July 3, 1962 R. REINERT 3,042,138

EXHAUST MUFFLER

Filed Feb. 7, 1961

Fig.1

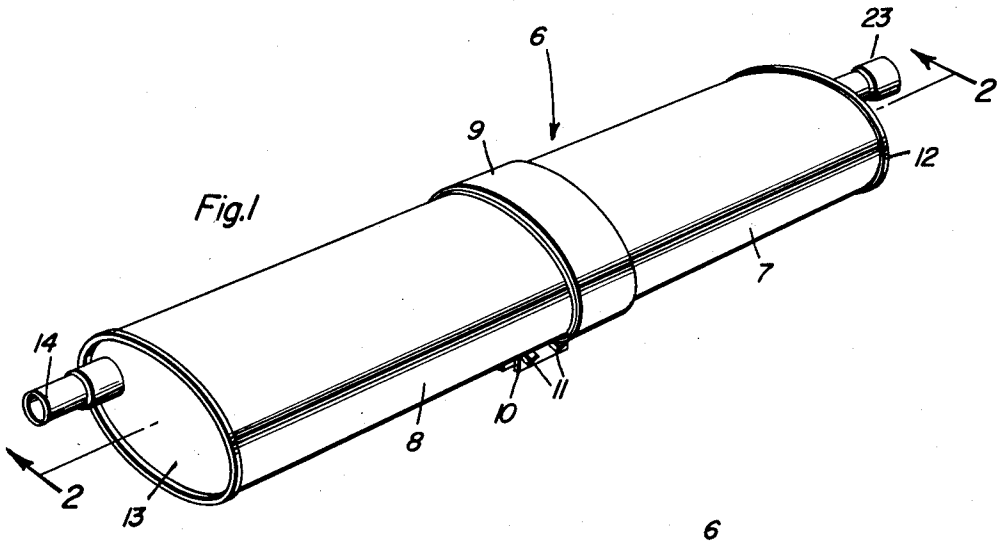


Fig.2

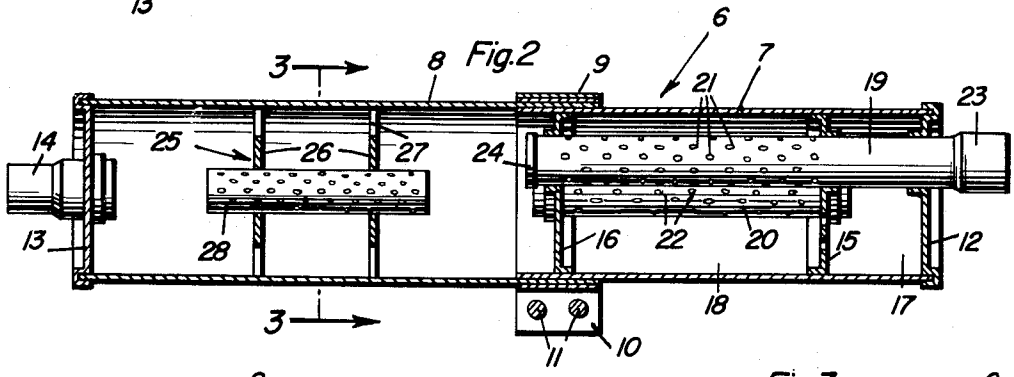


Fig.5

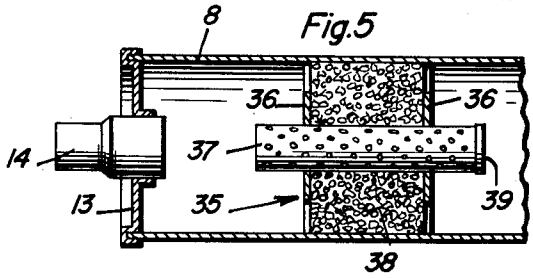


Fig.3

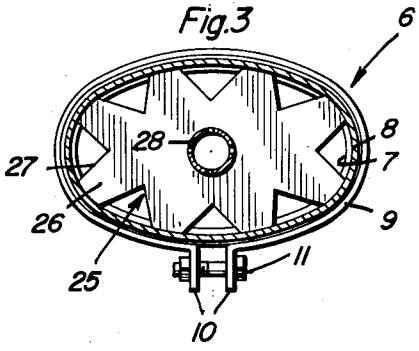
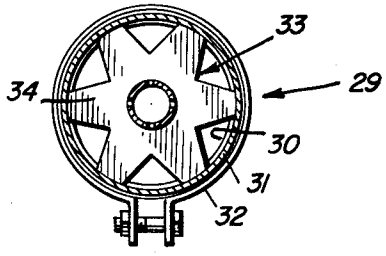


Fig.4



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EXHAUST MUFFLER

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This invention relates to new and useful improvements in engine mufflers particularly, although not necessarily, for motor vehicles and has for its primary object to provide, in a manner as hereinafter set forth, a device of this character which is telescopically adjustable to any desired length for use in different makes of vehicles and to meet various other conditions which may be encountered when installing, thus permitting a very low inventory or stock to be carried by parts dealers, replacement establishments and others.

Another very important object of the present invention is to provide an adjustable muffler of the aforementioned character comprising a novel construction and arrangement of baffles which are readily insertable and removable whereby the effectiveness of the device and consequently the sound of the engine exhaust gases may be varied to suit the individual.

Still another important object of the invention is to provide a longitudinally extensible and contractible muffler of the character set forth comprising novel smog eliminating or reducing means.

Other objects of the invention are to provide a telescopically adjustable engine muffler of the character described which will be comparatively simple in construction, strong, durable, compact, of light weight and which may be manufactured and installed at low cost without special tools or equipment and, further, without disturbing the exhaust and tailpipes.

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 perspective view of an adjustable muffler constructed in accordance with the present invention;

FIGURE 2 is a vertical longitudinal sectional view on an enlarged scale through the muffler, taken substantially on the line 2—2 of FIGURE 1;

FIGURE 3 is a view in transverse section, taken substantially on the line 3—3 of FIGURE 2;

FIGURE 4 is a view in transverse section through a cylindrical embodiment of the invention; and

FIGURE 5 is a view in longitudinal section through an embodiment of the muffler which includes smog preventing or reducing means.

Referring now to the drawing in detail, it will be seen that the embodiment of the invention which has been illustrated in FIGURES 1, 2 and 3 of said drawing comprises an elongated shell or casing of suitable metal which is designated generally by reference numeral **6**. The shell or casing **6**, which may also be of any desired dimensions, is oval in transverse section, as shown to advantage in FIGURE 3 of the drawing.

The casing **6** includes a pair of front and rear telescopically adjustable male and female sections **7** and **8**, respectively. A metallic clamping band **9** on the inner end portion of the female section **8** secures the sections **7** and **8** in telescopically adjusted position and seals the joint therebetween against leakage. The split metallic clamp or band **9** includes outturned end portions or ears **10** which are apertured to receive bolts **11** for contracting said clamp or band. The ends of the casing **6** are closed by end walls or heads **12** and **13** in the outer end portions

of the sections **7** and **8**, respectively. Mounted in the head **13** is an outlet fitting **14** which is telescopically engageable in a tailpipe for connecting same to the section **8**.

Mounted at longitudinally spaced points in the section **7** of the casing **6** is a pair of partitions **15** and **16** providing expansion chambers **17** and **18** in said section **7**. Mounted longitudinally in the partitions **15** and **16** is an inlet tube **19** and a plurality of gas passage tubes **20**. The tubes **19** and **20** are perforated, as indicated at **21** and **22**, respectively, for communication with the chamber **18**. The inlet tube **19** extends forwardly through the head **12** and terminates in an enlargement or bell **23** which telescopically receives therein the rear end portion of the exhaust pipe of the vehicle. The rear end of the tube **19** may be closed or restricted, as indicated at **24**.

Removably and slidably adjustably mounted in the section **8** of the casing **6** is a baffle unit **25**, any desired number of which may be provided. The baffle unit **25** includes a pair of partitions or plates **26** which are essentially oval to conform to the cross sectional shape of the section **8**. The peripheral or marginal portions of the plates **26** have formed therein notches or recesses **27** providing gas passages. Mounted in the plates **26** and extending therethrough is a centrally located, relatively small perforated tube **28**, also for the passage of exhaust gases.

It is thought that the operation of the muffler will be readily apparent from a consideration of the foregoing. Briefly, the casing **6** is installed as usual between the exhaust and the tailpipes of the motor vehicle, the fittings **23** and **14** telescopically engaging said pipes. By simply loosening the split clamp or band **9** the casing **6** may be readily lengthened or shortened as desired for installation on different vehicles and to meet various conditions. Of course, the exhaust gases enter the casing **6** through the inlet tube **19** and flow through the tubes **22** and the chambers **17** and **18** of the section **7** into the section **8** of said casing. The exhaust gases then flow through the baffle unit **25** and enter the tailpipe through the fitting **14**. As hereinbefore stated, any desired number of the units **25** may be used. The unit **25**, being removable and slidably adjustable in the casing **6**, may be positioned as desired to avoid interfering with the adjustment of the telescopic sections **7** and **8**.

In the embodiment of FIGURE 4 of the drawing, reference numeral **29** designates generally an elongated shell or casing of circular transverse section. The cylindrical casing **29** includes telescopic male and female sections **30** and **31**, respectively, which are secured in adjusted position through the medium of a split, circular clamp or band **32**. Removably and slidably adjustably mounted in the female section **31** of the casing **29** is one or more baffle units **33**. The baffle unit **33** is substantially similar to the unit **25** with the exception that the plates **34** thereof are essentially circular to conform to the cross sectional shape of the female section **31**.

In the embodiment of FIGURE 5 of the drawing, reference character **35** designates a removable and slidably adjustable baffle unit which is mounted in the female section **8** of the casing **6**. The unit **35** includes longitudinally spaced plates **36** which are substantially similar to the plates **26**. Mounted in the plates **36** is a longitudinal perforated gas tube **37**. In the embodiment shown, a smog preventing or reducing agent **38** of suitable material fills the chamber defined in the female section **8** of the casing **6** by the baffle plates **36**. The forward end of the tube **37** may be optionally closed or restricted, as indicated at **39**, for causing a substantial portion of the exhaust gases to pass through the agent **38**.

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 engine muffler comprising, in combination, an elongated shell including telescopically adjustable, separable sections, and a baffle unit slidably adjustably and removably mounted in the shell, said baffle unit including a pair of spaced plates mounted transversely in the shell and having exhaust gas passages therein, and a perforated, longitudinal tube mounted in said plates in spaced relation to the shell, said tube including perforated end portions projecting a substantial distance beyond the plates.

2. An engine muffler comprising, in combination, an elongated shell having an inlet in one end and an outlet in its other end, said shell including a pair of telescopically adjustable, separable male and female sections, a metallic clamping band encircling the shell for frictionally securing the sections in adjusted position and for sealing the joint therebetween, and a baffle unit slidably adjustably and removably mounted in at least one of the sections, said baffle unit including a longitudinally extending tube perforated from end to end and a pair of plates fixed on said tube at spaced points and engageable with the shell for supporting and centering the tube therein, said plates having notches in the marginal portions thereof defining passages for exhaust gases, said plates being spaced a material distance from the ends of the tube.

3. An engine muffler comprising, in combination an elongated shell closed at its ends and including telescopically adjustable male and female sections, means on one of the sections for securing said sections in adjusted position, spaced partitions in one of the sections defining expansion chambers, a perforated inlet tube in said one section communicating with the chambers, perforated tubes in the partitions communicating with the chambers and with the other section, and a baffle unit removably and slidably adjustably mounted in said other section, said other section including an outlet fitting for connecting a tailpipe thereto.

4. An engine muffler comprising, in combination, an elongated shell closed at its ends and including telescopically adjustable male and female sections, means on one of the sections for securing said sections in adjusted position, spaced partitions in one of the sections defining expansion chambers, a perforated inlet tube in said one section communicating with the chambers, perforated tubes in the partitions communicating with the chambers and with the other section, and a baffle unit removably and slidably adjustably mounted in said other section, said other section including an outlet fitting for connecting a tailpipe thereto, said baffle unit comprising a pair of plates mounted transversely in said other section at longitudinally spaced points, and a perforated, longitudinal tube mounted in the plates and comprising perforated end portions projecting beyond said plates.

5. An engine muffler comprising, in combination, an elongated shell closed at its ends and including telescopically adjustable male and female sections, means on one of the sections for securing said sections in adjusted position, spaced partitions in one of the sections defining expansion chambers, a perforated inlet tube in said one section communicating with the chambers, perforated tubes in the partitions communicating with the chambers and

with the other section, and a baffle unit removably and slidably adjustably mounted in said other section, said other section including an outlet fitting for connecting a tailpipe thereto, said baffle unit comprising a pair of plates mounted transversely in said other section at longitudinally spaced points, and a perforated, longitudinal tube mounted in the plates, said tube including perforated end portions projecting well beyond the plates, said plates having peripheral notches therein defining passages for exhaust gases.

6. An engine muffler comprising, in combination, an elongated shell closed at its ends and including telescopically adjustable male and female sections, means on one of the sections for securing said sections in adjusted position, spaced partitions in one of the sections defining expansion chambers, a perforated inlet tube in said one section communicating with the chambers, perforated tubes in the partitions communicating with the chambers and with the other section, and a baffle unit removably and slidably adjustably mounted in said other section, said other section including an outlet fitting for connecting a tailpipe thereto, said baffle unit comprising a pair of peripherally notched plates mounted transversely in said other section at longitudinally spaced points, a perforated, longitudinal tube mounted in the plates and including perforated end portions projecting well beyond said plates, said baffle unit further comprising a gas filtering medium between the plates and encircling the last named tube, and means restricting the intake end of the tube for diverting a substantial portion of the exhaust gases through the notched plates and the filter media.

7. An engine muffler comprising, in combination, an elongated shell including telescopically adjustable, separable sections, means on one of the sections for detachably securing said sections in adjusted position, and at least one baffle unit slidably adjustably and removably mounted in at least one of said sections, said baffle unit including a pair of spaced, opposed transverse plates having peripheral notches therein, and a perforated, longitudinal tube mounted centrally in said plates.

8. An engine muffler comprising, in combination, an elongated shell including telescopically adjustable, separable sections, means on one of the sections for detachably securing said sections in adjusted position, and at least one baffle unit slidably adjustably and removably mounted in at least one of said sections, said baffle unit including a pair of spaced, opposed transverse plates having peripheral notches therein, and a perforated, longitudinal tube mounted centrally in said plates, said baffle unit further including a gas filtering medium between the plates and encircling the tube, said tube comprising a closed forward end.

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