



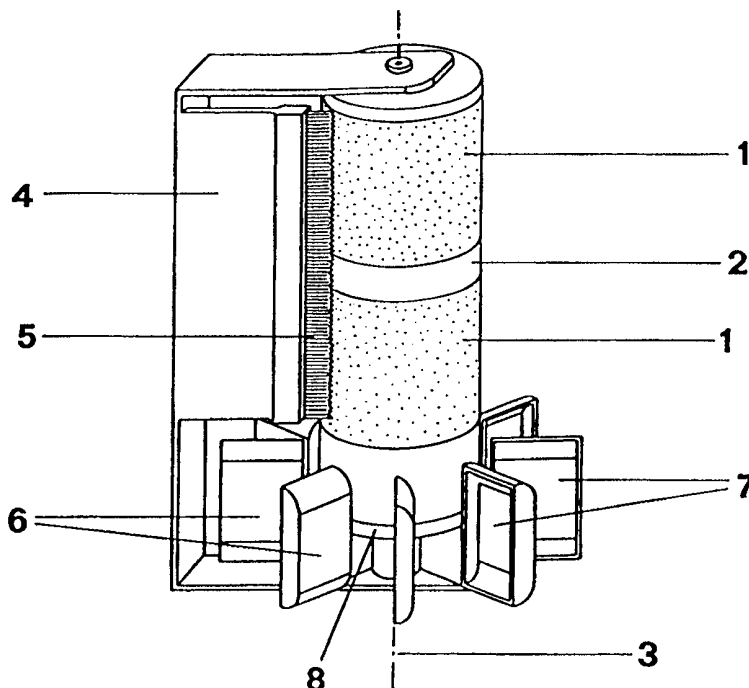
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(54) Title: AN AUTOMATIC CLEANING DEVICE FOR REFLECTORS PLACED ALONG ROADS AND MOTORWAYS

(57) Abstract

A device for the automatic cleaning of reflectors placed along roads and motorways, mainly consisting of: reflecting structures, arranged in perimetral bands (1) along the lateral surface of cylindric rollers (2) with vertical axis (3), movable with respect to a support (4) that may be applied directly to the guardrail (G) or to the lateral walls (P) of roads and tunnels; a cleaning element for each roller (2), consisting of a fixed brush (5) linked to said support (4); an automatic rotation means, comprising a plurality of small blades (6) arranged along the base circumference (8) of each roller (2) and that may be operated by the air pressure caused by the passing by of the vehicles near said reflectors.



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"AN AUTOMATIC CLEANING DEVICE FOR REFLECTORS PLACED ALONG ROADS AND MOTORWAYS"

The present invention concerns a device for the automatic cleaning of reflectors placed along roads and motorways, operated by the air moving caused by the passing-by vehicles.

It is well known that reflectors are placed long the edges of the roads, which have the task of reflecting the headlights for allowing to find out the lanes also if the lighting is lacking. Furthermore, said elements, due to their particular placing at the height of the exhausts of said vehicles and in presence of smog and dusts, are quickly covered with opaque layers which quickly reduce their functionality, in particular in the tunnels where this phenomenon is surely exalted.

Therefore, it proves to be necessary, for maintaining the functionality of said reflectors, to periodically clean them, which implies the presence of the specific vehicles and personnel and with long working times, high costs and even risks for the workers.

It is the aim of the present invention to solve above mentioned inconveniences by means of a device that allows the automatic cleaning of the surfaces of the reflectors, with a perfect functionality and a low cost.

The aim set forth is reached by means of the device according to the present invention, mainly consisting of:

- reflecting structures, arranged in perimetral bands along the lateral surface of cylindric rollers with vertical axis, movable with respect to a support that may be applied directly to the guardrail or to the lateral walls of roads and tunnels;
- a cleaning element for each roller, consisting of a fixed brush linked to said support, preferably arranged in vertical position along the whole length of the roller until it touches its external surface, so as to immediately remove any substance that may make the reflector opaque, following to the rotation of the roller;
- an automatic rotation means, comprising a plurality of small blades arranged along the base circumference of each roller and that may be operated by the air pressure caused by the passing by of the vehicles near said reflectors.

The advantages of the device according to the present invention are many and remarkable:

- a high reflecting functionality, due to the presence at sight for the coming vehicles of a plurality of superimposed reflector bands, kept always clean;
- energetic independence due to the exploitation of the air moving as a rotation source for the small blades, whe-

reby said air moving is remarkable when lorries or fast vehicles pass by;

- a complete lack of maintenance for very long time periods, unless for checks of damages to the rotation system;
- and, following to above advantages, inexpensiveness.

The present invention will be described more in detail hereinbelow relating to the drawings in which two embodiments are shown.

Figure 1 shows an axonometric view of a device for the automatic cleaning of reflectors placed along roads and motorways.

Figure 2 shows a device according to the present invention, working along a motorway or similar.

Figure 3 shows an axonometric view of a device having dimensions and structure suitable for being arranged inside a tunnel, as shown in figure 4.

The enclosed figures show an automatic cleaning device for reflectors placed along roads and motorways, comprising:

- a plurality of reflecting structures, arranged in bands 1 one on the other along the lateral surface of a roller 2

rotating on the vertical axis 3 with respect to a supporting element 4, that may be applied in well known way directly to a guardrail G of roads or motorways or to the lateral walls P of tunnels or similar;

- a linear brush 5, linked to said element 4, in contact by means of its bristles with the surface of said bands 1, so as to remove any substance that might make the reflector opaque, following to the automatic rotation of said roller 2, thus preventing any accumulation and stagnation thereof;
- a series of small blades 6, preferably concave 7 in the sense of the wind pressure developed by the passing by of the vehicles, and linked along the circumference 8 of the lower base of said roller 2 so as to determine the rotation of said roller 2 with respect to said supporting element 4 and thus the continuous removing by said brush 5 of the material on said bands 1.

In the variants shown in figures 3 and 4, the vertical elongation of said roller 2 is greater than in the described example due to the need of reflecting surfaces 1 of greater extensions, in particular in the dark of tunnels, and the supporting structure 4 shows, instead of the lateral connection, a base 9 for being placed on the ground, according to the needs.

CLAIMS

1. A device for the automatic cleaning of reflectors along roads and motorways, operated by the air moving of the vehicles passing by, *characterized in:*
 - a plurality of reflecting structures, arranged in bands (1) one on the other along the lateral surface of a roller (2) rotating on the vertical axis (3) with respect of a supporting element (4), that may be applied in well known way directly to a guardrail (G) of roads or motorways or to the lateral walls (P) of tunnels or similar;
 - a linear brush (5), linked to said element (4), in contact by means of its bristles with the surface of said bands (1), so as to remove any substance that might make the reflector opaque, following to the automatic rotation of said roller (2), thus preventing any accumulation and stagnation thereof;
 - a series of small blades (6), preferably concave (7) in the sense of the wind pressure developed by the passing by of the vehicles, and linked along the circumference (8) of the lower base of said roller (2) so as to determine the rotation of said roller (2) with respect to said supporting element (4) and thus the continuous removing by said brush (5) of the material on said bands (1).

2. A device according to claim 1, for being applied inside tunnels and similar, *characterized in* a vertical elongation of said roller (2) of such dimensions as to determine the presence of reflector surfaces of great extension, particularly suitable in the dark, and also *characterized in* a supporting base (9) for the application to the ground.

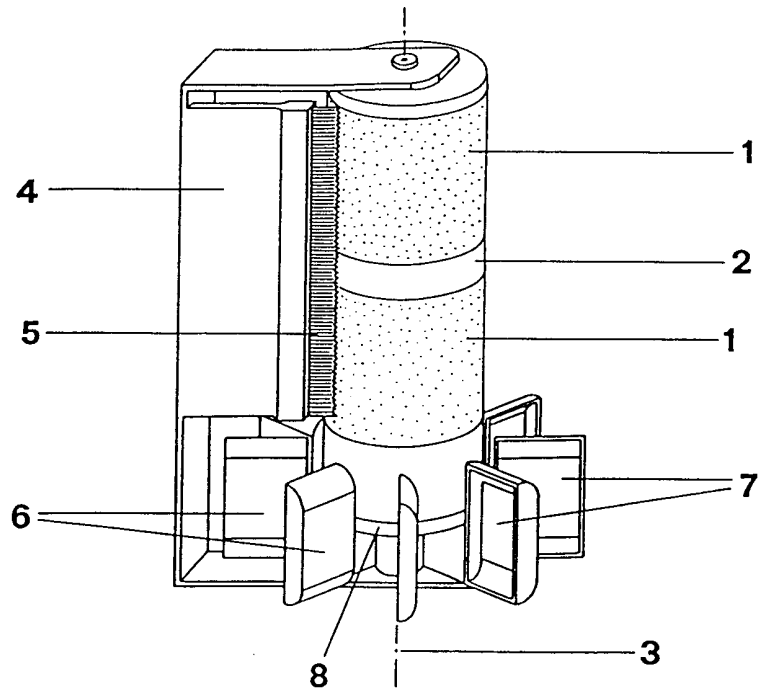


FIG. 1

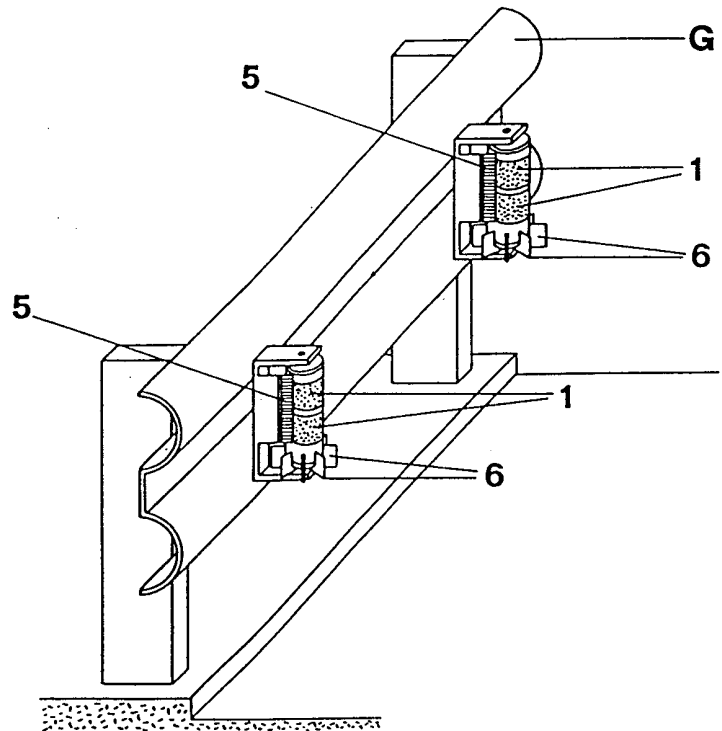
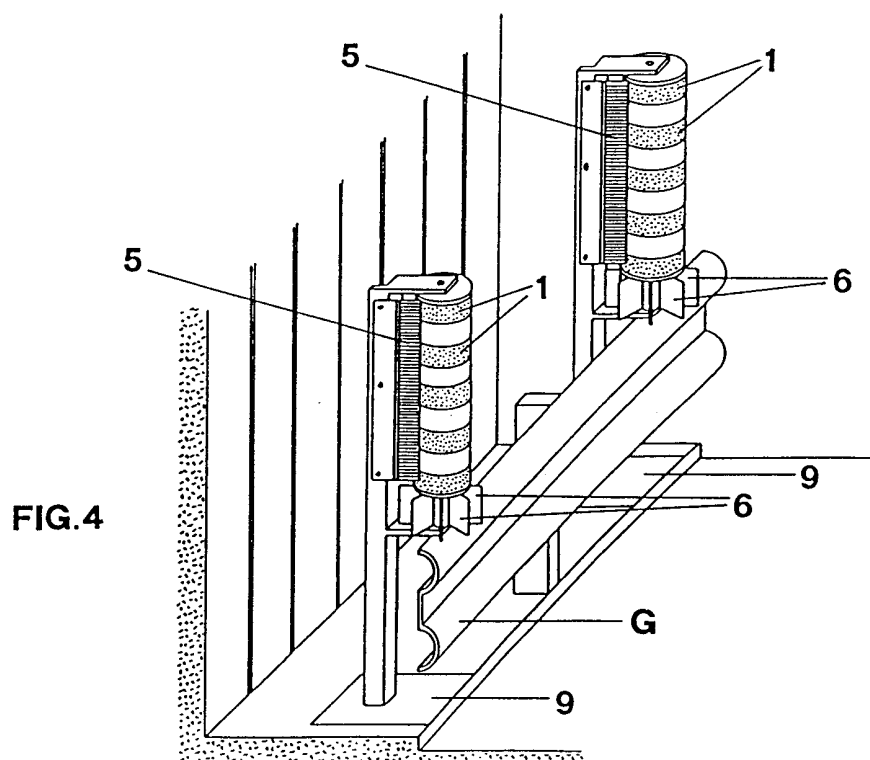
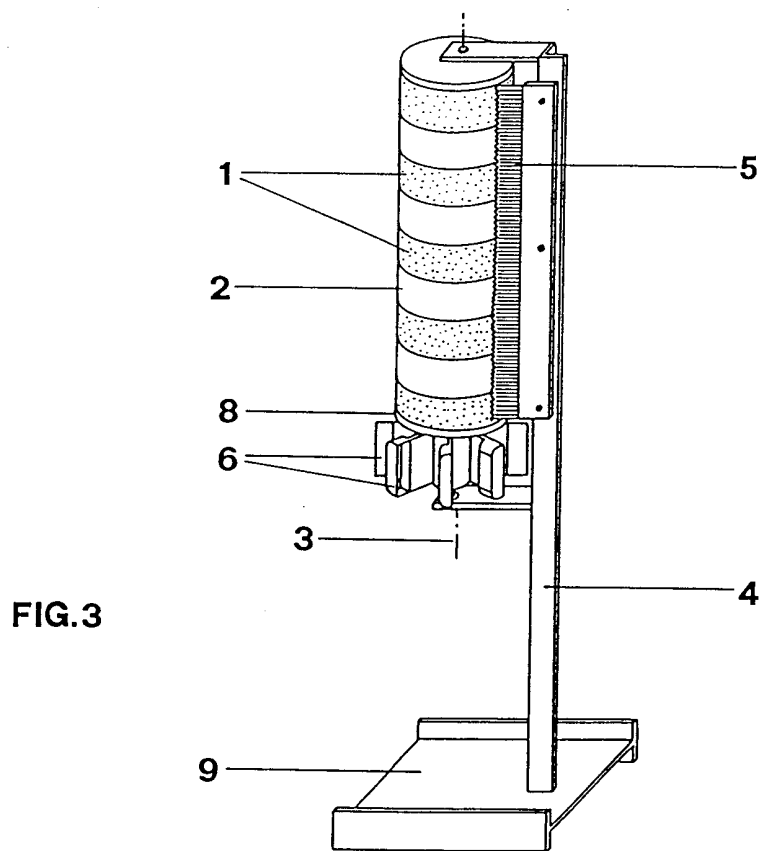


FIG. 2



INTERNATIONAL SEARCH REPORT

International Application No
PCT/IT 98/00277

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 E01F9/015

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 E01F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	PATENT ABSTRACTS OF JAPAN vol. 096, no. 004, 30 April 1996 & JP 07 331622 A (KOJI SUNAHARA), 19 December 1995 see abstract ---	1,2
Y	DE 21 08 928 A (F. KLEMPAU) 7 September 1972 see page 4, line 23 - page 6, line 10; figures ---	1,2
A	WO 80 02705 A (RIES W) 11 December 1980 see abstract ---	1,2
A	GB 2 113 280 A (STEWART DOUGLAS LUNUN) 3 August 1983 see page 2, line 102 - line 106; figure 11 -----	1,2

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Information on patent family members

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