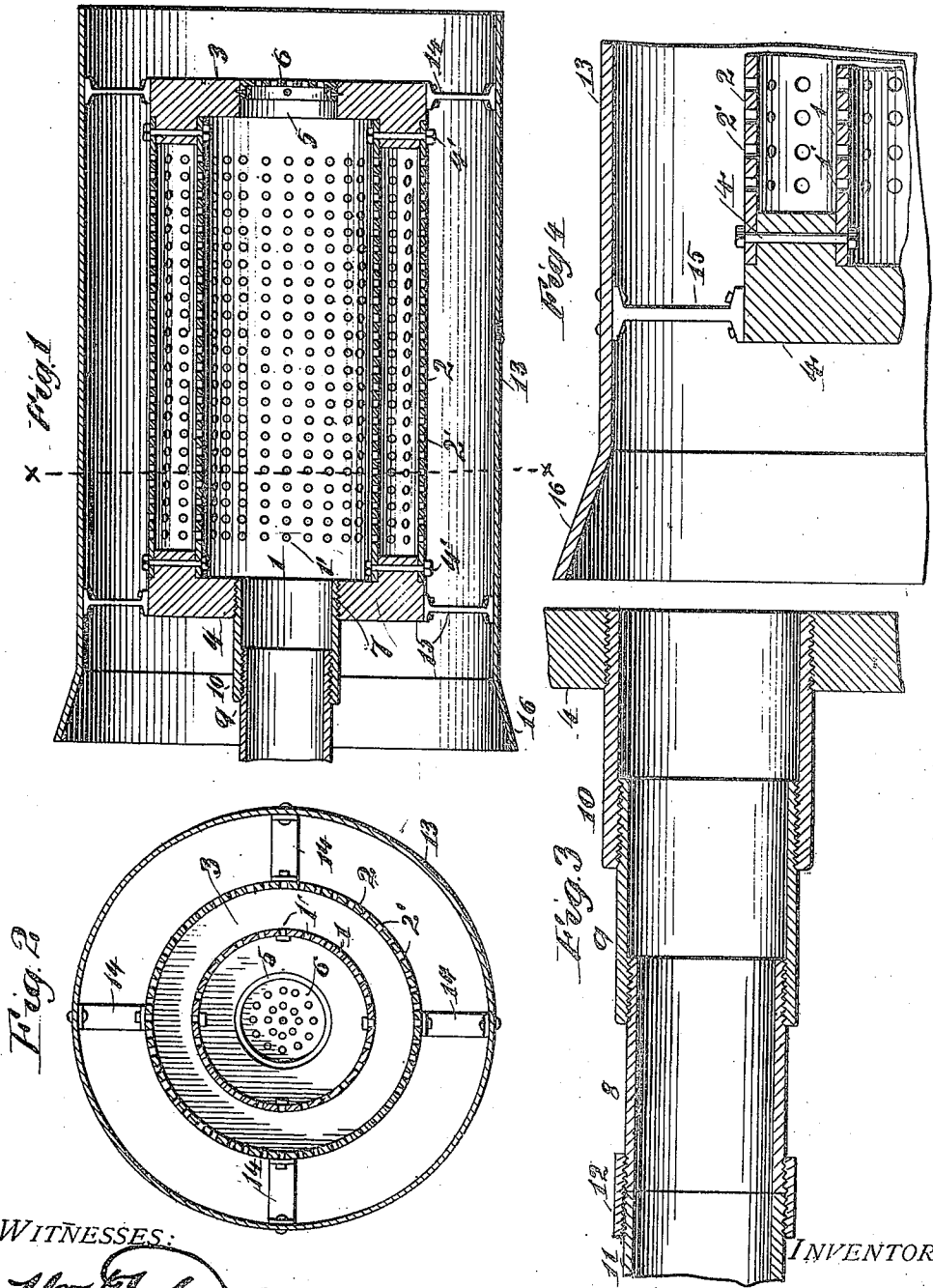


No. 851,490.

PATENTED APR. 23, 1907.

W. M. BRISBEN.  
MUFFLER FOR EXPLOSIVE ENGINES.

APPLICATION FILED JAN. 8, 1907.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM M. BRISBEN, OF HACKENSACK, NEW JERSEY.

## MUFFLER FOR EXPLOSIVE-ENGINES.

No. 851,490.

Specification of Letters Patent.

Patented April 23, 1907.

Application filed January 8, 1907. Serial No. 351,352.

*To all whom it may concern:*

Be it known that I, WILLIAM M. BRISBEN, a citizen of the United States, residing at Hackensack, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Mufflers for Explosive-Engines, of which the following is a specification.

My invention has relation to mufflers for explosive engines, and particularly for automobile engines although adapted for launch and other engines to which it is desired to apply a muffler.

The object of my invention is, generally, to provide a muffler of such construction and arrangement of parts that the gases from the engine will, while being exhausted directly into the air, be so controlled and modified in physical character that the noise usually incident to the exhaust will be subdued to a minimum without retardation of their escape or the imposition of back pressure on the piston of the engine.

My invention consists in the novel construction combination and arrangement of parts hereinafter described and claimed.

I have illustrated my improvements in the accompanying drawing in which:

Figure 1, is a vertical longitudinal sectional view of a muffler constructed according to my invention. Fig. 2 is a vertical transverse sectional view on the line X—X of Fig. 1, Figs. 3 and 4 are sectional views of parts of the muffler.

The body of my improved muffler is composed of an inner cylindrical section of perforated sheet metal 1, and an outer cylindrical section of perforated sheet metal 2, each of the same or approximately the same length and of such proportionate diameter that when arranged in their proper relative positions an annular space will be left between them of a width sufficient to permit of the proper expansion of the gases being discharged through the muffler as will be hereinafter described.

The perforated sheet metal of which the sections 1 and 2 are composed is a well known article of commerce and need not therefore be particularly described, it being sufficient to say that it is comparatively thin sheet-metal provided throughout its entire extent with regularly disposed circular holes of uniform size disposed at a distance apart about equal to their diameter and varying in

size in different sheets, according to the purpose for which the sheet is to be used.

In the drawing the holes in section 1, are designated 1' and those in section 2 are designated 2' and these holes, it will be seen are disposed at regular intervals throughout the entire extent of each section.

At the opposite ends of the sections 1, 2, are heads designated respectively 3 and 4, these heads being rabbeted to receive the edges of the sections 1 and 2, and the sections being secured in position by bolts 4' which pass through the sections near their edges and through the heads 3, 4, as shown in Fig. 1. The head 3, is provided with a central opening 5 in which is fixed a perforated disk 6, while the head 4, is provided with a central opening 7 in which is fixed the connection for the exhaust pipe of the engine. This connection is of peculiar and novel form and as shown is composed of a plurality of sections of pipe 8, 9, 10, which are screw-jointed one into the other and are of successively increasing size from the exhaust pipe to the head 4, the exhaust pipe proper being designated 11 and being coupled to the section 8 of the connection by an ordinary nipple 12.

When my improved muffler is used on an automobile and in order to protect the body of the automobile from the deleterious action of escaping gases, I provide a hood 13, of sheet metal which is arranged concentric to the outer section 2 and attached to brackets 14, 15 respectively mounted on the peripheries of the heads 3, 4. The hood 13 is of greater length than the section 2 and extends longitudinally beyond both the heads 3, 4 and is formed at its forward end, that is the end nearest the engine, with a bell 16. The hood 13 is somewhat larger in diameter than the section 2 so as to leave a space therebetween, and a current of air is created in this space by the forward movement of the automobile and this current of air serves to drive to the rear of the hood the heated gases emerging through the perforations in section 2, and thus prevent these gases from coming into contact with the body of the automobile.

Operation. The hot gases coming from the engine through the exhaust pipe 11 pass first through the connection composed of the sections 8, 9, 10 and as these sections are of successively increasing size, the gases expand

and lose some of their expansive force in passing therethrough. The gases then pass through the opening 7 in head 4 and into section 1 in which they expand and then pass through the holes 1' into section 2, in which they expand still further and from which they finally emerge through the holes 2' and when the hood 15 is employed, are carried by the current of air passing between the hood and the outer section to the rear end of the hood where they are discharged into the open air. Some of the gas expanding as before described in section 1, will of course escape through the perforated disc 6, but by the time such portion of the gases has reached this disk it will have expanded to such an extent as to pass noiselessly into the open air. The greater part of the gases however emerge after their partial expansion in section 1, and as before described, through the holes 1' into the section 2 and thence after further expansion escape into the air outside section 2 through the holes 2'. By reason of the fact that the sections 1 and 2 are perforated throughout their entire extent both of length and circumference, there is practically no obstruction to such expansion and certainly no obstruction sufficient to produce a noticeable amount of back pressure in the engine. At the same time the sections 1, 2, sufficiently retard the expansion of the gases to prevent their expanding in a sudden and explosive manner and therefore the noise which always accompanies the discharge into the open air of highly compressed gases is eliminated.

I claim:

1. In a muffler, the combination of two concentric cylindrical sections each perforated throughout its entire length and circumference, the outer section being exposed to the outer air heads to which such sections

are secured and an inlet connection entering the center of one of said heads.

2. In a muffler, the combination of two concentric cylindrical sections each perforated throughout its entire length and circumference, the outer section being exposed to the outer air heads to which said sections are secured, an inlet connection entering one of said heads and a hood open at both ends surrounding the outer section and spaced apart from the same.

3. In a muffler the combination of two concentric perforated cylindrical sections, heads to which said sections are secured and an inlet connection entering one of said heads, said connection being of gradually increasing size from its engine end to its muffler end.

4. In a muffler, the combination with a plurality of concentric perforated cylindrical sections, heads on which said sections are mounted, one of said heads being provided with a central opening, of a connection adapted to be coupled to the exhaust pipe of an engine, said connection consisting of a plurality of coupled sections of pipe of different size.

5. In a muffler, the combination with a plurality of concentric perforated cylindrical sections, heads on which said sections are mounted, of a connection leading to the interior of the inner section, brackets carried by said heads and a cylindrical bell mouthed hood attached to said brackets and surrounding the outer section.

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

WILLIAM M. BRISBEN.

Witnesses:

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