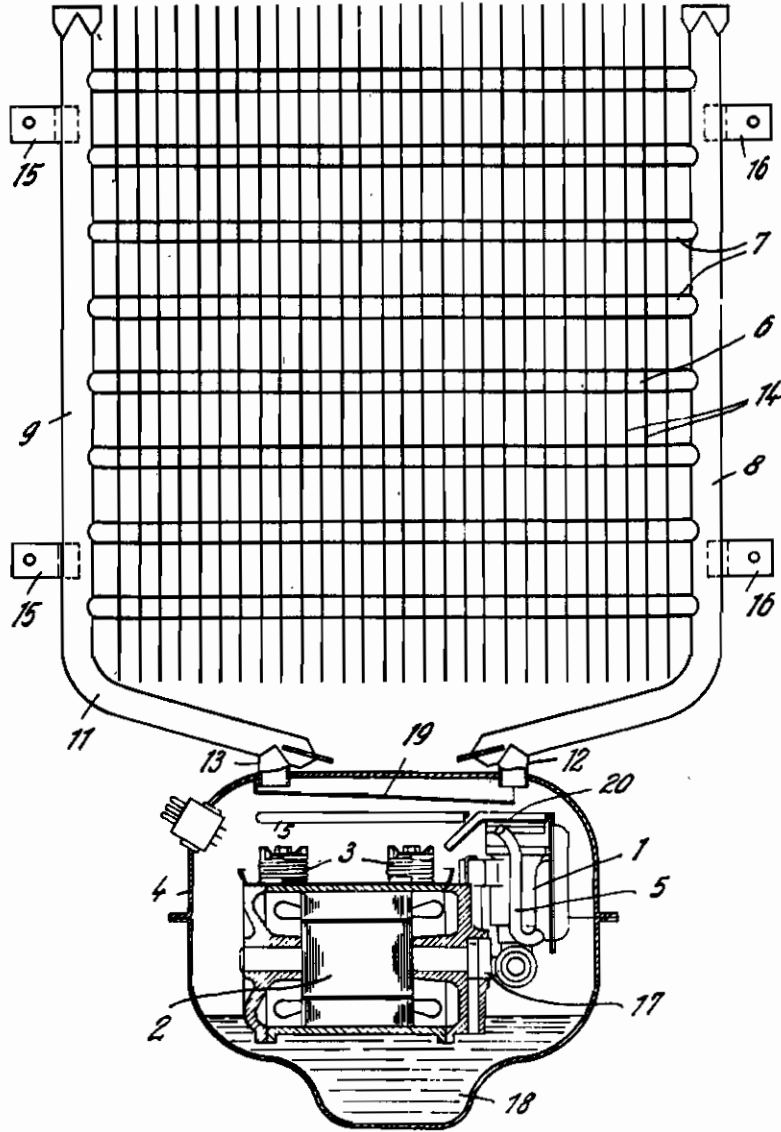


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R. HINTZE  
REFRIGERATING APPARATUS OF  
THE COMPRESSION TYPE  
Filed Sept. 29, 1941

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2 Sheets-Sheet 1

Fig. 1



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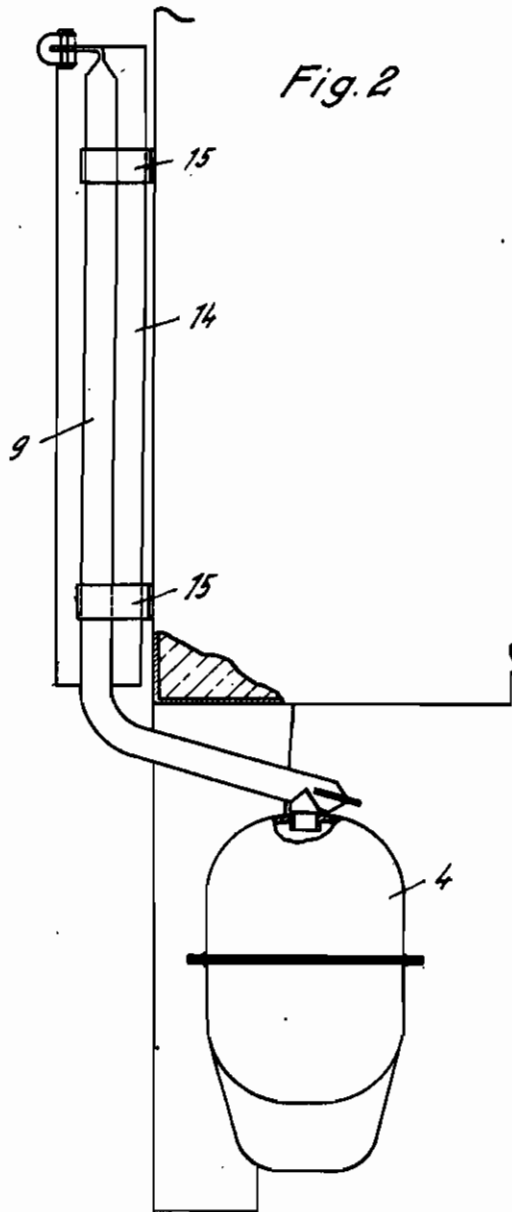
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# ALIEN PROPERTY CUSTODIAN

## REFRIGERATING APPARATUS OF THE COMPRESSION TYPE

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Application filed September 29, 1941

This invention relates to improvements in refrigerating apparatus of the compression type.

In refrigerator cabinets equipped with refrigerating apparatus of the compression type, it is known to secure the condenser to the refrigerator cabinet in such a manner as to lie substantially in parallel relation to the vertical outer wall of the refrigerator cabinet. In most cases the rear wall of the refrigerator cabinet is used for the reception of the condenser. In the known refrigerator cabinets of the above character, the motor compressor set is in many cases secured in a machine compartment lying below or above the cooling chamber with the aid of suitable fastening means. Furthermore, it is also known to secure the condenser and the machine set to a rigid frame arranged at the rear side of the refrigerator cabinet, relatively flexible refrigerant conduits being employed for connecting the compressor with the condenser and evaporator.

The invention relates to known refrigerating apparatus of the compression type of the above-indicated character whose condenser consists of a plurality of cross tubes arranged between vertical supports and is so secured to the refrigerator cabinet as to lie substantially in parallel relation to the vertical outer wall of the refrigerator cabinet. The object of the invention is to simplify the construction and assembling of refrigerating apparatus of the compression type equipped with condensers of the above character.

According to the invention the vertical tubular supports are extended in the upward or preferably in the downward direction and serve as supports for the compressor-motor housing as well as refrigerant conduits which connect the compressor with the condenser. In this manner, the construction of the apparatus is considerably simplified, since the supporting tubes of the condenser are at the same time the supports for the housing and the refrigerant conduits. In the novel refrigerating apparatus of the compression type, the motor-compressor set is secured together with the condenser to the refrigerator cabinet by fastening means of the condenser so that the apparatus may be easily mounted in the refrigerator cabinet.

If refrigerating apparatus of the compression type are involved whose compressor driving motor operates at a considerable speed; for instance, at a speed  $n=3000$  R. P. M. it is preferable to design the refrigerating apparatus in such a manner as to enable the condenser to carry off the entire waste heat of the apparatus to the

outside atmosphere. In this case the dissipation of the waste heat of the motor-compressor set may be effected in a known manner by the liquid refrigerant which comes into contact with the heat radiating parts of the set so that it is caused to evaporate again. The arrangement may be so designed that the total amount of the refrigerant liquefied in the condenser flows back into the housing and then passes into the device (float-operated valve, capillary tube or the like) controlling the flow of the refrigerant to the evaporator. The compressor-motor set is supported in this arrangement preferably by springs arranged inside the housing. The housing may then be easily secured to the refrigerator and, furthermore, may be surrounded by a suitable sound damping jacket, since the outer wall of the housing is not employed for the dissipation of the heat to the outside atmosphere.

The vertical lateral tubes of the condenser serve in the preferred embodiment of the invention to communicate the interior of the cooling set with the interior of the condenser and at the same time to support the housing for the motor-compressor set, which housing is also carried by the vertical condenser tubes. A particularly advantageous arrangement may be attained, if the condenser combined with the housing is secured to the rear frame of the refrigerator cabinet.

The refrigerant liquefied in the condenser may flow by gravity into the housing for the motor-compressor set or a pump may be employed which causes the refrigerant collected in the housing to continuously flow over the motor compressor. In this case, the pump may not only draw in the liquid refrigerant but also the lubricant for the apparatus so that a refrigerant-oil mixture from which the refrigerant is evaporated while the remaining oil is employed for lubricating the moved parts of the apparatus is supplied to the motor compressor. To enable a very effective cooling of the condensate it is preferable to immerse the motor-compressor set in part or wholly, particularly together with the parts producing large quantities of heat in the condensate or oil or in both liquids.

In the accompanying drawing is shown an embodiment of the invention in diagrammatic form, in which Fig. 1 is a rear view of a domestic refrigerator cabinet with the motor-compressor set mounted on the rear wall, and Fig. 2 is a corresponding lateral view. The compressor 1 of the refrigerating apparatus is driven by an electric motor 2. Compressor and motor are rigidly combined as shown in Fig. 1. The motor-com-

pressor set is held in position by springs 3 inside the housing 4. The refrigerant is drawn in by an evaporator not shown through a suction conduit 5. The refrigerant is forced out of the compressor directly into the housing 4. The condenser 6 is connected to the housing and consists of a plurality of horizontal refrigerant tubes 7 welded to the two lateral supports 8 and 9. The two supports are also designed in the form of refrigerant conduits. The lower portions of the supports are bent as indicated at 10 and 11 respectively and connected to the housing 4 by means of connections 12 and 13. 14 denotes the vertical cooling ribs serving to increase the heat radiating surface of the condenser tubes. The housing 4 is secured in the arrangement shown to the condenser so that further fastening parts are not necessary. The lateral supports of the condenser are secured to the rear wall of the refrigerator cabinet with the aid of the fastening plates 15 and 16 respectively.

17 denotes an oil pump for the motor-compressor set and supplies oil from the lower part 18 of the housing, designed in the form of an oil pan, to the points of the motor-compressor set to be lubricated.

The heat is dissipated from the set with the aid of the refrigerant. The refrigerant liquefied in the condenser flows through the conduits 8 and 9 into the housing 4 and it is then supplied to the heat radiating parts by means of the guide plates 19, 20 and the liquid refrigerant is evaporated in part so that the heat is transferred to the cooling ribs of the condenser. The liquid refrigerant which has not been evaporated again is collected in the lower part 18 of the housing 4 to which is connected the refrigerant conduit (not shown) which carries the liquid refrigerant to the evaporator (not shown) through a control device (capillary tube, float-operated valve or the like). When using a float-operated valve, this valve may also be directly mounted in the lower part 18 of the housing. In the embodiment shown the compressor-motor housing is so arranged that it is suspended in the space below the cooling chamber. The arrangement may also be so designed that the motor-compressor housing is arranged above the condenser and is accommodated in an upper machine compartment.

RUDOLF HINTZE.