

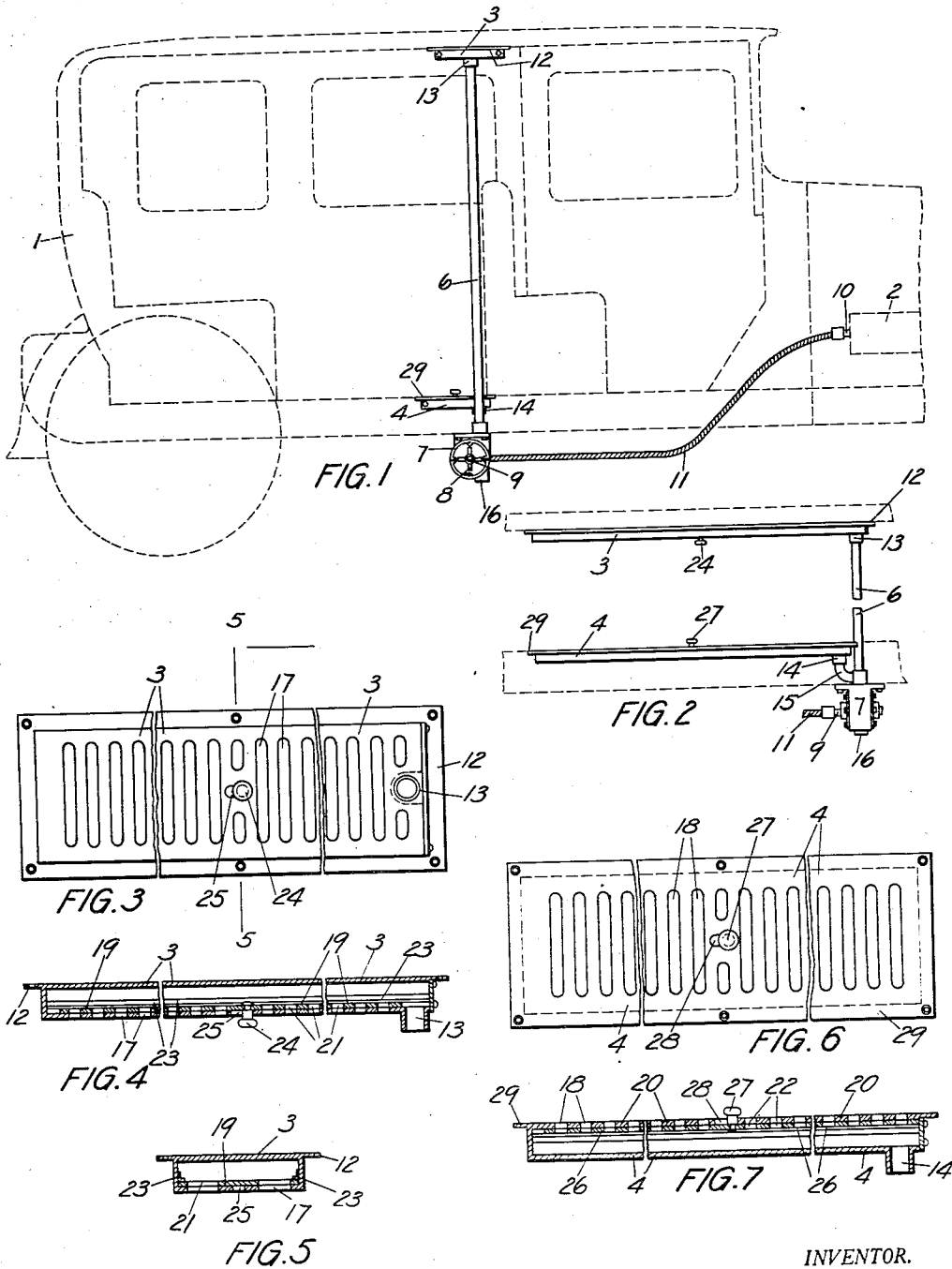
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AIR PURIFIER FOR CLOSED CARS

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AIR PURIFIER FOR CLOSED CARS

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My invention relates to improvements in devices or appliances for maintaining air, in bodies of vehicles of the closed type, pure and free from dust, smoke, and gases, and other foulness, by suction; and the primary object of my invention is to provide an equip-
ment to be installed in a closed car, by means of which impurities from the car body can be removed at the top, of said body, or at the bottom of said body, or at both top and bottom, at will, said equipment including an air suction element operated from some rotary member of the vehicle, such as the generator shaft.

More or less dust finds its way into a vehicle or car body of the class described, even when the windows in said body are closed, the air in said body becomes foul from the breath of the occupants thereof, tobacco smoke may be present if any occupant is smoking, and upon occasion gases enter the body, such, for example, as the deadly carbon monoxide gas from the exhaust of the engine, but with this air purifier any and all of these impurities can be and are easily and quickly removed and thus prevented from accumulating to the discomfort and danger of the occupant or occupants.

My purifier is capable of being installed without difficulty in practically any closed car.

Other objects and advantages will appear in the course of the following description.

I attain the objects and secure the advantages of my invention by the means illustrated in the accompanying drawings, in which—

Figure 1 is an end elevation of an air purifier which embodies a practical form of my invention, showing the same installed in a closed car represented by broken lines; Fig. 2, a rear elevation of said purifier, the intermediate portion of the long suction pipe being broken out; Fig. 3, an enlarged, bottom plan of the upper suction box; Fig. 4, an en-

larged, longitudinal, vertical section through said box; Fig. 5, an enlarged, cross section through the box, taken on lines 5—5, looking in the direction of the associated arrow, in Fig. 3; Fig. 6, an enlarged, top plan of the lower suction box, and, Fig. 7, an enlarged, longitudinal, vertical section through said lower box.

Similar reference characters designate similar parts throughout the several views. Parts are broken out in each of Figs. 3, 4, 6, and 7.

A closed-car body is represented at 1, and a generator at 2, by broken lines in the first view.

A suction box 3 is attached within the body 1 to the roof thereof, and a suction box 4 is set in the floor of said body, with the top of said second-named box flush with the top of said floor. These suction boxes extend crosswise of and are located generally about midway between the ends of the body 1. A suction pipe 6 extends down from the box 3, at a point adjacent to one end thereof, past the corresponding end of the box 4, and through the floor of the body 1, to open at the bottom end into a casing 7 in which is a suction fan 8. The casing 7 is fastened to the vehicle chassis under the body 1. The fan 8 may be of any ordinary and usual construction, and has a shaft 9 which is driven from the shaft 10 of the generator 2, by means of a flexible shaft 11 having opposite terminals connected with said fan and generator shafts, respectively.

The suction box 3 has at the top a flange 12 by means of which said box is attached to the roof of the body 1. At one end in the bottom of the box 3 is a hollow connection 13 for the upper end of the pipe 6, and the suction box 4 has at the corresponding end in the bottom a similar hollow connection 14. A short, curved pipe or elbow 15, located below the floor of the body 1, extends from the connection 14 to the pipe 6. Thus

the box 3 opens through the connection 13 into the pipe 6, and the box 4 opens into said pipe through the connection 14 and the elbow 15, and the suction produced by the fan 8, when in motion, draws the air and whatever may be mixed therewith from said boxes through said pipes into the casing 7, and causes said air to be discharged therefrom, through an outlet 16 in the bottom thereof, into the outside atmosphere. The fan 8 is driven from the generator 2, through the medium of the generator shaft 10, the flexible shaft 11, and the fan shaft 9.

The bottom of the suction box 3 and the top of the suction box 4 are perforated in some suitable manner, as by means of pluralities of transverse slots 17 and 18, respectively. The box 3 is provided with a sliding shutter 19, and the box 4 with a sliding shutter 20. The shutter 19 has therein transverse slots 21 similar to the slots 17 in the bottom of said box, and the box 4 has therein transverse slots 22 similar to the slots 18 in the top of said last-named box.

The shutter 19 is arranged to slide between the perforated bottom of the box 3 and two angle-irons 23 fastened to the front and back sides of said box above the contiguous edges of said shutter. A knob 24 is secured to the shutter 19 approximately in the center of the same, projects below the bottom of the box 3, and operates in a longitudinal slot 25 in said bottom.

When the knob 24 is moved to one end of the slot 25, the shutter 19 is disposed thereby with the slots 21 directly over the slots 17, and said shutter is wide open, so that air with the impurities therein can enter the box 3 through said slots. When the knob 24 is moved to the other end of the slot 25, the shutter 19 is disposed thereby with the slots 21 over the solid parts of the bottom of the box 3, and said shutter is closed to exclude air from said box. The shutter may, of course, be disposed to open it only part way if desired.

The shutter 20 is arranged to slide between the perforated top of the box 4 and two angle-irons 26 fastened to the front and back sides of said box below the contiguous edges of said shutter. A knob 27 is secured to the shutter 20 approximately in the center thereof, projects above the top of the box 4, and operates in a longitudinal slot 28 in said top.

The shutter 20 is operated by the knob 27 in a similar manner to that in which the shutter 19 is operated by its knob, and when said first-named shutter is open air with its impurities is admitted to the box 4, and when said first-named shutter is closed air is shut out.

The box 4 has a flange at the top by means of which said box is supported and secured in place in the floor of the body 1.

In practice, the shutter 19 is opened when

it is desired to purify the air in the body 1, and especially for the purpose of removing smoke, dust, or gases that are lighter than air and rise; the shutter 20 is opened when there is dust or gas that is heavier than air, that settles or is located in the lower part of said body, and must be taken therefrom at the bottom; and both shutters are opened in the event a thorough and complete removal of impurities and foulness can not be obtained by opening one only. As soon as either or both shutters are opened the air is sucked into one or both boxes 3 and 4, and down through the pipe 6 or the pipes 6 and 15, into the casing 7, and discharged from the latter through the opening at 16, assuming that the fan 8 be in motion. Upon closing either or both shutters, the suction produced by the fan merely reduces the air content in the closed suction box or boxes, without drawing any appreciable amount of air from the body 1.

The body 1 not being air-tight, air from the outside enters said body as fast as air from the interior is sucked out through the purifier.

In the event the windows of the body 1 are wide open, and no need exists for removing air from the interior of said body by means of and through the purifier, at times when the generator 2 is in operation, the fan may be permitted to remain idle. One method of accomplishing this is to disconnect the flexible shaft 11 from the generator shaft 10 before the engine is started.

Small circular registers have been used for ventilating closed cars, but it has been found that they are inadequate, because the foul air has a tendency to become pocketed in a manner which prevents a considerable portion of said air from escaping through such registers. This difficulty is entirely overcome with my purifier, because the perforated boxes with my perforated shutters are arranged laterally in the car.

More or less change in the shape, size, construction, and arrangement of some or all of the parts of this appliance, in addition to those hereinbefore referred to, may be made without departing from the spirit of my invention or exceeding the scope of what is claimed.

I claim:

The combination with a closed automobile body having a floor and roof, of air purifying apparatus comprising, separate suction boxes in the under and upper sides respectively of said roof and floor, each of said boxes having a greater length than width, a side wall of each of said boxes being perforated with transverse slots disposed in spaced relation to provide inlets, the said boxes being disposed crosswise of said roof and floor so that said perforated side walls thereof are directed towards one another and extend laterally with respect to said floor and roof, plates as-

sociated with the perforated side walls of said boxes which are provided with spaced slots and are movable relative to said walls whereby the inlet thereof may be opened or closed, outlet ports for each of said boxes, a suction
5 fan casing disposed below said floor and provided with suction and discharge ports, a fan member rotatable therein, driving mechanism for said fan, and pipe connections extending between the roof and floor of said
10 body connected to the outlet ports of said boxes and the suction port of said fan casing.

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