July 25, 1933. F. BUSCHBAUM 1,920,059

EXHAUST OPERATED HEATER

Filed May 16, 1932

Fig. 1.

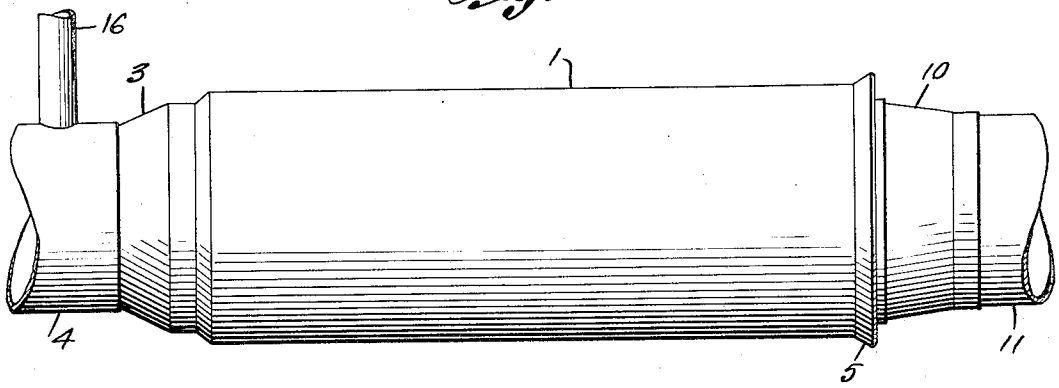


Fig. 2.

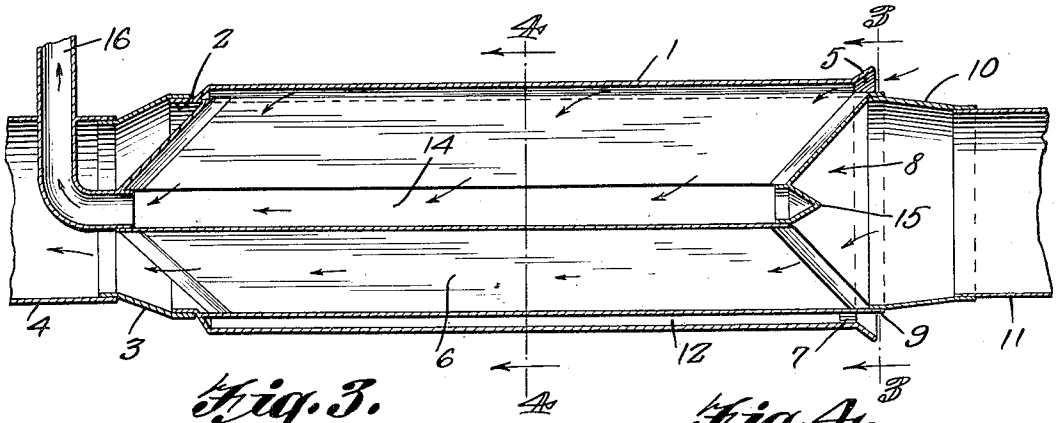


Fig. 3.

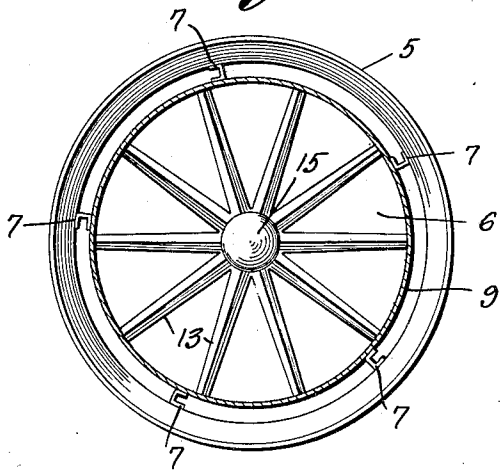
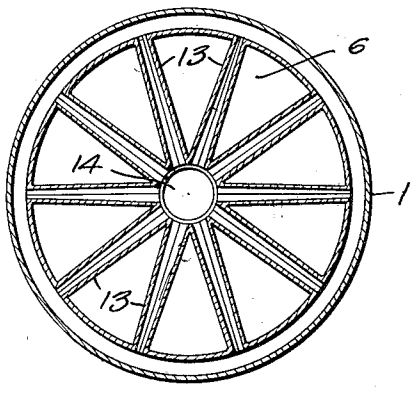


Fig. 4.



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WITNESS:

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FRED BUSCHBAUM, OF ST. LOUIS, MISSOURI

EXHAUST OPERATED HEATER

Application filed May 16, 1932. Serial No. 611,669.

This invention relates to exhaust operated heaters especially adapted for aeroplanes, automobiles and the like, and has for the primary object, the provision of a device of the above stated character which is capable of producing maximum heat free of contamination by the exhaust of an engine employed as the heating medium.

Another object of this invention is the provision of a plurality of exhaust chambers or passages, so constructed as to offer minimum resistance to the flow of exhaust and which provide maximum heating areas for the air or fluid to engage and become rapidly heated.

With these and other objects in view, this invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawing, in which

Figure 1 is a side elevation illustrating a heater constructed in accordance with my invention.

Figure 2 is a vertical sectional view illustrating the same.

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a similar view taken on the line 4—4 of Figure 2.

Referring in detail to the drawing, the numeral 1 indicates an outer shell having one end reduced to form a flange 2 on which is mounted a reducing collar 3 to which an exhaust pipe 4 is connected. The opposite end or the front end of the shell 1 is flared to form an air intake 5. A plurality of exhaust chambers or passages 6 are arranged in the shell 1 and supported in spaced relation thereto by spacers 7. The exhaust passages or chambers are of substantially triangular shape in cross section and extend radially from the longitudinal axis of the heater and have their ends opened to permit exhaust to pass through the various chambers or passages with minimum resistance. The ends of the chambers 6 are formed at an inclination so that when arranged within the shell 1 one group of ends extends into the collar 3 and the other group of ends extends inwardly of the shell from the intake end thereof, cooperating with each other in forming a conical shaped mouth 8 for directing the exhaust into the chambers. A flange 9 connects the various chambers about the mouth 8 and receives a reducing collar 10 to which an exhaust manifold 11 of an engine is connected. The chambers or passages 6 grouped within the outer shell 1 in the manner described form within said shell an annular air passage 12 communicative with a series of radially extending air passages 13 so that air entering the front end of the shell may pass entirely about each chamber or passage 6 to become thoroughly heated.

The flange 2 of the shell 1 is formed integrally with the exhaust ends of the chambers or passages and closes the annular air passage to the collar 3 so that the air entering the annular passage of the front end of the shell will pass inwardly through the radial passages 13 and enter the outlet passage 14, the forward end of which is closed by a cap 15 and its rearward end connected to a pipe 16 adapted to convey the heated air to any point desired in an aeroplane or automobile. The pipe 16 extends outwardly through one wall of the exhaust pipe 4 as clearly shown in Figure 1.

The inner edges of the exhaust chambers or passages are secured to the cap 15 and to a collar 17 receiving the intake end of the pipe 16 for the purpose of forming the outlet passage 14 for the heated air.

From the foregoing description taken in connection with the accompanying drawing, it will be seen that when the device is connected to the exhaust manifold of an engine of an aeroplane or automobile, the air will enter the shell 1 at the forward end thereof and be forced entirely about each exhaust chamber or passage and enter the centrally located outlet passage 14 and thence into the pipe 16 leading to the desired point within the automobile or aeroplane for heating the same. It is also to be noted that

the exhaust entering the mouth 8 will be evenly distributed to the various exhaust chambers or passages 6 so as to thoroughly heat the walls of each chamber and escape therefrom into the exhaust pipe 4 by way of the collar 3.

While I have shown and described the preferred embodiment of my invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the spirit and scope of my invention, as claimed.

Having thus described my invention, what I claim is:

1. An exhaust operated heater comprising an outer shell having one end opened to the atmosphere to permit air to enter the interior of the shell, a plurality of radially arranged compartments within the shell and supported in spaced relation thereto and each of said compartments being of substantially triangular shape in cross section and said compartments spaced from each other to permit air within the shell to circulate about each compartment, said compartments having their ends opened to permit the exhaust from an engine to pass therethrough, the inner edges of said compartments being circularly disposed to outline a central air passage having one end closed and its opposite end opened to receive a pipe for conveying the heated air to a desired point.

2. An exhaust operated heater comprising a plurality of relatively spaced and radially arranged compartments, each of substantially triangular shape in cross section and having the ends thereof fully open to permit exhaust to pass therethrough and heat the walls thereof, means connecting the compartments at the ends thereof to prevent exhaust from passing between the compartments, said compartments cooperating with each other in forming a plurality of radially arranged air passages, the inner edges of the compartments being circularly disposed to outline a central air passage having one end closed and its opposite end connected to an air conveying pipe, and communicative throughout its length with the inner end of the radially arranged air passages and a shell surrounding the compartments and having one end connected to said compartments to form a closure therefor and having its opposite end flared to catch air and direct the air into the radially arranged air passages for contact with the heated walls of said compartments.

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