

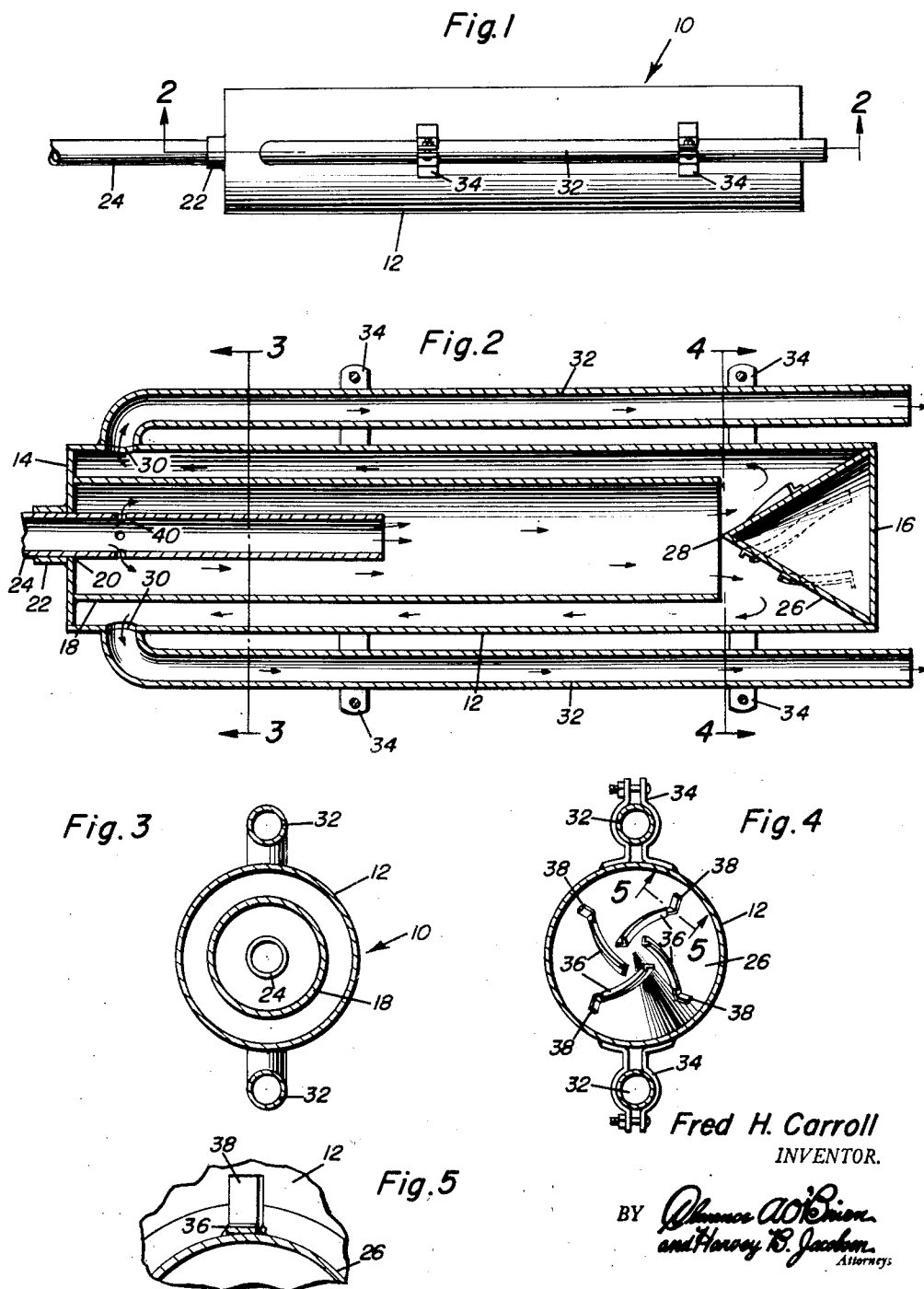
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EXHAUST MUFFLER

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EXHAUST MUFFLER

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1 Claim. (Cl. 181—53)

This invention relates in general to improvements in mufflers, and more specifically to an improved exhaust muffler for exhaust pipes of internal combustion engines.

The primary object of this invention is to provide an improved exhaust muffler which is efficient in the muffling of sound and at the same time offers a minimum of restriction to the flow of gases therethrough.

Another object of this invention is to provide an improved exhaust muffler for internal combustion engines, the exhaust muffler being in the form of a compact unit which causes the reversal of flow of exhaust gases with a minimum of resistance to the flow of gases whereby the muffler is effective and at the same time efficient.

A further object of this invention is to provide an improved exhaust muffler which results in the reversal of flow of exhaust gases, the exhaust muffler being provided with means for effecting a swirling motion of such gases whereby the reversal of direction may be obtained with the minimum of frictional losses.

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 drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the exhaust muffler which is the subject of this invention and shows the same attached to an exhaust pipe;

Figure 2 is an enlarged horizontal sectional view taken substantially along the plane indicated by section 2—2 of Figure 1 and shows the general construction of the muffler;

Figure 3 is a transverse sectional view taken substantially upon the plane indicated by the section line 3—3 of Figure 2 and shows the general construction of the forward portion of the exhaust muffler;

Figure 4 is a transverse vertical sectional view taken substantially upon the plane indicated by section line 4—4 of Figure 2 and shows the general construction of the rear end of the muffler; and,

Figure 5 is a fragmentary sectional view taken substantially upon the plane indicated by section line 5—5 of Figure 4 and shows the manner in which an end of one of the angular baffles is bent outwardly to cause a reversal of flow of gases engaging thereagainst.

Referring now to the drawings in detail, it will be seen that there is also the exhaust muffler which is the subject of this invention, the exhaust muffler being referred to generally by the reference numeral 10. The exhaust muffler 10 includes an elongated tubular housing 12 having its forward end closed by a forward end wall 14. The rear end of the tubular housing 12 is closed by a rear end wall 16.

Carried by the rear or inner surface of the forward end wall 14 and projecting rearwardly into the interior of the tubular housing 12 is a tubular member 18. It will

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be noted that the tubular member 18 does not extend the full length of the tubular housing 12 and that it is coaxial therewith. The forward end wall 14 is also provided with an inlet opening 20 which is in alignment with a fitting 22. The fitting 22 has connected therewith the rear end of an exhaust pipe 24, which extends rearwardly into the tubular member 18.

Carried by the rear end wall 16 is a forwardly projecting conical member 26. The conical member 26 has its apex 28 disposed along the center line of the tubular housing 12, the apex being disposed in the same plane as the rear end of the tubular member 18.

The tubular housing 12 has formed therein adjacent its forward end a pair of outlet openings 30. The outlet openings 30 have communicated therewith exhaust tubes 32. The exhaust tubes 32 extend rearwardly from the openings 30 and are disposed in spaced parallel relation with respect to the tubular housing 12. It will be seen that the exhaust tubes 32 are supported with respect to the tubular housing 12 by longitudinally spaced clamps 34. It will also be noted that the exhaust tubes 32 are disposed in diametrically opposite relation.

Gases entering the muffler 10 from the exhaust pipe 24 pass into the interior of the tubular baffle 18 and when they pass out of the rear end thereof impinge against the surface of the conical member 26. The impingement of the gases against the conical member 26 causes a reversal of flow of such gases with the result that they pass forwardly through the space between the tubular member 18 and the tubular housing 12 into the outlet openings 30.

In order to further facilitate the flow of gases, impinging against the surface of the conical member 26, the conical member 26 has secured to the surface thereof a plurality of longitudinally curved, angular members 36 whose relationship is best illustrated in Figure 4. The gases impinging against the angular members 36 have employed thereto a swirling motion so as to cause the reversal of flow of the same. It will also be noted that the rear ends of the angular members 36 are in the form of extensions of flanges of the angular members 36. The extensions are curved upwardly and are referred to by reference numeral 38. The extensions 38, being disposed at the extreme rear ends of the angular members 36, have the last of the gases impinging thereagainst, the extensions 38 causing a reversal of flow of such gases.

It will be seen that gases passing through the exhaust muffler 10 will pass therethrough with a minimum of resistance to flow. However, due to the reversal of flow of gases and arrangement of tubular chambers, the sound of an associated internal combustion engine will be greatly reduced through the passage of the exhaust gases through the muffler 10. The exhaust pipe 24 may be provided with suitable apertures 40 adjacent the forward end of the tubular baffle 18 if so desired to further reduce sound. The apertures 40 also create a suction to reduce back pressure.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, 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 shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claim.

What is claimed as new is as follows:

70 An exhaust muffler comprising an elongated tubular member having a forward end wall and a rear end wall closing opposite ends thereof, said forward end wall

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having secured thereto in centered relation an elongated tubular baffle extending into said tubular member and terminating adjacent to and spaced from said rear end wall, an exhaust inlet pipe carried by said forward end wall and projecting into said tubular baffle to a point adjacent the center of said tubular baffle, exhaust tubes 5 carried by said tubular member exterior thereof in spaced parallel relation to said tubular member, said exhaust tubes having forward ends thereof connected to said tubular member adjacent the forward end thereof, said 10 exhaust tubes having rear ends disposed rearwardly of said rear end of said tubular member, a conical gas deflector carried by said rear end wall, said conical gas deflector having an apex centered with said tubular baffle with said apex and said tubular baffle terminating in a 15 common plane, spiral gas flow control baffles carried by said conical member and cooperating therewith for re-

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versing the flow of gases from said tubular baffle into said tubular member and around said tubular baffle, and a plurality of auxiliary exhaust outlets in said exhaust inlet pipe adjacent said front end wall.

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