

O. KIESEL.
 DEVICE FOR CLEANSING AND DEODORIZING CONSUMPTION GASES.
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995,353.

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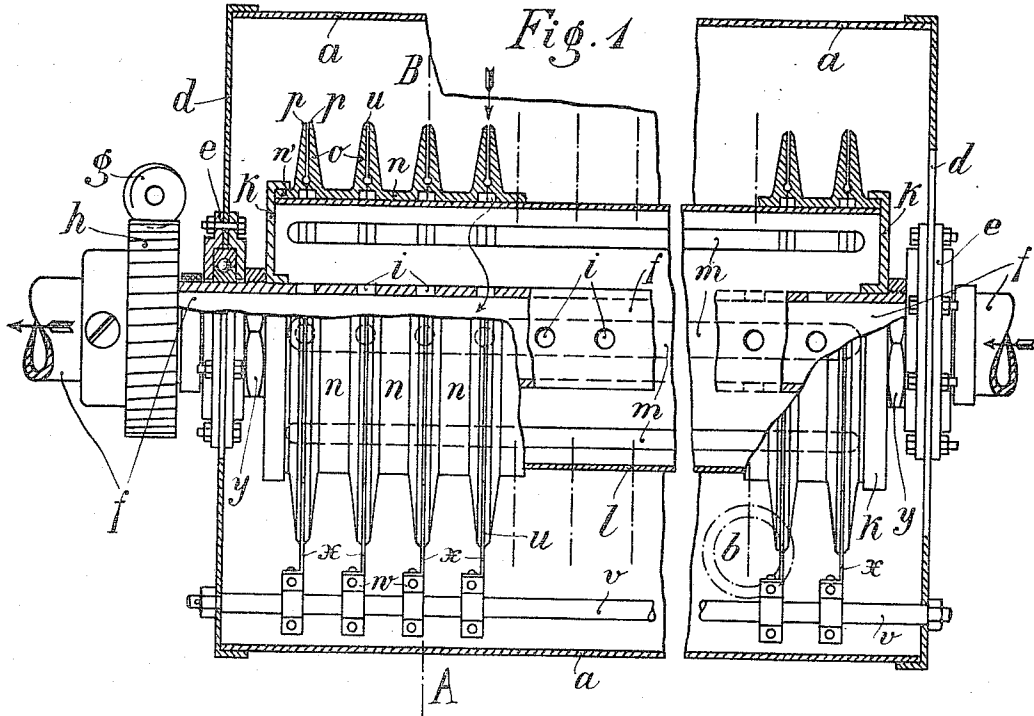
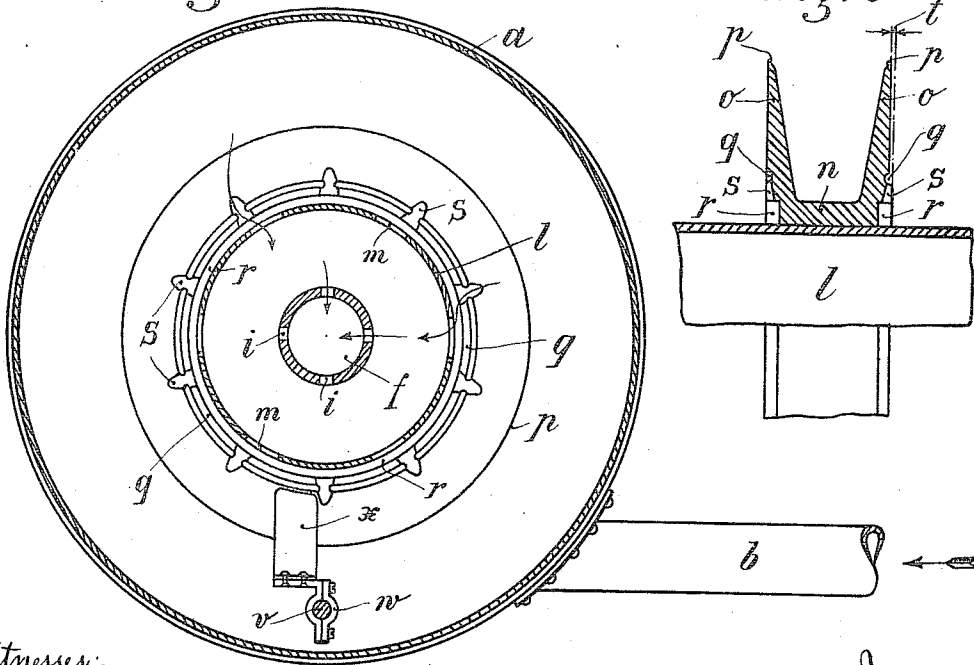


Fig. 2



Witnesses:
 Emma Frank
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 Oskar Kiesel
 by *[Signature]*
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UNITED STATES PATENT OFFICE.

OSKAR KIESEL, OF MUNICH, GERMANY, ASSIGNOR TO MARTIN AUFHAÜSER AND
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DEVICE FOR CLEANSING AND DEODORIZING CONSUMPTION-GASES.

995,353.

Specification of Letters Patent. Patented June 13, 1911.

Application filed December 27, 1910. Serial No. 599,352.

To all whom it may concern:

Be it known that I, OSKAR KIESEL, citizen of Germany, residing at Munich, in the Kingdom of Bavaria, German Empire, have
5 invented certain new and useful Improvements in Devices for Cleansing and Deodorizing Consumption-Gases; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as
10 will enable others skilled in the art to which it appertains to make and use the same.

All devices and processes according to the prior art for cleansing and deodorizing the gases produced by combustion, for instance,
15 in an internal-combustion engine, depend without exception on the use of chemical agents, liquids, acids and the like. All such devices and processes, depending on chemical means for cleansing and deodorizing the
20 gases, have proved of little utility in practice.

The present invention relates to a device for cleansing and deodorizing combustion gases by mechanical means alone.

25 The new device consists essentially of a chamber provided with narrow interstices or ring-like slits, through which the combustion gases are caused to pass, said slits being adapted to catch and hold back all
30 particles of soot, oil or the like contained in the gases, which particles are then removed from the slits by suitable blades.

Reference being had to the accompanying drawing, the device according to the present
35 invention is shown in Figure 1 in side-view and partly in longitudinal section, Fig. 2 being a cross-section along the line A—B of Fig. 1, Fig. 3 shows a detail in section on a larger scale.

40 *a* is a chamber of preferably cylindrical form, suitably connected to the combustion engine or to the car containing said engine by means of flanges or the like, and having an inlet *b* for the combustion gases. The
45 end-walls *d* of the chamber are provided with ball-bearings *e*, in which a hollow shaft *f* rotates driven by a worm-gear *g* at a low speed, about 5 to 10 revolutions in a minute. Said worm-gear which is designed to mesh
50 with a worm *h* fixed on the shaft *f* may be operated from any convenient rotating element of the engine or car.

The walls of the hollow shaft *f* are provided with a number of longitudinal rows
55 of bore-holes *i*; in the drawing four such

rows are shown (Fig. 2). On the shaft *f* is mounted by means of flanges *k* a hollow body or cylinder *l*, provided with a number of longitudinal apertures; in the drawing
60 six such apertures *m* are shown.

A number of rings *n* are arranged on the cylinder *l*. Each ring is provided with two
65 flanges *o* (Fig. 3) merging to a sharp edge *p*. The number of rings *n* mounted on the cylinder *l* depends on the size of the engine in connection with which the device is used.
Each flange *o* is provided with a circular groove *q* of preferably hemispherical section and is further recessed at its inner circumference, so that a circular recess or groove *r*
70 is formed at the point of contact of the flange and cylinder *l*. The recesses *r* connect with the grooves *q* by a number of slanting channels *s*; in the drawing ten such channels are provided for each flange.
75

Of each ring the one flange has a perfectly plane outer surface except for the
afore-mentioned grooves *r* and *q* and channels *s*, while the other flange is slightly
80 recessed from its outer circumference to the groove *q*, the depth of said recess *t* being approximately 0.1 to 0.15 millimeter.

Two rings *n* are so arranged beside each other that a plane and a recessed surface
85 always adjoin, whereby narrow interstices *u* are formed between the flanges, the width of each interstice or slit being equal to the depth of the recess *t*. The two end rings are provided with one flange only and are
90 gripped by the flange *k*.

The hollow shaft *f* is provided with screw
nuts *y* which serve to press together all rotating parts, so that one rotating body is
formed.

Within the chamber *a* is further arranged
95 a fixed bar or rod *v*, on which are mounted by means of clamps *w* suitable blades *x* of steel or other suitable material which protrude into the interstices *u*.

The sum of the sectional areas of the ring-
100 like slits *u*, as also the sum of the areas of the bore-holes *i*, and the internal area of the hollow shaft *f* must be equal to each other and must also correspond to the area of a valve of the engine.

105 The manner of operation of the device is as follows: The combustion gases entering at *b*, in consequence of the difference of pressure between the outer chamber *a* and the inner space of the hollow shaft *f*, are 110

caused to pass through the slits *u*, the grooves *q*, channels *s*, grooves *r* and apertures *m* into the interior of the cylinder *l*. During this passage of the gases, all solid
 5 and condensable constituents, especially partly or wholly unconsumed carbon, soot, oil and resinous substances, which are chiefly responsible for the smoke and smell, are deposited either on the sharp edges *p* of the
 10 flanges *o*, or on the walls of the slits *u*, from where they are then removed by the blades *x* in consequence of the rotation of the shaft *f* with its cylinder *l* and rings *n*. This cleansing of the slits *u* by means of the
 15 blades *x* is continuous so that a clogging or obstruction of said slits, which would retard the proper operation of the engine, is made impossible.

Practical trials have shown that this device
 20 vice completely cleanses the combustion gases of all solid and condensable substances and renders said gases colorless and practically odorless.

If the device is used for cleansing gases
 25 which enter the chamber *a* without any overpressure, it will be necessary to provide a ventilator or other suitable contrivance for producing a vacuum or the necessary pressure.

30 What I claim as my invention and desire to secure by Letters Patent, is:

1. In a device of the character specified, the combination with a chamber provided with a plurality of exterior peripheral
 35 flanges having narrow passages through which gas is adapted to pass to the interior of the chamber, of a casing surrounding all of said flanges and into which exhaust gases are adapted to be expanded prior to their
 40 passage into the chamber, and means for preventing the passages in the flanges from clogging.

2. In a device of the character specified, the combination with a chamber provided
 45 with a plurality of pairs of closely juxtaposed exterior peripheral flanges, each pair of flanges having a narrow passage therebetween through which gas is adapted to pass to the interior of the chamber, of a
 50 casing surrounding all of said flanges and into which exhaust gases are adapted to be expanded prior to their passage into the chamber, and means entering between the flanges of said pairs of flanges to prevent
 55 clogging of said passages.

3. In a device of the character specified, the combination with a rotary cylinder having a plurality of flanges spaced about its periphery, said flanges having narrow pas-

sages leading to the interior of the cylinder, 60 of a stationary casing surrounding all of said flanges and into which exhaust gases are adapted to be expanded prior to their passage into the cylinder, and blades carried by said casing, said blades being adapted 65 to prevent said passages from clogging.

4. In a device of the character specified, the combination with a hollow shaft, of a cylinder carried thereby, a plurality of flanges arranged about the periphery of 70 the cylinder, said flanges having passages through which gases are adapted to pass successively to the cylinder and shaft, and a casing surrounding all of said flanges and into which exhaust gases are adapted to be 75 expanded prior to their passage through said passages.

5. In a device of the character specified, the combination with an exterior casing provided with an opening for the admission 80 of exhaust gases, of a cylinder rotatably mounted in said casing, said cylinder having longitudinal apertures in the walls thereof, flanges arranged in pairs about said cylinder, each said pair of flanges having a 85 passage therebetween communicating with the interior of the cylinder through the apertures in the latter, and a hollow shaft adapted to receive cleansed gases from the 90 cylinder.

6. In a device of the character specified, the combination with an exterior casing provided with an opening for the admission of exhaust gases, of a cylinder rotatably 95 mounted in said casing, a plurality of flanges arranged about the periphery of said cylinder, said flanges being provided with longitudinal passages and grooves and recesses communicating with said passages by means of inclined channels, and a hollow shaft 100 rotatable with said cylinder and adapted to receive cleansed gases from said cylinder.

7. In a device of the character specified, the combination with a hollow cylinder, of a plurality of pairs of flanges arranged 105 about the periphery of said cylinder, each said pair of flanges having formed therebetween an elongated passage, a circular groove in communication therewith, a recess in communication with said cylinder, and a 110 slanting passage connecting said groove and said recess.

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

OSKAR KIESEL.

Witnesses:

A. VEREW COTTER,
 MATHILDE K. HELD.