Sept. 6, 1927. 1,641,660

E. S. BRYANT

CONDENSER

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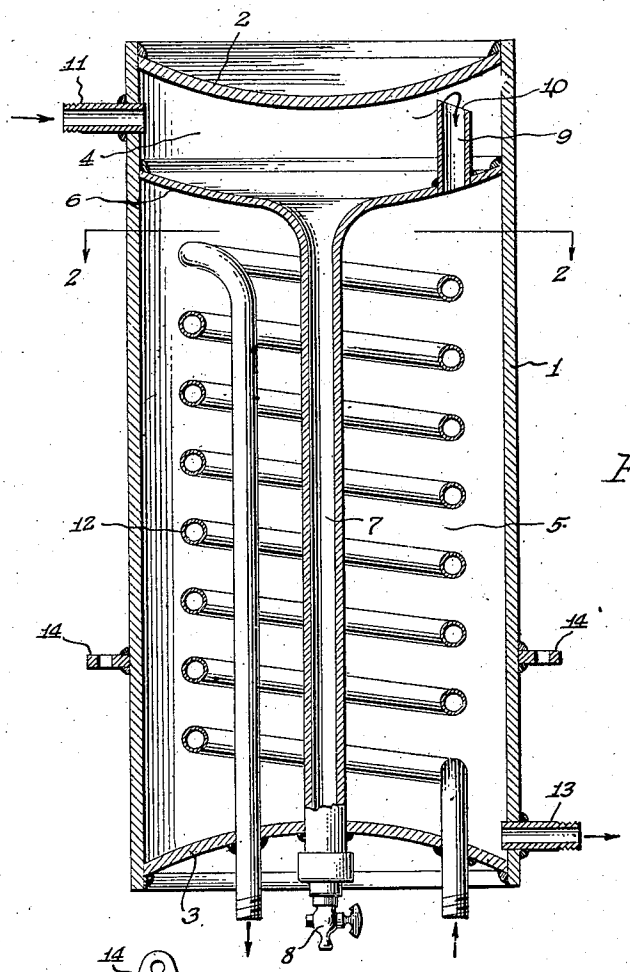


Fig. 1.

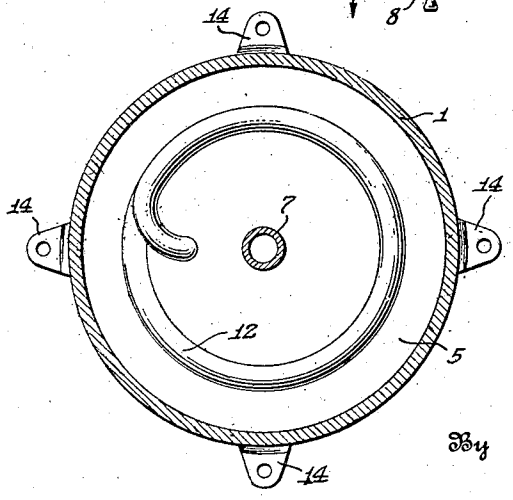


Fig. 2.

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UNITED STATES PATENT OFFICE.

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CONDENSER.

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This invention relates to condensers such as are utilized in refrigerating machines for the cooling of refrigerant.

In such machines it is desirable that the refrigerant be kept as clean and free from oil as possible, which oil is often picked up by the refrigerant in its passage through the compressor or through other mechanisms where oil is present, and it is the object of this invention to provide a simple type of condenser which will also operate to effect the extraction of oil or similar impurities from the refrigerant as required.

The invention further contemplates the provision of a dual chambered condenser, one chamber of which is adapted to take care of the condensation of heavy impurities such as oil in the refrigerant, and the other chamber the cooling of the refrigerant itself, in such manner that the cooled refrigerant assists in the condensation of the oil in the first chamber.

Still further objects subsidiary to or resulting from the aforesaid objects, or from the construction or operation of the invention as it may be carried into effect, will become apparent as the said invention is hereinafter further disclosed.

In carrying the said invention into effect, I may provide a tank partitioned into upper and lower chambers, with an inlet to the upper chamber and an outlet from the chamber, the said partition being dished in form and having a pipe extending from its depressed center downwardly through the bottom of the tank, the lower end of the said pipe being provided with a suitable drain valve. The partition is also provided with an upwardly extending tube approaching the top of the tank and establishing communication between the two chambers, the lower chamber housing a cooling coil.

All of which is more particularly described and ascertained hereinafter, by way of example, having reference to the accompanying drawing, wherein—

Figure 1 is a sectional elevation of my improved condenser, and

Figure 2 is a transverse section of the same, taken on the line 2—2, Figure 1.

Similar characters of reference indicate similar parts in both figures of the drawing.

1 indicates a tank which is preferably of cylindrical form closed at its upper and lower ends by concave end plates 2 and 3 preferably welded in position, and this tank is divided into upper and lower chambers 4 and 5 by a partition 6 similarly welded to the walls of the tank.

In its preferred form this partition is of a dished configuration, being depressed in its center, from which center a pipe 7 extends downwardly through the bottom of the tank, and is provided with a drain valve 8 of any suitable form. The partition 6 is also provided with a short upwardly extending pipe 9 approaching the top 2 of the tank and having its upper end preferably beveled as at 10, so that the opening thereof is somewhat directed away from the inlet 11 through which refrigerant is admitted to the chamber 4 of the device. This pipe 9 establishes communication between the said chamber 4 and the chamber 5, and in the chamber 5 is located any suitable form of cooling coil 12, the ends of which pass through the bottom of the tank.

13 is an outlet near the bottom of the chamber 5 for the escape of cooled refrigerant therefrom, and 14 are lugs on the tank to facilitate its mounting on any suitable structure.

The operation of the device is quite simple, the refrigerant first entering the chamber 4 through the inlet 11 wherein due to the increased capacity of the said chamber 4 over the inlet 11, there is a tendency to precipitate oil or similar heavy impurities on the walls of the chamber and especially upon the upper surface of the partition 6 due to the fact that this partition is cooled by the cooling coil 12 therebeneath, accumulated oil flowing down the pipe 7 from which it may be drained from time to time without loss of refrigerant if care be taken as will be obvious.

The pipe 9 prevents the flow of such oil into the chamber 5 even though quite an accumulation of the oil in the chamber 4 may take place.

When the refrigerant eventually passes into the chamber 5 it is cooled therein by the cooling coil 12 in the well known manner and may escape from the chamber 5 through the outlet 13 after being cooled.

The arrangement is quite effective in extracting oil from refrigerant, and admits of a very simple but strong construction employing a minimum number of parts which may be easily assembled and welded together which is a most desirable form of construction for a device of this description

where all possibilities of leakage are to be rigidly avoided, and this feature of the device is quite an important one.

This invention may be developed within the scope of the following claims without departing from the essential features of the said invention, and it is desired that the specification and drawing be read as merely illustrative and not in a limiting sense, except as necessitated by the prior art.

What I claim is:—

1. A device of the class described, comprising a tank, a partition dividing said tank into upper and lower chambers, said tank having an inlet to said upper chamber and an outlet from said lower chamber, means establishing communication through said partition between said chambers, a cooling coil in said lower chamber effecting the cooling of said partition and of refrigerant entering said lower chamber, whereby heavy impurities in refrigerant entering said upper chamber are condensed on said partition, a drain extending from a depressed part of said partition for the draining of oil therefrom, and a valve closing the lower end of said drain.

2. A device of the class described according to claim 1, wherein the drain extends downwardly through the lower chamber of the tank and is subjected to the cooling effect of the coil within said lower chamber.

3. A device of the class described according to claim 1, wherein the means of communication between the two chambers is in the form of a pipe extending upwardly from the said partition to a substantial extent.

In testimony whereof I affix my signature.

ELLSWORTH S. BRYANT.