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MUFFLER

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Fig. 1.

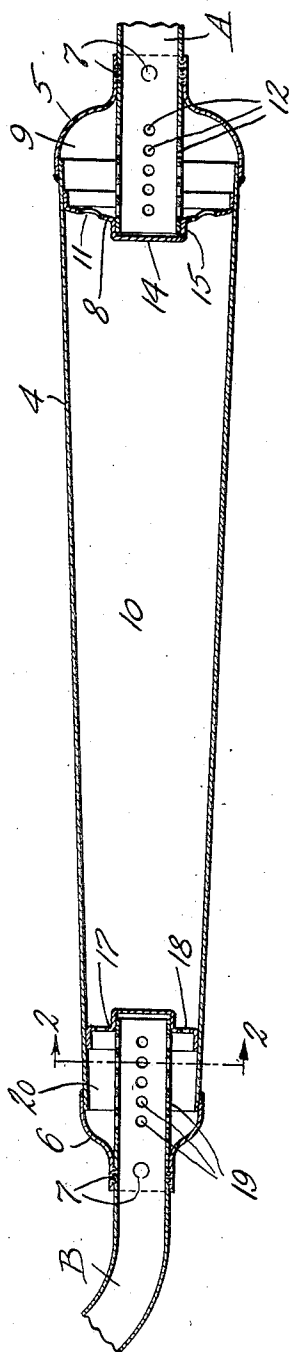
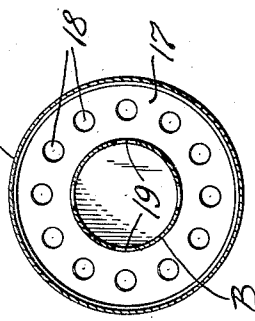


Fig. 2.



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MUFFLER

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2 Claims. (Cl. 181—57)

This invention relates to improvements in mufflers of the kind employed for silencing the exhaust gases discharged from internal combustion engines.

5 The objects of this invention are to provide a muffler of this kind with certain improvements whereby the end portion of an exhaust or tail pipe extending into the muffler may be supported in a novel manner for increasing the strength of the muffler and tail pipe assembly and for utilizing this construction for increasing the silencing effect of the muffler; also to provide a muffler of this kind in which a baffle is provided which supports the end of the pipe in fixed relation to the muffler and which is spaced at a distance from the adjacent end of the muffler for forming a structural support for the pipe and a chamber through which gases pass for silencing exhaust noises; also to improve the construction of mufflers of this kind in other respects hereinafter specified.

In the accompanying drawing:

Fig. 1 is a longitudinal central sectional view of a muffler embodying this invention.

15 Fig. 2 is a transverse sectional elevation thereof, on line 2—2, Fig. 1, and on an enlarged scale.

This invention is shown in the accompanying drawing as applied to a muffler of a well known type, but it will be understood that it is not intended to limit this invention to the particular type of muffler shown, since it will be obvious that the principles embodied in this invention may be applied to mufflers of different types and shapes.

35 A represents the exhaust pipe which leads from the exhaust manifold of an engine to the muffler and B represents the tail pipe through which gases are discharged from the muffler to the atmosphere. The muffler may have an outer housing of any desired shape or form and the exhaust and tail pipes communicate with the opposite ends of this housing. Preferably the housing comprises a shell 4 and heads 5 and 6 suitably secured to the shell, for example, by welding. 45 The heads are provided with openings with which the pipes connect. The improvements embodying this invention are, in the construction illustrated, provided at both ends of the muffler, but it will be understood that only one end of the muffler may, if desired, be provided with these improvements. Consequently, one or both of these pipes, both pipes in the particular construction shown, extend into the interior of the muffler, and these pipes may be welded or otherwise

suitably secured to the shell 4, as illustrated at 7.

In mufflers of the general type shown in the drawing, it is customary to secure and support the muffler on the ends of the pipes and support the pipes by brackets or otherwise from the chassis. In such cases, however, the ends of the pipes connect only with the headers, so that the connection is so abrupt or short that considerable strain is placed upon the connections between the muffler and the pipes with the result that the connections soon break from vibration. In accordance with my invention, I provide means within the muffler and spaced from the heads of the muffler and engaging the ends of the pipes, and these means together with the end portions of the pipes are also employed to increase the silencing effect of the muffler. In the particular construction shown, I support the end of the exhaust pipe A by means of a baffle 8 disposed within the muffler at a distance from the head 5 and extending from the end of the exhaust pipe to the housing or other fixed part of the muffler, for example, to the shell 4. This results in a supporting of the exhaust pipe at its end within the muffler as well as at the portion thereof welded or otherwise secured to the head 5. In order to utilize this reinforcing baffle to improve the silencing effect of the muffler, I provide means for causing the exhaust gases to flow from the exhaust pipe into an end chamber or space 9 arranged between the baffle 8 and the head 5, and then from this space into the main chamber 10 of the muffler. This may be effected in any suitable manner, for example, by providing the baffle 8 with apertures or openings 11. Any suitable means may be provided for passing gases from the exhaust pipe into the chamber 9, and in the construction illustrated for this purpose, I provide perforations 12 in the end portion of the exhaust pipe which is arranged within the muffler. In order to force the gases to pass through the perforations 11 and 12 and through the end chamber 9, means are, of course, provided for closing or partly closing the end of the exhaust pipe A. Any suitable means may be provided for this purpose, and preferably I construct the baffle 8 with a cap portion 14 formed thereon which fits over the end of the exhaust pipe A and closes the same. This cap portion 14 may be formed integral with shoulders 15 into which the end of the pipe fits for supporting the pipe on the baffle 8. As a result of this construction, the gases passing into the muffler through the exhaust pipe A pass out of the exhaust pipe through

the apertures 12 and expand in the chamber 9 and are then discharged through the apertures 11 and the baffle 8 into the main chamber 10 of the muffler.

5 A construction similar to that described in connection with the exhaust pipe may be provided at the discharge end of the muffler, in which case a baffle 17 is provided which connects with the end of the tail pipe B for spacing
10 the same in fixed relation to the shell 5 and simultaneously closing the end of the tail pipe. The baffle is provided with apertures 18 and the tail pipe is provided with apertures 19, so that gases pass from the main chamber 10 of the
15 muffler through the apertures 18 of the baffle and into the end chamber 20, from which they pass into the tail pipe through the perforations 19 thereof.

The construction described has the advantages
20 that when the end portion of a pipe is supported at two points, as shown, namely, by the baffle and the muffler head, a connection of much greater strength results than when a pipe is connected to the muffler head only. In accordance with this
25 invention, this structure is however further utilized, without adding to the cost thereof, to produce a material increase in the silencing effect, merely by providing the pipe and the baffle with perforations or other passages for gases. The
30 baffle thus not only forms a reinforcing or bracing member for the pipe, but also forms an additional silencing chamber in the muffler.

It will be understood that while the best muffling effects are obtained by applying this invention
35 to each end of the muffler, yet it will be obvious that even if it is applied to one end only of the muffler, the silencing effect of the muffler will be materially better than that produced with similar mufflers heretofore made.

I claim as my invention:

1. A muffler having a housing including a substantially frusto-conical shell, an inlet head closing the larger end of said shell and a discharge head closing the smaller end of said
5 shell, exhaust and tail pipes extending respectively through said inlet and discharge heads into the interior of said housing, transverse baffles arranged in said housing at distances from
10 said heads and forming in said housing chambers between said heads and said baffles and an intermediate chamber between said baffles, said baffles being secured at their peripheral portions to said shell and each engaging one of said pipes at a
15 distance from the adjacent baffle and having apertures through which the flow of gases from one chamber to another is restricted, the portions of said pipes between said heads and baffles being provided with apertures and the inner ends of
20 said pipes being closed.

2. A muffler including a housing having a shell, inlet and discharge heads closing respectively the
25 inlet and discharge ends of said shell, exhaust and tail pipes extending respectively through said inlet and discharge heads into the interior of said housing, transverse baffles arranged in
30 said housing at distances from said heads and forming in said housing chambers between said heads and said baffles and an intermediate chamber between said baffles, said baffles being secured at their peripheral portions to said shell and each
35 engaging one of said pipes at a distance from the adjacent baffle and having apertures for restricting the flow of gases from one chamber to another, each of said baffles also having a part which closes the inner end of the pipe which it engages, the portions of the pipes between said heads and baffles being provided with apertures.

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