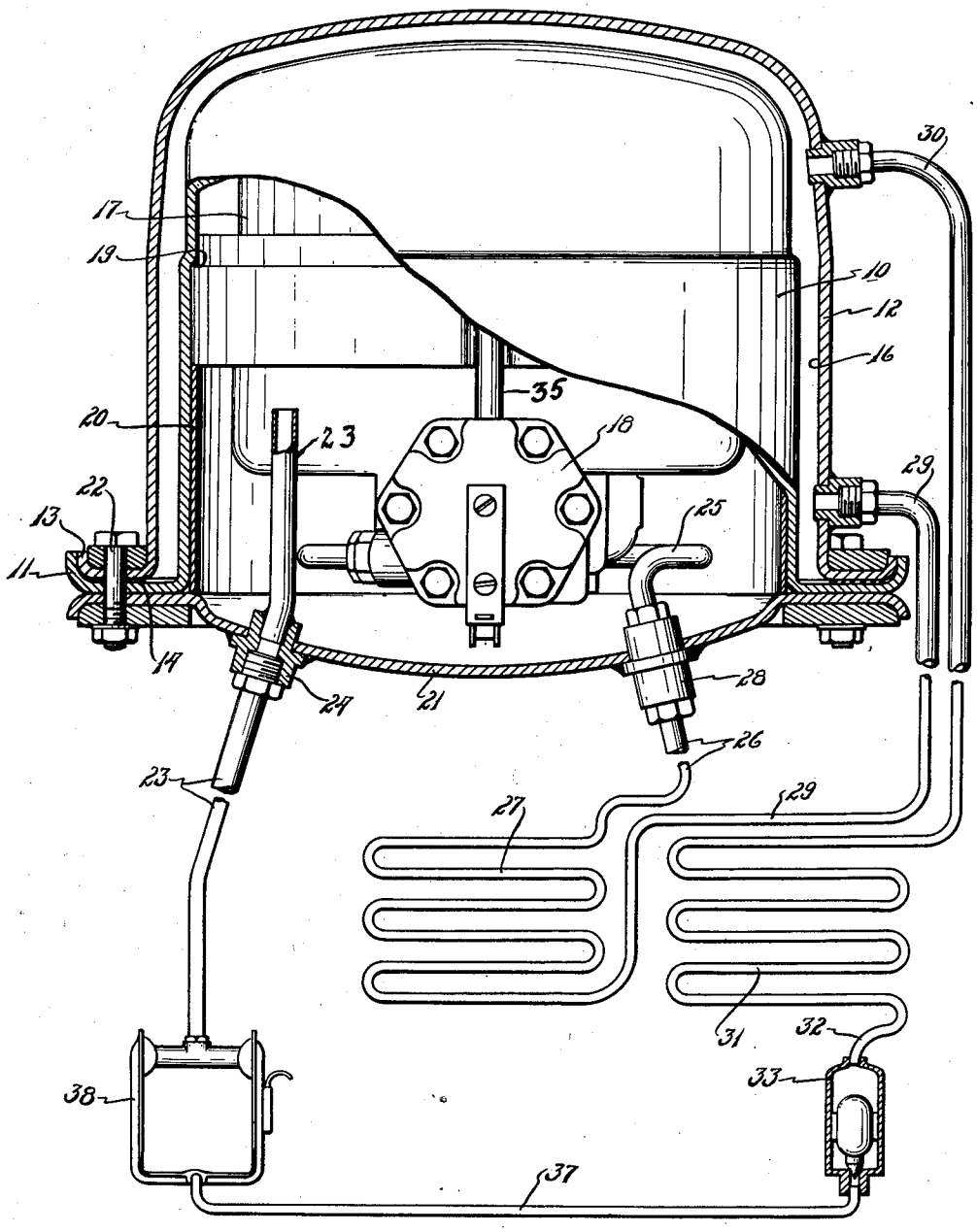
Feb. 7, 1939. L. A. PHILIPP 2,146,484

REFRIGERATING APPARATUS

Filed Feb. 7, 1938



INVENTOR.
LAWRENCE A. PHILIPP

BY
Ralph E. Baker
ATTORNEY.

Patented Feb. 7, 1939 2,146,484

UNITED STATES PATENT OFFICE

2,146,484

REFRIGERATING APPARATUS

Lawrence A. Philipp, Detroit, Mich., assignor to Nash-Kelvinator Corporation, Detroit, Mich., a corporation of Maryland

Application February 7, 1938, Serial No. 189,030

2 Claims. (Cl. 62—115)

This invention relates to an improvement in refrigerant cooled compressors, and more particularly to sealed units, where the motor and compressor are contained in a hermetically sealed casing or housing.

The invention consists in providing the sealed casing with a jacket for forming a chamber and into which refrigerant, which has passed through a condenser, is delivered for extracting the heat from the motor-compressor unit, and then the refrigerant which has become somewhat gasified is delivered to a second condenser for removing the heat from the refrigerant and converting it into a liquid state.

In the accompanying drawing the figure illustrates somewhat diagrammatically an arrangement of parts for accomplishing the invention.

In the drawing, 10 represents a dome-shaped shell or housing, which is open at one end, and having an outwardly extending flange 11. This shell is enclosed or surrounded by a similar shell 12 of larger size for forming a chamber 16 between the sealed walls and tops or ends of the shells. The shell 12 is provided with an outwardly extending flange 13 superimposed on the flange 11, and a suitable packing 14 is interposed between the flanges to form a hermetically sealed joint therebetween.

Mounted within the shell 10 and preferably vertically disposed therein is a unit consisting of an electric motor 17 and a compressor 18. The upper portion of the motor 17 engages a shoulder 19 formed on the inner wall of the shell 10, and an annular ring 20 engages the lower end of the motor 17 and a cover or bottom plate 21 for supporting the motor 17 and compressor 18 as a unit within the shell. Of course, other means of supporting the unit within the shell may be provided, but in this manner, upon the removal of the cover 21, the motor and compressor can be readily inserted or removed as a unit. The bottom or cover plate 21 is attached to the flanges 11 and 13 of the shells by bolts 22, 22 for closing the shell 10 and for hermetically sealing the motor-compressor unit within the shell 10 as well as supporting the unit therein.

The vaporized refrigerant is returned from an evaporator 38 of a refrigerating system to the shell 10, by a conduit 23 connected by a suitable coupling 24 to the cover. The refrigerant then passes through another portion of conduit 23 into interior of shell 10. The refrigerant in shell 10 passes through compressor intake conduit 35 which has its inlet end in open communication with conduit 23 and this vaporized refrigerant is compressed by the compressor 18. The compressed refrigerant is conducted from the compressor by conduits 25 and 26 to a condenser 27. The conduits 25 and 26 are connected by a suitable coupling 28 carried by the cover 21 for conducting the refrigerant from the compressor 18 to the condenser 27. Part of the gaseous refrigerant delivered to the condenser 27 will be condensed therein, and this gaseous and liquid refrigerant will flow by a conduit 29 into the chamber 16 formed between the walls of the shells 10 and 12, where the liquid refrigerant will again be vaporized in extracting or taking up the heat generated and transmitted from the motor 17 and compressor 18, and will thereby cool the motor-compressor. The vapor in the chamber 16 is conducted therefrom by a conduit 30 leading from the outer shell 12 to another or second condenser 31. This condenser 31 will cause the refrigerant vapor to be condensed and from which it will be conducted by a conduit 32 to a suitable receiver and float mechanism 33 before being delivered to the evaporator 38 by means of a conduit 37 which connects the receiver with the evaporator.

It will be seen from the foregoing that the gaseous refrigerant as it leaves the compressor 18 will be condensed, in part at least, in the condenser 27, and this mixed gas and liquid refrigerant will then be delivered to the chamber 16 for cooling the motor-compressor unit housed within the shells 10 and 12. The liquid refrigerant in the chamber 16 will be vaporized by the heat generated within the shell by the motor and compressor, and as the heat is absorbed by the refrigerant the motor, compressor and shell will be cooled.

The refrigerant which has been vaporized in the cooling of the motor-compressor unit is now conducted by a conduit 30 to a second condenser 31 where the heat laden gas will be cooled and converted into liquid refrigerant to be transmitted under pressure to an evaporator.

It is to be understood that any suitable provision may be employed in assisting in condensing the refrigerant in the condensers 27, 31, as for instance by fans or water. Also, that the arrangement and combinations of parts may be departed from that set forth herein without departing from the spirit and scope of the invention and hence it is not the intent to be limited by the precise construction herein illustrated.

I claim:

1. Refrigerating apparatus comprising a motor compressor unit for increasing the pressure of

refrigerant fluid exhausted from a refrigerant evaporating unit, a housing enclosing said motor compressor unit and provided with a chamber, a condenser for receiving the fluid discharged from the high side of said compressor and having communication with the chamber for delivering liquid refrigerant and gas thereto for absorbing heat generated by said motor compressor unit and a second condenser connected to said chamber for receiving the refrigerant therefrom and converting it into liquid refrigerant.

2. Refrigerating apparatus comprising inner and outer shells arranged in spaced relation for forming a chamber therebetween, said shells each having a closed end and connected together at their free ends, a motor-compressor unit therein, a condenser, a conduit for conducting gaseous refrigerant from the compressor to the condenser, means for conducting condensed refrigerant from the condenser to the chamber between the shells for extracting the heat from the motor-compressor unit, and a condenser in communication with said chamber for receiving the gaseous refrigerant therefrom and converting the refrigerant into a liquid refrigerant.

LAWRENCE A. PHILIPP.