

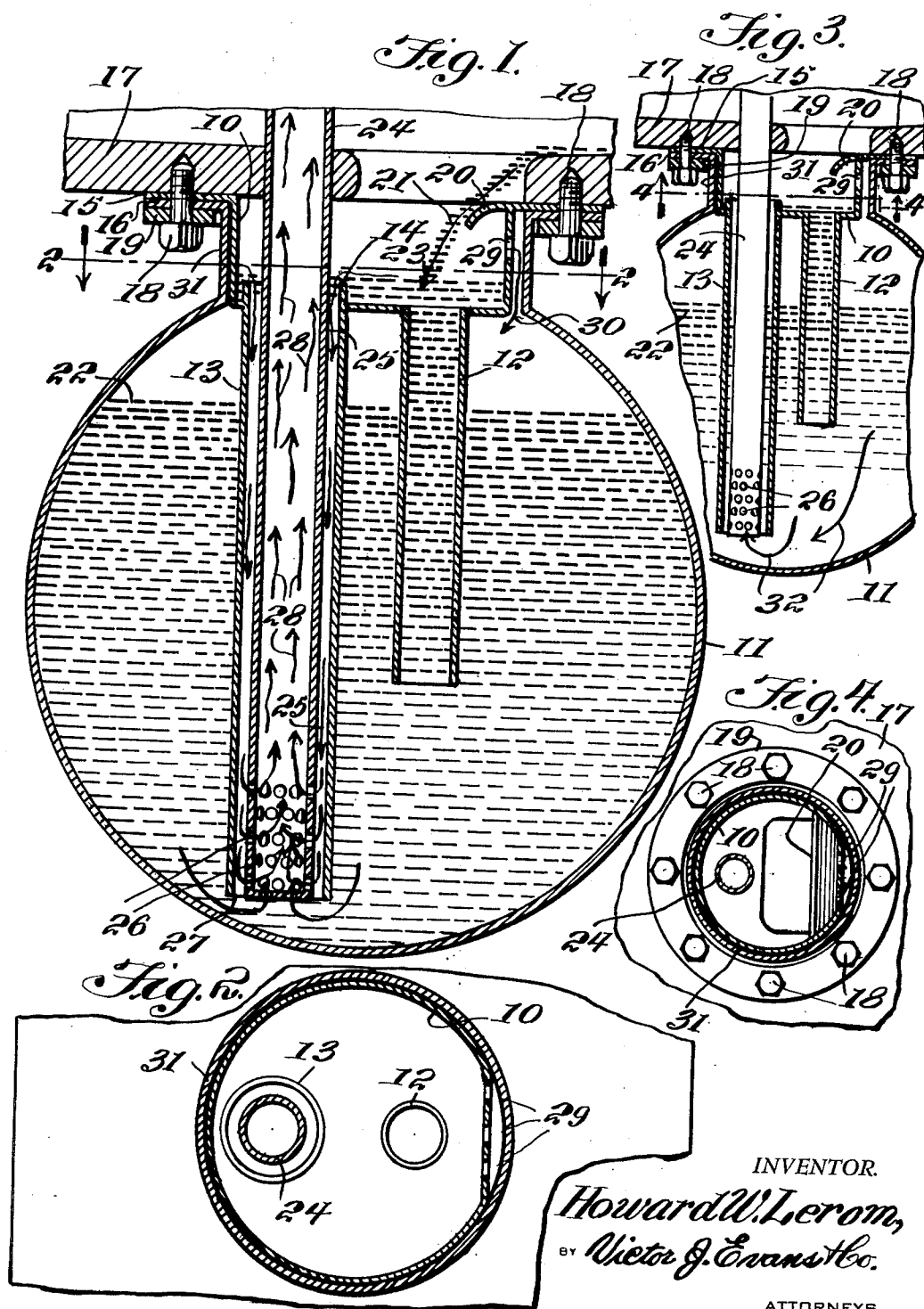
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H. W. LEROM

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OIL PUMP WELL VISCOSITY ACTUATED OIL HEATER

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INVENTOR.

Howard W. Lerom,
BY Victor J. Evans & Co.

ATTORNEYS

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OIL PUMP WELL VISCOSITY ACTUATED
OIL HEATER

Howard W. Lerom, Alderwood Manor, Wash.

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2 Claims. (Cl. 137—590)

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This invention relates to pumps or tanks into which suction pipes of oil pumps extend particularly where the pumps are used for circulating oil in crankcases of internal combustion engines, and in particular this invention relates to a means for rapidly heating the oil when starting an internal combustion engine at zero and sub-zero temperatures.

The purpose of this invention is to provide means for working hot oil returning from the crankcase of an engine through cold oil in the tank into which the suction pipe of an oil pump extends whereby the cold oil is rapidly converted into hot oil.

In the conventional method where the return from the crankcase passes downwardly through the oil well or pump through a pipe the viscosity of the cold oil retards the downward flow of the hot oil so that the hot oil passes over the upper part, bypassing the cold oil in the tank and is recirculated without mixing with the cold oil. With this thought in mind this invention contemplates a jacket or sleeve positioned around the oil pump suction tube whereby as the thick cold oil retards downward movement of the hot oil through the tank the hot oil flows downwardly through the outer jacket raising the temperature of the cold oil and drawing the cold oil in through the lower end thereof which opens into the lower part of the tank.

The object of this invention is, therefore, to provide means for connecting an oil pump suction tube to an oil sump or tank so that hot oil from a crankcase on which the tank is mounted passes downwardly through cold oil in the tank and thereby rapidly heats the oil.

Another object of the invention is to provide an improved means for circulating hot oil through a tank of cold oil into which the suction tube of an oil pump extends that may be installed in oil tanks of engines now in use.

A further object of the invention is to provide an oil pump well suction tube mounting wherein hot oil from a crankcase in starting an engine heats cold oil in the tank which is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies an oil tank suspended from a crankcase with a fitting having a down flow hot oil tube extended downwardly therefrom and also having a tube positioned to receive the tube of the suction line of the oil pump carried thereby and extended upwardly above the lower surface thereof positioned in the neck or opening in the upper end thereof.

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Other features and advantages of the invention will appear from the following description taken in connection with the drawing wherein:

Figure 1 is a cross section through an oil tank 5 showing the tank mounted below an opening in a crankcase.

Figure 2 is a sectional plan through the neck of the tank taken on line 2—2 of Figure 1.

Figure 3 is a section similar to that shown in 10 Figure 1 illustrating the flow of the oil after the oil has been heated, said section being shown on a reduced scale.

Figure 4 is a section similar to that shown in Figure 2 taken on line 4—4 of Figure 3 and looking 15 upwardly.

Referring now to the drawing wherein like reference characters denote corresponding parts the viscosity actuated oil temperature regulator of this invention includes a fitting or tray 10 20 positioned in an oil tank 11 with a hot oil down flow tube 12 depending from the fitting and also with a jacket or tube 13 extended downwardly from the fitting and also extended upwardly to a point 14 spaced above the lower surface of the 25 fitting.

The fitting 10 is provided with a flange 15 by which it is secured between a flange 16 of the tank 11 and the wall 17 of the crankcase by bolts 18 which extend through a ring 19.

The fitting 10 is provided with an arcuate baffle 20 that directs the flow of hot oil, as indicated by the numeral 21 downwardly over the tube 12 whereby the oil drops into the fitting 10 and normally passes downwardly through the 35 tube 12.

Moreover, with the oil, as indicated by the numeral 22 in the tank 11 cold, as in starting an engine in low temperatures the cold oil, being comparatively thick restricts the downward flow of the hot oil through the tube 12 whereby the hot oil accumulates in the fitting 10 as indicated by the line 23 and overflows over the upper end of the tubular casing 13 in which the suction tube 24 of the oil pump of the engine upon which the crankcase 17 is mounted is positioned.

From the upper end of the casing 13 the hot oil passes downwardly as indicated by the arrows 25 around the tube 24, entering the lower end of the tube through the perforations 26 and with the lower end 27 of the casing 13 open the cold oil is drawn inwardly with the hot oil whereby both hot and cold oil pass upwardly through the tube 24 as indicated by the arrows 28.

The fitting 10 is also provided with an overflow opening 29 and when the return of the hot 55

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oil increases whereby the oil reaches the level of the opening 29 the oil flows downwardly as indicated by the arrow 30 upon the cold oil in the tank 11.

With the fitting of this invention positioned in the neck 31 of the tank 11 as illustrated in Figure 1 the hot oil from the crankcase is forced downwardly through the cold oil and the hot oil passing through the cold oil and also drawing the cold oil in through the lower end rapidly increases the temperature of the cold oil and when the cold oil is heated the oil flows directly downwardly as indicated by the arrows 32 in Figure 3.

By this means the temperature of oil, particularly in an airplane engine, when starting the engine at low temperatures is rapidly heated and starting engines at low temperatures is, therefore, facilitated.

It will be understood that modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. In an adapter for use in an oil tank, the combination which comprises a tray having a horizontally disposed base with upwardly extended side and end walls and having flanges extended from the upper edges of said walls, spaced tubes extended downwardly from said base, the lower end of one of said tubes being spaced downwardly from the lower end of the other tube and the upper part of the tube spaced downwardly below the other tube extending through said base with the upper end thereof being spaced above the base, said tube having the upwardly extended end being adapted to receive a suction tube of an oil pump, one of the walls of said tray having

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an overflow opening therein and said overflow opening being spaced substantially midway of the height of the wall.

2. In an adapter for use in an oil tank, the combination which comprises a tray having a horizontally disposed base with upwardly extended side and end walls and having flanges extended from the upper edges of said walls, spaced tubes extended downwardly from said base, the lower end of one of said tubes being spaced downwardly from the lower end of the other tube and the upper part of the tube spaced downwardly below the other tube extending through said base with the upper end thereof being spaced above the base, one of the walls of said tray having an overflow opening therein and said overflow opening being spaced substantially midway of the height of the wall, and a tube having a perforated closure in the lower end and perforations in the side wall extended from the lower end of the tube extended downwardly below the other tube and the upper end thereof extended through said tray and adapted to be connected to the suction of an oil pump, said tube having the perforated lower end being spaced from the tube through which it extends.

HOWARD W. LEROM.

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