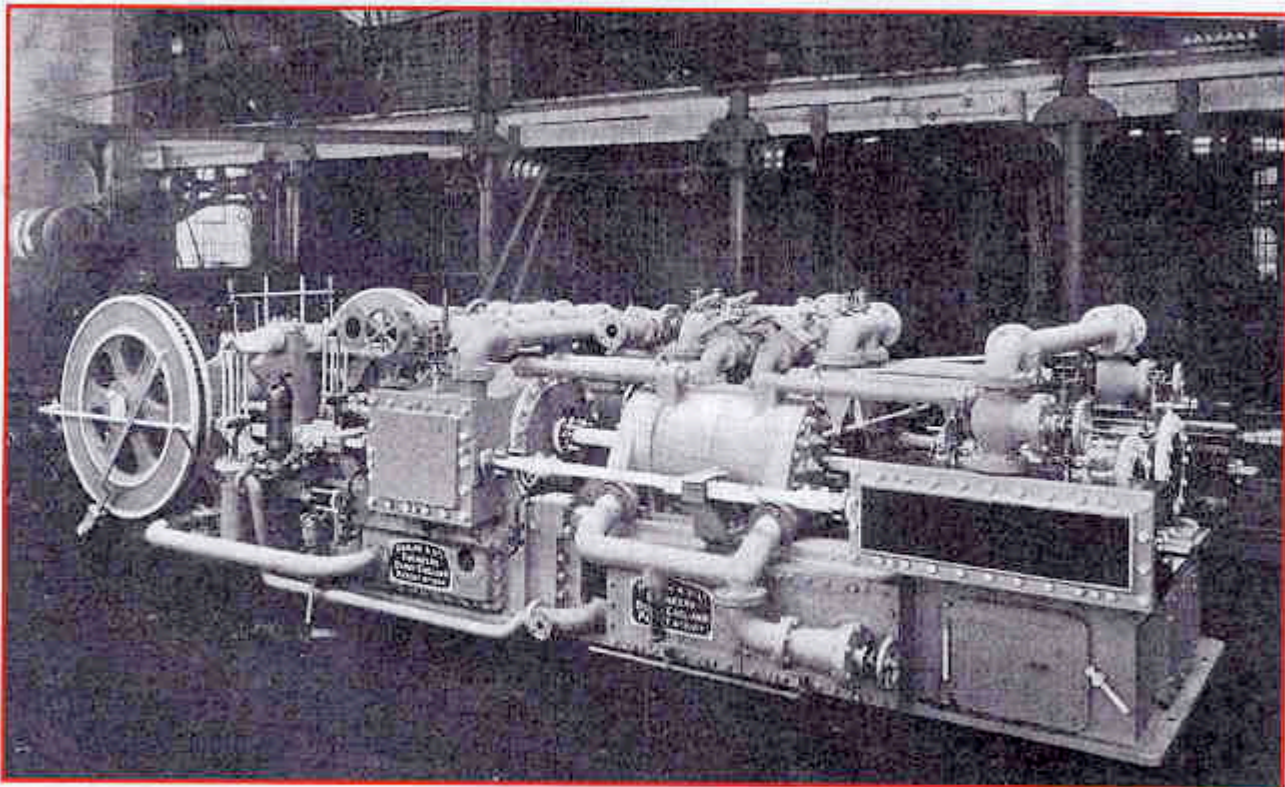
*Dr John Gorrie's air cycle (cold air) improved ice-machine, 1851
[From Gorrie's US Patent]*



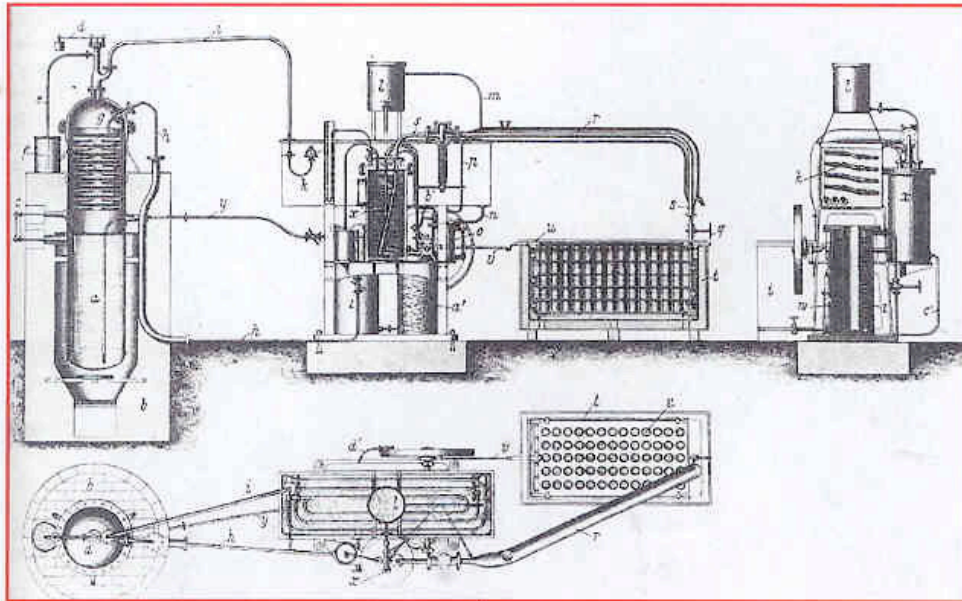
*Haslam vertical pattern cold air machine, developed c.1880
[Refrigerating and Ice-Making Machinery, p.130]*



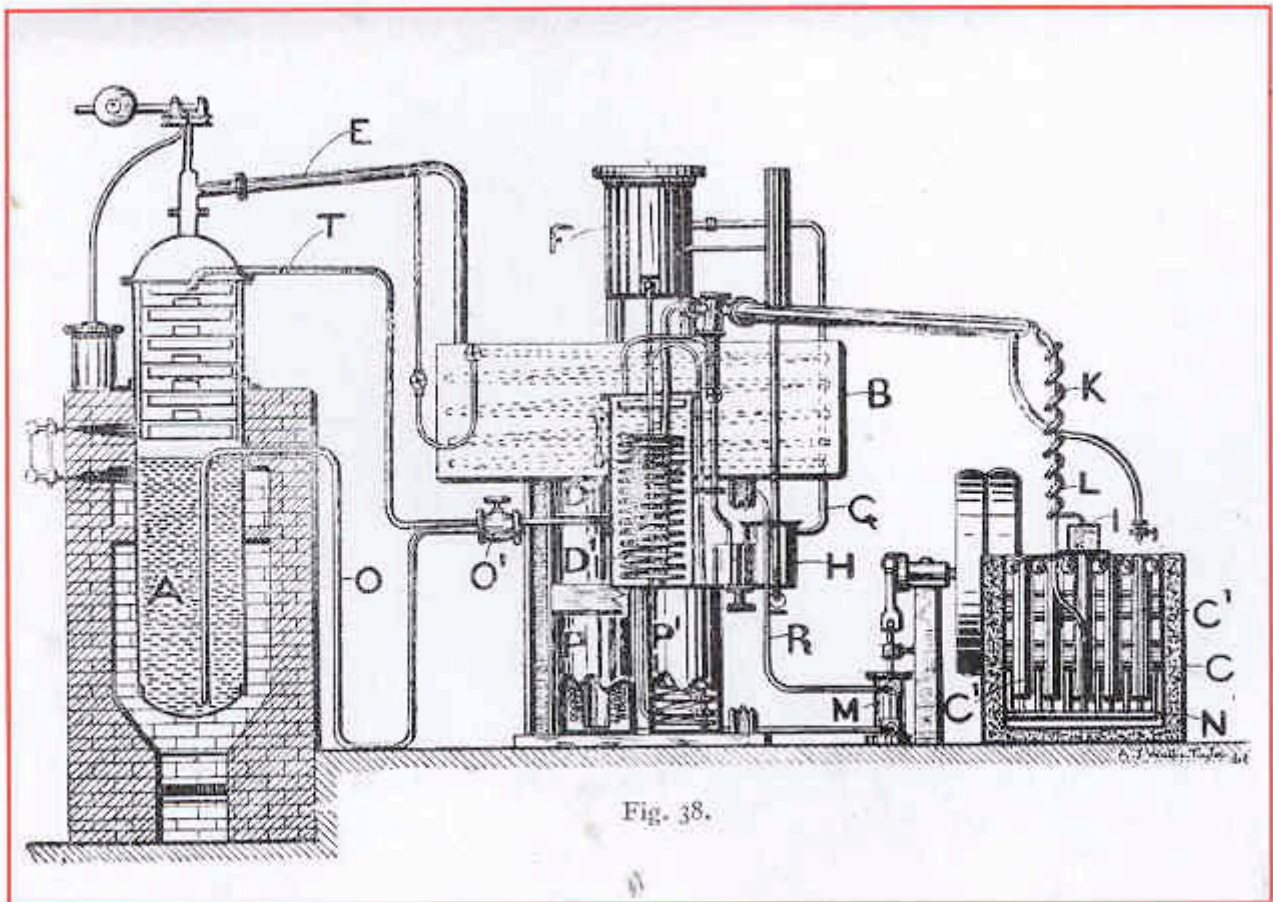
*Haslam cold air machine, developed c.1880
[Refrigerating and Ice-Making Machinery, p.129]*



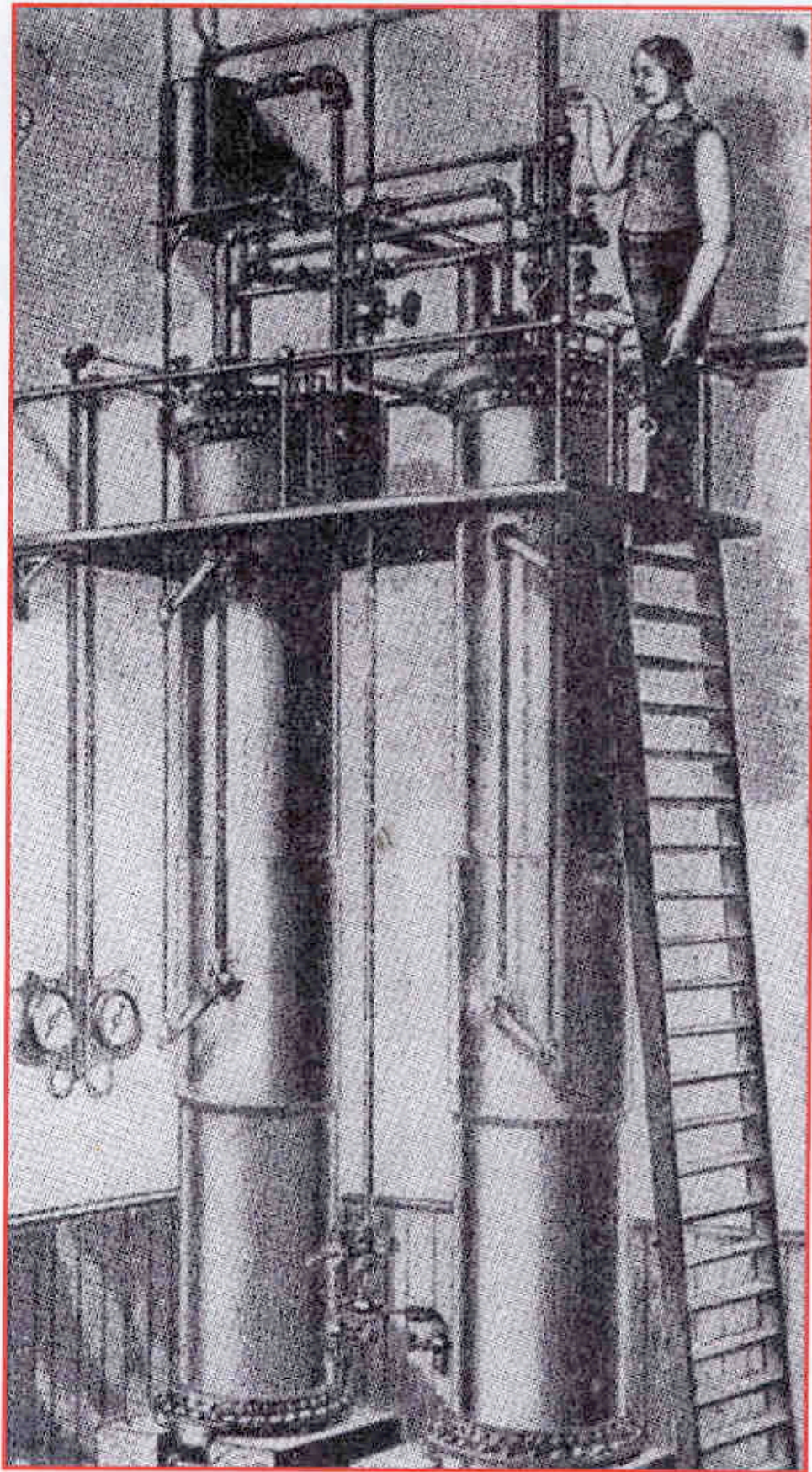
*Haslam cold air machine, c.1900 (?)
[Refrigeration, p.88]*



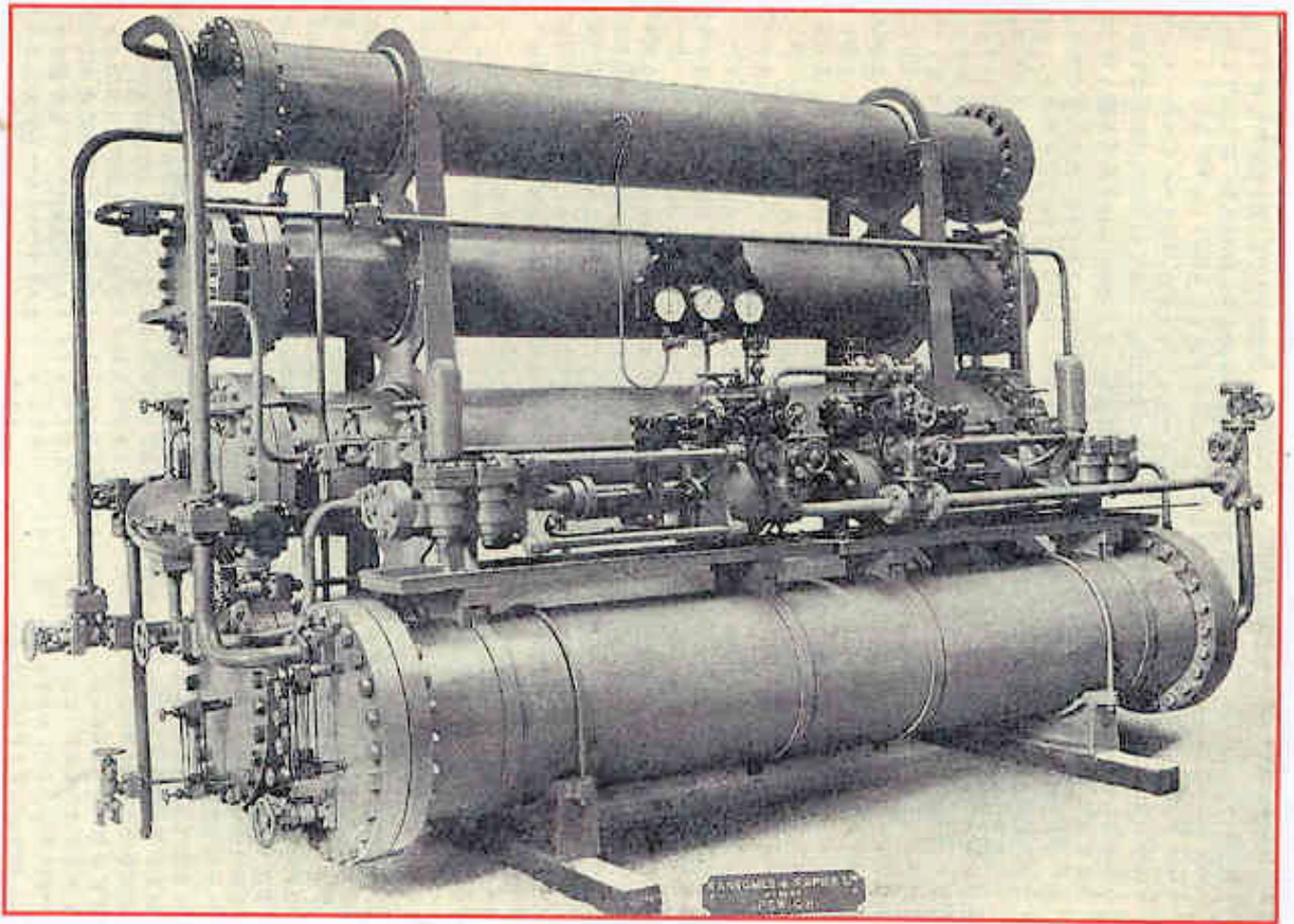
Carré's continuous absorption machine, 1859 [Building Services Engineering, p.261]



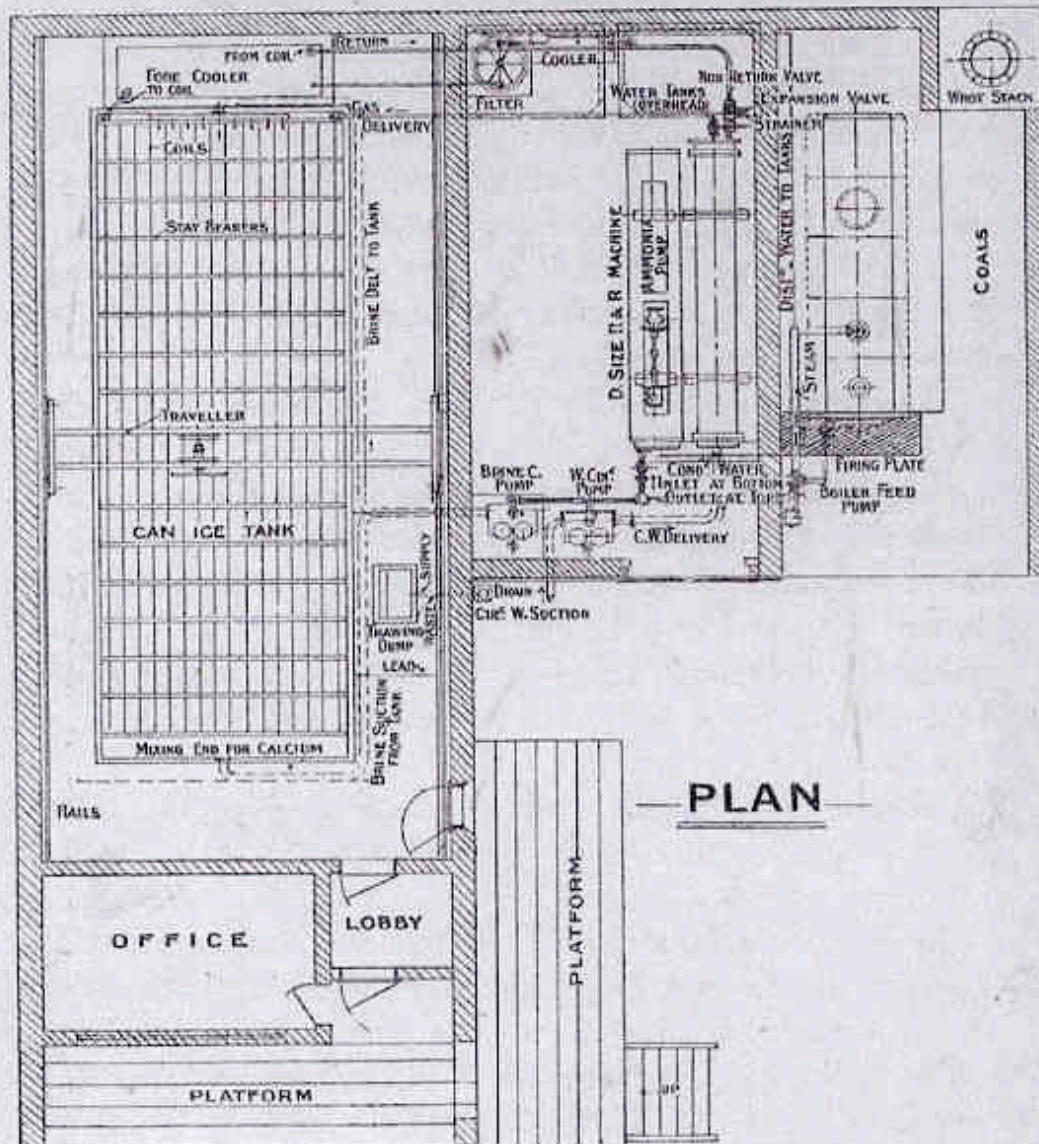
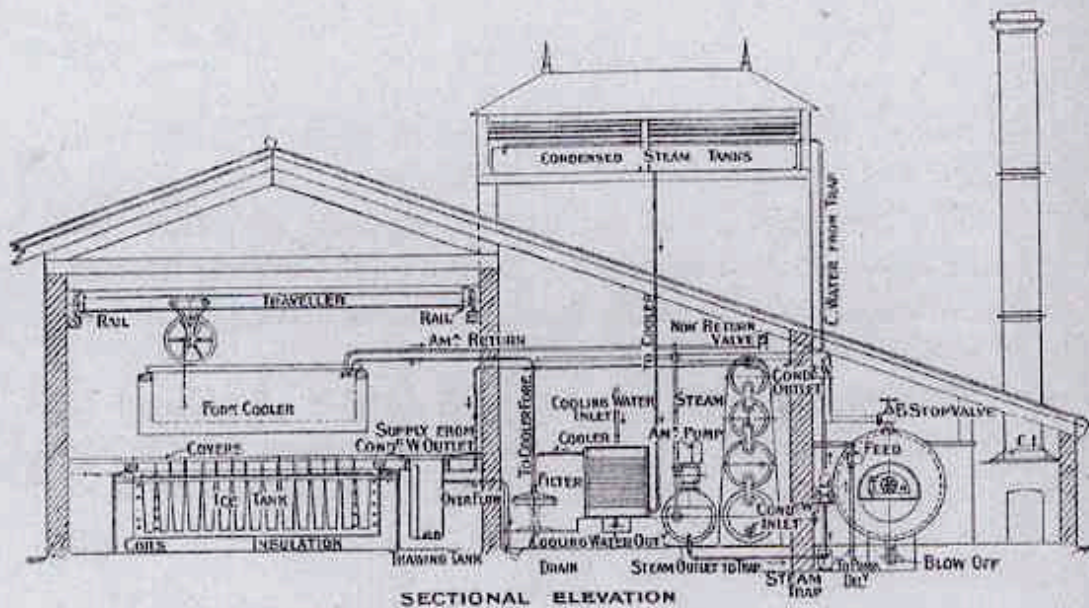
*Carré continuous ammonia absorption machine, probably c.1876
[Refrigerating and Ice-Making Machinery, p.95]*



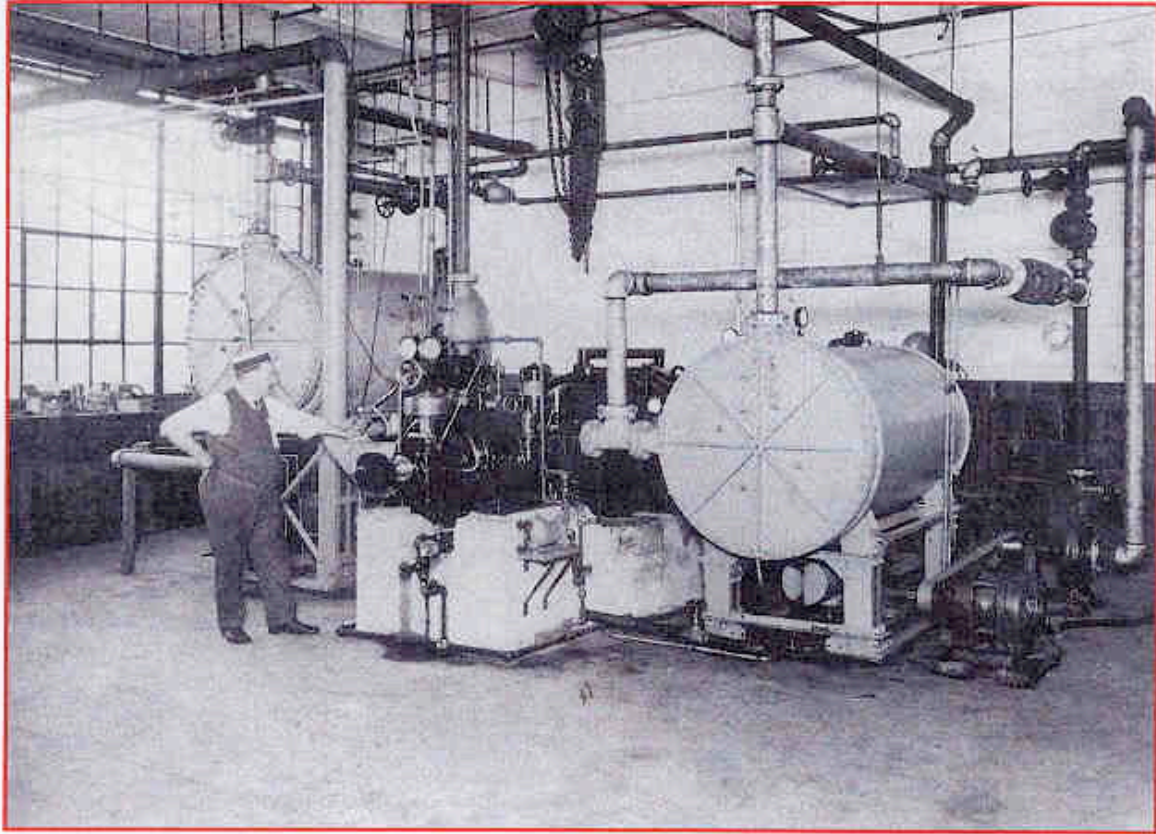
*Early 4 TR capacity ammonia-absorption machine
[Refrigeration in the Gay Nineties, p.361]*



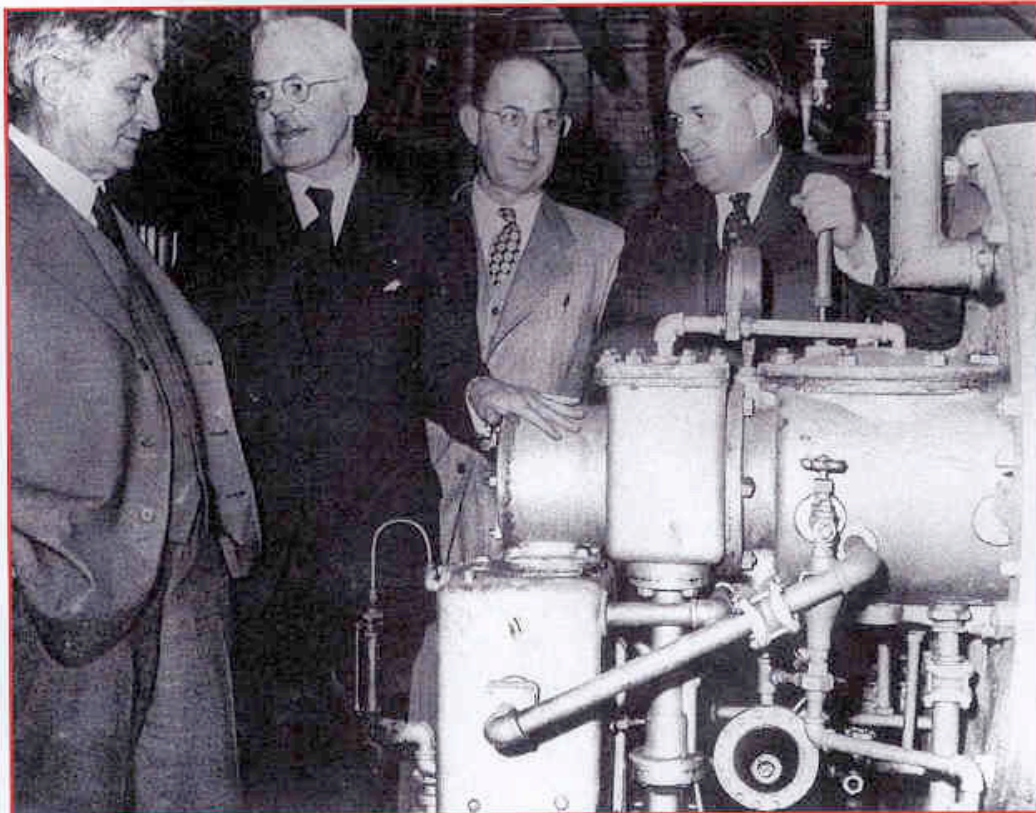
Ransome & Rapier absorption refrigerating machine, 1908 [Refrigeration, p.201]



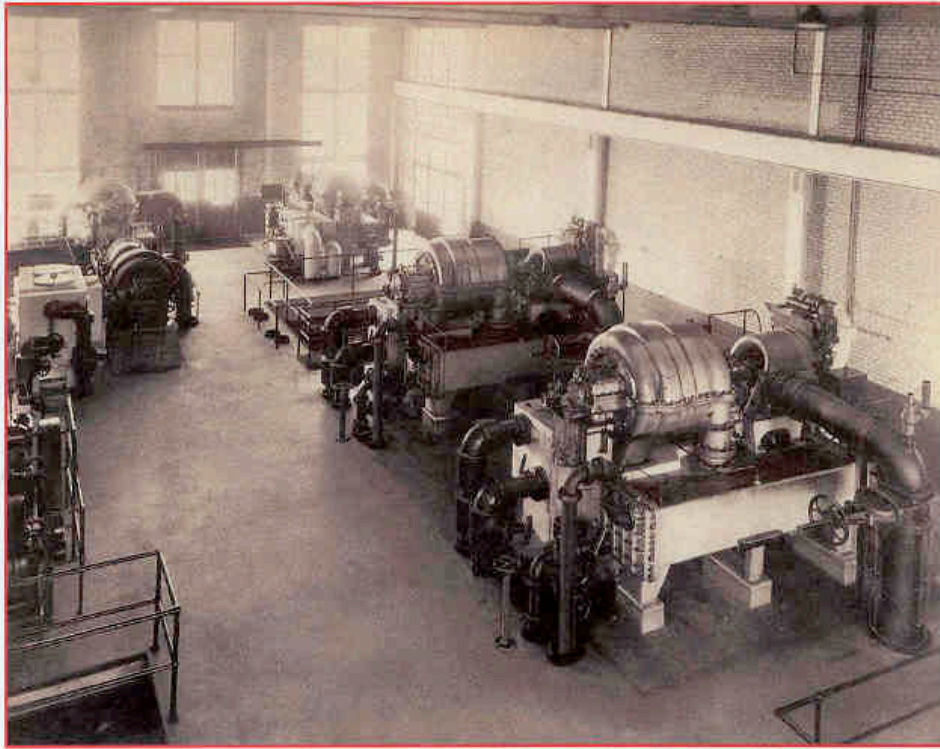
Ransome & Rapier ice-making factory using absorption refrigeration, 1908 [Refrigeration, p.198]



The first package Carrier centrifugal chiller, 1922 [Ice and Refrigeration, July 1922]



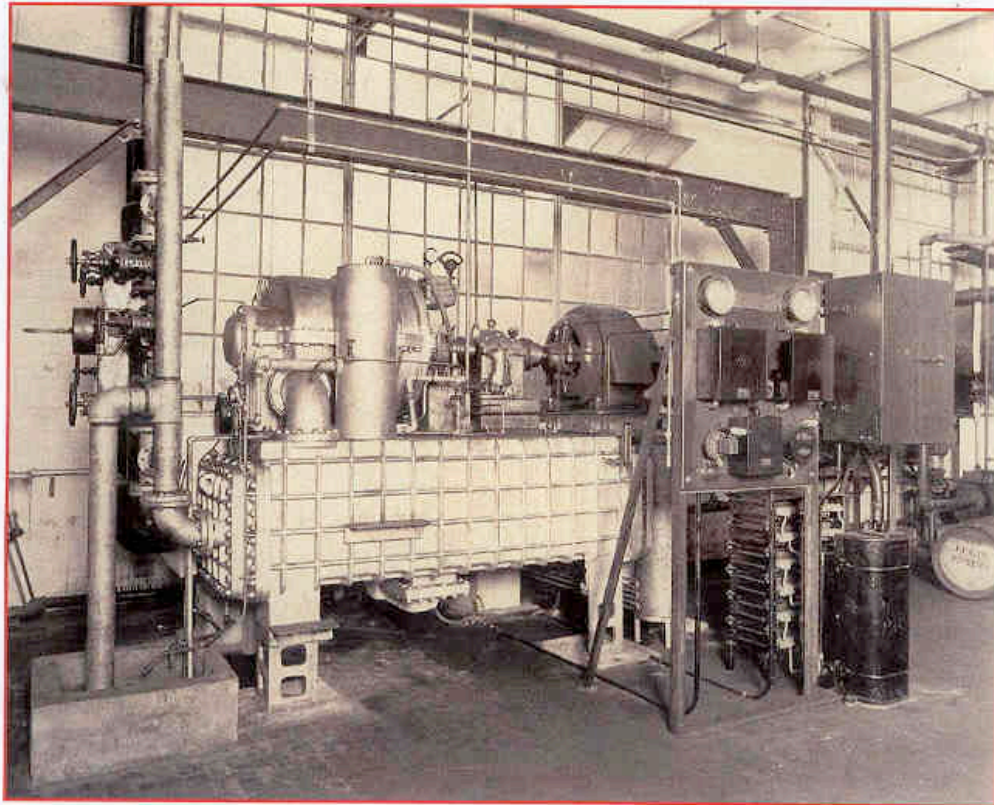
Willis Carrier (left) inspects Carrier centrifugal chiller No.1 installed at the Onondaga Pottery, Syracuse in 1922 (photo 1950) [75 Years: Building on Tradition]



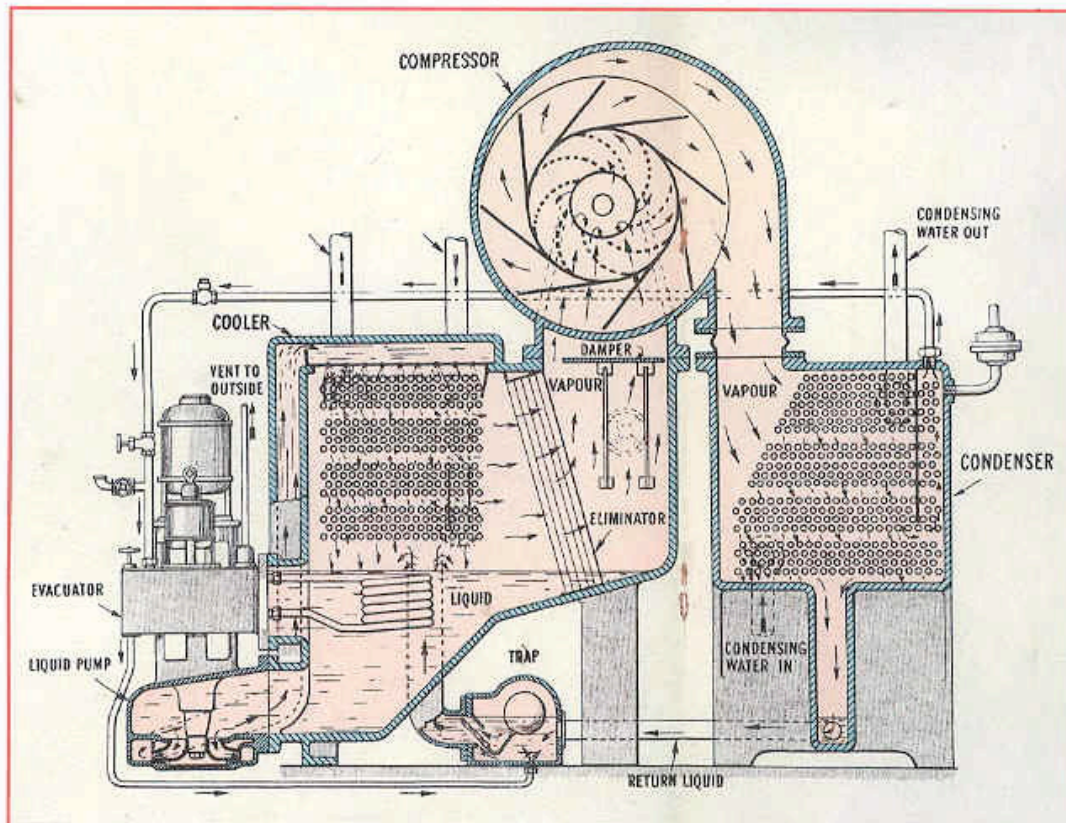
*Carrier centrifugal chillers, Wm F Schraft & Sons, Boston, 1923
[Heritage Group Collection, 00584]*



*Carrier centrifugal chillers, Wm F Schraft & Sons, Boston, 1923
[Heritage Group Collection, 00586]*



Carrier centrifugal chiller, Aberfoyle Manufacturing Company, Chester, Pennsylvania, c.1926 [Heritage Group Collection, 00587]



Carrier centrifugal refrigerating machine [Carrier Centrifugal Refrigeration, UK, c.1932]