

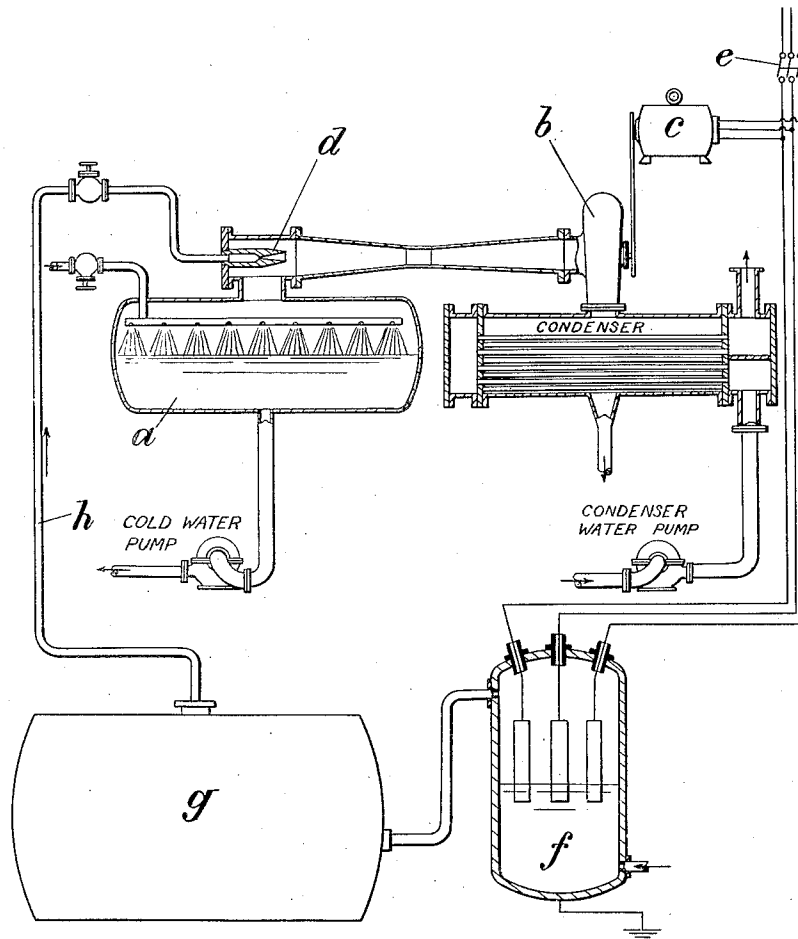
May 7, 1940.

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2,200,138

ELECTRICALLY OPERATED VACUUM REFRIGERATING PLANT

Filed Aug. 30, 1938



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UNITED STATES PATENT OFFICE

2,200,138

ELECTRICALLY OPERATED VACUUM
REFRIGERATING PLANT

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Application August 30, 1938, Serial No. 227,573
In Germany September 1, 1937

1 Claim. (Cl. 62—152)

So-called vacuum refrigerating installations are known, the action of which is based upon the physical fact that a liquid, usually water, evaporates in a vacuum at a temperature that lies below its boiling temperature at atmospheric pressure. The heat of evaporation is then withdrawn from the surroundings of the vacuum vessel, or, if the vessel is insulated, from the liquid itself.

The production and maintenance of the vacuum in such installations has hitherto been effected by means of a steam ejector or else by a motor-driven pump. Steam ejectors have the disadvantage that they develop a disproportionately large demand for cooling water, so that they are not economical to operate unless the cooling water can be obtained from a well of one's own. On the other hand they have the advantage that they can be operated either with any available exhaust steam, or else with such steam as can be electrically generated comparatively cheaply at times of low load on the electric power station or on its distributing plant.

Refrigerating installations the vacuum of which is produced by means of an electric motor have the advantage of a considerably smaller demand for cooling water, but they have the disadvantage of a considerable demand for current, which from an economic point of view is more noticeable, as the prices of current that can be accorded by the supply concern cannot be reduced below a certain limit if the plant is also used at the time of peak loading of the electric power station and of its distributing system, as is in general unavoidable.

Now according to this invention the advantages of vacuum cooling plants operated by electric motors and those operated by means of steam ejectors are fully utilised, without incurring the disadvantages of either, by operating the plant during the times of low load on the electric power station by means of an electric motor, and at

times of peak loading by means of steam which has been generated electrically at the time of electric motor drive. In this way the electric power station is put in a position to provide the energy requisite for operating such installations at considerably cheaper prices, and the disadvantage inherent in steam ejectors of greater consumption of cooling water is on the one hand restricted to the comparatively short times of peak loading, and is on the other hand still further set off by the fact that the steam has been generated with cheap current.

The invention is diagrammatically illustrated by way of example in the accompanying drawing, in which *a* is the vacuum vessel of an electrically operated vacuum refrigerating plant, *b* is a pump for evacuating the said vessel, *c* is an electric motor for driving the pump *b*, *d* is a steam ejector for evacuating the vacuum vessel *a*, *e* is a switch for opening and closing the supply circuit to the pump *b* and an electrically heated steam generator *f*, and *g* is a storage vessel for the steam generated therein. Steam for operating the ejector *d* is supplied from the storage vessel *g* by means of a pipe *h*.

A particularly advantageous application of the invention is constituted by the so-called climate installations, in which the cold produced is used in summer for cooling the air; for here the steam boilers that serve during the summer for producing a steam jet are utilised in winter for heating.

What I claim is:

In a vacuum operated refrigerating plant, a vacuum vessel, main electrically operable means for evacuating the vacuum vessel, electrical means operable during the operation of said first mentioned means for generating steam, means for storing the steam so generated, auxiliary means for supplementing said main evacuating means connected to said storage means and associated with said first mentioned evacuating means.

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