



## UNITED STATES PATENT OFFICE

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## ELECTRIC HEATER

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This invention relates to improvements in electric heaters and more particularly to a heater especially adapted for carburetors.

One of the objects of my invention is the provision of an electric heater which is especially designed for application to carburetors, whereby the carburetor can be heated in a very short space of time in order to more efficiently create the proper mixture for the fuel before being discharged into the cylinders of a motor, especially during cold weather.

Another object of the invention is the provision of an electric heater of the above type which is so formed that it can be readily wrapped about the carburetor and have its ends securely fastened together so that when the heating element enclosed in the sealed heater body is energized, the heat will be directed onto the carburetor body and quickly heat the same.

A further object of the invention is the provision of a heater of the above type which comprises a fluid-proof enclosure body in which is arranged a plurality of heating elements connected to a source of electrical supply and having attached to the conductor, which is connected to the electrical supply and the heaters, an operating switch, preferably located on the instrument board of a motor vehicle so that a current supply can be easily conveyed to the heating element in order to quickly heat the carburetor.

It is a well known fact that in severely cold weather, it is rather difficult to start an internal combustion engine, particularly that type used on motor vehicles, due to the fact that the fuel being fed to the engine is not only cold, but not sufficiently mixed to provide for a quick catch from the usual spark, and it is as stated heretofore, one of the principal objects of my invention to provide a simple type of heating element that can be applied to almost any well known make of carburetor, so as to heat the carburetor and the fuel therein to increase the firing facilities of the fuel.

With the above and other objects in view, the invention consists in the novel features of construction, the combination and ar-

rangements of parts hereinafter more fully set forth, pointed out in the claim and shown in the accompanying drawings wherein:

Figure 1 is a plan view, illustrating the application of the heating elements to the device, with parts thereof broken away and illustrated in cross section;

Figure 2 is a similar view, showing the device in complete form ready for application to a carburetor;

Figure 3 is a transverse section on the line 3—3 of Figure 2; and,

Figure 4 is a detailed edge view of one end of the heater with parts thereof broken away and illustrated in cross section.

In constructing a heater of the type heretofore set forth, I provide a body blank 1, preferably elongated in form, as illustrated in Figure 1. Upon this blank I place a layer of comparatively heavy mica 2. Upon this layer of mica 2 there are positioned the heating strands 3, with one of their ends soldered or otherwise secured, as shown at 4, to the body blank 1 adjacent one end thereof. The other end of the heating strands are connected to a transverse member 5 which is preferably one end of a conductor 6. The latter end of the strands are connected to this conductor by soldering the same thereto or in any other suitable manner to provide for a secure electrical connection.

It will be noted that the strands 3 are arranged in parallel spaced relation and between these strands and upon the outer sides of the outside strands are the longitudinal strips of mica 7, which retain the heating strips in proper spaced relation so as to prevent them from coming in contact with each other.

Above the heating strips 3, I place a number of layers 8 of mica in order to retain the heating strips and the lowermost strips of mica in position and also for properly insulating the heating strips and prevent them from coming in contact with the outside metal housing which is formed from the blank 1.

Prior to forming the housing there is placed on the mica strips 8 a metal strip 9 and the longitudinal edges of the body blank which are then bent over onto the edges of

the strip 9, as shown at 10, and these edges 10 are connected to the metal strip 9 by means of soldering, as shown at 11, so as to completely house the mica strips and the heating strips. This construction is clearly illustrated in Figure 3, which is a transverse section taken through the device in its complete form, as shown at Figure 2.

The conductor 6 may lead to any suitable source of electrical supply and is preferably enclosed within a flexible conduit 12. At each end of the complete housing, as shown in Figure 2, I provide perforated ears 13. These ears, while being illustrated adjacent one side edge of the housing, may be, if found desirable, placed at any other suitable location.

In applying the body or housing which contains the heater strips 3 to a carburetor, it is to be understood that the metal plate which is used for forming the housing, is of a comparatively flexible material and can be wrapped around the exterior of the carburetor and any suitable type of fastening elements can be passed through the perforated ears 13 for retaining the heater in position upon the carburetor. The heater can be made in various lengths and if the length should be found, in applying the same to the carburetor, too long, it can be arranged in a spiral or overlapping position upon the carburetor and still have the ends connected through the medium of the perforated ears 13.

Attention is also directed to the fact that both ends of the housing formed from the blank 1 are completely sealed by means of soldering, as shown at 14, so that all of the heat radiating from the members 3 will be conveyed to the housing and consequently conveyed to the carburetor body. This device is extremely simple in construction and can be manufactured and placed on the market at a very low cost, but at the same time, by actual practice has been found to be very efficient for the purpose intended.

The enclosure body is of such construction that it will prevent the entrance of gasoline to the heating elements, and will also prevent the entrance of any fluid which would create a short circuit in the heating strips.

In order to conserve the heat and deflect all of it directly against the surface of the carburetor as best shown in Figures 2 and 3 of the drawings, I have provided an asbestos strip or other insulating material or band 12', secured to the outer surface of the element by suitable means, as, for example, a wire clip or the like. This band serves in effect, as a jacket to prevent the escape of heat from the element whereby the insulating material serves to retain the heat in an efficient manner to insure maximum results.

While I have shown and described the preferred embodiment of my invention, it will be apparent that slight changes may be made

in the construction when putting the invention into practice without departing from the spirit of the same or the scope of the appended claim.

I claim:

An electric heater comprising a body blank, a layer of mica arranged thereon, a plurality of heating strands extending longitudinally of the body and arranged in spaced relation and disposed on the layer of mica, means connecting the terminals of the strands at one end to the body blank, a transverse conductor member connecting the opposite terminals of the strands together, a plurality of strips of mica arranged between and upon the outer sides of said heating strands, a plurality of layers of mica arranged over said strands and mica strips, a metal strip disposed over the outermost layer of mica, the edges of the body blank being extended over onto the metal strip and secured thereto, and means for closing the ends of said body blank after the edges thereof have been extended over the metal strip.

In testimony that I claim the foregoing I have hereunto set my hand at Eau Claire, in the county of Eau Claire and State of Wisconsin.

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