June 9, 1931. R. R. WAGNER 1,809,654

VEHICLE HEATER

Filed Nov. 17, 1928

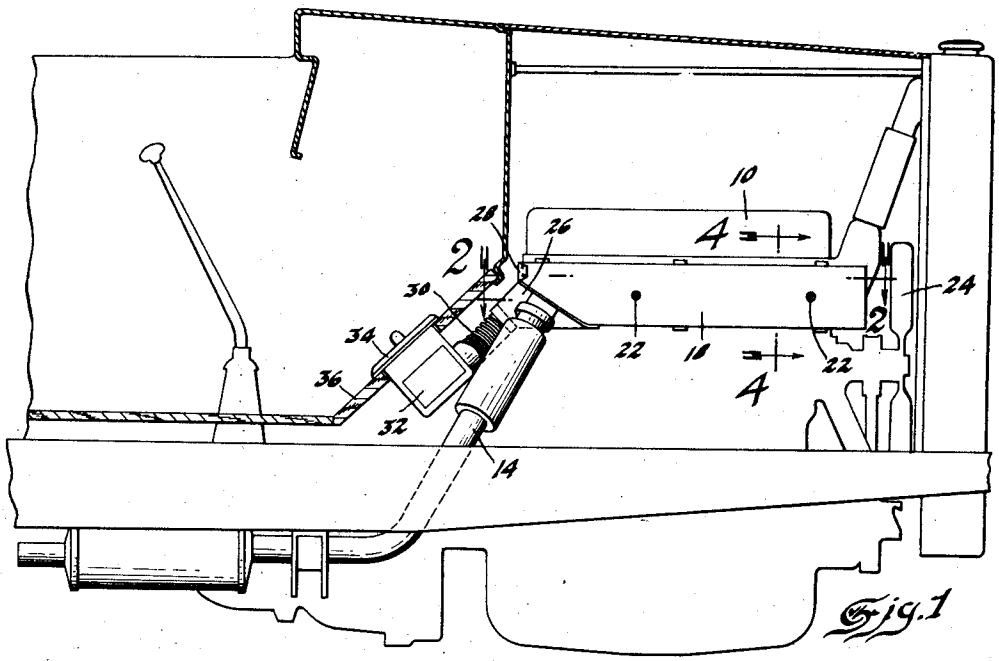


Fig. 1

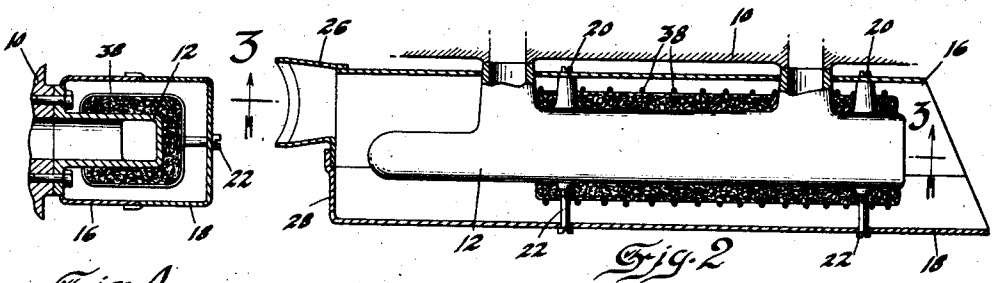


Fig. 4

Fig. 2

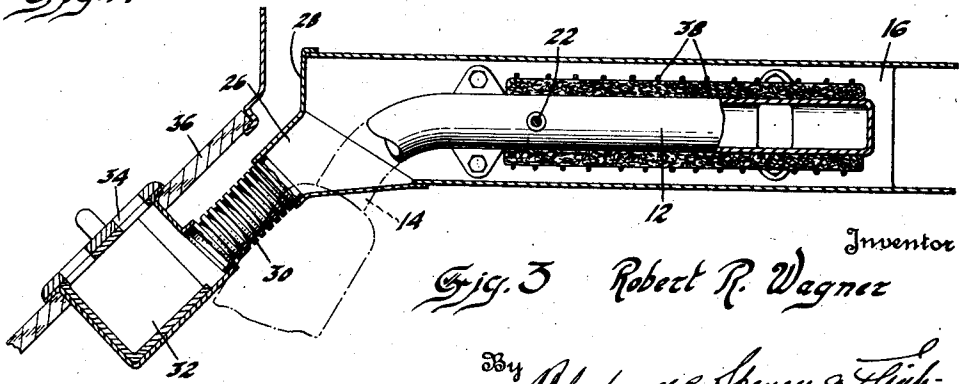


Fig. 3

Inventor

Robert R. Wagner

By Blackwood, Spencer & Flick

Attorneys

Patented June 9, 1931 1,809,654

UNITED STATES PATENT OFFICE

ROBERT R. WAGNER, OF DETROIT, MICHIGAN, ASSIGNOR TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE

VEHICLE HEATER

Application filed November 17, 1928. Serial No. 320,103.

My invention relates to improvements in vehicle heaters of the type in which air is forced through a casing surrounding the exhaust manifold, into the interior of a vehicle for the purpose of heating the latter, the air becoming heated as it passes over the exhaust manifold. The difficulty with such types of heating systems has been that, due to structural limitations, it has been impossible to secure a large enough area of exposed surface on the exhaust manifold to properly heat the air as quickly as the air flows through the heater casing. The inlet of the casing is usually located behind the cooling fan and, as a result, the air is forced quite rapidly through the casing into the interior of the vehicle. The result has been that the temperature of the air entering the vehicle has not been sufficiently high to properly heat the latter.

An object of my invention is to provide means for increasing the temperature of the air which is being forced through the heater casing. I accomplish this by surrounding a portion of the exhaust manifold with a covering of what is commonly known as metal wool.

Other objects and advantages will be apparent upon reference to the specification and accompanying drawings, in which:

Fig. 1 is a fragmentary view, partly in section, of the front end of a motor vehicle showing my improved form of heater applied thereto.

Fig. 2 is a section taken on the line 2—2 of Fig. 1.

Fig. 3 is a section taken on the line 3—3 of Fig. 2.

Fig. 4 is a section taken on the line 4—4 of Fig. 1.

The reference numeral 10 indicates an internal combustion engine provided with the usual exhaust manifold 12, which is connected at its rearward end with the exhaust pipe 14. Surrounding the manifold 12 is a casing composed of an inner portion 16, and an outer portion 18. The inner portion 16 is secured to the exhaust manifold by means of bolts 20 before the manifold is assembled in place on the engine. The outer portion 18 is then drawn up against the portion 16 by bolts 22, which are also threaded into the manifold 12. The front end of the casing formed by the portions 16 and 18, is open and is so arranged that it comes directly behind the cooling fan 24, so that when the engine is running the fan 24 will force air through the casing and around the exhaust manifold 12, so that the air will become heated. This heated air is conducted through a neck 26 formed on the rear cover 28 of the casing, through the flexible conduit 30 into a valve body 32, from which it passes into the interior of the vehicle through the register 34 located in the toeboard 36 of the body

It has been found that, due to the relatively small area of the surface of the manifold 12 which was exposed to the relatively large volume of air passing through the heater casing, the air was not raised to a high enough temperature to properly heat the vehicle. This was especially noticeable when the engine was first started, as it took considerable time to raise the temperature of the exhaust manifold to a point where it would serve to properly heat the air passing over it. The result was that, instead of warm air being forced into the vehicle within a reasonable time after the engine was started running, cold air was forced into the vehicle in large quantities and caused draughts in the latter.

In order to overcome this objection, I propose to wrap, or otherwise fasten, a mass of what is commonly known as metal wool around the exhaust manifold. This metal wool is formed by shaving off very thin and very narrow strips of any suitable metal, and by then compressing a large quantity of these strips into a mass which is more or less porous in accordance with the degree of compression employed. This metal wool may be secured in any suitable manner around the manifold 12 as, for example, by means of wires 38, which may be wrapped about the outside of the metal wool to hold it in place.

The object of this metal wool is to increase the heat radiating surface which is exposed to the column of air which is being forced through the heater casing. It will be readily seen that, since the metal wool is held in close

contact with the exhaust manifold 12, that heat will be conducted from the latter into the various strips which comprise the metal wool and, since the strips are so thin and so numerous, the exposed surface will be very large in area and, consequently, considerably more heat will be radiated into the air stream than would be the case when the manifold alone is used.

While I have described the material as metal wool, I do not intend to limit myself to any particular form of material. Any type of material which will present a relatively large exposed surface to the air stream may be used. For example, the chips and shavings produced as the result of certain machining operations upon metal may be used, and it may be necessary to place such chips or shavings in a screen or other similar container, for the purpose of holding them in the proper position about the exhaust manifold. Any kind of metal which will serve to conduct heat may be used, such as iron, steel, aluminum, copper, brass, etc.

It will be readily seen that, by covering the exhaust manifold with such a material as described, a very much larger area of heat radiating surface is obtained and that not only will the temperature of the air entering the interior of the vehicle under ordinary conditions be materially raised, but also warm air will be forced into the vehicle much quicker after starting the engine in cold weather.

It is believed from the foregoing taken in connection with the accompanying drawings, that the construction and operation of the heater will be apparent to those skilled in the art, and that various changes in size, shape, and proportion and details of construction may be made without departing from the spirit and scope of the appended claims.

I claim:

1. A vehicle heater comprising an exhaust manifold, a casing surrounding said manifold and forming a passageway around said manifold through which air may be conducted into the interior of the vehicle, and a mass of metal wool located in said passageway in contact with said exhaust manifold for the purpose of increasing the area of the heat radiating surface in said passageway.

2. A vehicle heater comprising an exhaust manifold, a casing surrounding said manifold and adapted to conduct air from around said manifold into the interior of the vehicle, and a layer of metal wool in contact with the outside of said exhaust manifold for the purpose of increasing the area of the heat radiating surface within said casing, said metal wool being spaced from said casing to provide a channel for the air to flow through.

In testimony whereof I affix my signature.

ROBERT R. WAGNER.