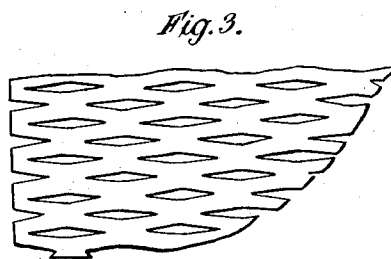
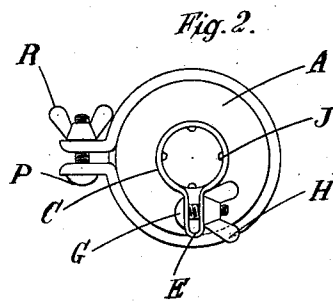
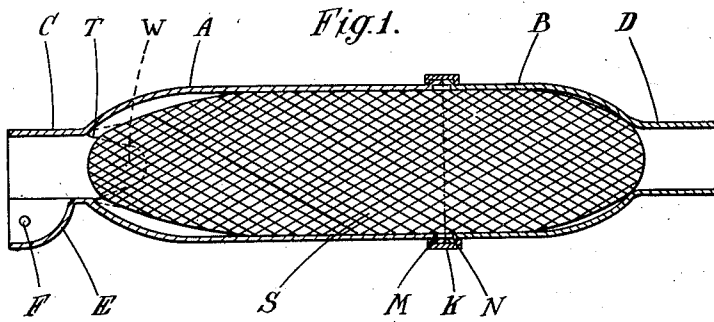


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N. STRAUSSLER
SILENCER FOR GASEOUS CURRENTS.

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UNITED STATES PATENT OFFICE.

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SILENCER FOR GASEOUS CURRENTS.

Application filed July 6, 1923. Serial No. 649,847.

To all whom it may concern:

Be it known that I, NICHOLAS STRAUSSLER, Roumanian, residing at 32 St. Swithins Lane, in the city and county of London, England, have invented certain new and useful Improvements in Silencers for Gaseous Currents, of which the following is a specification.

This invention relates to silencers for gaseous currents such as are produced in the exhaust of internal combustion engines, where successive explosions set up violent sound waves, the periodicity of which it is required to eliminate by breaking up the intermittently delivered volumes of gas into a level uniform flow.

According to this invention the body of the silencer is made in parts connected together by means that permit of their being readily separated or displaced in such manner as to render the internal operative parts easily accessible. The said internal operative parts are in the nature of a permeable metallic resilient structure which may be in the form of cartridges or rolls or bundles of loosely packed metal capable of being bodily placed into or removed from the silencer body and serving when in place to permit the passage of the gases while equalizing their flow without offering such obstruction as would create undue back pressure.

In order that the said invention may be clearly understood and readily carried into effect the same will now be described more fully with reference to the accompanying drawings, in which:—

Figure 1 represents in longitudinal section a silencer embodying this invention.

Figure 2 is an elevation of the said silencer viewed from the left-hand end of Figure 1.

Figure 3 illustrates a detail hereinafter mentioned.

In the example illustrated the body of the silencer is composed of two separable parts or sections A and B of stamped metal, which may be of equal length, but are preferably of different lengths as shown, in order that, in the mass production of standard parts, three sizes of silencers may be made by combining two long, two short, or one long and one short section. In the case of a very long silencer, a central cylindrical section may be interposed between two end sections to obtain the required length, the body of the casing thus being constructed of

three instead of two sections. Each section of the cylindrical body in the case of two sections or each end section when three sections are employed, terminates in a cylindrical neck (C, D) of reduced diameter; the neck C at the entrance end may be adapted for connection with the exhaust pipe of the engine by extruding radially a hollow wing E, through a hole F in which may pass freely a screw threaded bolt G, and by means of a wing nut H on the end of this bolt the neck C can be tightened on to the exhaust pipe. The necks at both ends of the silencer body may be provided with such hollow wings, but may be of different sizes, to enable the silencer to be reversed for attachment to either of two exhaust pipes of different diameters, the inoperative wing at the outlet end not interfering with the action of the silencer. Indentations J (Figure 2) may be formed in the neck C adjacent to the larger or body part of the section A to act as stops preventing the exhaust pipe from entering the said body. On the opposing end of each of the sections A and B are rims or beads M, N, which in assembling are embraced by a clip K of channel section, this clip being then tightened by means of a bolt P and wing nut R. The connections between the end sections and central section in a three-part silencer may comprise similar rims and clips. The internal operative part of the silencer constituted by the aforesaid permeable metallic resilient structure is in this example in the form of a cartridge S, comprising a bundle of very narrow and thin strips of flexible metal enclosed in a foraminous, reticulated bag or cover made of sheet material such as netting or loosely knitted or woven fabric made of the same or other suitable material. Instead of one cartridge a number of them made in short lengths may be used, the number employed depending upon the length of the silencer. Instead of cartridges composed of bundles of thin strips of flexible metal as aforesaid, cartridges composed of a roll of two or other suitable number of sheets of expanded metal may be used, each sheet of expanded metal being made as is well understood by scoring and slitting a blank sheet of metal which is then stretched so as to form a lattice work of diamond or lozenge shaped holes between narrow intersecting strips of metal as shown in Figure 3. The two sheets of expanded

metal prior to being rolled up may be relatively displaced to the extent of half the pitch or spacing of the apertures therein. Alternatively the roll may be composed of metal netting, or the cartridge may be composed of strip metal as aforesaid with an outer casing of expanded metal. However cartridges made up in the form of the narrow and thin strips of flexible metal as aforesaid are considered preferable owing to their being resilient in all directions, whereas the roll form is only radially resilient. The metal used in either case should be of a high melting point and resistant to corrosion.

In order to increase the surface of the cartridge S exposed to the incoming gases, ribs or flutings T (Figure 1) may be formed in the body section A of the silencer, under which ribs the cartridge fits, so that portions of the sides as well as the end of the cartridge will receive the said gases directly. These ribs or flutings may reach to the neck C as shown in Figure 1 and perform also the function of the indentations J previously mentioned. When the cartridge is in the form of a roll of expanded metal it will present a ridged surface, so that the ribs or flutings on the body section A will not be necessary.

Carbon particles travelling with the gases, having a greater inertia than that of the gases themselves, tend to impinge on the centre of the cartridge or other filling, and in order to promote this tendency and to keep the periphery of the filling as clean as possible, a recess or depression, indicated by chain dotted lines at W in Figure 1, may be formed at the entrance end of the filling, so that the carbon particles which do not blow through are retained in and around this recess.

Although the said silencer has been shown in the accompanying drawings as divided transversely into two parts held together by a clip of channel section engaging with rims or beads on the parts or sections of the silencer, it is to be understood that the invention is not intended to be limited to this manner of dividing the silencer into parts and of connecting them together.

It is to be understood that in the claims where the expression "permeable metallic resilient structure" is used, such expression is intended to cover any of the various forms of the internal operative parts of the silencer heretofore referred to.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A silencer for gaseous currents, comprising a body portion built of readily detachable sections, and a filling consisting of a permeable homogeneous tangled mass of very narrow and thin ribbons of flexible

metallic material enclosed in a metal bag made of foraminous reticulated sheet material adapted to fit bodily into the said body portion, said bag being composed of stiffer and stronger material than that of which the filling consists.

2. A silencer for gaseous currents, comprising a body portion built of readily detachable sections, and a filling consisting of a permeable homogeneous tangled mass of very narrow and thin ribbons of flexible metallic material enclosed in a metal bag made of foraminous reticulated sheet material adapted to fit bodily into the said body portion.

3. A silencer for gaseous currents, comprising a body portion built of readily detachable sections, and a filling consisting of a permeable homogeneous tangled mass of very narrow and thin ribbons of flexible metallic material enclosed in a metal bag made of foraminous reticulated sheet material of elongated substantially cylindrical shape, said bag having closed ends and being adapted to fit bodily into the said body portion, said bag being composed of stiffer and stronger material than that of which the filling consists.

4. A silencer for gaseous currents comprising a substantially cylindrical body made in readily detachable sections reduced in diameter at the outer ends of said body, a neck at the inlet end to receive the end of a pipe leading the gaseous currents to said silencer, internal projections on said neck to limit the extent to which said pipe can enter said neck, a filling consisting of a tangled mass of very narrow and thin strips of flexible metal enclosed in a reticulated metal bag adapted to fit bodily in the said body and ribs at the entrance end of said body for exposing portions of the sides as well as the end of said filling to the incoming gaseous currents.

5. A silencer for gaseous currents comprising a substantially cylindrical body made in readily detachable sections of unequal lengths and reduced in diameter at the outer ends of said body, a neck at the inlet end to receive the end of a pipe leading the gaseous currents to said silencer, internal projections on said neck to limit the extent to which said pipe can enter said neck, a filling consisting of a permeable homogeneous mass of metallic material of a resilient character such as a tangled mass of very narrow and thin strips of flexible metal enclosed in a reticulated metal bag adapted to fit bodily in the said body, and ribs at the entrance end of said body for exposing portions of the sides as well as the end of said filling to the incoming gaseous currents.

NICHOLAS STRAUSSLER.