

C. J. KNOPP.
ENGINE MUFFLER.
APPLICATION FILED MAR. 29, 1912.

1,044,397.

Patented Nov. 12, 1912.

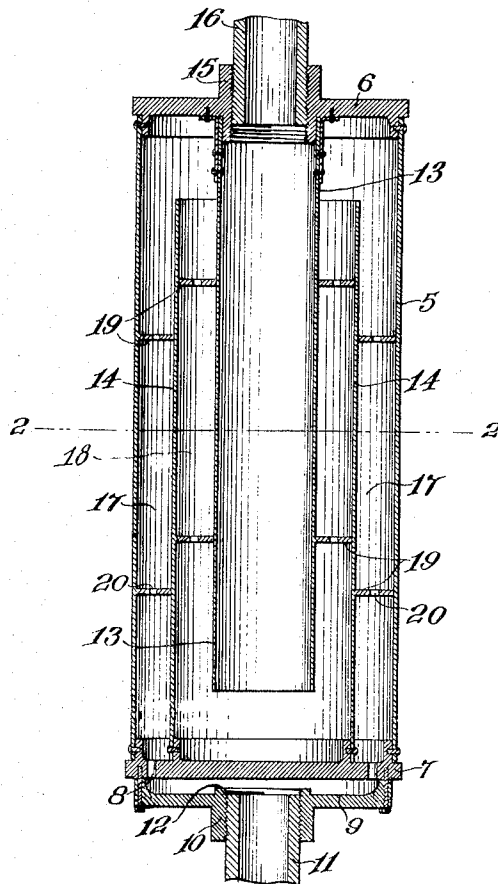


Fig. 1.

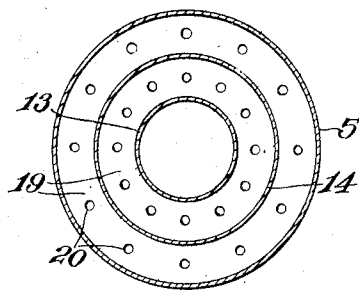


Fig. 2.

Inventor
Charles J. Knopp.

Witnesses

H. G. Batchelor
S. J. Leher

By

August B. Evans

Attorney

UNITED STATES PATENT OFFICE.

CHARLES J. KNOPP, OF CHICAGO, ILLINOIS.

ENGINE-MUFFLER.

1,044,397.

Specification of Letters Patent.

Patented Nov. 12, 1912.

Application filed March 29, 1912. Serial No. 687,162.

To all whom it may concern:

Be it known that I, CHARLES J. KNOPP, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Engine-Mufflers, of which the following is a specification.

The muffler which is the object of the present invention is designed more particularly for internal-combustion engines, and its object is to provide a muffler which will render the discharge of the exhaust gases from the engine less objectionable, the discharge being without noise and with no back pressure on the engine.

With this object in view, the invention consists in a novel construction and arrangement of parts to be hereinafter described and claimed.

In the accompanying drawing forming a part of this specification, Figure 1 is a central, longitudinal section of the muffler, and Fig. 2 is a cross section on the line 2—2 of Fig. 1.

Referring specifically to the drawing, 5 denotes the casing of the muffler, the same being cylindrical in form and closed at one of its ends by a head 6, this being the inlet end of the casing. To the opposite or outlet end of the casing is fitted a head 7 having outlet perforations 8. These heads are secured to the casing ends in any suitable manner. On the outside of the head 7, over the perforations 8, is mounted an expansion chamber 9 having an outlet nipple 10 to which may be connected a suitable discharge pipe 11. Surrounding the outlet, within the chamber, is an annular flange 12 which serves as a baffle to deflect the gases before they pass into the outlet.

In the casing 5 are located two concentric and spaced tubes 13 and 14 respectively. The tube 13 is connected to the head 6, which latter has an inlet 15 to which is connected the exhaust pipe 16 of the engine. The tube 13 is in line with the inlet 15 and extends lengthwise into the casing 5, its inner end being open and terminating a short distance from the head 7. The tube 14 is connected to the head 7 and surrounds the tube 13, and the inner end of said tube 14 terminates a short distance from the head 6. The tube 14 is spaced from the cylindrical wall of the casing 5, forming an annular space 17. As the tube 14 is spaced from the tube 13, an annular space 18 is formed there-

between. The tube 13 opens at its inner end, or adjacent to the outlet end of the casing 5, into the space 18, and said space is in communication with the space 17 adjacent to the inlet end of the casing 5. The perforations 8 open into the space 17.

It will be evident from the foregoing that the exhaust gases travel in a tortuous path through the casing 5, they being carried by the tube 13 to one end of the casing and then discharged into the space 18, through which latter they pass toward the opposite end of the casing, and thence through the space 17 to the first-mentioned end of the casing. From the space 17 the gases pass through the perforations 8 into the chamber 9 and escape from the latter through the outlet thereof, they being deflected by the baffle 12 before leaving the chamber.

In the spaces 17 and 18 are transverse partitions 19 which are perforated as indicated at 20. The partitions of the space 17 are set staggered with respect to the partitions of the space 18.

It will be readily seen that by the structure herein described, the force of the exhaust gases is broken up in their tortuous passage through the muffler and through the relatively small perforations 20. The gases can also freely expand in the muffler and they are discharged without noise and with no back pressure on the engine.

I claim:

1. An exhaust muffler comprising a casing, heads closing the ends of the casing, one of said heads having an inlet and the other head having outlet perforations, an expansion chamber mounted on the last-mentioned head over the outlet perforations, spaced tubes in the casing, one of said tubes being connected to the inlet head in line with the inlet and terminating short of the outlet head, and the other tube surrounding the first-mentioned tube and being connected to the outlet head and terminating short of the inlet head, the last-mentioned tube being also spaced from the side of the casing and the aforesaid outlet perforations communicating with the space between said last-mentioned tube and the casing, and perforated transverse partitions in the spaces between the tubes and in the space between the casing and the last-mentioned tube.

2. An exhaust muffler comprising a casing, heads closing the ends of the casing, one of said heads having an inlet and the

other head an outlet, spaced tubes in the casing, one of said tubes being connected to the inlet head in line with the inlet and terminating short of the outlet head, and
5 the other tube surrounding the first-mentioned tube and being connected to the outlet head and terminating short of the inlet head, the last-mentioned tube being also spaced from the side of the casing and the
10 aforesaid outlet communicating with the space between said last-mentioned tube and the casing, perforated transverse partitions in the spaces between the tubes and in the

space between the casing and the last-mentioned tube, an expansion chamber mounted 15 on the outlet head into which chamber the outlet opens, said chamber having an outlet, and a baffle surrounding the last-mentioned outlet.

In testimony whereof I affix my signature 20 in presence of two witnesses.

CHARLES J. KNOPP.

Witnesses:

H. G. BATCHELOR,
S. J. LEHRER.