

T. V. BUCKWALTER.
EXHAUST MUFFLER.
APPLICATION FILED JUNE 24, 1916.

1,240,415.

Patented Sept. 18, 1917.
2 SHEETS—SHEET 1.

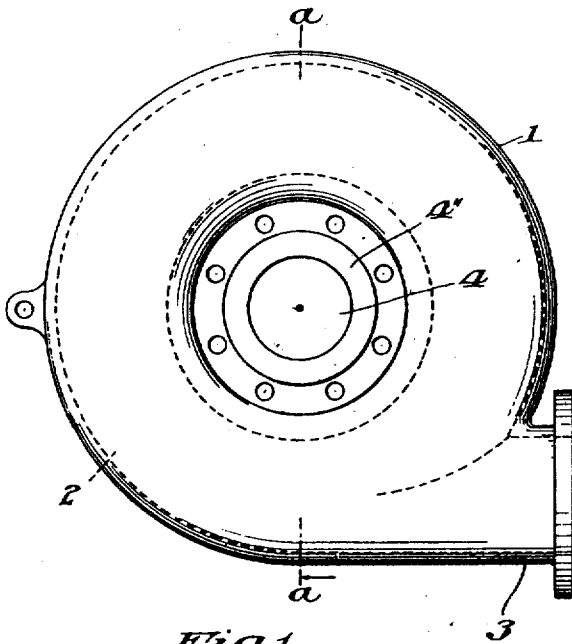


Fig. 1.

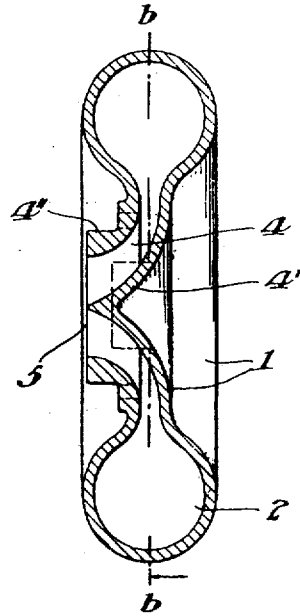


Fig. 2.

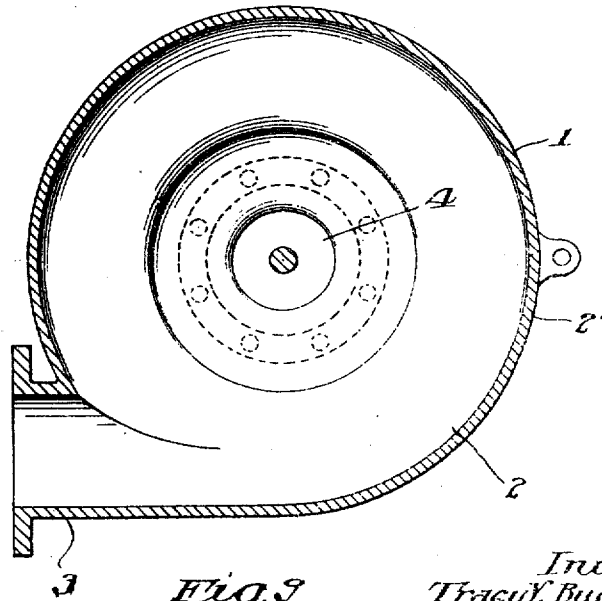


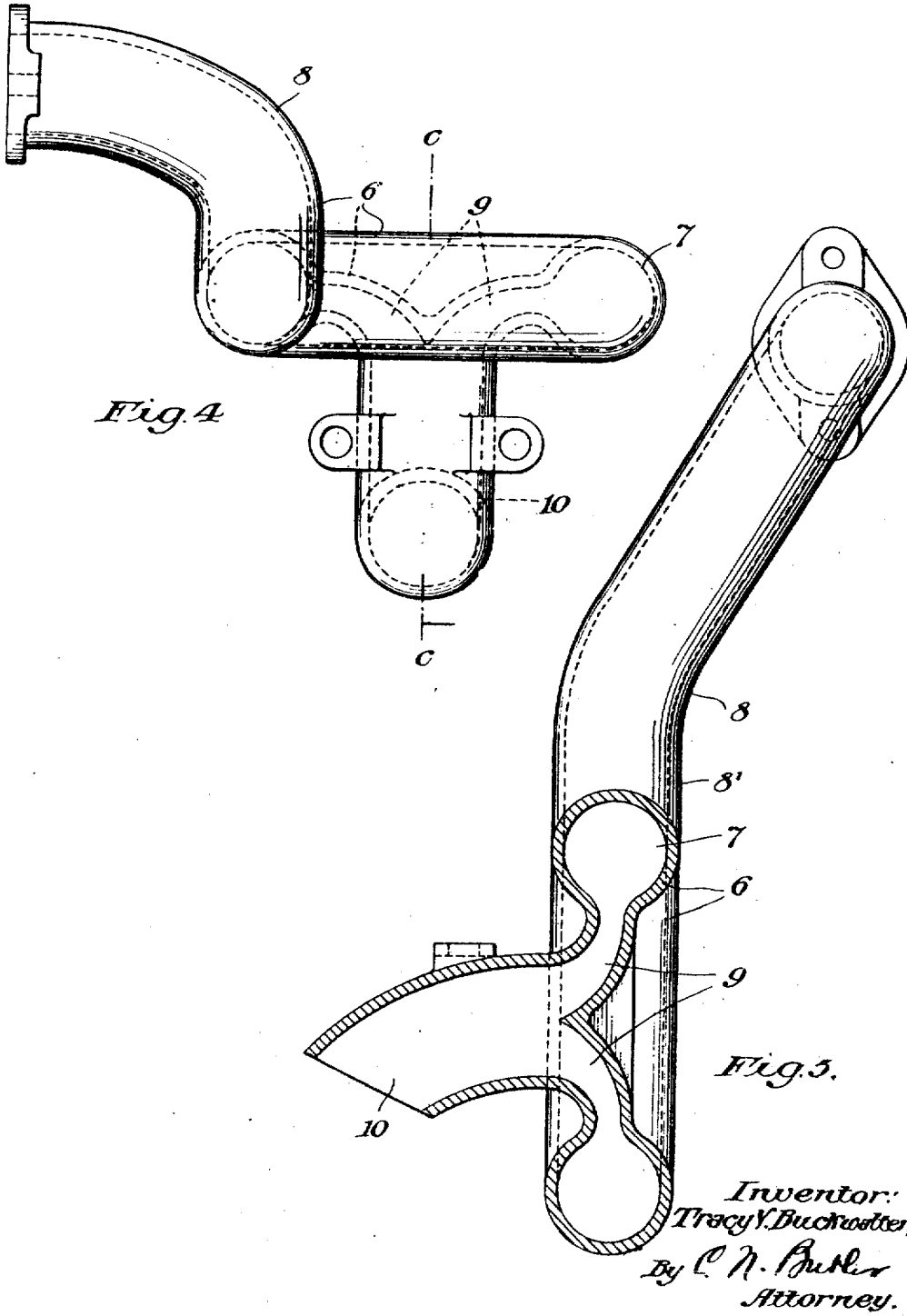
Fig. 3

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UNITED STATES PATENT OFFICE.

TRACY V. BUCKWALTER, OF ALTOONA, PENNSYLVANIA.

EXHAUST-MUFFLER.

1,240,415.

Specification of Letters Patent. Patented Sept. 18, 1917.

Application filed June 24, 1916. Serial No. 105,639.

To all whom it may concern:

Be it known that I, TRACY V. BUCKWALTER, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented an Improved Exhaust-Muffler, of which the following is a specification.

This invention is an improved exhaust muffler adapted for general use but intended especially for use with gas engines.

My improvements are characterized by means for applying centripetal force to and thus absorbing the energy of the exhaust gases. The gases to be muffled are delivered to a curved passage having a central outlet, and deenergized by the resistance involved in moving through the curved course drawing them to the central outlet, where the deenergized residue is discharged in a practically continuous stream.

The primary object of my invention is to provide a muffler that will effectually deenergize the exhaust gases and discharge them without objectionable impulses. A further object is to provide an apparatus that is simple, compact, readily cast in one piece or formed from sheet metal, and without baffles.

In the accompanying drawings, Figure 1 is an elevation of a muffler embodying my invention; Fig. 2 is a sectional view taken on the line *a-a* of Fig. 1; Fig. 3 is a sectional view taken on the line *b-b* of Fig. 2; Fig. 4 is an elevation of a modified form of my invention; and Fig. 5 is a sectional view taken on the line *c-c* of Fig. 4.

My improvements, in the form in which they are embodied in Figs. 1, 2, and 3, comprise a one-piece circular cast shell 1 containing the peripheral passage 2 into which the exhaust gases are delivered by the tangential inlet 3, and from which they are discharged by the conoidal passage 4 connecting the inner part of the peripheral passage with the laterally discharging central outlet 5, the passage 4 curving from the central plane of the passage 2 inwardly toward and outwardly in the direction of the axis of the muffler, with which it is concentric.

The gases delivered by successive impulses through the tangential inlet 3 being deflected

by the outer circular wall of the passage 2 and forced inwardly therefrom through the passage 4 to the central outlet 5 are thus deenergized and escape in a continuous stream around the conoid 4' concentric with the passage 4 and the conoid 4" forming the outer wall of such passage.

In the form of the improvements illustrated in Figs. 4 and 5, a jointless casting contains the circular peripheral passage 7 to which the gases are delivered by a duct 8 having a section 8' tangential to the passage. The gases delivered through the duct 8 are deenergized by deflecting them to their curved course through the passage 7 and drawing them inwardly through the conoidal passage 9 to a central outlet therefrom through the discharge nozzle 10.

While the preferred operation of the device is that described, the operation may be reversed and satisfactory muffling effected by passing the exhaust gases into the device through the central aperture 5 and expanding them outwardly by the deflecting device 4' through the curved deflecting passage 4 into the peripheral passage 2, whence they are discharged.

Having described my invention, I claim:

1. A muffler comprising a shell having a curved periphery forming a curved outer passage and parts extending from said periphery inwardly and laterally with relation thereto, so as to form an outlet from said passage surrounding one of said parts, said periphery having a branch forming an inlet thereto.

2. A muffler comprising a shell having a curved periphery forming a passage and concentric parts extending inwardly and then laterally with relation to said periphery to form a throttled passage surrounding one of said parts and through which said passage first named discharges, said periphery having a branch forming a substantially tangential inlet thereto.

3. A muffler comprising a shell having a curved periphery forming a passage and concentric parts forming a contracted curved discharge passage extending from the inner part of said passage first named in the direction of the axis of said periphery, said pe-

riphery having a branch forming an inlet thereto.

4. A muffler comprising a shell having a curved periphery forming a passage, a conoidal part surrounded by said periphery and a part surrounding said conoidal part to form a contracted conoidal passage

through which said passage first named discharges, said periphery having a branch forming an inlet passage thereto. 13

In testimony whereof I have hereunto set my name this 20th day of June, 1916

TRACY V. BUCKWALTER.