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F. S. OREM

AIR CLEANER FOR AUTOMOBILE ENGINES AND THE LIKE

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Fig. 1.

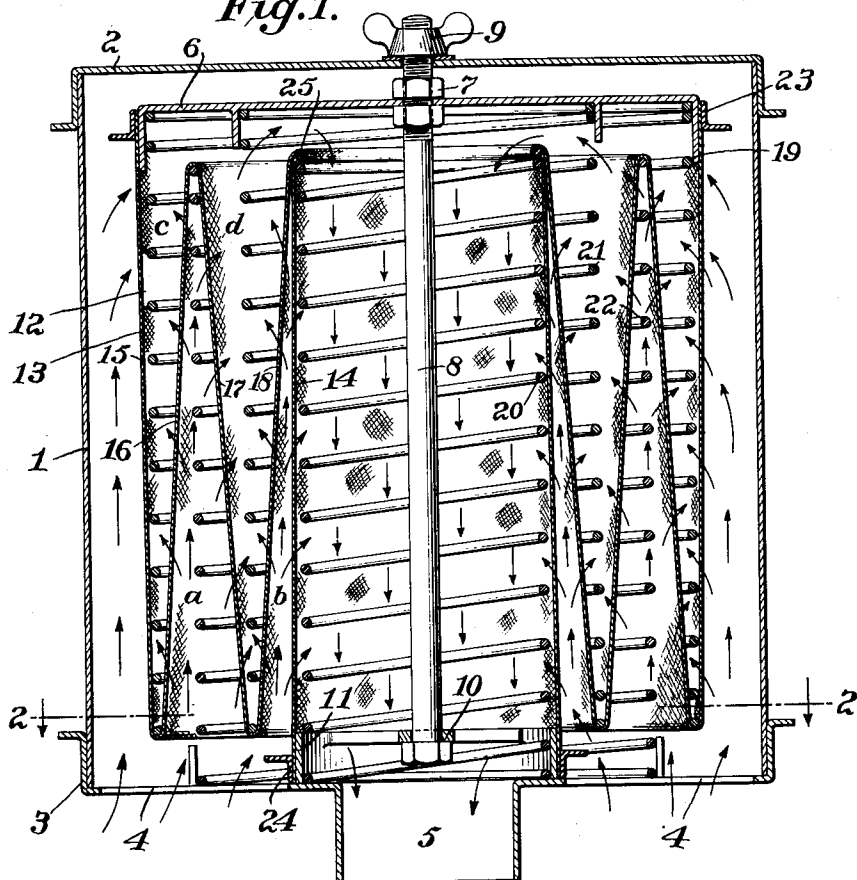
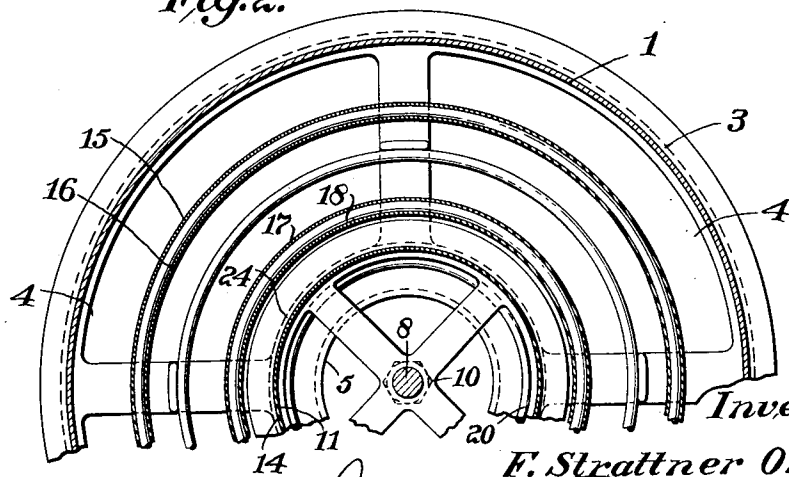


Fig. 2.



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by Spear Widdell & Donaldson Attys.

UNITED STATES PATENT OFFICE.

FREDERICK STRATTNER OREM, OF BALTIMORE, MARYLAND.

AIR CLEANER FOR AUTOMOBILE ENGINES AND THE LIKE.

Application filed May 29, 1924. Serial No. 716,787.

To all whom it may concern:

Be it known that I, FREDERICK STRATTNER OREM, a citizen of the United States, and a resident of Baltimore, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Air Cleaners for Automobile Engines and the like, of which the following is a specification.

The invention relates to air cleaners for use in connection with carbureters, and particularly for automobile engines, and it consists in the features and combination and arrangement of parts hereinafter described and particularly pointed out in the claims.

In the drawings:—

Figure 1 is a central vertical section of the cleaner device, and

Figure 2 is a horizontal sectional view on the line 2—2 of Fig. 1, only one-half of the device being illustrated in this figure.

In these drawings 1 indicates the cylindrical body member of the casing having a top 2 which forms a closure for the upper end of the body, and a bottom member 3 which involves a spider formation of any suitable form to provide an inlet or inlets at 4 for the dust-laden air. The outlet for the cleaned air is shown at 5, this being arranged centrally of the device and the openings 4 being disposed around this central outlet. Within the chamber and near the upper end thereof there is a plate 6 held by nuts 7 on a central rod 8, which passes through the top of the casing, where it is screw-threaded to receive a nut 9 which clamps the top to the main body of the casing. The lower end of the rod 8 passes through a spider 10 forming a part of the lower structure, this spider being directly connected with a flange or rim 11 extending up from the bottom member and held thereon in any suitable manner. Between the inlet and the outlet the screening material is interposed and this consists, in the particular form of the invention illustrated, of continuous fabric 12 composed of outer and inner substantially cylindrical portions 13 and 14, these portions being connected by conical portions of the fabric structure, presenting in cross section the zig-zag formation shown in Fig. 1, made up of the stretches 15, 16, 17 and 18. These intermediate zig-zag stretches are supported by spiral springs and the cylindrical portions of the cleaning fabric are also supported by spiral springs. These springs include

the outer spring 19, the inner spring 20, and the intermediate springs 21 and 22, which stretch or support the intermediate conical or zig-zag portions of the fabric. The spring 19 finds a bearing against the under side of the upper plate 6, and this plate also affords a bearing for the spring 21, whereas the two springs 20 and 22 find a bearing against the bottom of the device and are free at their upper ends. The fabric is stretched around or over these springs and its edges are attached respectively to the plate 6 and to the bottom 11, and in order to form this attachment clamping rings 23, 24 are provided which grip the fabric between themselves and the adjacent ring or flange.

The formation of the cleaning fabric, which preferably is continuous, into the substantially cylindrical inner and outer portions and the intermediate zig-zag connecting portions provides the re-entrant spaces *a, b* communicating with the inlet openings 4, and other re-entrant spaces *c, d* communicating with the space below the plate 6, which space, in turn, communicates freely with the central space through the substantially cylindrical portion 14 of the fabric. A ring is provided at 25 to rest on the upper coil of the spring 20 and the fabric is turned around this ring to get a support at this point. The springs 20 and 22 are free at their upper ends, while the springs 19 and 21 are free at their lower ends, and the fabric passes over these free ends of the springs and is kept taut by the action of the springs tending to stretch the fabric in reverse directions. In the operation of the device the dust-laden air will enter the openings 4 and in order to get to the outlet the air must pass through the fabric and it finds access to all portions of this fabric by reason of the cylindrical outer and inner portions and the re-entrant spaces formed by the zig-zag portions, and by reason of this construction the device has large capacity for taking care of a proper degree of air flow.

Furthermore, in the use of this apparatus in an automobile, the springs, being subjected to more or less vibration, due to the running of the car, will constantly apply a clearing force to the fabric, alternately rendering the same taut and loose in more or less degree, according to the degree of vibration of the springs, and this will serve

to dislodge the accumulations from the outer surface of the fabric, and these accumulations will be free to fall through the inlet openings, and only the cleaned air will pass from the outlet 5.

I claim as my invention:

1. In an air cleaner for automobiles, a casing having two opposed supports, a spiral spring seated on one support and extending towards, but free from contact with the other support, a spiral spring seated on said other support and extending towards but free from contact with the first support, said springs being concentric with each other, a tubular fabric supported at its opposite ends on said supports, and having its intermediate portion extending over the said springs in zig-zag form, said casing having an inlet and an outlet for air, the said fabric being interposed between the inlet and outlet, substantially as described.

2. In combination, a casing, a supporting

plate 6 within said casing, a ring shaped support 11 coaxially disposed with said plate, and of smaller diameter than the plate, a casing, a rod connected with the plate, and the ring, and removably connected with the casing, a spiral spring supported at one end against the plate, and extending towards the ring with its other end unsupported, a spiral spring supported at the ring, at one end, and having an unsupported end adjacent the plate, a tubular fabric having its ends attached to the ring and to the plate and its intermediate portion extending over the springs, said plate forming a closure at one end for the space within the tubular fabric and the ring forming an outlet for clean air, said casing having an inlet for the air between which and the outlet said fabric is interposed, substantially as described.

In testimony whereof, I affix my signature.

FREDERICK STRATTNER OREM.