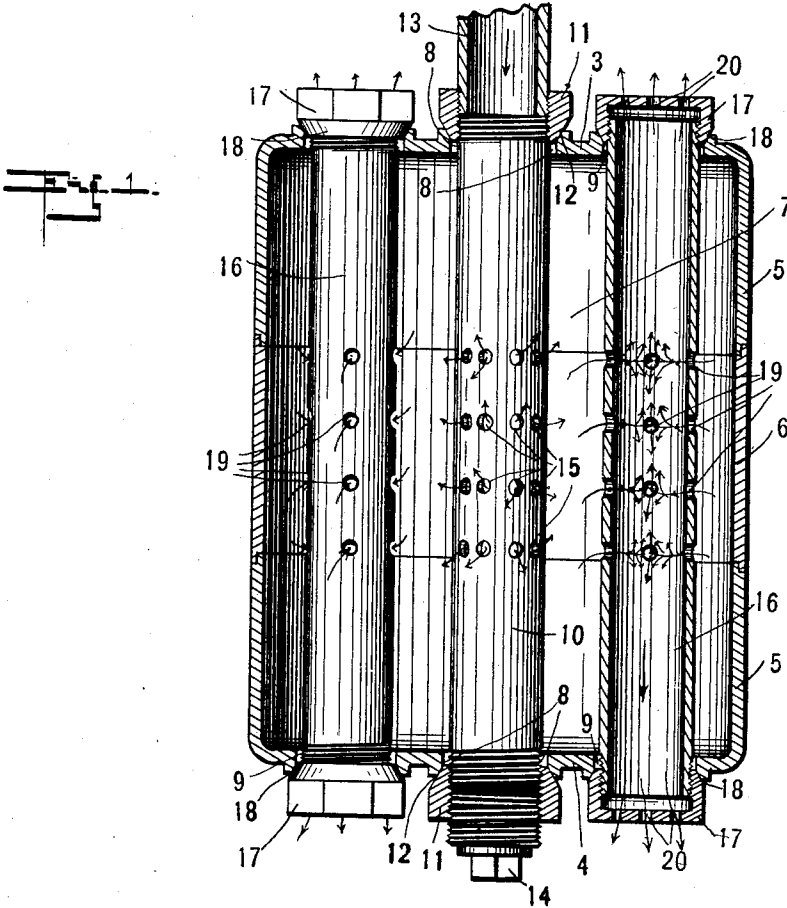
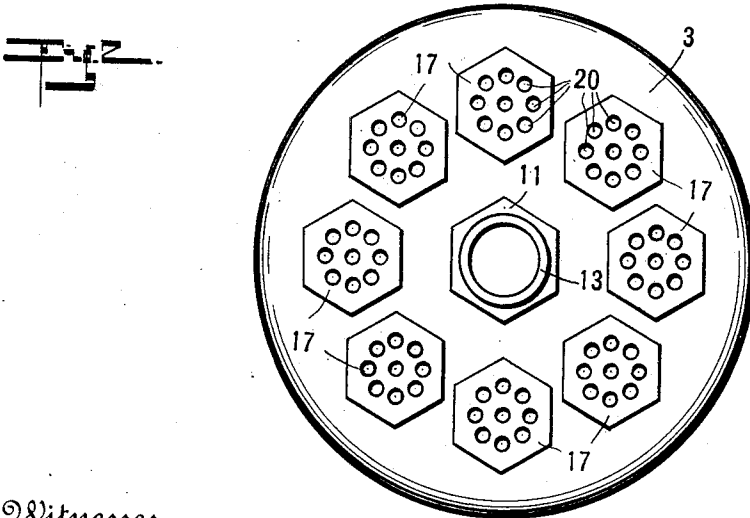


H. N. MOTSINGER.

MUFFLER.

(Application filed Sept. 23, 1901.)

(No Model.)



Witnesses
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HOMER N. MOTSINGER, OF PENDLETON, INDIANA, ASSIGNOR OF ONE-HALF
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MUFFLER.

SPECIFICATION forming part of Letters Patent No. 706,844, dated August 12, 1902.

Application filed September 23, 1901. Serial No. 76,163. (No model.)

To all whom it may concern:

Be it known that I, HOMER N. MOTSINGER, a citizen of the United States, residing at Pendleton, in the county of Madison and State of Indiana, have invented a new and useful Muffler, of which the following is a specification.

My invention relates to an improvement in means for eliminating the sound caused by the exhaust of gas or other engines.

Hieretofore in the design of mufflers it has been the object to provide means by which the gases under pressure are allowed to escape through diverging openings into a larger chamber or series of chambers.

My present invention departs from the usual lines; and the object thereof is to provide means by which the exhaust-gases may be first divided into a large number of small streams, which are directed in opposing or converging lines, so that each stream will be met by a substantially equal and practically directly opposite stream, each pair of coacting streams butting "head on" into a chamber, from which the gases are then allowed to escape. By this means the velocity of egress is checked, the chambers into which the said opposing streams discharge being in area much greater than the area of the exhaust-pipe, from which the gases are received.

A further object of my invention is to so construct and arrange the parts of the muffler that it shall be light, that it may be built by unskilled labor, of cheap and readily-obtainable material, and of such character that it may be easily opened for inspection or repair.

The accompanying drawings illustrate my invention.

Figure 1 is a section of a preferred form of my invention. Fig. 2 is an end elevation.

In the drawings, 3 and 4 indicate a pair of similar heads, preferably castings, each of which is provided with a cylindrical flange 5. In order to obtain proper length of the receiver to be formed of the heads 3 and 4, I provide a cylindrical section 6, the ends of which are so formed as to mate with the adjacent ends of the flanges 5. Any suitable means may be provided for holding the heads 3 and 4 and the portion 6 together, so as to form a receiving-chamber 7; but for commer-

cial reasons I provide the cheap construction now to be described.

Each of the heads 3 and 4 is provided with a central opening 8 and with a series of openings 9, arranged in any desired manner, the openings 9 in one head being arranged in alinement with the openings of the other head. Extending through the two openings 8 is a pipe 10, which is preferably slightly less in diameter than the diameter of the openings 8. Each end of the pipe 10 is threaded and adapted to receive a nipple 11, the inner end of which is provided with a seat 12, so that by screwing the two nipples upon the pipe they will be seated in the outer ends of the openings 8, so as to clamp the two heads 3 and 4 upon the central portion 6 and at the same time form a gas-tight joint. An exhaust-pipe 13 will be attached to one of the nipples 11, and the other nipple may be closed by a plug 14, or in the case of the use of double engines the plug 14 may be displaced by an exhaust-pipe. Pipe 10 is provided with a series of perforations 15, which in area should be preferably considerably greater than the area of the cross-section of the pipe. Extending through each pair of openings 9 is a pipe 16, each end of which is threaded so as to receive a cap 17, provided with a seat 18, which is adapted to close the outer end of the adjacent opening 9 and also serve to clamp the portions of the chamber 7 together. Each pipe 16 is provided with a number of perforations 19, which should be arranged in alining pairs across the pipe. The caps 17 are provided with outlet-perforations 20, or, if desired, the entire end of the cap may be omitted.

In operation exhaust-gases under pressure are discharged into the pipe 10 and pass therefrom through the perforations 15 into the chamber 7, the pressure being reduced, owing to the increased capacity of the chamber 7. The gases then pass through the openings 19 into the several pipes 16, the said gases being thus divided into a large number of small converging streams, which as they enter the pipe 16 come into opposition in pairs, the force of each stream being opposed by the equal force of an exactly-opposite stream. This opposition of streams of gas,

together with the increased capacity of the pipes 16, results in a further reduction of pressure and velocity to such a point that the gases pass from the ends of the pipes 16 without noise.

I claim as my invention—

1. In a muffler, the combination of a pair of heads each having a similar set of openings therethrough, one or more pipes passing one through each pair of the said openings, means carried by said pipes for clamping said heads together and the pipes in position, and a pair of alined openings leading into the interior of each of said pipes.

2. In a muffler, the combination of a pair of heads each having a similar set of openings therethrough, a cylinder arranged between said heads and provided with ends adapted to mate with said heads, one or more pipes passing one through each pair of the said openings, a cap mounted upon each end of each pipe and adapted to engage the heads so as

to close the openings and clamp the heads upon the cylinder, and openings leading from the cylinder into the interior of each of said pipes.

3. In a muffler, the combination of a receiving-chamber, and a plurality of pipes extending therethrough each of said pipes having openings leading through its walls from the receiving-chamber into its interior.

4. In a muffler, the combination of a receiving-chamber, a receiving-pipe extending through the middle thereof and having a series of openings through its wall into the chamber, and a plurality of discharge-pipes surrounding the receiving-pipe and extending through the receiving-chamber and having a series of openings leading through their walls into their interiors.

HOMER N. MOTSINGER.

Witnesses:

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