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TWO-PIECE MUFFLER COMPRISING EXTERNAL SHELL AND CONCENTRIC DEFORMED INNER TUBE

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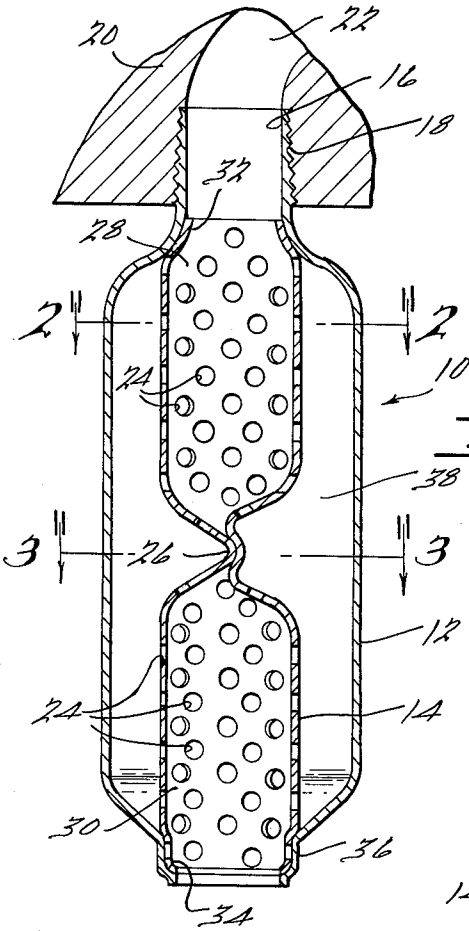


FIG. 1.

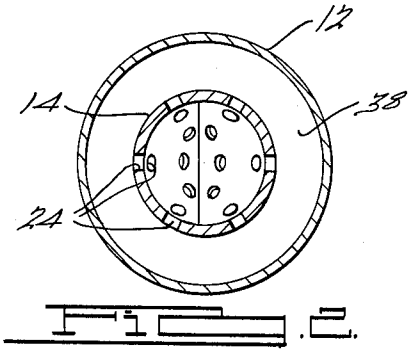


FIG. 2.

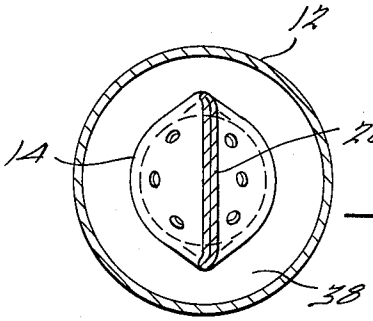


FIG. 3.

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TWO-PIECE MUFFLER COMPRISING EXTERNAL SHELL AND CONCENTRIC DEFORMED INNER TUBE

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Continuation of application Ser. No. 153,176, Nov. 17, 1961. This application June 16, 1964, Ser. No. 376,612

1 Claim. (Cl. 181—56)

This application is a continuation of the applicants' copending application, Serial No. 153,176, filed November 17, 1961, now abandoned.

This invention relates to mufflers and in particular to one of simplified construction for use with lawn mower engines and the like.

The muffler of the present invention is characterized by its simplicity of construction and ease of manufacturing which provides significant economic advantages to both the manufacturer and customer while affording an effective sound muffling device.

The main objects of the invention are to provide an effective sound muffling device with simplified construction allowing it to be inexpensively produced; to provide a muffler shell having an end portion with threads integrally formed thereon for securing the muffler to the engine; to provide a muffler perforated center tube which is pinched intermediate its ends to provide an outlet into an expansion chamber and an inlet into a constricted gas outlet; and to provide a two-piece muffler which is adapted for automatic machine formation and assembly.

Further objects, advantages and novel features of the invention will become apparent from the following description taken in conjunction with the drawings wherein:

FIGURE 1 is a longitudinal sectional view of the muffler;

FIGURE 2 is a cross-sectional view of the muffler taken along the line 2—2 of FIGURE 1; and

FIGURE 3 is a cross-sectional view of the muffler taken along the line 3—3 of FIGURE 1.

In the drawing, the muffler **10** comprises a shell **12** and a center tube **14**. The shell is reduced in diameter at its inlet end **16** and threads, preferably pipe threads, **18** are formed in the outer surface thereof for securing the muffler to an engine **20** to connect the inlet end of the muffler with the exhaust passage **22** of the engine. The center tube **14** is provided with perforations **24** and a pinched portion **26** which separates the tube into an inlet portion **28** and an outlet portion **30**. The inlet end **32** and the outlet end **34** of the tube are respectively tightly frictionally engaged by the inlet end **16** and the outlet end **36** of the shell to provide an expansion chamber **38** into which the discharge gas puffs from the engine **20** are disseminated by the perforations **24** in the inlet portion **28** of the tube, and from which the expanded gas then flows through the perforations **24** in the outlet end of the tube to be emitted from the muffler. This flow path results in a significant decrease in the energy of the exhaust gas puffs and a reduction of the noise caused thereby.

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In the manufacture of the muffler the inlet and outlet ends **16** of shell **12** are simultaneously swaged by reducing dies which causes the end **16** to become thickened so that the threads **18** may be conveniently rolled or otherwise formed therein. Simultaneously with this reduction of the ends of the shell, the ends of the center tube **14** will be engaged by the shell and also reduced in diameter as indicated in FIG. 1. The tube is provided with the pinched portion **26** prior to its insertion in the shell **12**. It is readily seen that the manufacture of this muffler can be made by completely automatic machinery provided with hopper feeds for the shell and inner tube **14**.

While it will be apparent that the embodiment of the invention herein disclosed is well calculated to fulfill the objects of the invention, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claim.

What is claimed is:

A two-piece gas muffler comprising a tubular external shell having a gas inlet at one end and a gas outlet at the other end, a perforate gas flow tube extending coaxially within said shell and extending between and connecting said inlet and outlet, the space between the outer periphery of said tube and the inner periphery of said shell forming a chamber communicating with the interior of said tube through the perforations in the wall thereof, said tube being formed with a first side portion intermediate the opposite ends thereof which projects radially inwardly to a position substantially intermediate the opposite sides of said tube and a second side portion axially aligned with said first portion and projecting radially inwardly to a position engaging the radially innermost section of said first side portion, whereby to provide a gas-tight partition between the opposite ends of said tube and to divide said tube into an inlet section and an outlet section, the perforations in said tube communicating said inlet and said outlet sections with said chamber, said chamber comprising an expansion chamber and a connecting path for gas to flow from the inlet section of said tube to said outlet section of said tube.

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LEO SMILOW, *Primary Examiner.*