S. A. COCHELL.

MUFFLER.

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1,131,825.

Patented Mar. 16, 1915.

Fig. 4.

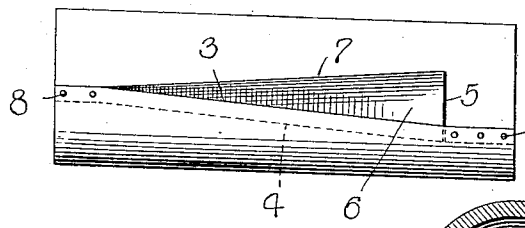


Fig. 1.

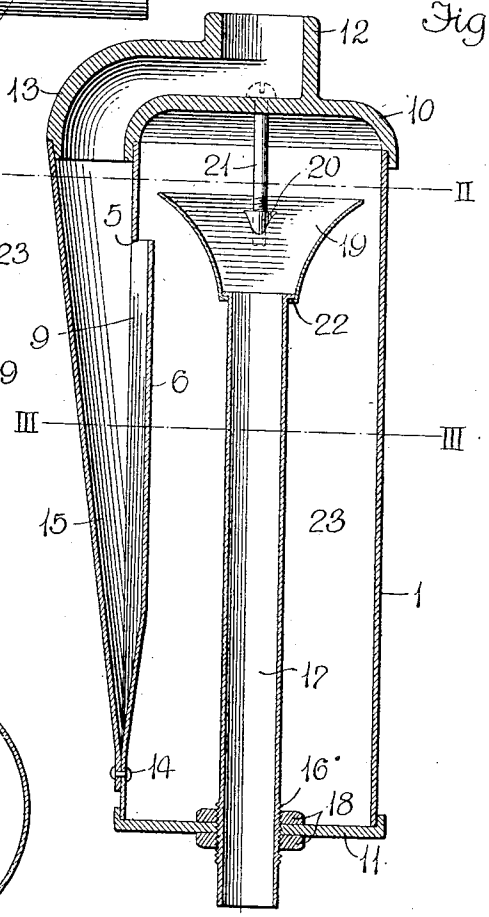


Fig. 2.

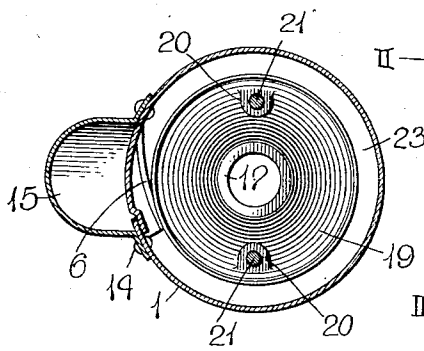


Fig. 3.

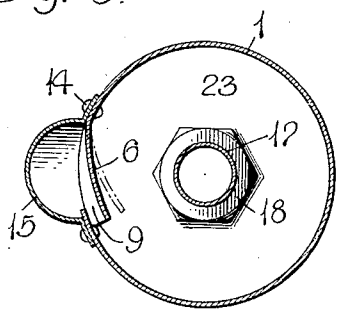
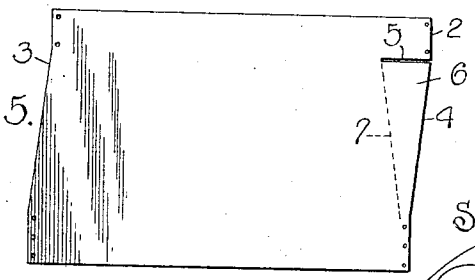


Fig. 5.



Witnesses

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MUFFLER.

1,131,825. Specification of Letters Patent. Patented Mar. 16, 1915.

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To all whom it may concern:

Be it known that I, STEPHEN A. COCHELL, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Mufflers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to mufflers, and the primary object of my invention is to provide a novel device for deadening the noise or sound of the exhaust of an internal combustion engine, without causing any back pressure that would tend to decrease the efficiency of the engine.

Another object of this invention is to provide a muffler for internal combustion engines that receives the exhaust of the engine and conveys the exhaust in a circuitous or sinuous path before encountering the atmosphere, the muffler having provision whereby the area of a passage thereof is increased and decreased according to the volume of the exhaust, thereby insuring a reduction in the noise or sound incident to exhaust without a retardation or back pressure that would impair the efficiency of an engine.

A further object of this invention is to provide a muffler consisting of comparatively few parts that are durable, inexpensive to manufacture, easy to assemble and highly efficient for the purpose for which they are intended.

With the above and other objects in view the invention resides in the novel construction, combination and arrangement of parts to be hereinafter specifically described and then claimed.

Reference will now be had to the drawing, wherein—

Figure 1 is a longitudinal, sectional view of the muffler; Fig. 2 is a cross sectional view taken on the line II—II of Fig. 1; Fig. 3 is a similar view taken on the line III—III of Fig. 1; Fig. 4 is a plan, on a reduced scale of a detached casing or cylinder; and Fig. 5 is a plan or developed view of a blank from which the muffler casing or cylinder is formed.

A muffler in accordance with this invention comprises a cylindrical casing or cylinder 1 made of a single piece of material, as from the blank shown in Fig. 5, bent and rolled to cylindrical form. The blank has the longitudinal edges thereof cut to provide straight edges 2 and angle edges 3 and 4, the angle edges 3 and 4 being intermediate the straight edges 2 and of greater length. The blank, at an end of the angle edge 4, is provided with a transverse slit 5 forming a tongue or deflector 6 that is bent upon a dash line 7 extending from the inner end of the slit 5 to the opposite end of the angle edge 4, thus providing a tongue or deflector that is triangular in plan, the purpose of which will presently appear. The straight edges 2 of the blank are adapted for overlapped registration and are connected by rivets 8 or other fastening means. When the casing or cylinder is so formed, the tongue 6 presents a tapering deflector within the periphery of the casing or cylinder and coöperates with the angle edge 3 in forming a triangular shaped or tapering opening 9, the area of which gradually diminishes toward the outer end of the casing or cylinder.

Closing the ends of the casing or cylinder 1 are heads 10 and 11, the former having a concentric nipple 12 adapted to be screwed or otherwise mounted upon the end of an exhaust pipe. The nipple 12 is in communication with a radially disposed connection 13 that terminates at the periphery of the head 10 and mounted upon said connection and secured to the outer end of the casing or cylinder 1 by rivets 14 or other fastening means is a tapering conduit 15. This conduit is riveted or otherwise secured along the marginal edges of the opening 9 and establishes communication between the connection 12 and the interior of the casing or cylinder 1.

The head 11 is screwed upon a threaded portion 16 of an outlet pipe 17, and said head is held in adjusted position by a jam nut 18. The inner end of the outlet pipe 17 terminates in a funnel or funnel shaped mouth piece 19 in proximity to the head 10 and the inner walls of the funnel 19 are provided with diametrically opposed bosses 20 in which are screwed bolts or tie rods 21 connecting the funnel 19 to the head 10. As a matter of good construction, the funnel 19 is made of a separate piece from the outlet pipe 17 and connected by flanges 22. With the outlet pipe 17 and the funnel 19 connected to the head 10 by the bolts 21, it is an

extremely easy matter to place the casing or cylinder 1 in position and firmly hold the same relative to the head 10.

With the casing or cylinder 1 surrounding the outlet pipe 17, there is an annular passage 23 around the outlet pipe, and it is into this passage exhaust gases are discharged by the conduit 15. As the exhaust gases impinge the deflector 6, the gases are directed against the inner wall of the casing or cylinder 1 and caused to travel in a circuitous manner. As the conduit 15 tapers the greater volume of exhaust gases will be directed toward the head 11, impinging the head with such momentum that the gases rebound and at the same time travel in a sinuous or circuitous path to the funnel 19. The outer walls of the funnel 19 deflect gases toward the walls of the casing or cylinder 1 as the gases enter the head 10 and are directed into the funnel to exhaust to the atmosphere through the pipe 17.

With the casing or cylinder 1 made of sheet metal the deflector or tongue 6 possesses a degree of resiliency that permits of the area of the opening 9 being increased or decreased, according to the volume or velocity of the exhaust gases, consequently an excessive exhaust is not retarded to that degree as to cause a back pressure in the exhaust pipe of an internal combustion engine. The tapering conduit 15 constitutes the first retardation of exhaust gases and the deflector 6 restricts the opening or passage 9 to that extent as to constitute a further retardation. The volume of gases in the casing or cylinder 1 together with the third retardation effected by the funnel 19, is sufficient to practically deaden the noise or sound incident to exhausting gases, and this is accomplished without extreme overheating of parts or impairing the efficiency of an internal combustion engine.

The shape, appearance and compact structure of the muffler permits of it being advantageously used in connection with the internal combustion of an automobile, and while in the drawing there is illustrated a preferred embodiment of my invention, it is to be understood that the structural elements are susceptible to such variations and modifications as fall within the scope of the appended claims.

What I claim is:—

1. A muffler comprising a casing having a passage at the periphery thereof adapted to admit exhaust gases to said casing, and a resilient deflector in said casing at an edge of the passage thereof adapted to increase and decrease the area of said passage according to the volume of exhaust gases.

2. A muffler comprising a casing having a passage in the periphery thereof adapted to admit exhaust gases to said casing, a resilient deflector in said casing at an edge of the passage thereof adapted to increase and decrease the area of said passage according to the volume of exhaust gases, and means in said casing adapted to retard gases passing therethrough.

3. A muffler comprising a casing having a longitudinally disposed tapering opening therein, means carried by the inner end of said casing for conducting exhaust gases to the opening of said casing, means at the opening of said casing for deflecting exhaust gases against the inner wall of said casing whereby said gases are caused to travel in a circuitous path, and means concentric of said casing in communication with the inner end thereof and adapted to exhaust gases at the outer end of said casing.

4. A muffler comprising a casing having a longitudinally disposed tapering opening therein, means on the periphery of said casing for conducting exhaust gases from the inner end of said casing to the outer end thereof, a deflector in said casing, and means within said casing adapted to convey exhaust gases from the inner end thereof to the outer end of the casing.

5. A muffler comprising a casing having a longitudinal opening in a wall thereof, a head at the inner end of said casing provided with a connection, a tapering conduit establishing communication between the connection of said head and the opening of said casing, a head at the outer end of said casing, and an outlet pipe supported by said head and adapted to conduct exhaust gases from the first mentioned head through the last mentioned head.

6. A muffler comprising a casing having a wall thereof provided with a longitudinal opening, a head at the inner end of said casing provided with a connection, a tapering conduit on said casing establishing communication between the connection of said head and the opening of said casing, a deflector at the opening of said casing adapted to deflect exhaust gases against the inner wall of said casing, a head at the outer end of said casing, and means supported by said head and adapted to convey exhaust gases from the inner end of said casing to the atmosphere.

7. A muffler comprising a casing having the wall thereof provided with a longitudinal opening, means at the inner end of said casing adapted to convey exhaust gases to the opening thereof, means at the opening of said casing adapted to increase and decrease the area of said opening according to the volume and velocity of exhaust gases passing therethrough, and means within said casing adapted to convey gases from the inner end thereof to exhaust at the outer end of said casing.

8. A muffler comprising a casing having

an opening therein, a tapering conduit adapted to convey exhaust gases through the opening of said casing, a resilient deflector at the opening of said casing providing a retardation for exhaust gases entering said casing, and means within said casing adapted to retard gases passing therethrough.

9. A muffler comprising a casing having a wall thereof provided with a tapering opening, a resilient deflector carried by said casing at the opening thereof, a head at the inner end of said casing provided with a connection adapted to receive exhaust gases, a tapering conduit on said casing for conveying exhaust gases from the connection of said head to the opening of said casing, a head at the outer end of said casing, an outlet pipe extending through said head and adjustably connected thereto, a funnel at the inner end of said outlet pipe in proximity to the head at the inner end of said casing, and means connecting said funnel and the head at the inner end of said casing and coöperating with the head at the outer end of said casing in maintaining said outlet pipe concentric of said casing.

In testimony whereof I affix my signature in presence of two witnesses.

STEPHEN A. COCHELL.

Witnesses:
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."