Nov. 21, 1967 J. R. GILBERT 3,353,628

RETROVERTED FLOW MUFFLER WITH LONGITUDINAL PARTITIONS

Filed March 5, 1965

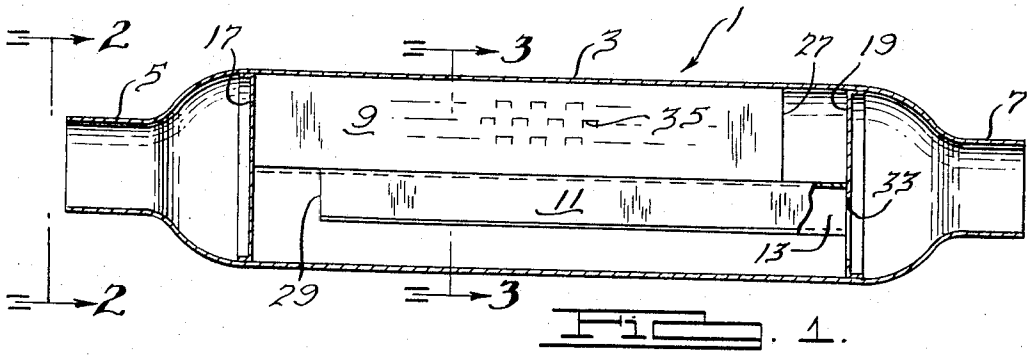


FIG. 1.

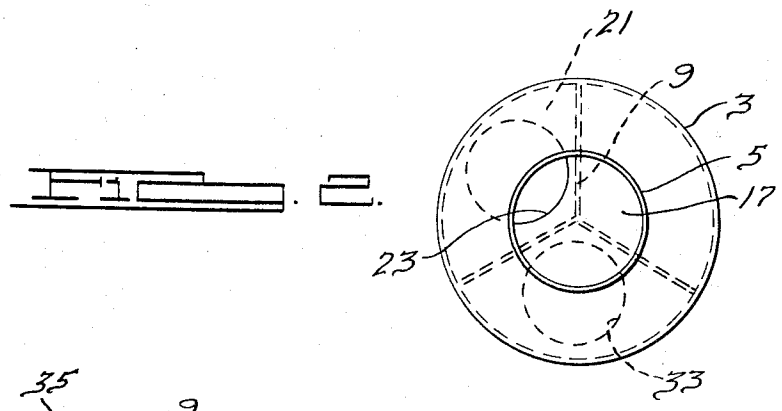


FIG. 2.

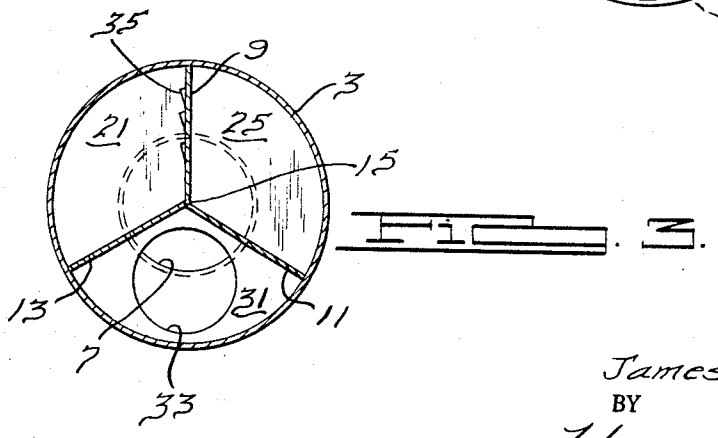


FIG. 3.

INVENTOR.
James R. Gilbert
BY
Cannes, Dickey & Pierce
ATTORNEYS.

United States Patent Office

3,353,628

Patented Nov. 21, 1967

3,353,628

RETROVERTED FLOW MUFFLER WITH LONGITUDINAL PARTITIONS

James R. Gilbert, Jackson, Mich., assignor to Walker Manufacturing Company, Racine, Wis., a corporation of Delaware

Filed Mar. 5, 1965, Ser. No. 437,427

2 Claims. (Cl. 181—53)

My invention relates to gas silencing mufflers, and in particular to mufflers of the type that are used to silence the exhaust of internal combustion engines such as are used in automobiles and trucks.

It is an object of my invention to provide a compact and inexpensive muffler construction which incorporates the triflow or retroverted gas passage principle.

The invention accomplishes the foregoing and other objects by means of a construction in which a tubular housing is subdivided internally into three longitudinal passages by means of radial partitions which emanate from the axis of the housing and extend to the walls thereof to divide the cross section of the housing into arcuate segments. One of these is used for inlet gas flow, another for return gas flow, and the third for outlet gas flow, all of which are parallel to the inlet gas flow. Gas is caused to turn around at the ends of the passages by means of diametral partitions which are secured in place in the housing.

The invention is illustrated in the accompanying drawings in which:

FIGURE 1 is a longitudinal section through a muffler embodying the invention;

FIG. 2 is an end elevation taken from the inlet end of the muffler along line 2—2; and

FIG. 3 is a cross section along line 3—3 of FIG. 1.

The muffler 1 has an outer tubular housing 3 which is preferably of cylindrical form. It is preferably made of a tube which is reduced in diameter at its ends to provide an inlet bushing 5 and an outlet bushing 7 whereby the muffler 1 may be connected in the exhaust line of an internal combustion engine.

The interior of the housing 3 is subdivided into three parallel but angularly displaced gas flow passages that run axially or longitudinally of the length of the housing. These passages are provided by means of the three partitions 9, 11, and 13. As seen in FIG. 3, these preferably originate at the axis 15 of the housing 3 and extend radially to the inner periphery and longitudinally as radial planes inside of the housing 3. Diametral partitions 17 and 19 are secured to the housing at each end of the longitudinal radial partitions 9, 11, and 13 and have a gas tight joint with the housing.

The partitions 9 and 13 define an inlet passage 21 which receives gas from the inlet bushing 5 through an opening 23 formed in the partition 17. The partitions 9 and 11

form a return flow passage 25 which receives gas from the inlet passage 21 by means of a cutout or reduced length section in the wall 9 which provides an opening 27 adjacent the partition 19 and connecting the passage 21 with the passage 25. Similarly, the wall 11 is foreshortened at its upstream end to provide an opening 29 so that gas in the return flow passage 25 can pass into the outlet passage 31 from which it flows through opening 33 in the partition 19 to th outlet bushing 7 to be discharged from the muffler.

If desired, various of the longitudinal walls or partitions 9, 11, and 13 can be provided with louvers or perforations 35 so as to permit cross-bleeding and some sound attenuation of the high frequency noises and roughness. If desired, the ends of the partitions 9 and 11 which are foreshortened to provide the openings 27 and 29 may be curled or rolled over in the direction of gas flow to provide some reduction in backpressure as the gas changes direction to flow from one passage to another.

Modifications may be made without departing from the spirit and scope of the invention.

I claim:

1. A triflow muffler comprising an elongated tubular housing having reduced ends forming inlet and outlet bushings, three longitudinal partitions inside said housing radiating from a common longitudinal axis extending lengthwise of the housing, said partitions defining an inlet passage, a return flow passage, and an outlet passage all extending lengthwise of the housing, partition means at each end of the longitudinal partitions extending transversely across the housing and closing the ends of the outlet and return flow passages at the inlet end of the muffler and the ends of the inlet and return flow passages at the outlet end of the muffler, and opening means adjacent the outlet end in the common partitions for the inlet and return flow passages and adjacent the inlet end in the common partition for the outlet and return flow passages to provide for cross over flow of gases from one passage to the next.

2. A muffler as defined in claim 1 wherein at least one of said longitudinal partitions is perforated to provide for cross bleeding of gas.

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RICHARD B. WILKINSON, *Primary Examiner.*

ROBERT WARD, *Assistant Examiner.*