F. I. COCHRANE.

CRANK CASE EVAPORATOR.

APPLICATION FILED FEB. 16, 1920.

1,351,716.

Patented Aug. 31, 1920.

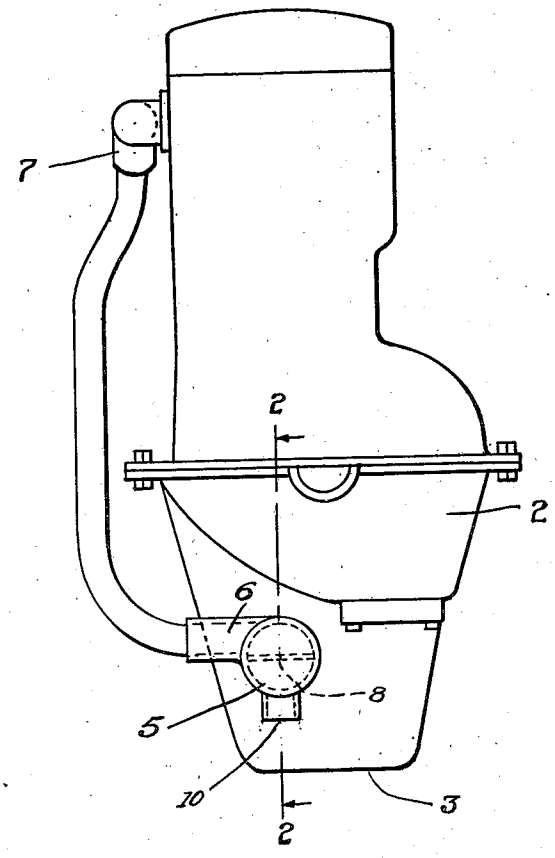
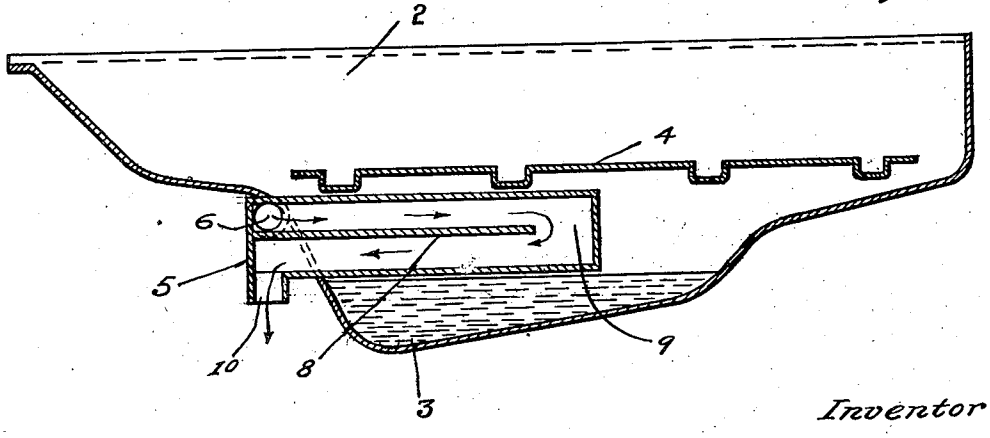


Fig. 1

Fig. 2



Inventor

FREDRICK I. COCHRANE

By Paul & Paul

His Attorneys.

UNITED STATES PATENT OFFICE.

FREDRICK I. COCHRANE, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO CRANK CASE EVAPORATOR COMPANY, A PARTNERSHIP COMPOSED OF HARVEY E. MACK AND FREDERICK I. COCHRANE.

CRANK-CASE EVAPORATOR.

1,351,716. Specification of Letters Patent. Patented Aug. 31, 1920.

Application filed February 16, 1920. Serial No. 358,913.

To all whom it may concern:

Be it known that I, FREDRICK I. COCHRANE, a citizen of the United States, resident of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Crank-Case Evaporators, of which the following is a specification.

It often happens in the operation of an automobile or other motor vehicle that moisture will accumulate in the crank case from leakage around the pistons or from other causes, and forms an objectionable mixture with the oil in the case.

The object of my invention is to provide a device in the crank case, not for the purpose of heating the oil, but for raising the temperature of the crank case to cause evaporation of any moisture which may accumulate therein.

A further object is to heat the inside of the crank case to prevent condensation in cold weather of the moisture in the exhaust gases which leak into the crank case and mix with the oil.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification,

Figure 1 is a vertical sectional view through a crank case with my invention applied thereto,

Fig. 2 is a transverse sectional view of the same.

In the drawing, 2 represents the crank case of the engine having the usual lower chamber or sump 3, above which is a horizontal plate 4 extending across the crank case substantially near the middle portion thereof. The level of the oil in the crank case is generally considerably below this plate 4. To eliminate the objectionable moisture in the crank case I provide a heating drum 5 mounted to project into the case beneath and preferably close to the plate 4 and generally above the level of the oil in the case. This drum or cylinder may be made of cast iron, brass, aluminum, steel or sheet metal, tubing or wrought iron pipe with caps in both ends and with an inlet 6 at one side communicating with the exhaust pipe 7 of the engine. A partition plate 8 extends longitudinally within the drum on the cylinder, preferably near the middle portion thereof, dividing it centrally into passages which are connected by a port 9 at one end of the drum. Through this port the hot gases flow from one side of the centrally arranged partition plate to the other. An outlet pipe 10 communicates with the drum and extends to a suitable discharge point where the hot gases are allowed to escape. The drum is placed in any position desired in the crank case or oil basin of any engine or motor using gasolene or hydrocarbon fuel, and secured preferably by any suitable means to the wall of the casing and the drum may be of any desired diameter or length necessary to fit into the crank case or oil basin of any engine. The purpose of the partition extending through the drum is, of course, to serve as a baffle-plate and compel the hot gases to follow a tortuous path through the drums and heat the walls of the same before delivery to the discharge opening.

As previously stated, this drum is located in the upper part of the oil basin and generally out of contact with the oil so that the heat waves radiating therefrom will flow out in all directions through the crank case and warm or heat the walls of the case and the plate 4, and cause the immediate evaporation of any moisture which may accumulate in the crank case from any cause. Usually this moisture will be due, in cold weather, to the condensation of the moisture in the exhaust gases leaking into the crank case between the piston and cylinder walls, and moisture may be present in the crank case from any other cause. The warm air created by the heating of the drum walls will cause the immediate evaporation of the moisture and keep the oil free from water, and similarly any fuel passing into the case around the pistons will also be evaporated. The drum will also serve as a muffler to deaden the noise of the exhaust.

Instead of heating the drum from the exhaust gases I may connect it with the water

jacket of the engine or with the radiator or pipes of the cooling system, the water being circulated through the heating drum and returned to the cooling system by means of suitable valves, pipes or other connections.

I do not wish to be confined to the particular form of the heating drum herein shown or its location, as these features may be modified in various ways, the idea of my invention being a means for evaporating any moisture or fuel in the crank case to prevent the mixture of either of them with the oil in the case.

I claim as my invention:

1. The combination, with a gas engine crank case, of a member mounted to project into the case with a greater portion of its walls above the level of the oil therein, means for circulating a heating agent through said member to heat the walls thereof and evaporate the moisture within said crank case.

2. The combination, with a gas engine crank case having a lower portion adapted to contain a body of oil, and a plate separating the upper portion of the crank case from said body of oil, of a heat circulating member projecting into said crank case between said plate and the body of oil and contiguous to said plate, said members operating to evaporate the accumulated moisture within said crank case and the fuel in the oil.

3. The combination, with a crank case, of a cylinder mounted to project therein with its walls above the body of oil in said case, said cylinder having a tortuous passage therethrough and means for connecting it with a heating agent for heating the walls of said cylinder and evaporating the moisture in said case.

4. The combination, with a gas engine crank case, of a cylindrical member mounted in the walls thereof and having a tortuous passage formed therein, said member being normally above the level of the oil in said case, means for connecting said member with the exhaust of the engine and conducting the hot exhaust gases around and through said member for heating the walls thereof, the accumulated moisture in said crank case being evaporated by the heat from the walls of said cylinder.

5. The combination, with a gas engine crank case, of a heating member mounted to project into the case above the normal level of the oil therein, for evaporating the moisture in the crank case.

In witness whereof, I have hereunto set my hand this 12th day of February, 1920.

FREDRICK I. COCHRANE.