Nov. 27, 1928. 1,693,471

L. C. WEINBERG

AUTO OIL CLEANER

Filed April 22, 1926

FIG. 1.

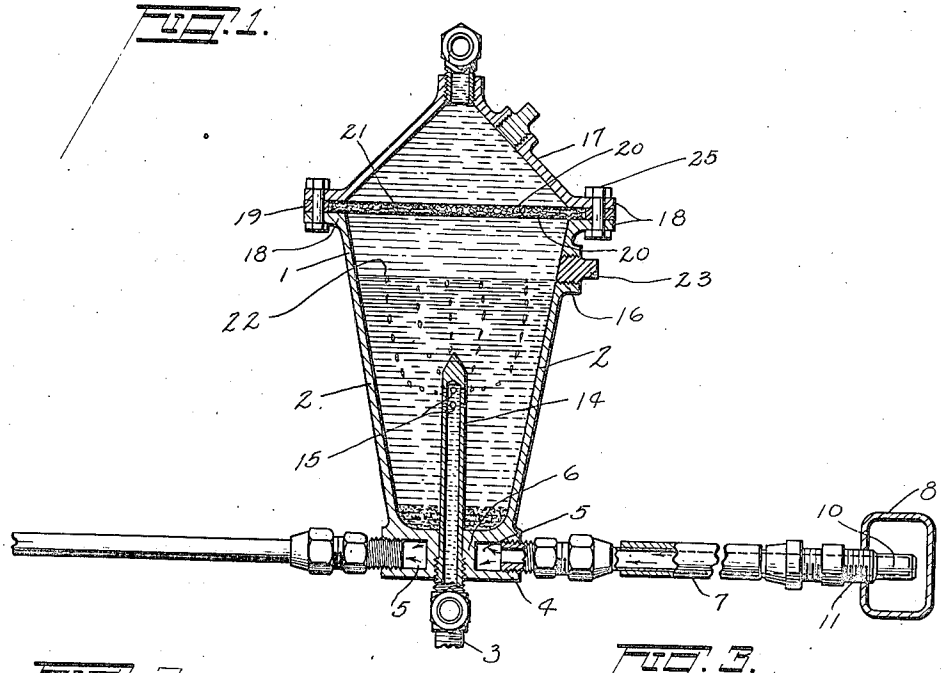


FIG. 2.

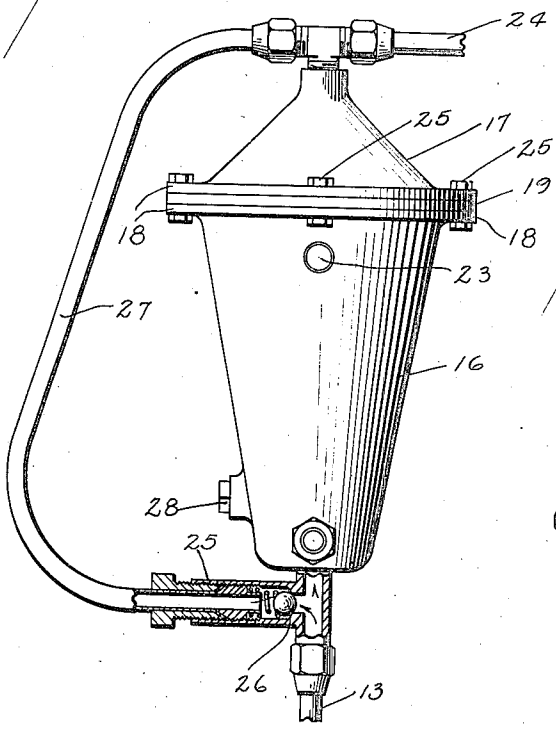


FIG. 3.

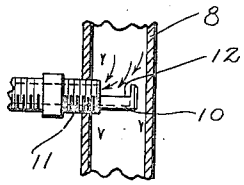
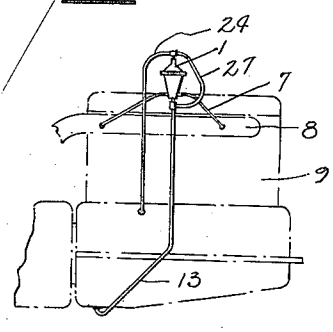


FIG. 4.



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AUTO OIL CLEANER.

Application filed April 22, 1926. Serial No. 103,786.

This invention relates to cleaning devices for use with internal combustion engines and has for its main object the cleansing of the lubricant used therein of all foreign matter prior to its passage thru the various working parts of the engine.

In an internal combustion engine the lubricant is pumped or forced to the different parts for the purpose of lubricating the same. The lubricant makes a complete circuit thru the various channels of its operations and is then drained back into a low level of the engine where it is again pumped to the different points of lubrication as before.

Small parts of metal are worn or broken from the various moving parts of the engine during the operation thereof, and these parts are naturally picked up by the lubricant and carried therewith to other moving parts of the engine. Considerable wear therefore results in the working parts of the engine by the suspended foreign matter in the lubricant as a result of its continued use in the engine, resulting in numerous repairs being necessary therein.

It is difficult for the average person to constantly bear in mind this continual ravage to the power plant of his automobile. Due to the usual position of the oil well in the engine, the removal of the oil, and cleaning the same is somewhat a task which is commonly left untouched. As a result, these minute particles which are held in a state of suspension in the lubricant, act as an abrasive, which has a very injurious effect on the moving parts of the motor.

The heat of the engine parts, such as the surface of the underside of the piston head, causes any lubricating oil which strikes this surface to be raised to a high temperature. This heating of the lubricant creates a formation of carbon to take place within the same, which is also injurious to the moving surface of the engine.

At low temperature conditions, lubricating oil does not readily flow and it is necessary to use a thinner grade of oil during the period of low temperature in order to insure proper lubrication.

It is an object of this invention therefore, to remove the small particles of foreign matter suspended in the lubricating oil used in connection with an internal combustion engine.

A further object of this invention is the provision of means for raising the temperature of the lubricant used to such a degree as to make possible the use of one grade of lubricating oil in the operation of the engine without danger of insufficient lubrication.

It is a further object to provide means for causing the lubricating oil to bypass around the cleaning device in the event that the same becomes inoperable due to clogging of the passage therethru, or by other natural causes.

Further objects of the invention are in the specific features of construction whereby compactness and efficiency in operation are secured, as is hereinafter more fully set forth.

These and other objects and novel features of the invention are hereinafter more fully described and claimed and the preferred form of construction of an oil cleaner embodying the invention is shown in the accompanying drawings in which

Fig. 1 is a vertical central section thru the oil cleaner.

Fig. 2 is a side elevation partly in section of the same.

Fig. 3 is a detail sectional view showing the manner in which hot gases from the exhaust of an engine are caused to be deflected and circulated thru the cleaner.

Fig. 4 is a diagram showing the cleaner installed on the power plant of an automobile.

Referring to the drawings more particularly by reference numerals, the device consists mainly of a container 1 having an inclined side wall 2 of circular cross sections. The container 1 has an oil line 3 mounted in the base 4 thereof thru which the oil used in the engine is caused to pass. The base 4 comprises a chamber 5 which completely surrounds the wall 6 thru which the oil line 3 passes. A heating pipe 7 is suitably connected to the chamber 5 at one end and is connected at its other end to the exhaust 8 of an internal combustion engine 9. An adapter 10 having threads 11 thereon is screwed into the exhaust pipe 8. This adapter has an inlet 12 on the one side thereof so positioned as to cause hot gases passing thru the exhaust pipe to be deflected into the adapter 10 and passed thru line 7 and into receiving chamber 5.

The oil line 3 is in communication with the supply line 13 of the engine 9, and oil is delivered from the engine by the customary oil pump and caused to pass thru oil line 3 of the cleaner and thru a diffuser 14 vertically mounted within the container 1. This dif-

fuser has a series of openings 15 at the upper end thereof communicating with the inside of the container 1.

The side 2 of the container 1 provides a body portion 16, and a cover 17 is provided, both having flanges 18. These flanges are held together by the use of machine screws and nuts 25. A spacer 19 is provided between the flanges of the body and the cover to permit a pair or series of spaced wire screens 20 to be placed therebetween. These screens are for the purpose of insuring separation of the larger foreign particles from the oil. The screen 20 comprises a support for a layer of wool 21 which is interposed between the same for the further purpose of cleansing the oil. At the same time, the wool 21 acts as a means for preventing any of the cleansing fluid from passing thru the container and into the main supply line and then to the engine.

The body portion of the container is filled with a cleansing fluid of any well known type which is kept at a proper height in the body 16, as shown at 22. This level is maintained, thru the use of a plug 23 screwed into the side wall of the body where it can easily be removed and any excess cleansing fluid removed. As the oil enters the cleansing fluid after leaving the diffuser 14, it is cleansed of the carbon and metal particles suspended therein, gradually rises in the container, due to its being lighter than the cleansing liquid, passes thru the screens 20, and enters the cover portion 17. It is then conducted thru the supply line 24 and thence to the working or moving parts of the engine.

The ingredients of the cleansing liquid are usually such that the liquid will freeze at low temperatures. Freezing causes the liquid to expand, and for this purpose the lower sides of the container are sloped as shown in the drawings so as to allow the frozen liquid to slide toward the top of the container, thereby preventing any damage being done to the container by expansion.

When the cleansing liquid in the container is frozen it prevents the oil from passing. For this purpose a by-pass valve 25 is mounted at the bottom of the container and exterior to the same, which has a spring governed ball 26 mounted therein, which is acted upon by oil pressure. When the passage thru the container is blocked the oil is caused to pass thru valve 25 and into a secondary pipe line 27, which permits the oil to by-pass around the container and into the main supply line 24 where it can readily reach its designated points of use.

At the same time that the oil is passing around the container, the exhaust gases from the engine are entering the chamber 5, and in so doing, the frozen liquid is soon heated sufficiently to cause it to melt, at which time the oil will again enter the cleansing liquid as at first, due to reduced pressure in the line.

A removable plug 28 is screwed into the side of the container near the base where all foreign matter taken from the oil is easily removed from time to time.

Having shown the prefered form of the invention, it will of course be understood that changes may be made in the form and details of construction without departing from the scope of the invention.

What I claim as new and wish to cover by Letters Patent is:

In combination with an internal combustion engine, a receptacle for holding liquid mounted adjacent thereto, a cleansing liquid in said receptacle, inlet and outlet pipe lines connected to said receptacle and to said engine respectively, to permit oil to be circulated from said engine thru said receptacle and again returned to said engine, a deflector coacting with said receptacle and inserted into the exhaust pipe of said engine, said deflector being so constructed as to cause exhaust gases in said exhaust pipe to be carried into the base of said receptacle for the purpose set forth.

In testimony whereof I affix my signature.

LOWELL C. WEINBERG.