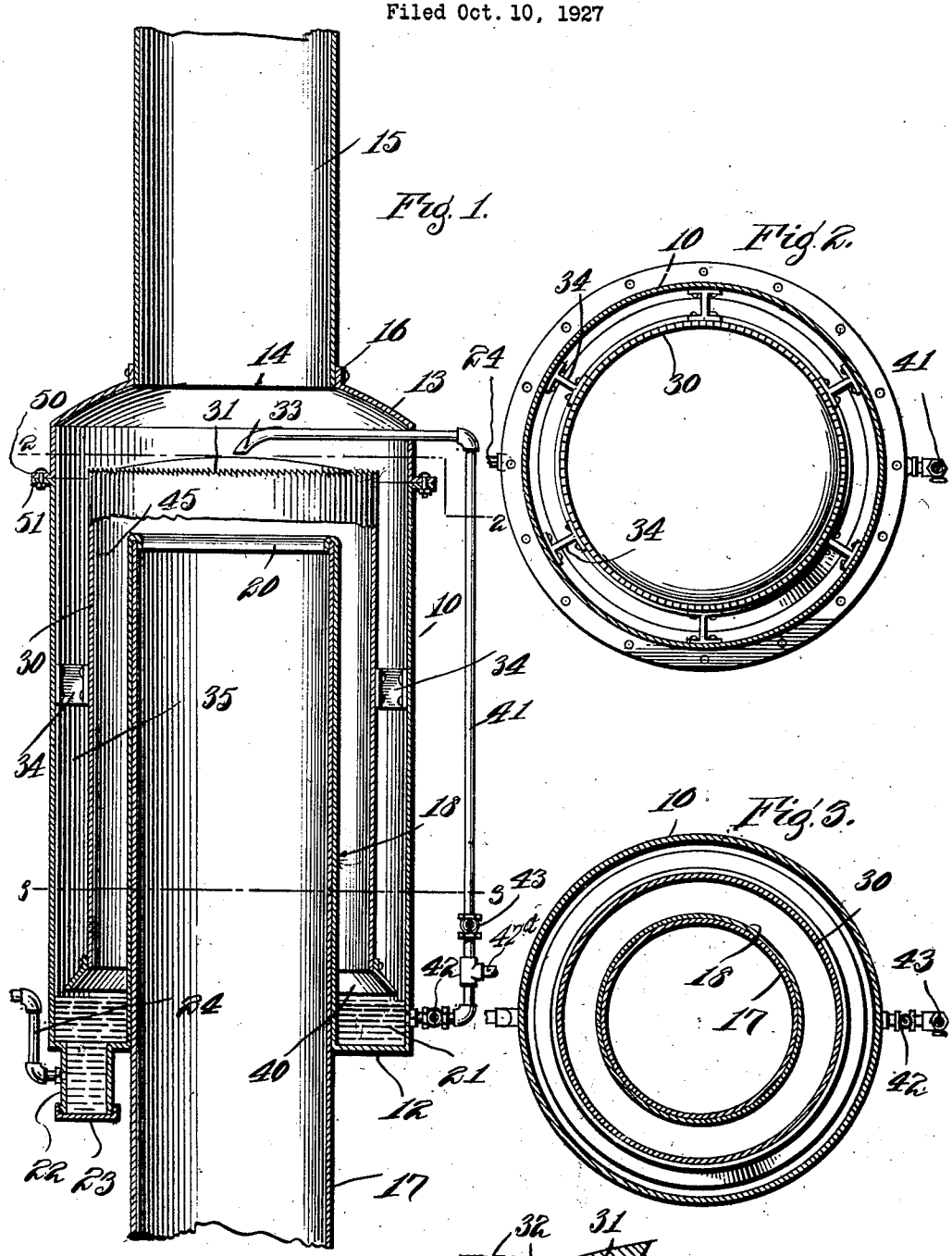
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AIR AND GAS CLEANER

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AIR AND GAS CLEANER.

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This invention relates to air and gas cleaners.

An object of the invention is the provision of a device for cleaning air or gas of foreign matter, in which the gas or air is directed through a tortuous path while varying the speed of said gas or air.

Another object of the invention is the provision of an air or gas cleaner for use in connection with carbureters, air compressors, air ventilating systems or gas plants, the air or gas being supplied at above or below atmospheric pressure, and conducted through a tortuous path, part of which contains a bath for not only washing the fluid, but for adding moisture when desired.

This invention will be best understood from a consideration of the following detailed description, in view of the accompanying drawings forming a part of the specification; nevertheless it is to be understood that the invention is not confined to the disclosure, being susceptible of such changes and modifications which shall define no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a vertical section of the cleaner.

Figure 2 is a horizontal section taken along the line 2—2 of Figure 1.

Figure 3 is a horizontal section taken along the line 3—3 of Figure 1.

Figure 4 is a fragmentary vertical section of the top of an inner casing of the cleaner.

Referring more particularly to the drawings, 10 designates an outer shell, closed at the bottom 12 and provided with a cover 13 having a central opening 14. An inlet pipe 15 is received by an annular flange 16, which embraces the opening, the flange being secured to the inlet pipe in any approved manner.

A discharge pipe 17 is received within and nearly fits an upstanding tube 18 formed integrally with the bottom 12 of the shell 10. The tube 18 is spaced from the shell, and rises to a point within the shell which is adjacent the top 13. The upper end of the tube is flanged over the upper end of the discharge pipe, as shown at 20, for securing the pipe to the tube.

The lower end of the shell forms with the tube 18 a well 21 for the reception of a liquid which not only provides a wash for the fluids passing through the shell, but a moistener for such fluids. A sump 22, closed at the lower end by a threaded cap 23, is in open communication with the well and depends from the bottom 12 of the shell. A pipe 24 is adapted to discharge the liquid from the well and maintain a predetermined level of the liquid in said well.

An inner shell 30 has the upper end closed by a curved top 31, which is secured to said shell in any approved manner. The inner shell projects above the periphery of the top, and is provided with a plurality of slots 32 for spreading and breaking up a liquid which is sprayed upon the central portion of the top 31 through a nozzle 33. The inner shell is supported from the inner wall of the outer shell by means of I-bars 34, which have the flanges thereof riveted to the inner and outer shells, whereby the inner shell is retained in spaced relation with the outer shell to form an annular passage 35 for gases entering the inlet pipe 15.

The lower open end of the inner shell has a flared flange 40 providing a restricted communication between the inner and outer shells directly above the level of the liquid in the well 21.

A pipe 41 connects the nozzle 33 with the well 21.

A pump, not shown, is adapted to be connected by means of a T 42^a with the pipe 41 between the valves 42 and 43 which are interpolated in the pipe 41. Instead of the pump, the T 42^a may be connected with the tank at a higher level so that water may be supplied by gravity. When valve 42 is closed and valve 43 is open the water or other liquid will flow through the T, pipe 41 and thence from the nozzle 33. Again the valve 42 may be open while valve 43 is closed when varying moisture is desired, or when it becomes necessary to flush or clean out the well.

In the operation of the device, gases or other fluids are forced or directed through the inlet onto the top 31 of the inner shell, wherein they are spread outwardly toward the annular passage 35 between the inner and outer shells. The gases travel downwardly through said passage and are deflected by the flared flange 40 on to the surface and partly through the liquid in the well 21. Thence they travel upwardly through the annular passage 45. The speed of travel of the gases is accelerated as they pass the flange 40, because of the fact that the reduced space between the flange 40 and the shell 10 acts as a venturi. The gases then enter the discharge

pipe 17 over the upper end of said pipe, and are ready for use.

As the gases enter the outer shell, and engage the rounded top, they come into contact with the moisture on said top issuing from the nozzle 33, and travel downwardly with the moisture or liquid, which is broken up by the notches or passages 32, so that the gases pick up moisture and are not only washed but are supplied with a sufficient quantity of moisture which is particularly effective in the operation of an internal combustion engine for the prevention of preignition of the engine cylinders.

As the gases pass through the liquid in the well, they give up impurities and foreign matter which are heavier than the gas because of the baffling of the gases by the tortuous path. The released impurities fall by gravity to the bottom of the outer shell, and are collected in the liquid.

The cover 23 is removed periodically to remove the liquid and the sediment collected therein.

The top 13 has an annular flange 50 seated on a flange 51 of the shell 10 and riveted thereto. A gasket may be interposed between the flanges to prevent the leakage of gas.

We claim:

1. A cleaner for fluids comprising an outer shell, an inner shell spaced from and located within the outer shell, the inner shell having a closed top, and an open lower end spaced from the bottom of the outer shell, the lower end of the inner shell being flared outwardly thereby providing a restricted communication between the lower end of the inner shell and outer shell, an inlet pipe connected with the upper end of the outer shell, a discharge pipe projecting into the inner shell, means for spraying a liquid on the top of the inner shell, the outer shell having a well at the lower end to store the liquid in spaced relation with the flared end of the inner shell.

2. A cleaner for fluids comprising an outer shell, an inner shell spaced from and located within the outer shell, the inner shell having a closed top, and an open lower end spaced from the bottom of the outer shell, the lower end of the inner shell being flared outwardly thereby providing a restricted communication between the lower end of the inner shell and outer shell, an inlet pipe connected with the upper end of the outer shell, a discharge pipe projecting into the inner shell, means for spraying a liquid on the top of the inner shell, the outer shell having a well at the lower end to store the liquid in spaced rela tion with the flared end of the inner shell and means for breaking up the liquid as said liquid leaves the top of the inner shell.

3. A cleaner for fluids comprising an oute shell, an inner shell spaced from and locate within the outer shell, the inner shell havin a closed top, and an open lower end space from the bottom of the outer shell, the lowe end of the inner shell being flared outwardl thereby providing a restricted communica tion between the lower end of the inner shel and outer shell, an inlet pipe connected witl the upper end of the outer shell, a discharg pipe projecting into the inner shell, means fo spraying a liquid on the top of the inner shell the outer shell having a well at the lowe end to store the liquid in spaced relation witl the flared end of the inner shell, the inne shell being extended above the periphery o the closed top and provided with slots fo breaking up the liquid as said liquid leave the top of the inner shell.

4. A cleaner for fluids comprising an oute shell, an inner shell spaced from and locate within the outer shell, the inner shell havin a closed top, and an open lower end space from the bottom of the outer shell, the lowe end of the inner shell being flared outwardl thereby providing a restricted communica tion between the lower end of the inner shel and outer shell, an inlet pipe connected witl the upper end of the outer shell, a discharg pipe projecting into the inner shell, mean for spraying a liquid on the top of the inne shell, the outer shell having a well at th lower end to store the liquid in spaced rela tion with the flared end of the inner shell and means for conducting the liquid store in the well to the spraying means.

5. A cleaner for fluids comprising an oute shell, an inner shell spaced from and locate within the outer shell, the inner shell havin a closed top, and an open lower end space from the bottom of the outer shell, the lowe end of the inner shell being flared outwardl thereby providing a restricted communica tion between the lower end of the inner shel and outer shell, an inlet pipe connected witl the upper end of the outer shell, a discharg pipe projecting into the inner shell, the dis charge pipe terminating at the inner en thereof in spaced relation with the closed to of the inner shell, and means for spraying liquid on the closed top of the inner shell.

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