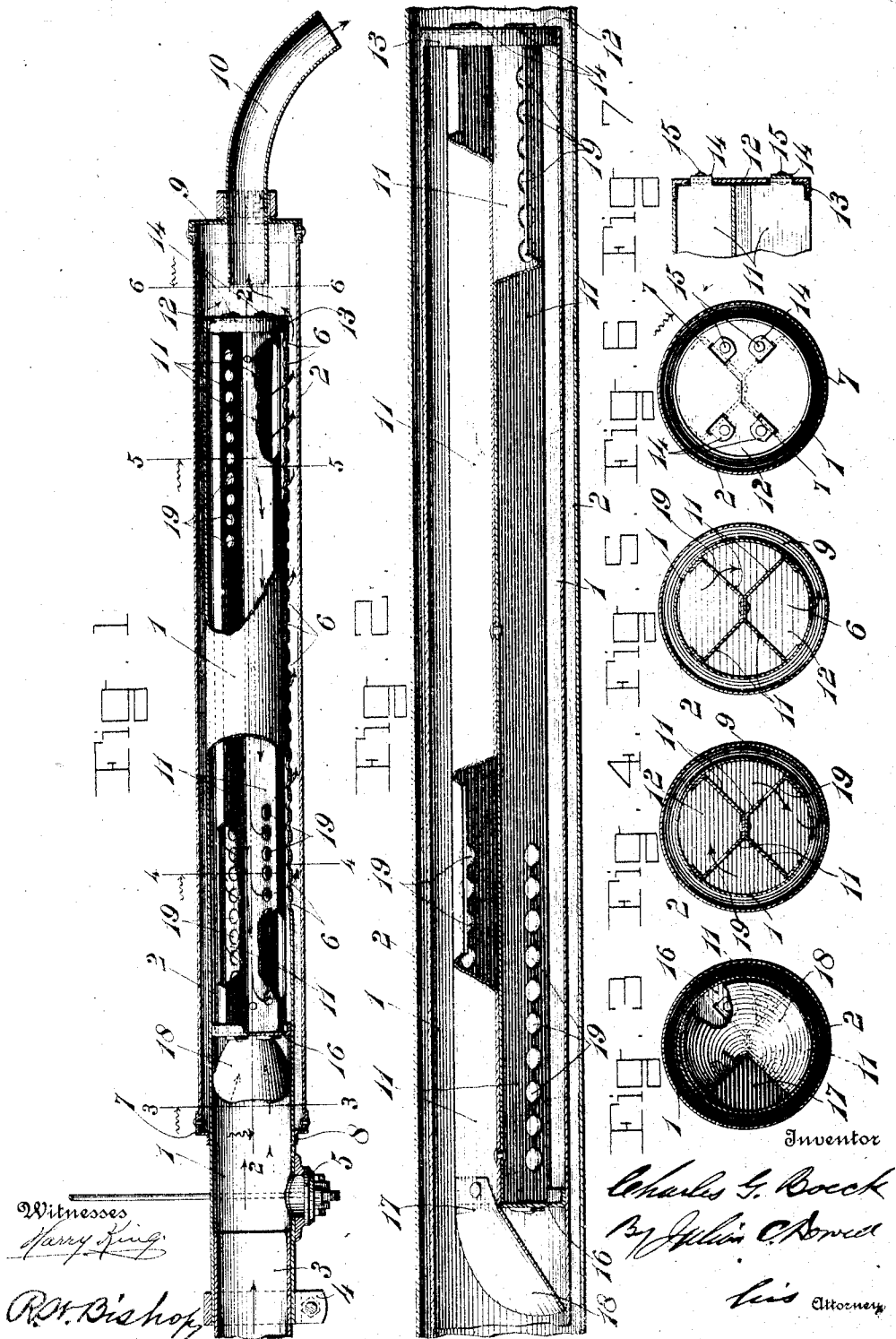


C. G. BOECK.
 AUTOMOBILE MUFFLER.

APPLICATION FILED JULY 1, 1911. RENEWED APR. 6, 1912.

1,044,007.

Patented Nov. 12, 1912.



UNITED STATES PATENT OFFICE.

CHARLES G. BOECK, OF JACKSON, MICHIGAN, ASSIGNOR TO NOVELTY MANUFACTURING CO., OF JACKSON, MICHIGAN, A CORPORATION OF MICHIGAN.

AUTOMOBILE-MUFFLER.

1,044,007.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed July 1, 1911, Serial No. 636,522. Renewed April 6, 1912. Serial No. 682,042.

To all whom it may concern:

Be it known that I, CHARLES G. BOECK, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Automobile-Mufflers, of which the following is a specification.

This invention relates to mufflers employed to deaden and destroy the sound caused by the exhaust of explosive engines and intended more particularly for use on automobiles.

The invention relates particularly to that type of muffler which comprises a cylindrical casing and a core of baffles within the casing.

The objects of the present invention are to provide means for directing the exhaust gases positively into the core and to prevent accumulation of the same at the inlet end of the casing; to prolong the circulation of the gases within the muffler so that they will be fully spent prior to their discharge; and to improve the construction generally with a resultant increase in efficiency.

The invention is hereinafter first fully described and its novel features particularly pointed out in the claims at the end of the description.

In the annexed drawings, which are to be taken as a part of this specification, Figure 1 is a view of my improved muffler showing the casing in longitudinal section and showing the core partly in elevation and partly broken away and in section. Fig. 2 is an enlarged section taken on the line 2-2 of Fig. 1. Figs. 3, 4, 5 and 6 are transverse sections taken, respectively, on the lines 3-3, 4-4, 5-5, and 6-6, of Fig. 1. Fig. 7 is a detail section taken on the line 7-7 of Fig. 6.

The casing comprises an inner cylinder or tube 1 and an outer cylinder or tube 2. The inlet end of the inner tube is adapted to fit over the end of the exhaust pipe from the engine, indicated at 3, and is secured thereon by a clamp 4, a cut-out valve 5 being located on the wall or shell of the tube adjacent the inlet end thereof. Outlet openings 6 are provided in the shell of the inner tube, said openings being arranged remote from the inlet end of the tube and extending to the opposite end thereof. The outer tube 2 is arranged concentric with and spaced from the inner tube and is arranged to inclose the outlet openings 6 of the inner tube. To the front end of the outer tube is secured

a collar 7 which extends over the end thereof and is provided with a central ring or flange 8 which fits snugly around the inner tube so as to form an air-tight joint therewith. The outer tube projects beyond the rear end of the inner tube and its own rear end is closed by a cap 9 secured thereto. A discharge tube or spout 10 extends through and is secured firmly to the cap 9, the outer or rear end of this spout being generally turned downwardly so as to direct the escaping gases toward the ground. It will be readily noted that the travel of the automobile will create a suction through this discharge spout so that the gases will be drawn through the same in a thin stream.

The exhaust gases received by the inner tube from the exhaust pipe are given a tortuous circulation within the tube by a core consisting of a series of longitudinal baffles 11 and, to prevent the gases from passing directly through the casing, a closure 12 is provided for the rear end of the inner tube. In the present instance, the closure is a disk or cap secured to the rear ends of the baffles and having an annular axial flange 13 adapted to fit snugly within the end of the tube and thereby hold the core in place while, at the same time permitting its ready removal when repairing or cleaning of the parts is necessary. The baffles are provided at their rear ends with tongues 14 which extend through slots in the disk or cap 12 and are bent against the outer face of the disk, being secured rigidly thereto by rivets or similar fastenings 15, as clearly shown in Figs. 6 and 7. To the front ends of the baffles is secured a closure 16 which fits snugly within the tube 1 and, as shown most clearly in Fig. 3, leaves the space between the front ends of two of the baffles unbridged thereby providing an entrance 17 to admit the gases to the core. To direct the gases positively to this entrance and prevent their accumulation in the tube at one side of the entrance, I provide a guide, deflector or hopper 18 in the form of a flaring funnel-like plate secured in the V-shaped opening 17 and extending therefrom to the side of the tube. It will be noted that the free end of this plate fits close to the concave surface of the casing and effectually cuts off the corner formed between the casing and the cap 16 so that the gases cannot accumulate therein, but will be caused to flow directly

into the core. One of the baffles is imperforate and the core is so arranged within the casing that this imperforate baffle will lie between the entrance 17 and the outlets 6 and thereby prevent the flow of gases from the entrance directly to the outlets. The remaining baffles are each provided at one end with a plurality of perforations 19, said perforations being located at opposite ends of alternate baffles whereby the gases are caused to follow a tortuous path back and forth and around the core so that they will gradually lose their force before passing through the outlets 6. After passing through said outlets the gases may further expand in the outer tube so that when they finally emerge from the spout 10 they will have lost practically all their tension and their escape to the outer air will be noiseless. Owing to the tortuous circulation of the gases, the decrease in their tension will be gradual so that no back pressure on the engine will be created.

The device is simple in construction and efficient in operation. It may be produced at a low cost and the parts may be readily assembled and disassembled.

Having described my invention, what I claim and desire to secure by Letters Patent is:—

1. A muffler comprising an inner tube adapted to be secured on an engine exhaust pipe and having an inlet to receive gases directly from said pipe and an outlet distant from said inlet, an outer tube encircling the inner tube and having an air-tight connection therewith in advance of said outlet, a discharge leading from the outer tube, and means in the inner tube for effecting a tortuous circulation of the exhaust gases between the inlet and outlet of said inner tube.

2. A muffler comprising an inner tube adapted to be secured on an engine exhaust pipe and having an inlet to receive gases directly from said pipe and an outlet distant from said inlet, an outer tube encircling the inner tube over said outlet and spaced therefrom, a discharge leading from the outer

tube, and means in the inner tube for effecting a tortuous circulation of the exhaust gases within said tube.

3. A muffler comprising an inner tube having an inlet at one end and an outlet distant from the inlet, an outer tube concentric with and spaced from the inner tube and extending over the outlet therein, said outer tube having an air-tight connection at its front end with the inner tube and having its rear end projecting beyond the rear end of the inner tube, a discharge spout at the rear end of the outer tube, and means in the inner tube for effecting a tortuous circulation of the exhaust gases.

4. A muffler casing comprising an inner tube adapted to be secured upon the end of an engine exhaust pipe and having an outlet remote from said pipe, an outer tube encircling the inner tube over said outlet, a cap closing the front end of the outer tube and fitting snugly around the inner tube, a cap closing the rear end of the outer tube, and a discharge spout projecting from said cap.

5. In a muffler, the combination with a tubular casing, of a core of baffles therein having an entrance for gases in its front end, and a deflector extending from the said entrance in the core to the side of the casing.

6. In a muffler, the combination with a tubular casing, of a core of baffles therein having a V-shaped entrance for gases in its front end, and a concave deflector plate secured to the core and extending from said entrance to the side of the casing.

7. In a muffler, the combination of a tube, a core of longitudinal baffles therein, a cap constituting a closure for the rear end of the tube, and tongues on the rear ends of the baffles inserted through and secured to the said cap.

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

CHARLES G. BOECK.

Witnesses:

D. R. TARBELL,
G. D. HAWKINS.