

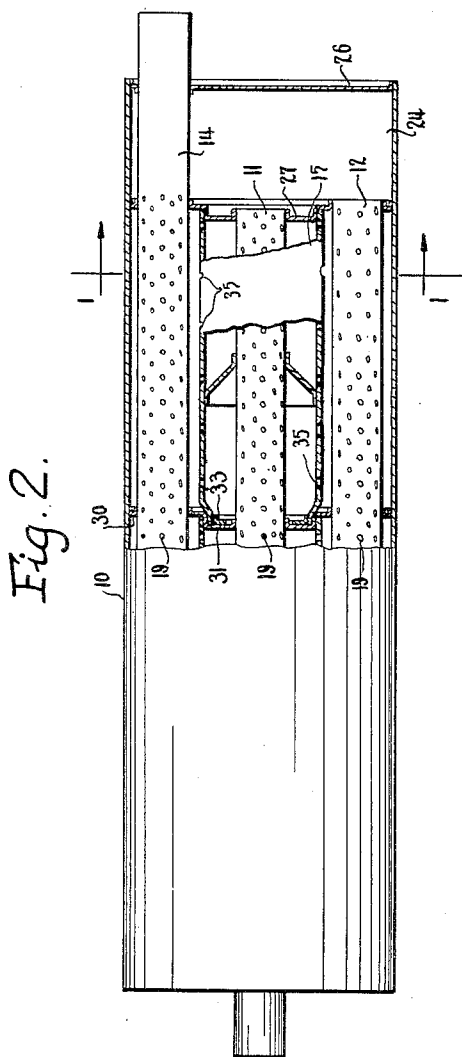
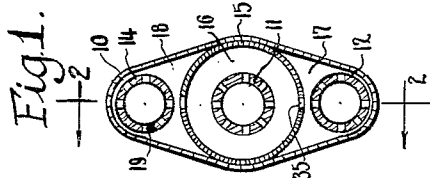
Oct. 22, 1935.

S. OLDBERG

2,018,084

SILENCER

Filed Sept. 24, 1934



INVENTOR.

BY

Sidney Oldberg
Samuel H. Gussow
ATTORNEY.

UNITED STATES PATENT OFFICE

2,018,084

SILENCER

Sidney Oldberg, Detroit, Mich.

Application September 24, 1934, Serial No. 745,173

3 Claims. (Cl. 137—160)

This invention relates to silencers and more particularly to silencers used in connection with gases exhausted from internal combustion engines.

5 The silencer of this application is of the triple-pass retroverted passage type, and has a substantially oval or elliptical outer casing provided with a row of three parallel through-flow tubes which open into absorption spaces around the tubes, these spaces being defined and relatively isolated by a circular intermediate shell which surrounds the central one of the tubes and tangentially engages the side walls of the casing.

15 In the preferred embodiment, a central header is provided to reinforce the silencer and to divide the absorption spaces into isolated absorption chambers.

20 Also in the preferred embodiment, the intermediate shell is provided on each side with a row of bleeder holes, and these communicate the space inside the shell with the separated spaces outside the shell.

25 Objects and other features of the present invention will be readily apparent to those skilled in the art upon reference to the following detailed description of an embodiment of the same, reference being had to the appended drawing, which shows this embodiment.

30 In this drawing,

Figure 1 is a cross section as if on line 1—1 of Figure 2; and

Figure 2 is a cross section as if on line 2—2 of Figure 1.

35 Referring to the drawing, it will be seen that the silencer there shown includes an imperforate outer casing 10 of substantially oval or elliptical cross section, in which are disposed in a single row, and in side by side parallel juxtaposition, three, relatively spaced, circular, through-flow, tubes 11, 12, and 14, these being somewhat shorter than the outer casing. Centrally disposed within the outer casing and tangentially engaging its side walls and surrounding the central tube 11 is a circular intermediate shell 15, and the latter provides three relatively isolated absorption spaces 16, 17, and 18 around the three tubes. The tubes, throughout substantially their entire area, are covered with a plurality of minute, outwardly extruded perforations 19 communicating the through passages in the tubes with the absorption spaces therearound.

50 Expansion chambers 24, at each end, provided by end and inner headers 26 and 27, at each end,

communicate the tubes to provide a triple pass, retroverted passage through-flow silencer.

The shell 15 is divided into two parts, midway between the ends of the silencer and a central header 30, like the header 27, and having flanged 5 openings through which pass the three tubes, and disposed between the halves of shell 15 has a dished portion 31 which seats within the open end of one part of the shell 15, the adjacent end of the other part being swedged inwardly to fit within the dished portion. Disposed within the dished portion 31 is an annulus 33, and all of these parts are welded to one another at the central header to rigidify and unify the construction.

15 It will be observed that the central header not only rigidifies the entire silencer, but also serves the purpose of providing twice as many absorption chambers in each absorption space 16, 17, and 18 as there would be were the central header eliminated.

20 In order to reduce the amount of restriction that may exist in a silencer of the type here shown, the absorption chamber 16 may be connected to the absorption chambers 17 and 18 through a row of small bleeder holes 35 on each side of the shell 15. These bleeder holes provide a double absorption effect for each tube, and it may be considered that the entire length of the silencer is provided with a double absorption system for the through passages. It will also be observed that this expedient may be utilized in silencers of types other than the retroverted passage triple-pass type here shown, the system being characterized by the provision of interconnected absorption chambers along the entire flow path of the silencer.

35 Now having described a preferred embodiment of the invention of this application, selected by way of example, reference will be had to the following claims for a determination of the scope of the invention.

What I claim is:

1. A silencer of the retroverted passage type comprising an outer casing of substantially oval cross section, an inner and an end header providing an expansion chamber at each end thereof, means providing an inlet and an outlet therefor, and three parallel through-flow tubes mechanically connecting the chambers and lying in a single row and having their axes disposed in substantially a common plane, and having a multiplicity of perforations therein, a circular intermediate transversely split shell surrounding the center one of the tubes and tangentially engaging the side walls of the casing to provide a sound 55

wave absorption space in the shell around the center tube and in conjunction with the outer casing a sound wave absorption space around each of the other tubes, a central header through which
5 pass said tubes, and which divides each of said absorption spaces in said shell into longitudinally isolated absorption spaces, the central header having a central dished portion seated within the end of one of the parts of the shell and seating the end
10 of the other part of the shell.

2. A silencer of the retroverted passage type comprising an outer casing of substantially oval cross section, an inner and an end header providing an expansion chamber at each end thereof,
15 means providing an inlet and an outlet therefor, and three parallel through-flow tubes mechanically connecting the chambers and lying in a single row and having their axes disposed in substantially a common plane, and having a multiplicity of perforations therein, a circular intermediate transversely split shell surrounding the
20 center one of the tubes and tangentially engaging the side walls of the casing to provide a sound wave absorption space in the shell around the center tube and in conjunction with the outer casing a sound wave absorption space around each
25 of the other tubes, a central header through which pass said tubes, and which divides each of said absorption spaces in said shell into longitudinally isolated absorption spaces, the central header
30 having a central dished portion seated within the end of one of the parts of the shell and seating the end of the other part of the shell, the inner headers being identical in shape with the central
35 header and having their dished portions cooperating

with the other ends of the shell parts for mutual positioning of the inner headers and the shell parts.

3. A silencer of the retroverted passage type comprising an outer casing of substantially oval
5 cross section, an inner and an end header providing an expansion chamber at each end thereof, means providing an inlet and an outlet therefor, and three parallel through-flow tubes mechanically connecting the chambers and lying in a
10 single row and having their axes disposed in substantially a common plane, and having a multiplicity of perforations therein, a circular intermediate transversely split shell surrounding the center one of the tubes and tangentially engaging
15 the side walls of the casing to provide a sound wave absorption space in the shell around the center tube and in conjunction with the outer casing a sound wave absorption space around each of the other tubes, a central header through
20 which pass said tubes, and which divides each of said absorption spaces in said shell into longitudinally isolated absorption spaces, the central header having a central dished portion seated within the end of one of the parts of the shell
25 and seating the end of the other part of the shell, the inner headers being identical in shape with the central header and having their dished portions cooperating with the other ends of the shell parts for mutual positioning of the inner headers
30 and the shell parts, the end of the shell part that seats within the central header dished portion being of smaller diameter than the other shell part ends.

SIDNEY OLDBERG. 35