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MAGNETICALLY SUPPORTED CRANKCASE HEATER

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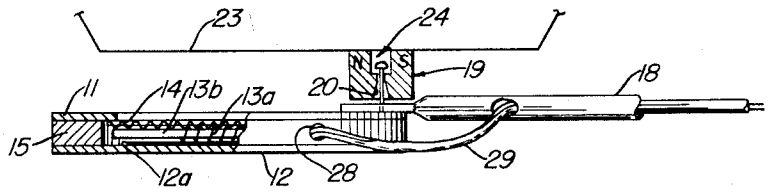


Fig. 2

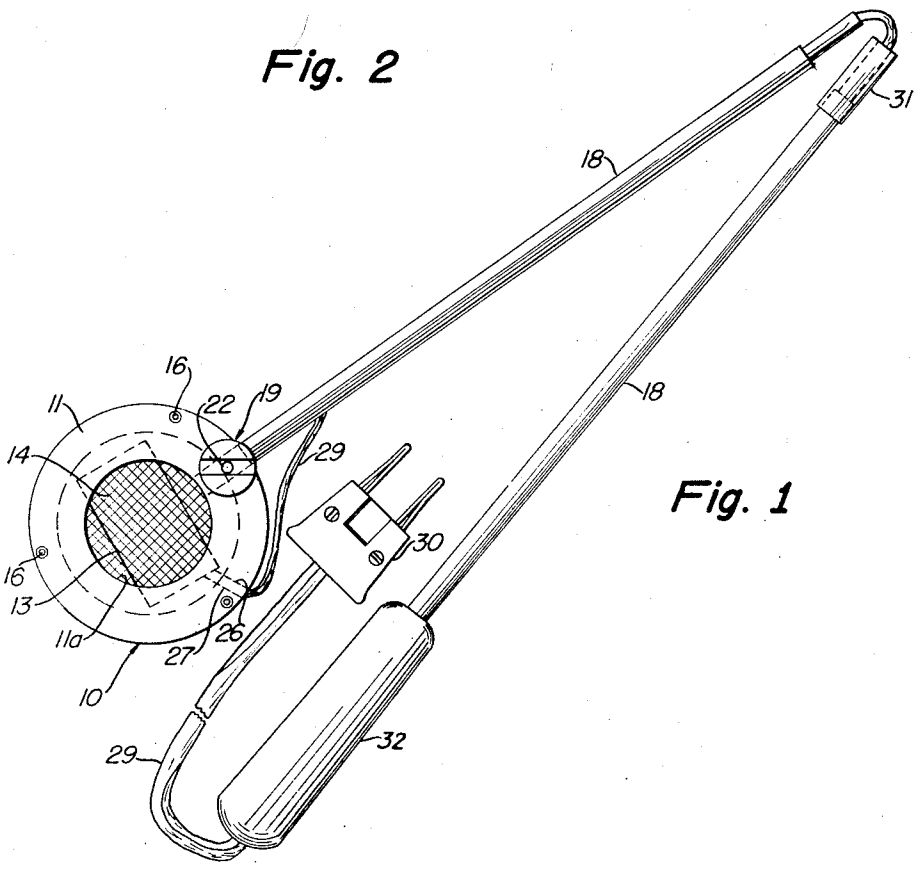


Fig. 1

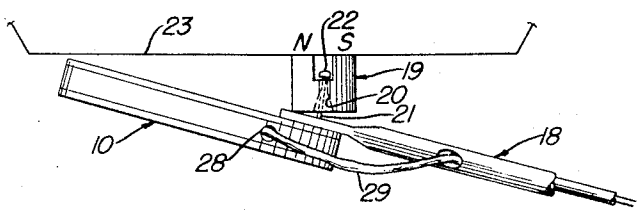


Fig. 3

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MAGNETICALLY SUPPORTED CRANKCASE HEATER

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8 Claims. (Cl. 219—38)

This invention relates to a heater designed and adapted for use in heating the crankcase of an automobile or tractor engine.

It is well known how the oil in the crankcase of an engine becomes stiffened to such viscosity in cold weather on standing outside or in unheated shelters that it makes starting difficult and affords little or no lubrication until the engine has been run for several minutes and warmed sufficiently to warm the oil in the sump. Because of the initial congealed condition of the oil there is an excessive load imposed on the battery in starting and in fact the engine may fail to start at all. Pistons and cylinders are scored and bearings damaged with improper lubrication. Furthermore because of excessive choking on starting with a cold oil in the crankcase there is excessive crankcase oil dilution which causes additional trouble when warm weather returns.

It is therefore a principal object of my invention to provide a heater which may be applied to the crankcase in the vicinity of the oil sump. A further object is to provide a rugged and efficient device which is easily and conveniently applied to the crankcase. Still another object of the invention is to provide a heater which will be foolproof and effective in avoiding the difficulties heretofore experienced on cold engine starting.

Heaters have heretofore been proposed but they have been unsatisfactory for various reasons. Most were not readily portable and none were self-supporting on the exterior of the vehicle. Accordingly, it is another object of my invention to provide a unit which is readily portable and which is self-supporting in heat contact with the crankcase of an engine. A further object is to provide an electrical heater which may be powered by a battery or line current. These and other objects of my invention will become apparent as the description thereof proceeds.

Briefly my invention comprises a casing containing a heating unit, an extension handle for placing the device under a car, and a permanent magnet carried by the casing for holding the heating unit adjacent the crankcase wall. The heating unit may comprise any suitable electrical heater of which many types are available. The magnet is mounted on a swivel support which permits the poles of the magnet to firmly engage the crankcase wall while permitting the handle to rest on the floor without exerting a lever action to the magnet. The leads to the heater may pass within the hollow extension handle and if desired means is provided for folding the handle for convenient storage or shipment of the device.

Details of my device will be described in connection with a preferred embodiment of the invention described in the accompanying drawings wherein:

Figure 1 is an elevation showing the general assembly;

Figure 2 is a detailed view, partly in section of the casing and one form of magnetic mount; and

Figure 3 is a side elevation of the heater in place demonstrating the swivel action of the magnet mount.

Referring to the drawings, the device comprises a casing **10** illustrated as being disc-shaped. It includes an annular face plate **11**, a back plate **12**, a heater unit **13**, and top screen **14**. These elements are held in a "sandwich" by rivets **16** with a spacer ring **15** between them. If desired, the back plate **12** may be omitted in which case a skirt depending from the front plate **11** will be provided in place of the spacer ring **15**. The heater unit **13** may comprise a Nichrome resistance heater, a heater bulb, a conducting rubber strip, or the like. It may be powered

by car battery current or by 110 volt line current. Leads **26** and **27** from the heater **13** pass through a wall of the casing **10** and into the hollow handle **18**. One end of the handle **18** is riveted to the top of the casing **10** or otherwise fixed to it so as to support it for reaching under the car. Means such as a clamp or magnet can be provided for supporting the hand-hold end of the handle on the car body, bumper, etc.

The magnet **19**, preferably a cylindrical U-shaped Alnico magnet, is provided with a transverse channel **24** between the poles and an axial bore **20** which may be flared at the base. A pin **21** with a head **22** passes through the channel **24** and the stem extends through the bore **20** to engage the casing **10**. This permits the casing **10** to tip as shown in Figure 3 when the handle **18** slopes downwardly to the floor. In this position the poles of the magnet **19** firmly engage the crankcase wall **23** to support the heater thereunder. Another form of magnet holder may comprise a magnetic block having an integral mounting plate depending from one side of the block and adapted for hingedly mounting on the top face of the casing. Such an arrangement also permits the "swivel" action.

A preferred form of the device is illustrated in some detail in Figures 1 and 2 of the drawing. The casing **10** comprises metal plate **12**, metal spacer ring **15**, and annular face plate **11** enclosing a heater unit **13** covered by screen **14**. The heater unit **13** illustrated includes a Nichrome high resistance wire winding **13*a*** about a mica core **13*b***. A sheet **12*a*** of electrical and heat insulating material may be interposed between the back plate **12** and the heating unit **14**. Leads **26** and **27** from the heating unit winding **13*a*** pass through a port **28** in the side wall of the casing **10** and merges into a cord **29** which passes through the hollow handle **18** and terminates in plug **30**. The handle **18** comprises metal tubing and may have a joint **31** to permit the handle **18** to be collapsed as shown. The hand-hold **32** is used to manipulate the casing **10** and magnet **19** face up into contact with the underside of a crankcase wall **23**. The handle may then be lowered as shown in Figure 3 and a minimum strain placed upon the magnet **19** by the swivel action of the mounting pin **21—22**.

Although I have described my invention with reference to specific embodiments thereof, it should be understood that this is by way of illustration only and that modifications can be made by those skilled in the art without departing from the described invention.

What I claim is:

1. A portable crankcase heater comprising a disc-shaped casing, an electrical heating unit wholly within said casing, an elongated handle for said heater having one end fixed to said casing, and means for supporting said heater on a vehicle motor crankcase adjacent the oil sump thereof.

2. A support for a crankcase heater comprising a permanent magnet and a swivel support for said magnet, said magnet being the sole supporting means for said crankcase heater.

3. A portable crankcase heater comprising a disc-shaped casing including an annular face plate, an electrical heating unit supported below said face plate, an elongated handle for said heater fixed to said casing, a permanent magnet means fixed to said face plate and adapted to support said heating unit adjacent a crankcase, and a swivel support for said magnet means, said magnet means and the lower end of said elongated handle providing the support for said casing.

4. A portable heater unit comprising a disc-like casing having an annular face plate and a circular back plate, a heating unit between said plates, a positioning handle for said heater, and a permanent magnet fixed to the upper face of said casing for supporting said heater adjacent a paramagnetic wall surface.

5. A portable electrical heater comprising an electrical heating unit, a lightweight flat casing for said unit, a permanent magnet means for supporting said heater adjacent a surface to be heated, and an elongated handle means for positioning said heater on said surface, said handle means and said magnet means being attached to

the said casing at substantially the same point adjacent a margin thereof.

6. A crankcase heater adapted to be applied to the bottom of a crankcase comprising a casing, an electrical heating unit within said casing, an aperture in the top wall of said casing above said heating unit, an elongated hollow handle having one end fixed to said casing, a permanent magnet fixed to the top wall of said casing adjacent said handle, and electrical leads to said heating unit passing through said hollow handle.

7. A support for a crankcase heater comprising a cylindrical permanent magnet having two poles at one end thereof, a transverse channel between said poles, a central bore in said magnet, and headed pin means passing through said channel into said bore to engage said heater.

8. An apparatus for heating a crankcase of a vehicle engine comprising an electrical heating unit, a casing for said unit, a permanent magnet carried by said casing and supporting it adjacent the bottom of a crankcase, a hollow handle having one end fixed to said casing, and electrical leads for energizing said heater passing through said handle.

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