F. A. VOLLBRECHT.

MANIFOLD HEATER.

APPLICATION FILED DEC. 26, 1912.

1,089,884. Patented Mar. 10, 1914.

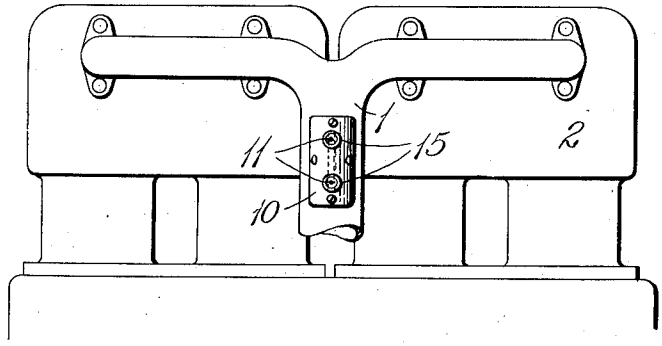


Fig. 1.

Fig. 2.

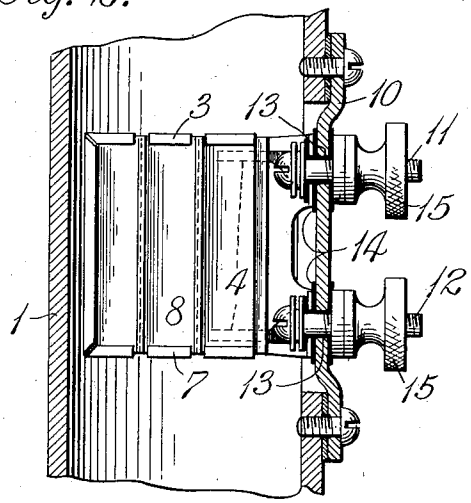
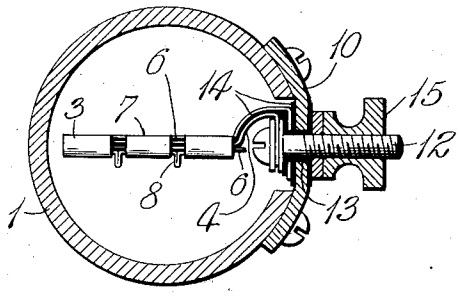


Fig. 3.



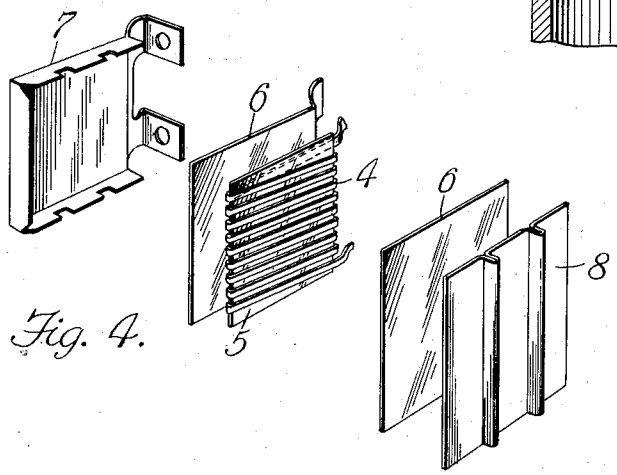


Fig. 4.

Witnesses

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MANIFOLD-HEATER.

1,089,884. Specification of Letters Patent. Patented Mar. 10, 1914.

Application filed December 26, 1912. Serial No. 738,545.

To all whom it may concern:

Be it known that I, FREDERICK A. VOLLBRECHT, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Manifold-Heaters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a heating device for internal combustion engines to heat the explosive charges before entering the cylinders thereof and its object is to provide a simple and efficient device which is especially adapted to be applied to an intake manifold and is so constructed that it will not hinder the normal operation of the engine and may be quickly and easily attached.

It is also an object of the invention to provide certain new and useful features in the construction and arrangement of parts, the invention consisting in the matters hereinafter more fully described and pointed out in the claims reference being had to the accompanying drawing in which—

Figure 1 is a view illustrating the application of the invention to the manifold of an internal combustion engine; Fig. 2 is an enlarged sectional detail of the device; Fig. 3 an end elevation of the same showing the manifold in section; and Fig. 4 is an enlarged perspective view showing the construction of a heating element.

As shown in the drawings 1 represents the manifold or intake pipe of an internal combustion engine, the cylinders of which are indicated at 2. For the purpose of illustration the heating element is shown as applied to the riser of a manifold or a multiple cylinder engine but it will be understood that it may be applied as well to any form of intake or other part through which the explosive charges pass upon their way to the cylinder or cylinders of the motor. It will also be understood that any suitable source of electrical energy may be employed to supply a current to the heater.

The heating element 3 comprises a metal ribbon 4 wound about a flat insulating core 5 of mica or other suitable material and placed between insulating sheets 6 preferably of the same material and the whole inclosed within an outer casing formed of sheet metal, this casing comprising a supporting sheet 7 forming one side of the casing and a strengthening sheet 8 forming the opposite side of the casing. The edges of the supporting sheet are formed over the top, bottom and one end edge of the core and insulating sheets and also over the edge of the strengthening sheet forming the side of the casing to firmly connect the sides of the casing together and form a thin flat heating element which may have any desired configuration but which is preferably rectangular in outline. The sheet of metal forming the side 8 of the casing is preferably bent to form one or more strengthening ribs extending across the sheet to give rigidity to the casing and also increase the radiating surface without offering any material opposition to the free passage of the carbureted air through the manifold. The side 7 of the casing is extended and bent laterally to form curved supports for the heating element and these supports are attached to a cover plate 10 by means of binding screws 11 and 12 which engage the supports and pass through openings in the plate which openings are provided with suitable insulating bushings 13. The supports of the sheet 7 are also insulated from the cover plate by any suitable insulation 14. Suitable binding nuts 15 are provided upon the outer ends of the binding screws to hold suitable electrical conduits or wires leading from any suitable source of electrical energy such as a battery.

The heating element is applied to the manifold or intake pipe 1 by cutting a slot in one side of the pipe and securing the cover plate over this opening with the element projecting into the pipe and diametrically across the same. The element may thus be quickly and easily placed in operative position and when so placed will extend directly across the path of the ingoing carbureted air so that the same will be heated by direct contact with the element as it passes up the intake pipe into the motor cylinders. The construction of the element is such and it is so positioned within the manifold, that it offers but little resistance to the passage of the carbureted air through the manifold, said element being very thin and extending longitudinally of the pipe.

By providing the heating element with a sheet metal casing which is ribbed to give the necessary strength, a very strong and efficient heating element for the purpose is provided and the same will not be warped

or bent by the heat or be displaced by the vibration of the engine and come into contact with the pipe thus making a short circuit.

Obviously, changes may be made in the construction and arrangement of parts without departing from the spirit of my invention and I do not wish to limit myself to the particular construction shown.

Having thus fully described my invention what I claim is:—

1. A heater for the purpose described, comprising a metallic casing, curved supports carried thereby, plates of insulation arranged in said casing with one of said plates provided with extensions engaging said supports, an insulating core arranged between said plates, and a metallic ribbon wound around said core and having ends thereof extending out of said casing against the extension of said plate of insulation and adapted to be connected to a suitable source of electrical energy.

2. A heater for the purpose described, comprising a metallic casing, supports carried thereby, plates of insulation arranged within said casing and one of said plates provided with extensions adapted to engage said supports, an insulating core arranged between said plates of insulation, a metallic ribbon wound around said core and having the ends thereof in proximity to the extensions of said insulating plate, a detachable ribbed side wall closing said casing and means in connection with said casing for retaining said side wall in engagement therewith.

3. A heater of the type described, comprising a casing having a detachable side wall, supports projecting from one side of the back of said casing, plates of insulation arranged within said casing, extensions carried by an edge of one of said plates and engaging the supports of said casing, an insulating core arranged between said plates, and a metallic ribbon supported by said core and having the ends thereof terminating at the extensions of said insulating plates.

4. A heater of the type described comprising a casing, supports carried by the back of said casing at one edge thereof, plates of insulation arranged within said casing, an insulating core arranged between said plates, a metallic ribbon wound upon said core and having the ends thereof terminating at the supports of said casing, insulation arranged between said supports and the ends of said ribbon, and means whereby access can be had to said casing.

5. The combination with a suitable support, of a casing connected thereto, plates of insulation arranged in said casing, extensions carried by one of said plates of insulation and extending to the connection of said casing with said support, an insulating core arranged between said plates of insulation and a metallic ribbon wound around said core and having ends thereof extending into proximity to the extensions of said plate of insulation.

In testimony whereof I affix my signature in presence of two witnesses.

FREDERICK A. VOLLBRECHT.

Witnesses:
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ANNA M. DORR.