

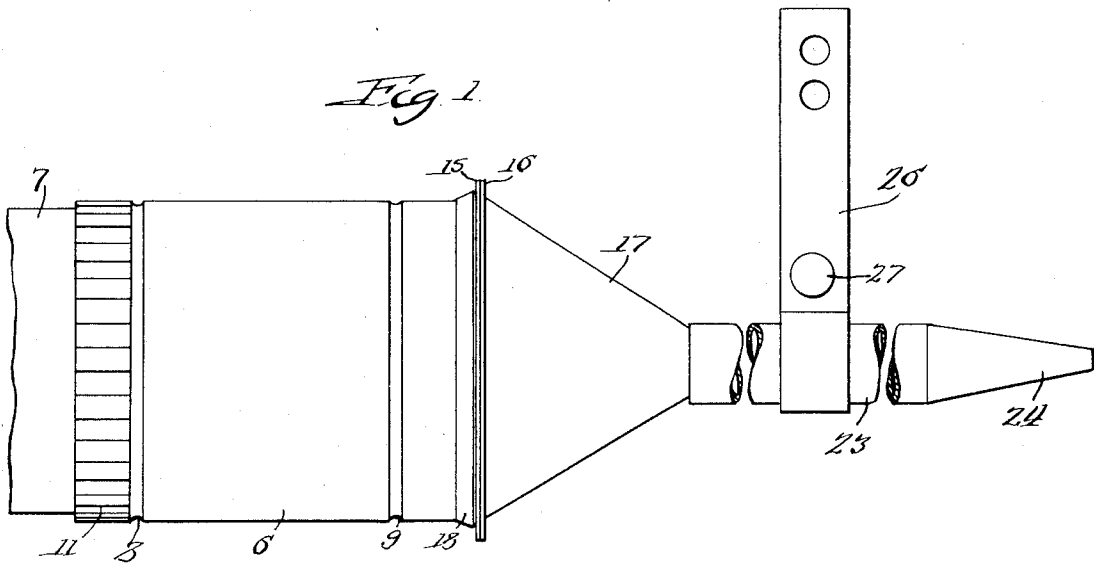
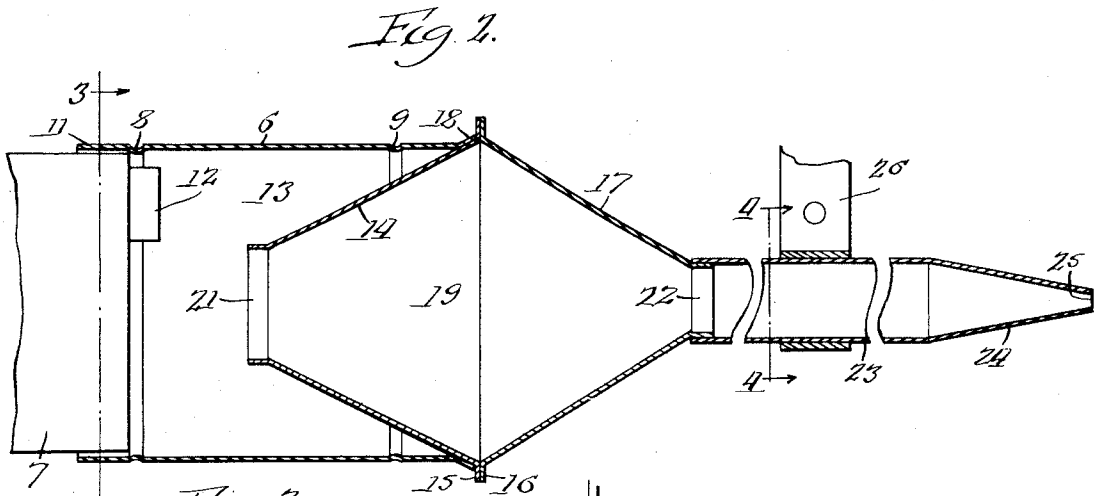
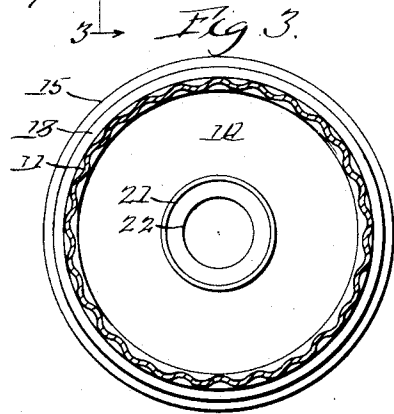
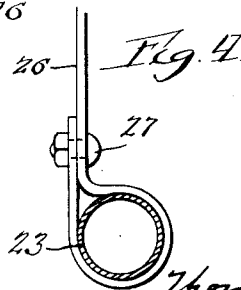
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T. J. SIMONS ET AL

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EXHAUST SILENCER

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Inventors:
Thomas J. Simons
Thomas A. Simons

By Wilson & McCanna
Attys.

UNITED STATES PATENT OFFICE.

THOMAS J. SIMONS AND THOMAS A. SIMONS, OF ROCKFORD, ILLINOIS.

EXHAUST SILENCER.

Application filed September 7, 1923. Serial No. 661,358.

This invention pertains in general to internal combustion engines, and has more particular reference to an attachment adapted to be applied to the muffler of such engines for silencing the exhaust.

The primary object of our invention is to provide an improved attachment of this kind, which may be quickly and easily installed and constructed in such simple and novel manner that it may be produced and sold at a comparatively low cost and will serve to effectually silence the exhaust.

Other objects and attendant advantages will be appreciated as the invention becomes better understood by reference to the following description when considered in connection with the accompanying drawing, in which—

Figure 1 is a side elevation of an exhaust silencer embodying our invention;

Fig. 2 is a longitudinal vertical sectional view through the exhaust silencer; and

Figs. 3 and 4 are cross-sectional views taken on the lines 3—3 and 4—4, respectively, of Fig. 2.

Referring more particularly to the drawing, it will be observed that our improved exhaust silencer includes an outer tubular casing, designated generally by 6, which is adapted to be telescoped over the discharge end of a muffler 7. We prefer to provide a number of annular beads 8 and 9 in the outer casing as a reinforcement, the bead 8 serving in addition as a stop against which the end of the muffler 7 abuts, thereby limiting the position of the outer casing of the muffler. The end portion 11 of the outer casing telescoping over the muffler is crimped so as to be yieldable and expansible for accommodating minor variations in shapes and dimensions of the mufflers. In this regard, it will be understood, however, that the outer casing is made in sizes adapted for fitting standard mufflers; but it will be manifest that our improved exhaust silencer may be made in any size for attachment to any muffler.

In the example shown, the muffler has a discharge pipe 12 located off center, although a concentric pipe might be provided in other mufflers with no great change in operation and the exhaust from this discharge pipe is delivered into a silencing compartment 13, formed by the outer casing 6, and an inner casing member 14 which will now be described.

This inner casing member 14 of sheet metal, frusto-conical in shape, has a marginal flange 15 at its base end seated against a marginal flange 16 of a similar frusto-conical casing member 17, said flanges being suitably united as by welding. The casing member 14 extends within and seats upon an out-turned annular flange 18 on the outer casing 6 and is permanently secured to such flange as by welding or any equivalent means. It will be observed that the casing members 14 and 17 provide a silencing compartment 19 having an inlet opening 21 and an outlet opening 22, the inlet opening being of a greater diameter than the outlet opening.

To the outlet end of the casing member 17 is attached a discharge tube 23 having a constricted end portion 24 terminating in a discharge opening 25. The tube 23 is preferably of substantial length so as to provide a final silencing compartment. In practice, the discharge tube 23 is preferably over two feet in length.

Our improved attachment, supported at one end on the muffler, will be supported at its opposite end by a suitable bracket 26, preferably in the form of a strap iron turned about the discharge pipe 23 and secured thereto by means of a bolt 27. This bracket may be attached at its upper end to the frame of a motor vehicle, or to any suitable supporting part, and by adjusting the bracket 26 lengthwise on the discharge pipe the bracket may be so located as to be capable of attachment to any vehicle.

From the foregoing, it will be observed that our improved exhaust silencer is formed of only four principal parts, namely, the outer casing 6, frusto-conical casing members 14 and 17, and the discharge pipe 23, these parts forming three compartments or chambers in which the exhaust gases may expand, and thereby be silenced. The compartment 13 into which the exhaust from the muffler first enters, has a constricted outlet 21 into the compartment 19. The exhaust gases entering the compartment 13 will, therefore, be retarded therein, by reason of the constricted outlet opening and will be caused to expand, thereby partially reducing their pressure and the consequent noise. Exhaust gases entering the compartment 19 will obviously expand by reason of the diverging walls of the casing member 14, and escape from this compartment is limited

by the constricted opening 22, which is smaller in diameter than the inlet opening 21. In this compartment, therefore, the exhaust gases expand sufficiently to practically eliminate the sharp intermittent putt-putt noise of the exhaust gases. The discharge tube 23 by reason of its length and constricted outlet serves as an additional factor in reducing the pressure so that the final discharge is substantially uniform and accompanied practically with no noise. Thus by means of the compartments 13, 19 and that formed by the discharge tube and of the shape of these compartments and their constricted outlet openings, the exhaust gases delivered into the first compartment intermittently with such pressure as to produce reports, will be repeatedly baffled and expanded, so that when it finally discharges, its pressure will be so uniform and continuous as to cause but little noise.

The construction of our improved exhaust silencer whereby the foregoing result is obtained, is, it will be noted, exceptionally simple and includes such few parts as to enable production and assembly thereof at a comparatively low cost. This is especially so in regard to the shape and assembling of the frusto-conical parts 14 and 17, which it will be noted are adapted to be attached to the outer casing 6 and to the discharge pipe 23 in a simple and effective manner.

It is believed that the foregoing conveys a clear understanding of our invention, and it should be understood that while we have illustrated but a single working embodiment, changes might be made in details of construction without departing from the spirit and scope of the invention as expressed in the appended claims:

We claim:

1. A silencing attachment for exhaust

mufflers comprising a pair of hollow sheet metal cone members having their apex ends open and facing in opposite directions and arranged with their other ends together, a sheet metal, cylindrical tubular member having one end fitting over one cone member at the junction of said cone members, said three members being joined together at the junction, the other end of said tubular member being arranged to have telescoping connection with the casing of an exhaust muffler, and an elongated discharge tube connected with and extending from the apex end of the other cone member.

2. A silencing attachment for exhaust mufflers, comprising a pair of hollow, sheet metal cone members having their apex ends open and arranged in opposed relation with their base ends together to provide a silencing compartment therebetween, the opening in the apex of one cone member being larger than that in the other cone member, a hollow sheet metal cylindrical tubular member having one end fitting over the first mentioned cone member at the junction of said cone members, said three members being joined together at the junction, the other end of said tubular member being arranged to have telescoping connection with a rearward portion of an exhaust muffler, and an elongated discharge tube connected with and extending rearwardly from the open apex end of the second mentioned cone member, the open end of said tubular member being larger than the opening in said first mentioned cone member and the opening in said second mentioned cone member being larger than the opening in the outer end of said discharge tube.

THOMAS J. SIMONS.
THOMAS A. SIMONS.