

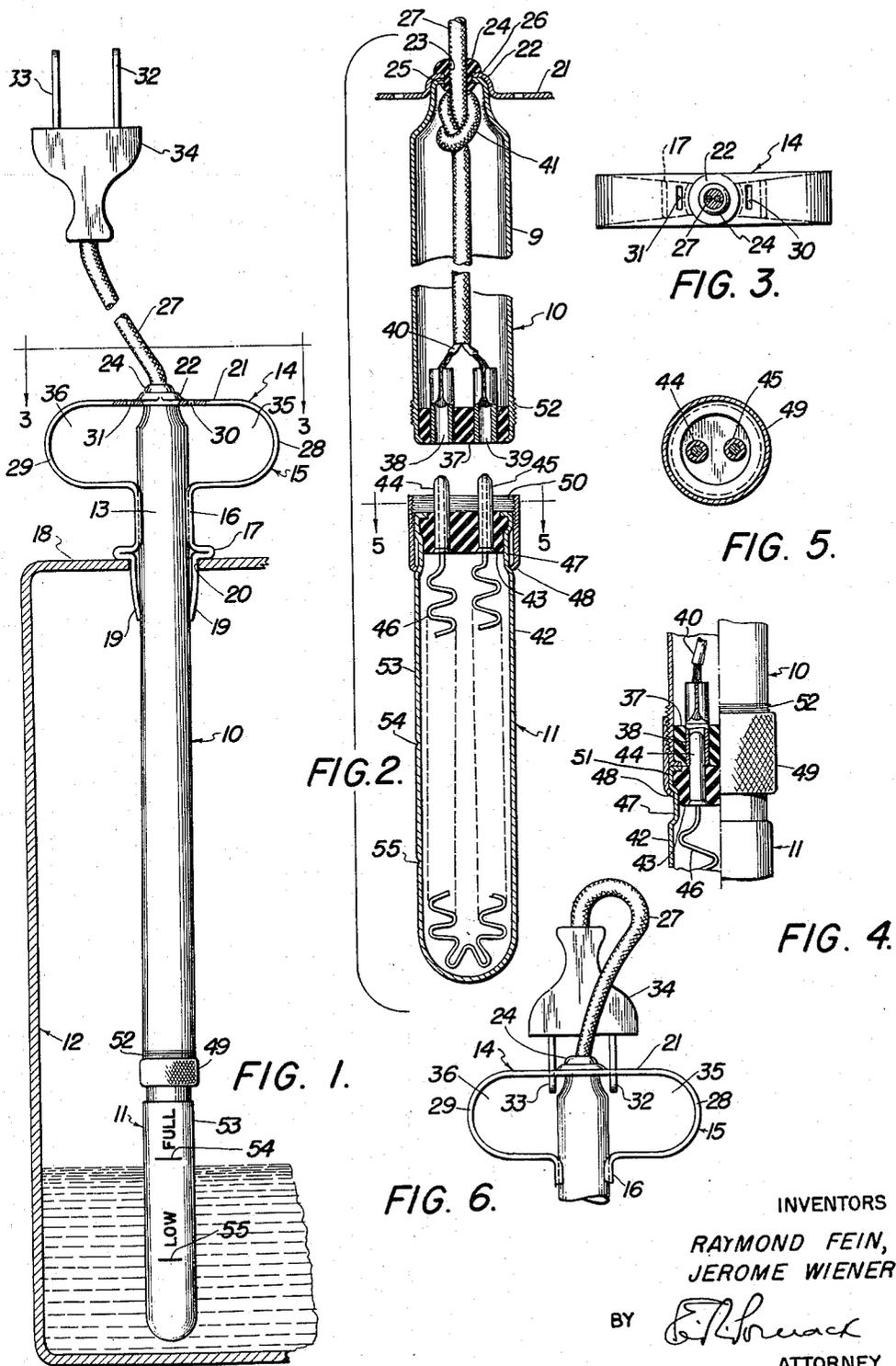
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COMBINATION OIL GAUGE AND HEATER

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## COMBINATION OIL GAUGE AND HEATER

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This invention relates to oil heating and measuring devices, more particularly to a combination oil gauge and heater for the crankcase of an automobile.

A common deterrent to the starting of automobile engines in cold weather is the thickened and partially congealed oil in the crankcase of the vehicle, resulting from parking for extended periods under low temperature conditions. It has been primarily within our contemplation to provide a device, adapted for ready and convenient use with a motor crankcase, which will enable the oil therein to be heated to a suitable running motor temperature.

In the accomplishment of this objective it has been our further object to obviate the necessity of providing a special receptacle and aperture in the crankcase for accommodating the heating element; and in this aspect of our invention we have, in novel manner, combined into a single unitary structure, an oil measuring gauge and electric heating element, so that the portion of the crankcase normally adapted to receive the conventional "oil stick" would receive our novel combination implement.

It is a further object of our invention to provide the said combination device with electrical connecting means that can safely be held against movement when not in use, and which can conveniently be connected to a source of current supply whenever necessary.

It is within our contemplation to provide a simple and readily constructed device, capable of performing the objectives above mentioned.

Other objects and features will appear from the drawings and the description hereinafter given.

Referring to the drawings,

Figure 1 is a fragmentary section taken through an automobile crankcase, our invention being shown in elevation, except for a small fragmentary section.

Figure 2 is a disassembled fragmentary vertical section of the two components of our device.

Figure 3 is a section of Fig. 1 taken along line 3—3.

Figure 4 is a fragment of the central portion of the device in assembled condition, a portion being shown in elevation and another portion in a longitudinal section.

Figure 5 is a section of Fig. 2 taken along line 5—5, and

Figure 6 is a fragmentary front view of the upper portion of the device, showing the plug in operative engagement with the hand-grip member.

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In the form of our invention illustrated there are two separable components, the upper or handle component 10 and the lower or combination heating and gauge component 11. Both of these components have coaxing elongated casing members, preferably although not necessarily cylindrical substantially throughout their length and of substantially similar cross-sectional proportions and configuration, so that when operatively joined as shown in Fig. 1, they form a continuous member adapted to be inserted into an automobile crankcase 12 substantially in the manner of conventional crankcase "stick" gauges, as will more clearly hereinafter appear.

Attached to the region 13 of the casing 9 of the upper component 10 is the handle element 14, comprising the looped substantially elliptical hand-grip 15, the intermediate bars 16 welded or otherwise secured to said region 13, the flanges 17 adapted to rest upon the top wall 18 of the crankcase 12, and the outwardly bowed spring legs 19 flanking the casing 10 and adapted for frictional yieldable engagement with the wall of aperture 20.

The preferred form of hand-grip 14 has an upper wall 21 containing a raised central portion 22 with an aperture 23 therein, a rubber bushing or grommet 24 being inserted through said aperture 23 and an underlying apertured portion 25 at the upper portion 26 of the casing 9, thereby providing a yieldable support for the cable 27 to be hereinafter described. Flanking the upper portion of the casing 9 are the two looped portions 28 and 29 of the hand-grip 14 to permit one's fingers to be inserted there-through, the said wall 21 forming the tops of said looped portions 28 and 29. Disposed within said upper wall 21 are the holes 30 and 31 flanking said raised portion 22 and adapted to receive therein the prongs 32 and 33 of the electrical plug 34, as illustrated in Fig. 6. The said holes 32 and 33 are disposed close to the upper portion of the casing 9, so as to leave spaces 35 and 36 each sufficient to accommodate a finger even with the prongs in place. Member 14 therefore serves both as a receptacle for the said plug 34 and as a hand-grip for operatively removing and inserting the device.

Disposed within the bottom of the casing 9 is the insulating plug 37 supporting therein the sockets 38 and 39 to which are electrically connected the terminals 40 of the insulated wire cable 27, the latter extending longitudinally through casing 9 and out through the bushing 24 into the said socket 34. The casing 9 is so portioned as to enable an "Underwriter's" knot

41 to be tied in the cable, thereby to prevent a forced detachment of the terminals 40 from the sockets 38 and 39 upon an upward pull of the cable 27.

The said lower component 11 comprises the casing 42 the upper portion of which contains the insulating plug 43 within which are embedded the two prongs 44 and 45 proportioned and positioned for slidable entry into the sockets 38 and 39, respectively, when components 10 and 11 are in coactive relation. Electrically connected to the prongs 44 and 45 is the heating element 46 which extends substantially throughout the length of casing 42.

The upper portion of casing 42 has a cylindrical neck 47 of reduced proportions with which the inwardly bent lower edge 48 of the internally threaded ring or nut 49 is in engagement. Said ring is so proportioned that the threaded portion 50 is adapted for simultaneous threaded engagement with the outer threaded portions 51 and 52 of the lower and upper components 11 and 10, respectively. Hence, when the two said components are in operative engagement as shown in Fig. 4, the ring 49 is in its raised operative position enveloping and holding the adjacent edges of the casings 9 and 42 in abutment.

The outer surface 53 of casing 42 has markings thereon to indicate the level of oil in the crankcase, such as the respective "full" and "low" markings 54 and 55 illustrated in Fig. 1.

In the operation of this device as an oil gauge, it is used substantially in the manner of a conventional stick gauge. When inserted within the crankcase 12, the lower component 11 is immersed within the oil, as illustrated in Fig. 1, so that when the device is removed, the amount of oil can readily be determined. In normal use, the device is in its inserted condition as illustrated, the plug 34 being operatively positioned in engagement with the hand-grip 14, the prongs 32 and 33 extending into apertures 30 and 31. In this manner, the plug is maintained against movement during the operation of the vehicle. It will be noticed that even with the plug in operative engagement with the hand-grip as illustrated in Fig. 6, there is ample provision for the fingers to be inserted in spaces 35 and 36 for a withdrawal of the unit, since the prongs 32 and 33 are spaced close to the central grommet 24.

When it is desired to heat the oil in the crankcase, the plug 34 is removed from its engagement with the hand-grip, and inserted in any convenient receptacle, such as that attached to the end of an extension cord electrically connected to a source of current supply. Because of the fact that the plug 34 is not rigidly connected to the hand-grip member 14, there is sufficient flexibility of the plug component to enable it to be conveniently connected to a receptacle, as aforesaid. In other words, if the device is situated in a portion of the crankcase where it would be difficult directly to connect the receptacle of an extension cord, the plug 34 can readily be moved to facilitate such connection.

It will further be noted that the construction of the entire device is such as to be capable of ready manufacture and assembly; and since the device is separable into two components, ready access can be gained into the interior thereof for repair or replacement purposes.

In the above description, the invention has been disclosed merely by way of example and in preferred manner; but obviously many variations and modifications may be made therein. It is to

be understood, therefore, that the invention is not limited to any specific form or manner of practicing same, except insofar as such limitations are specified in the appended claims.

We claim:

1. In a combination oil gauge and heater for simultaneously measuring and heating crankcase oil, an elongated casing member comprising an upper component and detachably secured thereto a lower component, a handle attached to the upper component, an electrical heating element disposed in the lower component, contact terminal elements on the upper component adjacent the said handle, an upper pair of electric connector elements at the bottom of said upper component, a lower pair of connector elements at the top of said lower component and in electrical contact with said upper pair of connector elements when said two casing components are in operatively engaged relation, said upper pair of connectors being electrically connected to said terminal elements, said lower connector elements being electrically connected to said heating element, and releasable locking means enveloping the engaged portions of the said upper and lower components and holding them together when in operatively engaged relation.

2. In a combination oil gauge and heater for simultaneously measuring and heating crankcase oil, an elongated casing member, an electrical heating element disposed therein, gauge markings on the outer surface of said casing member, an electric conductor having an interior portion disposed within the casing and electrically connected to said heating element and an exterior portion extending out of the casing, contact terminals on said exterior portion of the conductor, and a handle attached to the casing and having seat elements thereon for receiving said contact terminals of the conductor.

3. In a combination oil gauge and heater for simultaneously measuring and heating crankcase oil, an elongated casing member, an electrical heating element disposed therein, gauge markings on the outer surface of said casing member, an electric conductor having an interior portion disposed within the casing and electrically connected to said heating element and an exterior portion extending out of the casing, a plug connector with prong elements connected to the terminals of said exterior portion of the conductor, and a handle attached to the casing and having apertures therein for receiving the said prong elements.

4. In a combination oil gauge and heater for simultaneously measuring and heating crankcase oil, an elongated casing member, an electrical heating element disposed therein, gauge markings on the outer surface of said casing member, an electric conductor having an interior portion disposed within the casing and electrically connected to said heating element and an exterior portion extending out of the casing, a plug connector with prong elements connected to the terminals of said exterior portion of the conductor, and a handle attached to the casing and comprising a substantially elliptical hand-grip having an upper wall and two oppositely disposed finger-receiving looped portions, said upper wall having two apertures therein adjacent said looped portions.

5. In a combination oil gauge and heater for simultaneously measuring and heating crankcase oil, the combination according to claim 4, said upper wall having a central opening therein

through which said exterior portion of the conductor passes, said two apertures being in flanking and proximate relation to said central opening.

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