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DRAIN PLUG

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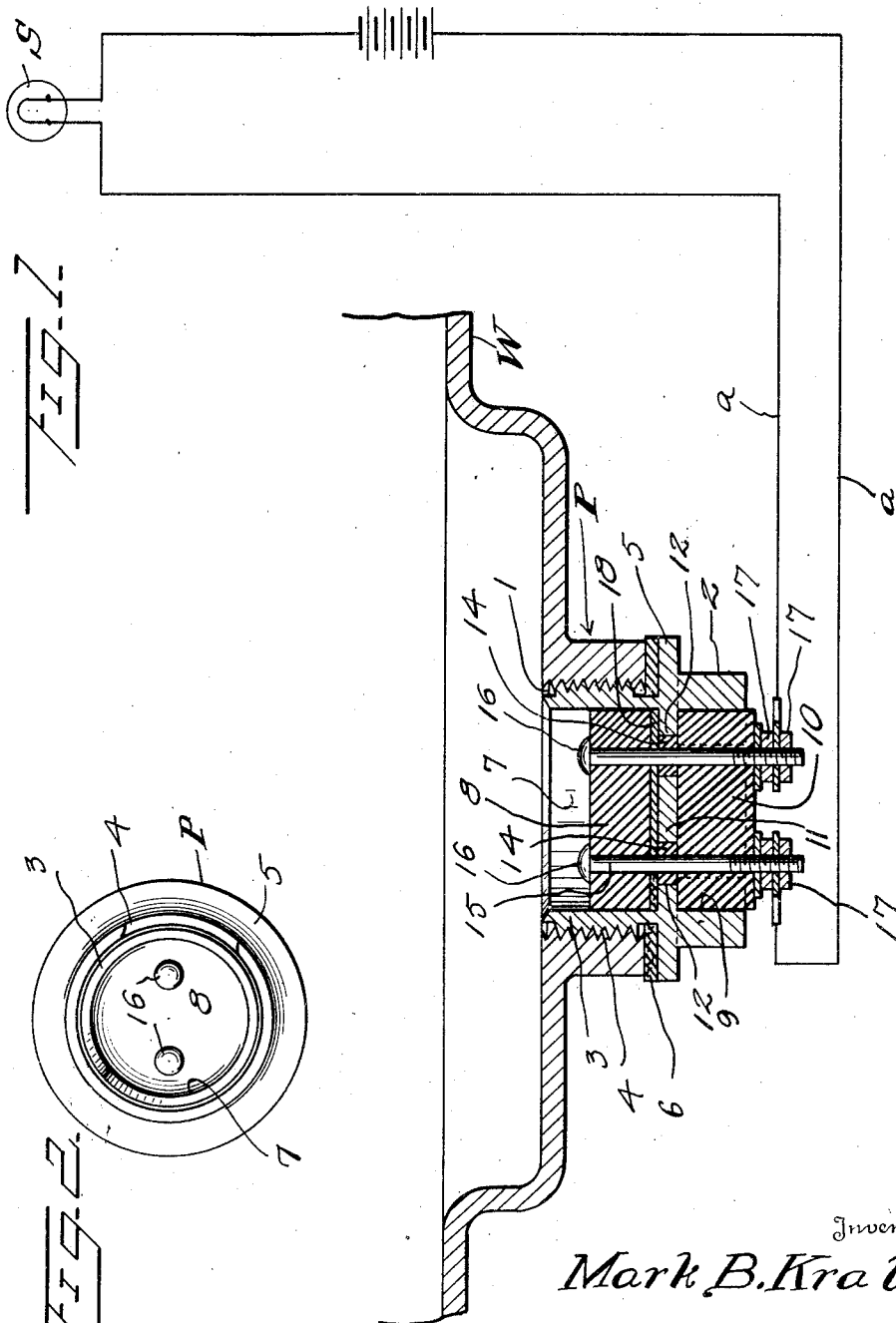


FIG. 1

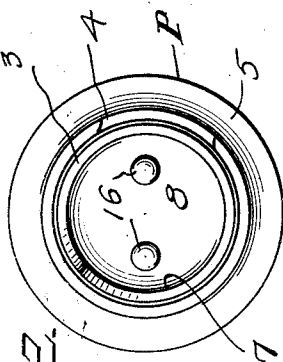


FIG. 2

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DRAIN PLUG

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1 Claim. (Cl. 200—52)

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This invention relates to a drain plug and has relation more particularly to a plug of this kind for use in connection with an oil sump or oil pan of an engine or other machine, and it is a particular object of the invention to provide a plug of this kind provided with means to effect the operation of a signal to give warning of trouble.

It is also an object of the invention to provide a plug of this kind which constitutes a normally open circuit closure interposed within the operating circuit for a signal and wherein the construction is such as to effect a closing of the closure as the result of a deposit of metal particles within the oil resulting from a defective bearing or other part of the engine or machine.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved drain plug whereby certain important advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view partly in elevation and partly in section illustrating a drain plug constructed in accordance with an embodiment of the invention, a signal and operating circuit thereof being shown diagrammatically; and

Figure 2 is a view in top plan of the plug unapplied.

As disclosed in the accompanying drawings, W denotes the bottom wall of an oil pan or sump of a conventional type as employed in connection with internal combustion engines or other machines and which wall W is provided with a drain opening 1 closed by the plug P. This plug P comprises an angular head 2 to be engaged by a suitable implement for applying or removing the plug. This plug P also includes a stem or shank 3 provided with exterior threads 4 and which stem or shank is of such diameter as to be snugly and tightly engaged through the drain opening 1.

At its inner end or at its junction with the stem or shank 3, the head 2 is provided with a surrounding annular outstanding flange 5 for co-action with the under or outer face of the wall W. There is preferably interposed between this flange 5 and the adjacent face of the wall W a sealing gasket 6 of desired material. This gasket 6 surrounds the inner end portion of the stem or shank 3 below or inwardly of the threads 4.

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The outer end portion of the stem or shank 3 is machined out to provide a relatively deep recess or pocket 7 in the lower portion of which is fitted a fiber body 8 non-conductive of electricity.

The outer portion of the head 2 is also machined out to provide a pocket or recess 9 in which is snugly fitted a fiber member 10 also of a material non-conductive of electricity and the inner or base wall 11 of this recess or pocket 9, which also constitutes the base or bottom wall for the pocket or recess 7, is provided with the spaced openings 12 in which are snugly fitted the filler blocks 14 of a material non-conductive of electricity.

Disposed through the members 8 and 10 and the blocks 14 are the elongated conductor members 15 provided with the heads 16 which overlie and have close contact with the outer face of the member 8. At this time it is to be pointed out that this outer face of the member 8 is at a pronounced distance below the outer or open face of the recess or pocket 7 whereby a well is provided to readily retain metallic particles which may be in suspension in the oil within the sump or pan to assure such particles accumulating within such well bridging the space between the heads 16 which constitute contacts.

The conductor members 15 are of a length to extend outwardly beyond the outer or exposed face of the member 10 and said extended portions constitute binding posts to which are affixed by the conventional binding nuts 17 terminals of the conductor lines α comprised in the circuit for the signal S herein disclosed as a lamp. It is believed to be obvious that if preferred instead of being visual, the signal S may be audible. This signal S is positioned upon the panel board or other suitable support as may be preferred in practice.

It is also of advantage to interpose between the body 8 and the wall 11 a gasket 13 to prevent leakage of oil out through the openings 12 or through the blocks 14.

In view of the foregoing it is believed to be obvious that when a bearing or other part of an engine or machine fails, metallic particles suspended in the oil within the pan or sump will accumulate within the well provided at the upper portion of the recess or pocket 7 and bridge the space between the heads or contacts 16, thus closing the circuit α to make the signal S effective, whereby warning will be given to the operator. It is to be pointed out that the operation of the signal is entirely automatic.

It is to be added that while the plug as here-

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in embodied is of particular advantage for closing a circuit in the event of engine trouble, yet it is believed to be obvious that the plug will operate under certain conditions to make the signal S effective should the oil be of such condition as to be changed.

From the foregoing description it is thought to be obvious that a drain plug constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

What is claimed is:

A plug for a drain opening of an oil container of the character stated, comprising a plug body having two opposite ends each having a socket formed therein, the body at one end being exteriorly screw threaded for connection in the drain opening, a body of insulation material within each socket, the insulation material in the socket at the said one end of the plug body terminating short of the end of such end to form

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a metal particles receiving receptacle, a pair of electric terminals extending through the two bodies of insulation and through the material of the plug body between the sockets, insulation means between the terminals and the material of the plug body between the sockets, the terminals being disposed within the receptacle, and the terminals at the ends remote from the receptacle being extended beyond the adjacent end of the plug body for electrical connection in opposite sides of an electric circuit.

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REFERENCES CITED

The following references are of record in the file of this patent:

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