

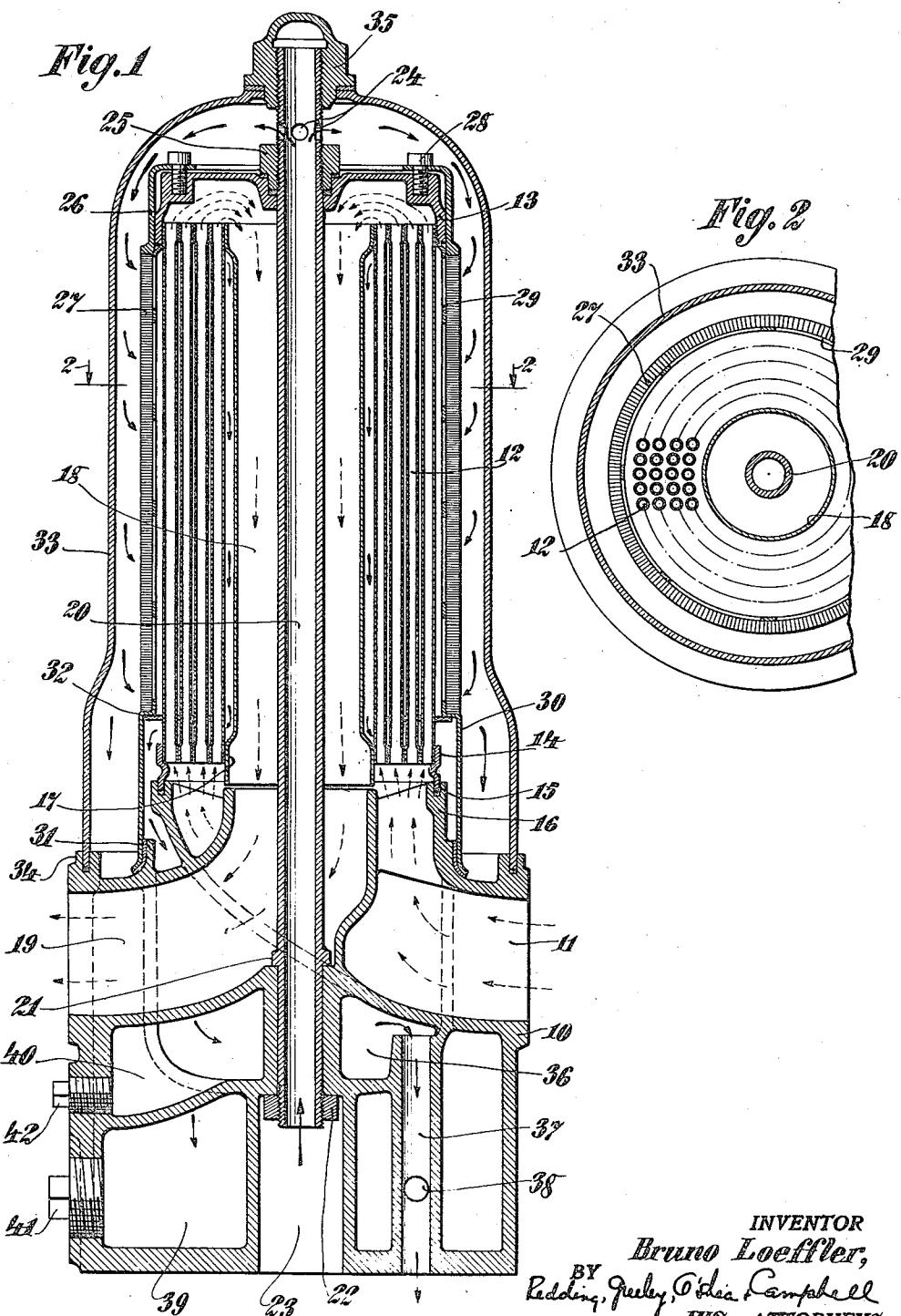
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COMBINED OIL COOLER AND CLEANER

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## UNITED STATES PATENT OFFICE

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## COMBINED OIL COOLER AND CLEANER

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The present invention relates to oil cooling and cleaning equipment and embodies, more specifically, a combined heat interchanging and cleaning equipment for the lubricant of a motor vehicle.

More specifically, the invention embodies a combined oil cooling and cleaning device which is adapted to be mounted upon a motor vehicle and utilize the temperature of the cooling water of the engine cooling system to maintain a desired temperature in the lubricant. The structure is so designed that the cleaning of the lubricant takes place simultaneously with the cooling at no sacrifice in space, thus eliminating additional auxiliary equipment necessary for the proper operation of the vehicle.

An object of the invention, accordingly, is to provide an improved form of heat interchange equipment for lubricant of motor vehicles in combination with cleaning mechanism to effect the simultaneous cleaning of the lubricant as it flows through the cooling mechanism.

A further object of the invention is to provide an oil cooling and cleaning device, wherein the cooling and cleaning elements are assembled in a convenient manner and are simple of construction and assembly, in order that they may be dismantled and inspected readily.

Further objects, not specifically enumerated above, will be apparent as the invention is described in greater detail in connection with the accompanying drawings, wherein:

Figure 1 is a view in vertical section, taken through the axis of a device constructed in accordance with the present invention.

Figure 2 is a view in section, taken on line 2-2 of Figure 1, and looking in the direction of the arrows.

Referring to the above drawings, a chambered member 10 is formed with a water inlet 11 into which water is introduced from the vehicle pump. This water flows upwardly through a series of spaced conduits 12 which are suitably secured in an upper header 13 and a lower header 14. The lower header is sealed at 15 into the upper enlarged extremity 16 of the inlet 11 and a core mem-

ber 17 provides a central passage 18 through which the water flows into a discharge outlet 19 from the upper header 13. The water thus flows in the path indicated by the dotted arrows and provides the conduits 12 55 with a suitable cooling medium.

A central tube 20, preferably formed with shoulder 21 and secured to the chambered member 10 by means of a nut 22, receives oil from the oil pump through passage 23. The oil thus flows upwardly through the central tube 20 and is discharged over the upper header 13 through apertures 24. A positioning nut 25, threaded up over the upper extremity of tube 20 secures the upper header 60 13 in position and thus affords a tight construction.

Over the upper header 13 a collar 26 is provided to hold a cylindrical cleaner 27 in position outside the tubes 12. Screws 28 may 70 be provided to secure the collar 26 to the upper header and thus position the cleaning element which is preferably mounted over an apertured cylindrical spider 29 which is formed with an enlarged lower portion 30 75 engaging over an annular abutment 31 formed on the chambered member 10. The enlarged portion 30 affords a shoulder 32 upon which the cleaning element abuts and the collar 26 thus effectively holds such element against the shoulder 32. 80

A dome-shaped closure 33 is received within an annular flange 34 on the chambered member 10 and is clamped in position by means of a nut 35 which engages the threaded 85 extremity of the central tube 20. The closure thus limits the flow of the lubricant from the tube 20 and directs its flow through the cleaning element 27 from which the lubricant flows around the cooling tubes 12 and 90 downwardly into a cooler compartment sump 36. A discharge pipe 37 permits the flow of the oil to the main oil line and a pressure relief valve 38 is provided to prevent injury to the apparatus in the event that the oil line 95 becomes clogged. An oil sump 39 is provided for collecting oil from the cleaner and permitting draining thereof, if desired. A sump 40 is further provided in the chambered member 10 for draining oil from the 100

cooler compartment, and taps 41 and 42 are provided for giving access to the respective sumps 39 and 40.

The solid arrows indicate the path taken by the oil through the mechanism and it will thus be seen that a highly compact structure is provided for not only cooling the oil but simultaneously cleaning the same, the structure being of such nature that the elements 10 may be readily taken down and cleaned during inspection and repair.

While the invention has been described with specific reference to the accompanying drawings, it is not to be limited, save as defined in the appended claims.

I claim as my invention:

1. A heat interchange device comprising a chambered base member formed with independent ducts, heat interchange elements disposed upon the base and communicating with certain of the ducts therein, means to provide a duct for conducting fluid from other of the ducts around the heat interchange elements, and a strainer mounted about the heat interchange elements.

2. A heat interchange device comprising a chambered base member formed with independent ducts, heat interchange elements disposed annularly upon the base and communicating with certain of the ducts therein, means forming a separate duct about the elements, and communicating with other of the ducts in the base, and a cylindrical strainer mounted about the elements.

3. A heat interchange device comprising a chambered base member formed with independent ducts, heat interchange elements disposed annularly upon the base and communicating with certain of the ducts therein, means forming a separate duct about the elements and communicating with other of the ducts in the base, a cylindrical spider mounted about the elements and a strainer on the spider.

4. A heat interchange device comprising a chambered base member formed with independent ducts, heat interchange elements disposed annularly upon the base and communicating with certain of the ducts therein, means forming a separate duct about the elements and communicating with other of the ducts in the base, a central tubular supporting member upon which the elements are mounted, a shouldered cylindrical spider carried by the tubular member, and a strainer over the spider and seated on the shoulder thereon.

5. A heat interchange device comprising a chambered base member formed with independent ducts, heat interchange elements disposed annularly upon the base and communicating with certain of the ducts therein, means forming a separate duct about the elements and communicating with other of the ducts in the base, a central tubular supporting member, a header carried by the member

and mounting the heat interchange elements, a shouldered cylindrical spider carried by the tubular member and a strainer over the spider and seated on the shoulder thereon.

This specification signed this 9th day of July, A. D. 1931.

BRUNO LOEFFLER.