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R. H. INMAN ET AL
EXHAUST PIPE ATTACHMENT

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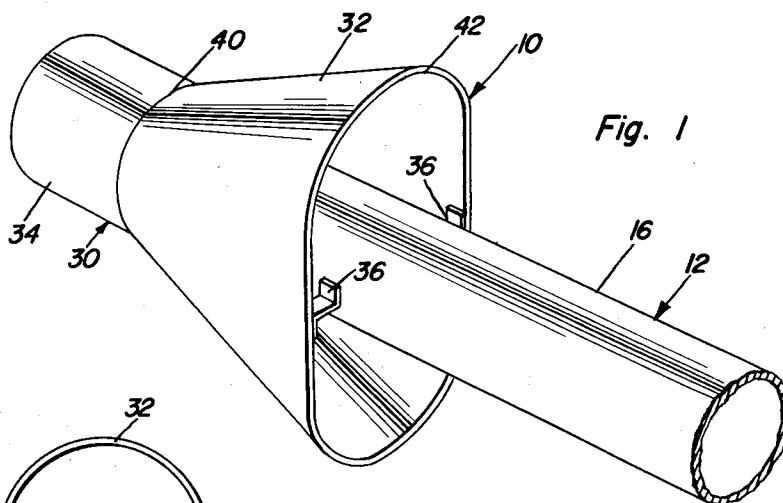


Fig. 1

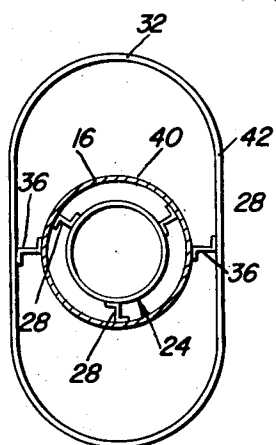


Fig. 3

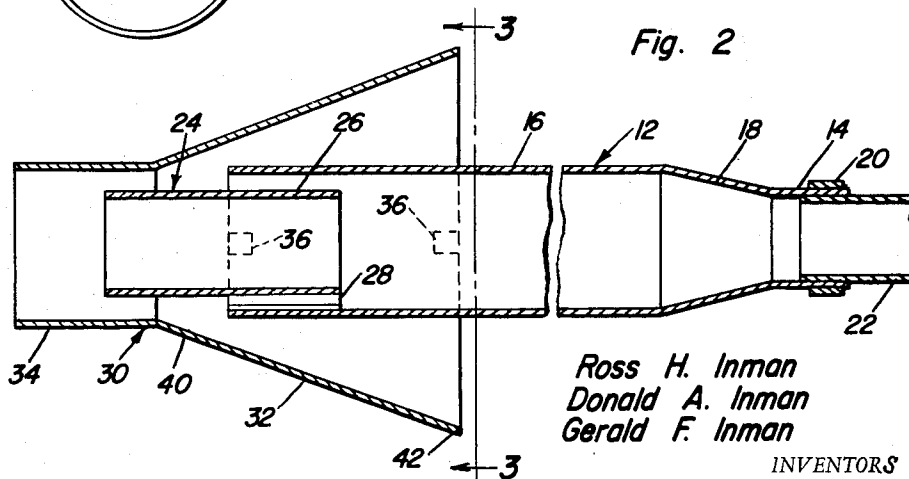


Fig. 2

Ross H. Inman
Donald A. Inman
Gerald F. Inman

INVENTORS

BY *Alvanice A. O'Brien*
and Harvey B. Jackson
Attorneys

1

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EXHAUST PIPE ATTACHMENT

Ross H. Inman, 315 3rd St. NW., Watertown, S. Dak.,
and Donald A. Inman and Gerald F. Inman, Clinton,
Minn.

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7 Claims. (Cl. 60—30)

This invention relates to a novel and useful exhaust pipe attachment and more specifically to an exhaust pipe attachment for creating a partial vacuum in the outlet end of a rearwardly projecting exhaust pipe.

The exhaust pipe attachment of the instant invention includes the provision of an elongated mounting pipe having one end which is adapted for snug telescopic engagement with the outlet end of an exhaust pipe. A dividing tube section of constant and smaller diameter than the rear end of the elongated mounting pipe is rigidly mounted with the forward end of the tube section loosely nested within the rear end of the elongated pipe and a ram funnel assembly including an outwardly flared front end portion is provided and disposed about the rear end of the elongated pipe section and the rear end of the tube section for defining first and second venturi areas about the tube section disposed rearwardly of the rear end of the elongated mounting pipe and immediately rearwardly of the rear end of the tube section respectively.

The main object of this invention is to provide an exhaust pipe attachment for creating a partial vacuum in the outlet end of a rearwardly projecting pipe in order that the internal combustion engine or the like to which the exhaust pipe is connected for discharging exhaust gases may operate more efficiently because of reduced back pressure of exhaust gases.

A further object of this invention, in accordance with the immediately preceding object, is to provide an exhaust pipe attachment which may be readily secured to existing exhaust pipes.

Still another object of this invention is to provide an exhaust pipe attachment which will create in the exhaust system established by the attachment and the exhaust pipe to which the attachment is secured to venturi for speeding up the discharge of exhaust gases as points spaced along the stream of the exhaust gases passing through the exhaust pipe and attachment.

A final object to be specifically enumerated herein is to provide an exhaust pipe attachment in accordance with the preceding objects which will conform to conventional forms of manufacture, be of simple construction and easy to install so as to provide a device that will be economically feasible, long lasting and relatively trouble free in installation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the exhaust pipe attachment of the instant invention;

FIGURE 2 is a longitudinal sectional view of the attachment shown with its forward end mounted on the rear end of an exhaust pipe; and

FIGURE 3 is a transverse sectional view taken substantially upon the plane indicated by the section line 3—3 of FIGURE 2.

Referring now more specifically to the drawings the exhaust pipe attachment of the instant invention is generally designated by the reference numeral 10. The exhaust pipe attachment 10 includes an elongated mounting pipe generally referred to by the reference numeral 12

2

and including a forward end portion 14 and a rear end portion 16. A truncated cone-shaped neck 18 is formed integrally with and joins the forward and rear end portions 14 and 16. As can best be seen from FIGURE 2 of the drawings, any suitable type of clamp assembly 20 may be utilized to secure the forward end portion to the rear end of an exhaust pipe 22 with the exhaust pipe 22 being telescoped within the rear end portion 14.

A dividing tube section generally referred to by the reference numeral 24 and of generally constant cross-sectional shape and area is provided and has its forward end 26 rigidly mounted in loosely nested relation within the rear end of the elongated mounting pipe 16 by means of a plurality of circumferentially spaced support brackets or mounts 28 disposed between the confronting surfaces of the rear end portion 16 of the elongated mounting pipe and the forward end of the tube section 24.

A ram funnel assembly generally referred to by the reference numeral 30 and including an outwardly flared forward end portion 32 and a generally constant diameter rear end portion 34 is provided and is mounted in loosely telescoped relation over the rear ends of the mounting pipe 16 and tube section 24 by means of V-shaped mounts 36. It will be noted that the minor portion 40 of the forward end portion 32 is positioned between the rearmost ends of the mounting pipe 16 and the tube section 24 and that the major portion 42 of the forward portion 32 is disposed a considerable distance forwardly of the rear end of the mounting pipe 16. In addition, it will be noted that the rear end of the rear end portion 34 is disposed rearwardly of the rear end of the dividing tube section 24.

From FIGURES 1 and 3 of the drawings it will be noted that the major portion 42 is generally oval in cross-section and that the minor portion 40 is substantially circular in cross-section. The outwardly flared front end portion 32 gradually and smoothly changes in cross-section rearwardly into the circular minor portion 40.

In operation, with the rear end of the exhaust pipe 22 moving to the right as viewed in FIGURE 2 of the drawings such as would be the case if the exhaust pipe 22 were mounted on a conventional type of motor vehicle having the exhaust pipe projecting rearwardly at its outlet end, the forward movement of the attachment 10 secured to the exhaust pipe 20 will cause large quantities of air to be scooped up by the ram funnel assembly 30 at its forward end. This ram air will be greatly accelerated between the rear end of the mounting pipe 16 and the confronting inner surfaces of the outwardly flared front end portion 32 and will thus create a partial vacuum in the area between the confronting surfaces of the mounting pipe 16 and the dividing tube section 26 and also in the area disposed about the dividing tube 26 immediately rearwardly of the rear end of the mounting pipe 16. Additionally, as the ram air and exhaust gas mixture passing between the confronting surfaces of the dividing tube section 24 and the rear end portion 34 move past the rear end of the dividing tube section 24, a reduced pressure zone directly to the rear and in axial alignment with the dividing tube section 24 will be formed. Accordingly, it will be seen that the dividing tube 24 divides the exhaust gases coming out of the mounting pipe 16 into an inner cylindrical column of exhaust gases and an outer annular cylinder of exhaust gases. The outer portion of the exhaust gases is first accelerated rearwardly in the area defined between the confronting surfaces of the dividing tube 26 and the front end portion 32 and thereafter the inner cylindrical column of exhaust gases being discharged from the interior of the dividing tube 24 is accelerated as the exhaust gases pass from the rear end of the dividing tube 24.

From FIGURE 2 of the drawings it may be seen that

3

the neck portion 18 also enables the exhaust gases being discharged from the exhaust pipe 22 to be expanded initially before passing through the rear portion of the attachment 10. Thus, it may be seen that the back pressure of the exhaust gases passing through the exhaust pipe attachment 10 will be greatly reduced upon rapid forward movement of the exhaust pipe attachment 10. In addition, as the exhaust gases are expanded they are appreciably reduced in pressure and speed. As the slower moving and low pressure gases are passed into the two venturi areas, they are acted upon by the reduced pressure in the venturi areas and are then drawn from the exhaust pipe.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. An exhaust pipe attachment for creating a partial vacuum in the outlet end of a rearwardly projecting exhaust pipe, said attachment comprising an elongated pipe having one end adapted for snug telescopic engagement with the outlet end of said exhaust pipe, a dividing tube section of constant and smaller diameter than the other end of said elongated pipe, means rigidly mounting the forward end of said tube section in loosely nested relation within said other end of said elongated pipe, a ram funnel assembly including an outwardly flared front end portion and a generally constant diameter rear end portion, means rigidly supporting said ram funnel assembly in a forwardly projecting position with the minor portion of said front end portion loosely disposed about the rear end portion of said tube section between the other end of said elongated pipe and the rear end of said tube section, the major portion of said front end portion disposed forwardly of and loosely about said other end of said elongated pipe and said constant diameter rear end portion extending rearwardly from a point between said other end of said elongated pipe and the rear end of said tube section to a point spaced rearwardly of the rear end of said tube section.

2. An exhaust pipe attachment for creating a partial vacuum in the outlet end of a rearwardly projecting exhaust pipe, said attachment comprising an elongated pipe having one end adapted for snug telescopic engagement with the outlet end of said exhaust pipe, a dividing tube section of constant and smaller diameter than the other end of said elongated pipe, means rigidly mounting the forward end of said tube section in loosely nested relation within said other end of said elongated pipe, and a forwardly opening ram air means disposed about said other end of said elongated pipe and the rear end of said tube section defining a first venturi in the area about said tube section disposed rearwardly of said other end of said elongated pipe and a second venturi immediately rearwardly of the rear end of said tube section.

4

3. The combination of claim 1 wherein said major portion of said front end portion is oval in cross-section and said front end portion slowly and smoothly changes in cross-section rearwardly into said minor portion which is substantially circular in cross-section.

4. The combination of claim 3 wherein said rear end portion is circular in cross-section.

5. The combination of claim 4 wherein the said one end of said elongated pipe is appreciably smaller in diameter than the other end portion thereof and is connected thereto by means of an integral rearwardly opening truncated cone-shaped neck portion.

6. An exhaust pipe attachment for creating a partial vacuum in the outlet end of a rearwardly projecting exhaust pipe, said attachment comprising an elongated pipe having one end adapted for snug telescopic engagement with the outlet end of said exhaust pipe, a dividing tube section of constant and smaller diameter than the other end of said elongated pipe, means rigidly mounting the forward end of said tube section in loosely nested relation within said other end of said elongated pipe, a ram funnel assembly including an outwardly flared front end portion and a generally constant diameter rear end portion, means rigidly supporting said ram funnel assembly in a forwardly projecting position with the minor portion of said front end portion loosely disposed about the rear end portion of said tube section between the other end of said elongated pipe and the rear end of said tube section, the major portion of said front end portion disposed forwardly of and loosely about said other end of said elongated pipe and said constant diameter rear end portion extending rearwardly from a point between said other end of said elongated pipe and the rear end of said tube section to a point spaced rearwardly of the rear end of said tube section, the said one end of said elongated pipe being appreciably smaller in diameter than the other end portion thereof and is connected thereto by means of an integral rearwardly opening truncated cone-shaped neck portion.

7. An exhaust pipe attachment for creating a partial vacuum in the outlet end of a rearwardly projecting exhaust pipe, said attachment comprising an elongated pipe having one end adapted for snug telescopic engagement with the outlet end of said exhaust pipe, a dividing tube section of constant and smaller diameter than the other end of said elongated pipe, means rigidly mounting the forward end of said tube section in loosely nested relation within said other end of said elongated pipe, and a forwardly opening ram air means disposed about said other end of said elongated pipe and the rear end of said tube section defining a first venturi in the area about said tube section disposed rearwardly of said other end of said elongated pipe and a second venturi immediately forwardly of the rear end of said tube section, the said one end of said elongated pipe being appreciably smaller in diameter than the other end portion thereof and is connected thereto by means of an integral rearwardly opening truncated cone-shaped neck portion.

No references cited.