Aug. 9, 1932. M. W. KENNEY 1,870,457

REFRIGERATING APPARATUS

Filed Dec. 19, 1930

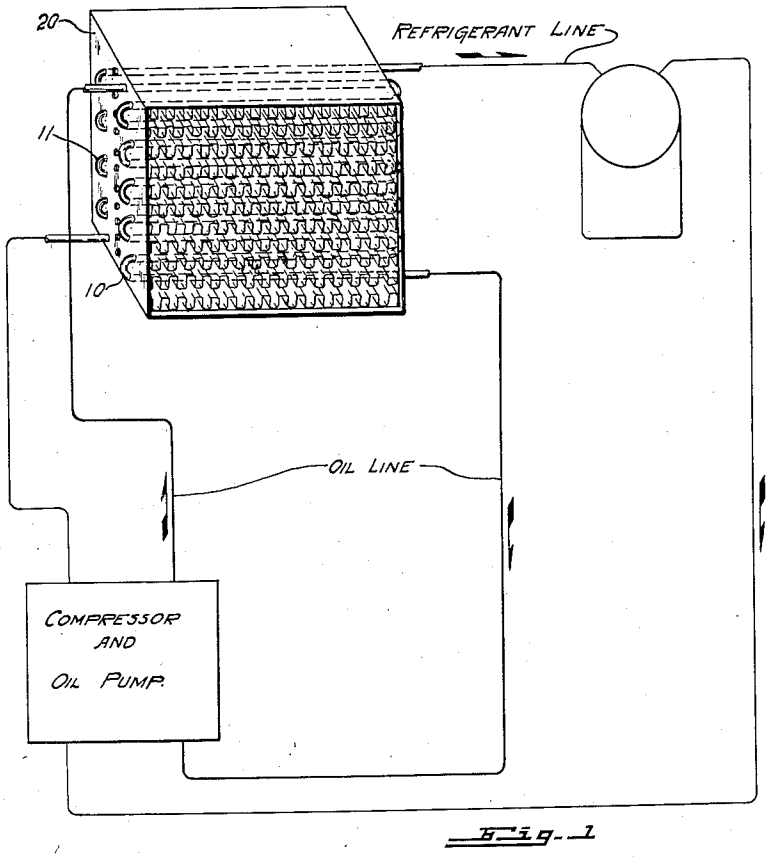


Fig. 1

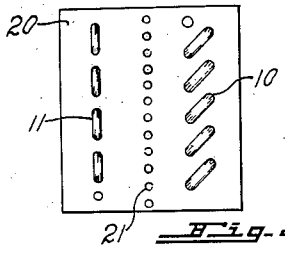


Fig. 2

INVENTOR.
MAHLON W. KENNEY.
BY LeRoy J. Williams
ATTORNEYS.

Patented Aug. 9, 1932 1,870,457

UNITED STATES PATENT OFFICE

MAHLON W. KENNEY, OF ELMHURST, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GRIGSBY-GRUNOW COMPANY, A CORPORATION OF ILLINOIS

REFRIGERATING APPARATUS

Application filed December 19, 1930. Serial No. 503,461.

This invention relates to refrigerating apparatus and particularly to condensers therefor.

In refrigerating systems wherein lubricating oil and refrigerant freely mingle, some means must be provided for cooling the body of lubricant. A condenser is invariably provided for cooling the compressed refrigerant to permit liquefaction. A condenser may also be provided for cooling the lubricant. It is evident that from a manufacturing point of view, a single unitary structure with two separate condensing paths for refrigerant and oil would tend to simplify the system and lower the cost. However, the desirable condensing temperature of the refrigerant is substantially lower than the temperature at which the lubricant should be maintained. It is clear that in high speed compressors, machined to fine dimensions, it is necessary that the oil should remain thin and for this reason be prevented from being cooled too much.

An object of this invention is to devise a unitary condensing structure for both the gas and oil lines in a refrigerating system which will permit each portion of the system to operate at its optimum temperature.

Referring to the drawing:

Figure 1 is a diagrammatic view of a refrigerating system including a condenser embodying this invention.

Figure 2 is an end view of the condenser.

A composite compressor and oil pump of any suitable type has outlet lines for gas and oil. Both these lines lead to a cooling unit and thence diverge. The refrigerant line leads to an evaporator and then on to the intake of the compressor. The oil leads directly from the condenser into the compressor and oil pump.

The condenser comprises two conduits of finned tubing 10 and 11 maintained in alignment by two end plates 20. In order to prevent an objectionable transfer of heat from the hot oil in tubing 10 to the comparatively cool compressed gas in tubing 11, each end plate 20 has a number of apertures 21 punched therein and forming a line of division between the two portions of the complete condenser. In this way, the amount of metal available for heat transfer from one portion of the condenser to the other is materially reduced.

In place of apertures, slits may be used.

Associated with the condenser may be a force feed cooling system.

What I claim is:

1. In a refrigerating system of the type wherein refrigerant and lubricant freely mingle, a unitary condenser structure provided with separate paths therethrough for refrigerant and lubricant respectively, and supporting means for controlling the heat transfer from one of said paths through to the other whereby said refrigerant and lubricant may be cooled to different temperatures in the same structure.

2. In a refrigerating system of the type wherein lubricant and refrigerant mingle freely, a unitary condenser comprising separate conduits for gas and lubricant respectively, a plurality of supporting end plates for maintaining said conduits in predetermined formation, and means associated with said end plates for controlling the transfer of heat between said oil and gas conduits.

3. In a refrigerating system wherein refrigerant and lubricant mingle freely, a condenser having two separate conduits therethrough for gas and oil respectively, a framework including metallic plates for maintaining said conduits in predetermined formation, said plates having portions cut out therefrom between the gas and oil conduits for controlling the transmission of heat therethrough.

In testimony whereof he affixes his signature.

MAHLON W. KENNEY.