

No. 773,934.

PATENTED NOV. 1, 1904.

H. FORD.

MUFFLER.

APPLICATION FILED JUNE 22, 1904.

NO MODEL.

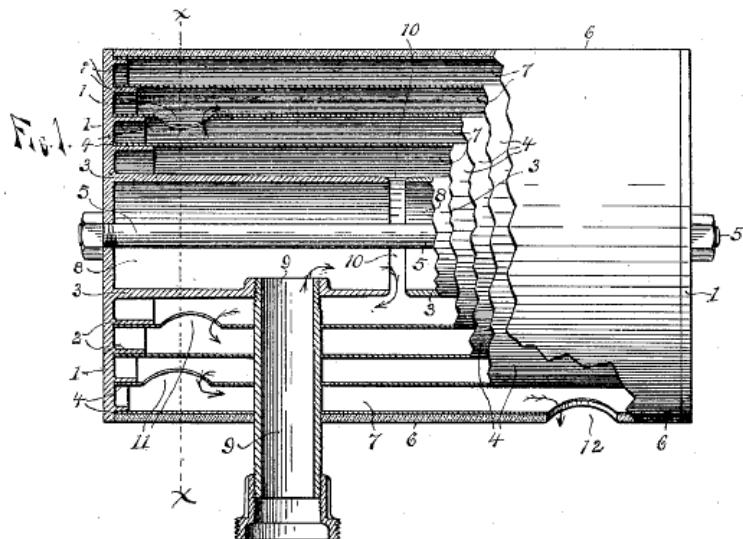
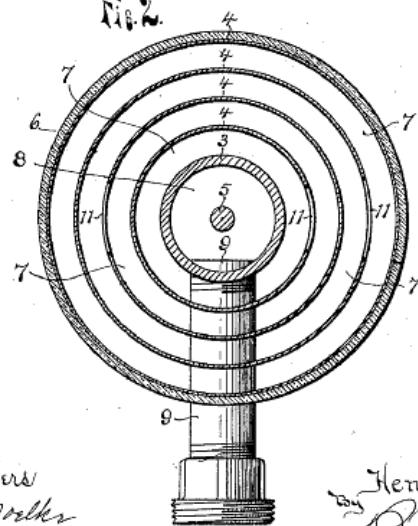


Fig. 2.



WITNESSES.

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MUFFLER.

SPECIFICATION forming part of Letters Patent No. 773,934, dated November 1, 1904.

Application filed June 22, 1904. Serial No. 213,581. (No model.)

To all whom it may concern:

Be it known that I, **HENRY FORD**, 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 improvements in exhaust-mufflers for explosive-engines; and its object is to provide an efficient device for the purpose which is simple and cheap in construction, easily and quickly assembled, and has the advantages of the particular arrangement and combination of parts, all as herein-after more fully described, and shown in the accompanying drawings, in which—

Figure 1 is a central longitudinal section of a device embodying the invention and showing the same partly in elevation, and Fig. 2 a transverse section of the same on the line *a—a* of Fig. 1.

As shown in the drawings, the device is a cylindrical structure provided with disk-like cast heads 1, each formed with inwardly-extending concentric flanges 2, projecting from its inner face, and with an axial tubular member 3.

4 is a series of sheet-metal tubes or cylinders of different diameters to fit over the flanges on the heads and adapted to be held in place between said heads by a tie-bolt 5, which extends through axial openings in the heads and is screw-threaded and provided with nuts 35 to engage the outer surface of the heads and draw the same firmly against the ends of the cylinders. These cylinders thus form a series of concentric walls dividing the space within the outer or largest one, forming the outer casing or body 6, and the inner tubular members 3 into a series of concentric chambers 7, surrounding the axial chamber 8 within said members.

An exhaust-pipe 9, forming a portion of the exhaust-passage leading from the exhaust-port of the engine, is extended inward through openings provided therefor in the walls 4 and is screw-threaded at its inner end to engage a screw-threaded opening in one of the tubular members 3. These members 3 are of such

a length that when the heads are secured in place the opposing inner ends of said members will extend to within a short distance of each other, leaving a narrow discharge space or slit 10 between, through which the exhaust 55 passes into the chamber between said members and the adjacent wall. In this adjacent wall at one side is an opening 11 to allow the exhaust to pass into the next chamber, and in the succeeding walls are similar openings, 60 said openings being provided in the walls at alternate sides to cause the exhaust to pass around within the chambers from one side to the other until it reaches the outer chamber, from which it escapes through the exhaust- 65 opening 12 in the outer wall or casing.

The exhaust-pipe opens directly into one side of the inner chamber 8 intermediate the ends thereof, and thus the sound of the exhaust is deadened by the surrounding chambers and walls, and entering through one side of the cylindrical member the charge is deflected and broken up by the opposing curved wall. Upon entering this inner chamber the charge expands and passes out through the 75 slit 10 at the center of the device, where the noise is most effectually muffled, and then expanding again in the inner of the chambers 7 passes out through the opening 11 in the wall thereof and around to the opening on the 80 opposite side, it being expanded in each succeeding chamber, which is larger than the one before.

The advantages of the construction are apparent, as no machining of the parts is required and the construction greatly facilitates the assembling of the parts, no accuracy of adjustment being necessary, as the walls, which are all cut to a length, determine the distance accurately between the inner ends 85 of the tubular members 3 and the exhaust-pipe extending through the walls brings the openings 11 in the correct relation to each other.

In practice it is found that there is a great 95 advantage in discharging the exhaust into the center of the muffler, the noise being much more effectually muffled than where it is let into a chamber which extends to the outer sheet-metal casing, and by providing 100

the cylindrical chamber at the center and connecting the exhaust-pipe thereto at right angles to its longitudinal axis the exhaust is directed against the curved wall of said chamber at a distance from its outer ends, and thus the charge is broken up and its force dissipated before it reaches the outer walls of the muffler at any point.

What I claim as new, and desire to secure 10 by Letters Patent, is—

1. In a muffler, the combination of a cylindrical casing having heads and provided with an exhaust-opening, tubular members extending inward from said heads opposite 15 each other with a space between their opposed inner ends at the center of the casing for the escape of the exhaust from the axial chamber formed by said members, one of said members being provided with an opening in its 20 side, and an exhaust-pipe extending through the wall of the casing and secured within the opening in said tubular member.

2. In a muffler, the combination of a series of concentric cylinders provided with openings at alternate sides and openings opposite 25 each other, heads, each provided with a series of concentric flanges to engage said cylinders, inwardly-extending axial tubular members integral with said heads with a space between their opposed ends when the 30 heads are secured in place and one of said members provided with a screw-threaded opening in its side, a tie-rod for clamping the cylinders between the heads, and an exhaust-pipe having an externally-screw-threaded end 35 extending through the opposed openings in said cylinders and screwed into the opening in the side of the tubular member.

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

HENRY FORD.

Witnesses:

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