

Feb. 6, 1951

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2,540,695

FUEL-ECONOMIZER AND AIR-CLEANER FOR MOTOR VEHICLES

Filed Jan. 17, 1948

Fig. 1.

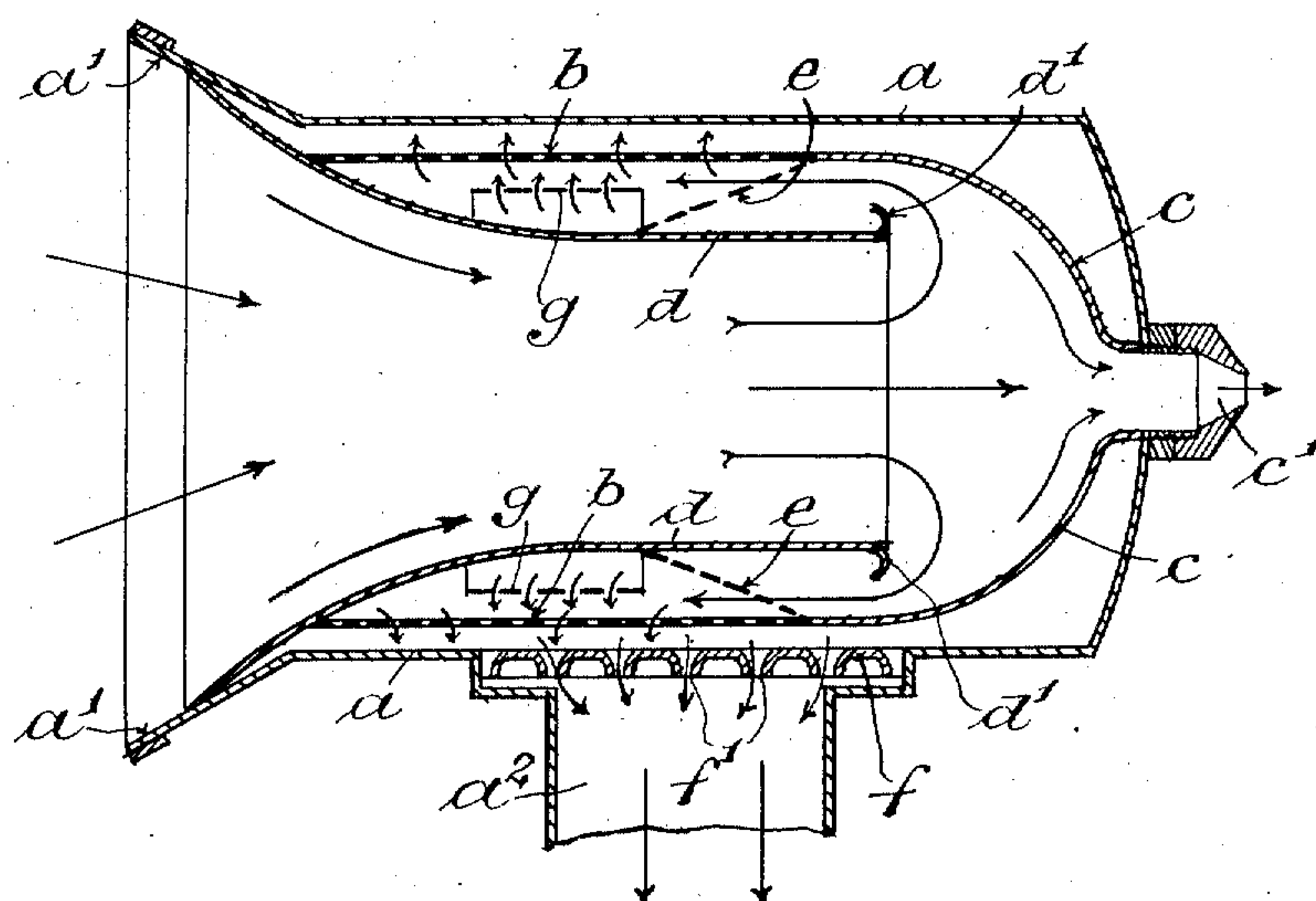
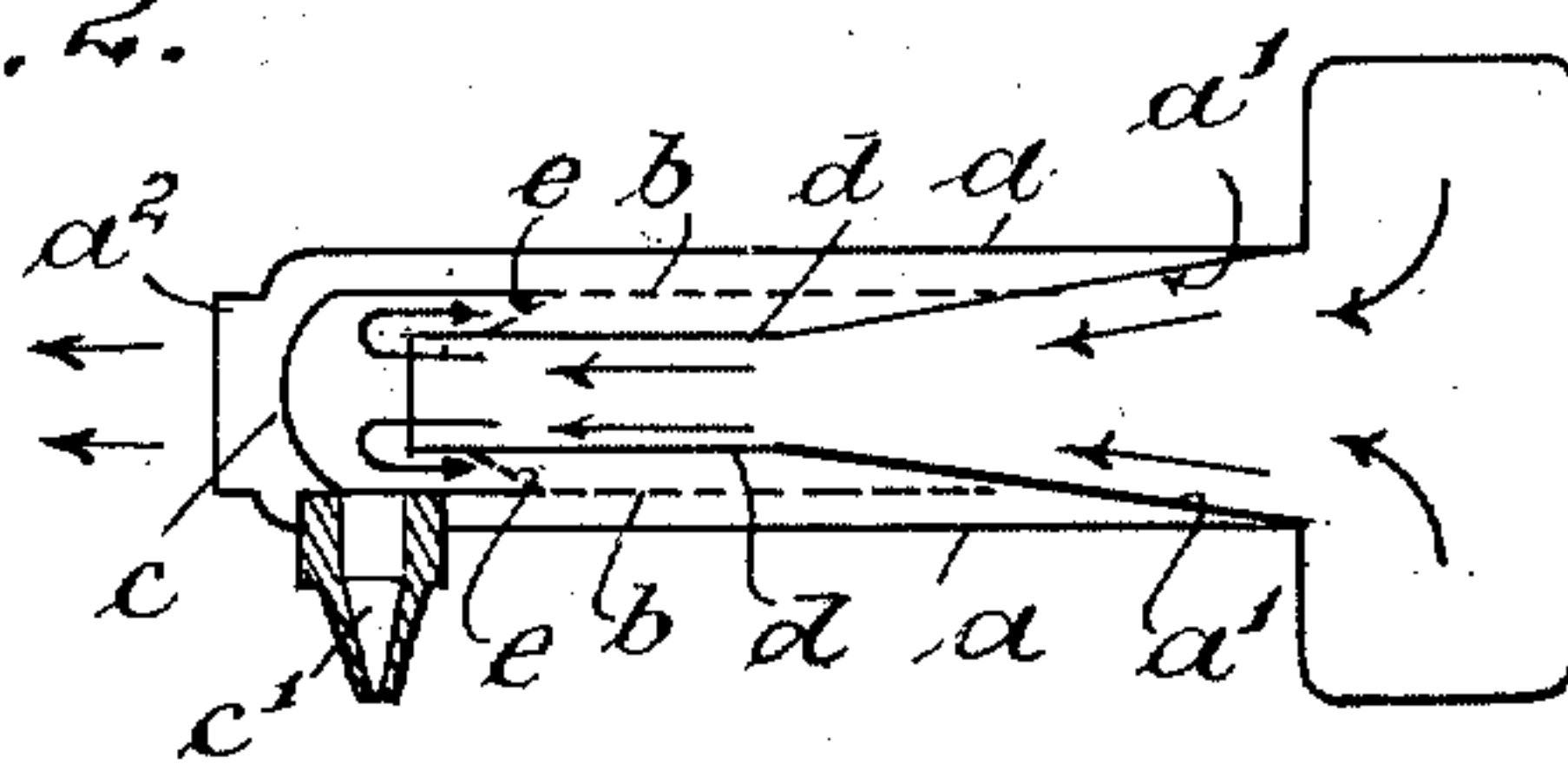


Fig. 2.



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## UNITED STATES PATENT OFFICE

2,540,695

## FUEL ECONOMIZER AND AIR CLEANER FOR MOTOR VEHICLES

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Application January 17, 1948; Serial No. 2,844  
In Great Britain January 13, 1947

6 Claims. (Cl. 183—67)

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The invention relates to air-admission devices for the carburettors of motor vehicles of the kind comprising a conical or funnel-mouthed tubular member, adapted to be located behind the radiator of a motor vehicle in such manner that the larger inlet end of the member is opposed to the hot air stream induced through a radiator by the cooling fan, whilst the smaller-diameter portion is connected to the primary-air inlet to the carburetter. A filter is incorporated between the inlet to and the outlet end of the device, in the form of a tubular member of gauze or equivalent perforated material of such smaller diameter than the outer member of the device as to constitute between itself and the said outer member an annular space of suitable thickness or area. Provision is made for the ejection from the device of any dirt or grit carried in by the air stream.

It has been found in practice that whilst a device of the construction above referred to functions quite effectively in reducing fuel consumption and increasing the power obtainable from an engine, there is a tendency, in some vehicles in which the devices have been applied, for undesirable noises to be set up by the inrushing air, especially when the engine throttle is opened quickly to obtain rapid acceleration.

It is an object of the present invention to modify and improve upon the construction above described in such a manner as to avoid the noises referred to.

According to the invention there is provided, within the tubular filter of a device of the construction described, an internal baffle tube of appropriately smaller diameter than the filter and extending longitudinally within it from the inlet end to a point suitably distant from the closed end of the filter or of the outer member as the case may be, the inlet end of the baffle tube being supported by or being made integral with the frusto-conical member which supports the inlet end of the filter. In the annular space between the baffle tube and the filter there is provided, at a suitable point in the length of the baffle tube, a perforated division ring preferably of frusto-conical form, the smaller diameter end of such ring resting on or being secured to the tube whilst its larger diameter end rests against or is secured to the interior surface of the filter.

In the accompanying drawing,

Fig. 1 is a sectional elevation of a constructional embodiment of the invention in which the outlet from the device to the carburetter is in the side wall of the outer member of the device, whilst

Fig. 2 shows, diagrammatically, an embodiment in which the outlet opening from the device is coaxial with the outer member, filter and baffle tube of the device.

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Referring to the drawing, *a* represents a tubular outer member having a conical or funnel-mouthed inlet *a'*. The outlet from the device, leading to the carburetter of the vehicle to which the device is applied, is shown at *a''*. In the embodiment shown in Fig. 1, the annular filter member, indicated at *b* is closed at its inner end by an imperforate domed member *c* provided with a central outlet *c'*. The baffle tube is shown at *d*. Its outer end is flared outwardly and secured within the frusto-conical inlet *a'* of the outer member *a*, whilst its inner end, which terminates a suitable distance from the domed member *c*, is or may be turned outwardly back upon itself at a suitable radius as at *d'* to form a curved directing surface for the air stream. The division ring is shown at *e*, its larger end commencing at the peripheral termination of the domed member *c*.

The hot air stream entering the device passes along the baffle tube *d* and is directed back by the domed member *c* along the space between the baffle tube and the peripheral portion of the member *c*. The air stream then passes through the division ring *e* and through the filter *b* into the annular space between the filter and the outer member, from whence it passes to the outlet *a''*, if desired, through orifices *f'* in a plate *f*.

Grit or other foreign matter carried into the device by the air stream is expelled through the opening *c'*, and is thus prevented from clogging the filter.

If desired, there may be provided in the space between the baffle tube and the filter, on the outer side of the division ring *e*, an annular perforated ring *g*, the function of which is to assist in breaking up the air stream.

The construction shown in Fig. 2 is substantially similar to that of Fig. 1 with the exception that the outlet opening *h* to the carburetter is formed in the end of the outer member *a*, whilst the expulsion opening for grit or other foreign matter is formed in the side wall of the member *a*. The closed end of the filter may be imperforate or may be perforated as may be preferred.

Having thus described our invention, what we do claim as new and desire to secure by Letters Patent is:

1. A fuel economizer and air-cleaner for a motor vehicle, including the combination, with a tubular outer member, of a widely open inlet portion forming the outer end thereof; a substantially tubular filter member spaced concentrically within the tubular outer member and having a partly closed inner end; the tubular outer member having an outlet port in one portion thereof; a substantially cylindrical baffle tube spaced concentrically within the filter member and terminating with its inner end spaced a predetermined distance from the inner partly closed end of said



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filter member; and an integral flaring outer end on said baffle tube disposed in contact with the outer end of said filter member and mounted with its outer end in stationary contact with part of the widely open inlet portion of said tubular outer member in order to close the outer end of the space between said tubular outer member and said filter member.

2. A fuel economizer and air-cleaner for a motor vehicle, including the combination, with a tubular outer member, of a widely open inlet portion forming the outer end thereof; a substantially tubular filter member spaced concentrically within the tubular outer member and having a partly closed inner end; the tubular outer member having an outlet port in one portion thereof; a substantially cylindrical baffle tube spaced concentrically within the filter member and terminating with its inner end spaced a predetermined distance from the inner partly closed end of said filter member and turned or doubled back outwardly upon itself to present a curved directing surface for guiding the air flow within the device towards the filter; and an integral flaring outer end on said baffle tube disposed in contact with the outer end of said filter member and mounted with its outer end in stationary contact with part of the widely open inlet portion of said tubular outer member in order to close the outer end of the space between said tubular outer member and said filter member.

3. A fuel economizer and air-cleaner for a motor vehicle, including the combination, with a tubular outer member, of a widely open inlet portion forming the outer end thereof; a substantially tubular filter member spaced concentrically within the tubular outer member and having a partly closed inner end; the tubular outer member having an outlet port in one portion thereof; a substantially cylindrical baffle tube spaced concentrically within the filter member and terminating with its inner end spaced a predetermined distance from the inner partly closed end of said filter member; a perforate plate disposed within the filter member in the path of air traveling from the inlet portion toward said filter member and said outlet port; and an integral flaring outer end on said baffle tube disposed in contact with the outer end of said filter member and mounted with its outer end in stationary contact with part of the widely open inlet portion of said tubular outer member in order to close the outer end of the space between said tubular outer member and said filter member.

4. A fuel economizer and air-cleaner for a motor vehicle, including the combination, with a tubular outer member, of a widely open inlet portion forming the outer end thereof; a substantially tubular filter member spaced concentrically within the tubular outer member and having a partly closed inner end; the tubular outer member having an outlet port in one portion thereof; a substantially cylindrical baffle tube spaced concentrically within the filter member and terminating with its inner end spaced a predetermined distance from the inner partly closed end of said filter member; a perforate plate of greater area than that of the cross section of the outlet port disposed within the filter member in the path of air traveling from said inlet portion toward said filter member

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and said outlet port; and an integral flaring outer end on said baffle tube disposed in contact with the outer end of said filter member and mounted with its outer end in stationary contact with part of the widely open inlet portion of said tubular outer member in order to close the outer end of the space between said tubular outer member and said filter member.

5. A fuel economizer and air-cleaner for a motor vehicle, including the combination, with a tubular outer member, of a flaring frusto-conical inlet portion forming the outer end thereof; a substantially tubular filter member spaced concentrically within the tubular outer member and having a partly closed inner end; the tubular outer member having an outlet port in one portion thereof; a substantially cylindrical baffle tube spaced concentrically within the filter member and terminating with its inner end spaced a predetermined distance from the inner partly closed end of said filter member; an annular perforate ring surrounding the cylindrical baffle tube out of contact therewith and spaced intermediate the latter and the filter member in concentric relation thereto; a perforate plate of greater area than that of the cross section of the outlet port disposed within the filter member in the path of air traveling from said inlet portion toward said filter member and said outlet port; and an integral flaring outer end on said baffle tube disposed in contact with the outer end of said filter member and mounted with its outer end in stationary contact with part of the flaring frusto-conical inlet portion of said tubular outer member in order to close the outer end of the space between said tubular outer member and said filter member.

6. A fuel economizer and air-cleaner for a motor vehicle, including the combination, with a tubular outer member, of a widely open inlet portion carried thereby and terminating thereby; a substantially tubular filter member spaced concentrically within the tubular outer member and having a partly closed inner end with a limited rear opening therein for ejection of foreign materials carried into the device by the air stream; the tubular outer member having an outlet port in one portion thereof; a substantially cylindrical baffle tube spaced concentrically within the filter member and terminating with its inner end spaced a predetermined distance from the inner partly closed end of said filter member; and an integral flaring outer end on said baffle tube disposed in contact with the outer end of said filter member and mounted with its outer end in stationary contact with part of the widely open inlet portion of said tubular outer member in order to close the outer end of the space between said tubular outer member and said filter member.

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#### REFERENCES CITED

The following references are of record in the file of this patent:

#### FOREIGN PATENTS

Number	Country	Date
386,537	France	Apr. 13, 1908
526,138	Germany	June 2, 1931