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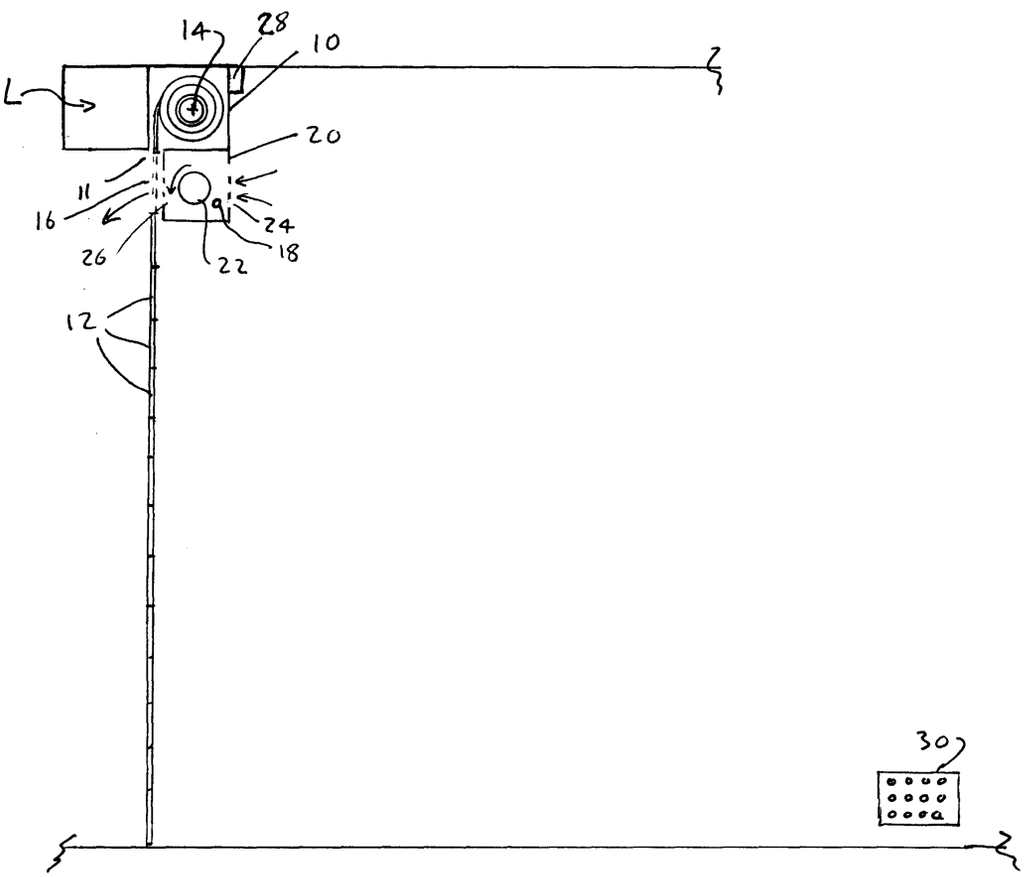
(54) Garage ventilation

(57) A ventilating assembly comprises a door (e.g. a roller shutter door having a series of horizontal slats 12) installed in an entrance to a garage or other building enclosure, and an extraction fan assembly (20) arranged for energisation upon closure of the door, to expel air from within the enclosure through an outlet formed in the door.



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Description

[0001] The present invention relates to ventilation arrangements, particularly for ventilating a garage, workshop, factory unit or other indoor enclosures prone to contain noxious gases.

[0002] Modern garage doors provide a relatively airtight seal. This is generally advantageous but leads to the situation that if a vehicle is driven into a garage and then the door is immediately closed, the garage will be filled with exhaust gases which cannot escape. There are, however, many other indoor enclosures which are liable to contain noxious gases.

[0003] We have now devised arrangements for overcoming the above-described problem.

[0004] In accordance with the present invention, there is provided a ventilating installation which comprises a door installed or for installing in an entrance of a building enclosure, and an extraction fan assembly arranged for energisation upon closure of the door, to expel air from within the enclosure through an outlet formed in the door.

[0005] The extraction fan assembly is preferably mounted at or adjacent the top of the door. In the case of a roller shutter door, the fan assembly is preferably mounted below the roller housing of the door: preferably one of the horizontal slats of the door is provided with a grille or a perforated section, to register with the fan assembly outlet. In the case of an up-and-over door, a grille or perforated section is provided in the door, to register with the fan assembly outlet.

[0006] The fan assembly is preferably energised once the door reaches its closed position. This may be sensed by de-energisation of the door motor, in the case of a powered door, or by a switch positioned so that it actuated as the door reaches its closed position.

[0007] The fan assembly may be arranged so that it remains energised for a predetermined period of time. Preferably however, a sensor of one or more noxious gases (e.g. carbon monoxide) is mounted in or adjacent the fan assembly, to sense the concentration of such gas or gases in the outlet air flow: the fan remains energised until the sensed concentration of the noxious gas or gases falls below a predetermined threshold value.

[0008] Additionally, an occupancy detector (e.g. a passive infra red detector) may be mounted in the garage or other enclosure, and arranged to energise the fan assembly upon detecting the presence of a person in the enclosure, if the noxious gas sensor senses greater than a given value of such gas or gases in the enclosure.

[0009] Preferably the installation further comprises an inlet for fresh air, to replace the air extracted by the fan assembly. Preferably this air inlet is installed at a position remote from the extraction fan assembly, preferably at or adjacent the opposite end of the garage, or other enclosure. In the case of a large enclosure, such as a factory unit, a fan may be provided in the fresh air inlet, to positively introduce the fresh air: preferably the inlet fan assembly switches on and off with the extraction fan.

[0010] An embodiment of the present invention will now be described by way of example only and with reference to the accompanying drawing, the single Figure of which is a schematic sectional view through a roller-shutter garage door which has an extraction fan assembly.

[0011] Referring to the drawing, there is shown a garage doorway in which a roller shutter door is installed. The roller shutter door comprises a housing 10 mounted behind a lintel L extending across the top of the garage doorway. The door itself comprises a number of horizontal slats 12, adjacent slats being pivotally coupled together. A roller 14 is mounted within the housing 10 and the door is wound around the roller 14, extending through a slot 11 in the lower side of the housing 10. An electric motor (not shown) is mounted within the housing to turn the roller in order to raise or lower the door. U-section channels are mounted down the opposite sides of the doorway and the opposite edges of the door run in these, providing a seal between the edges of the door and the doorway. A remote control system is provided to enable the vehicle driver to control the raising and lowering of the door.

[0012] In accordance with the invention, an extraction fan assembly 20 is installed in the garage, below the roller shutter housing 10 and behind the door itself (when lowered). The extraction assembly comprises a casing in which a fan impeller 22 is rotatably mounted: an electric motor (not shown) is provided to drive the impeller 22. The fan casing has an inlet 24 in its rear, directed towards the garage interior, and an outlet 26 in its front. One of the slats of the roller shutter door is formed with a grille or perforated section 16: when the door is fully lowered and therefore closed, the grille 16 is registered with the outlet 26 of the fan assembly.

[0013] The motor of the fan assembly is provided with a controller which is connected to the control system of the roller shutter door. The arrangement is such that as the door reaches its closed position, and the door motor is switched off, the fan motor is energised to extract air and exhaust gases from within the garage and expel them from the garage through the grille 16. The fan motor may be arranged to run for a predetermined (preferably adjustable) length of time.

[0014] Alternatively or in addition, a carbon monoxide sensor 18 may be mounted in the air flow passage of the fan assembly, and arranged to maintain the fan motor running until the sensed concentration of carbon monoxide falls below a predetermined threshold value.

[0015] Additionally, a passive infra red (PIR) sensor 28 may be mounted in the garage and arranged to switch the fan motor on upon detecting the presence of a person in the garage, whilst the door is closed, if at the same time the carbon monoxide detector senses that the concentration of carbon monoxide is above a

given value.

[0016] In any event, the garage is provided with an inlet 30 for fresh air, to replace the air extracted by the fan assembly. The inlet 30 is installed at a position remote from the fan assembly, preferably at or adjacent the opposite end of the garage and preferably adjacent ground level. Preferably the air inlet includes a filter through which the fresh air passes.

[0017] Whilst the invention has been described in use with a roller shutter door, it may instead be used with up-and-over doors, whether powered or manually raised and lowered. Where the up-and-over door is powered, the fan motor may be energised upon the drive motor of the door switching off, as the door reaches its closed position: alternatively, a switch may be provided on the door frame and arranged to be actuated as the door reaches its closed position, in order to energise the fan motor; the latter arrangement is employed where the door is manually operated.

[0018] It will be appreciated that the installations which have been described ensure that the atmosphere within the garage will be cleared rapidly of vehicle exhaust gases and will accordingly facilitate the safety of the garage.

[0019] Whilst the invention has been described when installed in a garage, particularly a domestic garage, the invention may be installed in any building enclosure liable to contain noxious gases, for example a workshop, factory unit or other industrial premises.

Claims

1. A ventilating installation which comprises a door installed or for installing in an entrance of a building enclosure, and an extraction fan assembly arranged for energisation upon closure of the door, to expel air from within the enclosure through an outlet formed in the door.

2. A ventilating installation as claimed in claim 1, in which said extraction fan assembly is mounted at or adjacent the top of said door.

3. A ventilating installation as claimed in claim 1, in which said door comprises a roller shutter door.

4. A ventilating installation as claimed in claim 3, in which said extraction fan assembly is mounted below a roller housing of said door.

5. A ventilating installation as claimed in claim 4, in which said door comprises a series of horizontal slats, one of which is formed with a grille or perforated section to register with an outlet of said extraction fan assembly.

6. A ventilating installation as claimed in claim 1, in which said door comprises an up-and-over door.

7. A ventilating installation as claimed in claim 6, in which said door is provided with a grille or perforated section to register with an outlet of said extraction fan assembly.

8. A ventilating installation as claimed in any preceding claim, arranged for said extraction fan assembly to be energised in response to said door reaching its closed position.

9. A ventilating installation as claimed in claim 8, in which said door is powered by a motor and said installation is arranged for said extraction fan assembly to be energised in response to de-energisation of said motor.

10. A ventilating installation as claimed in claim 8, further comprising a switch positioned to be actuated as said door reaches its said closed position.

11. A ventilating installation as claimed in any preceding claim, arranged for said extraction fan assembly to remain energised for a predetermined period of time.

12. A ventilating installation as claimed in any preceding claim, further comprising a sensor of one or more noxious gases mounted adjacent said extraction fan assembly and arranged so that said extraction fan assembly remains energised until the sensed concentration of said noxious gas or gases falls below a predetermined threshold value.

13. A ventilating installation as claimed in claim 12, further comprising an occupancy detector which is arranged to energise said extraction fan assembly upon detecting the presence of a person in said building enclosure to which said door is fitted, if said sensor of noxious gas or gases senses a concentration of such gas or gases greater than a given value.

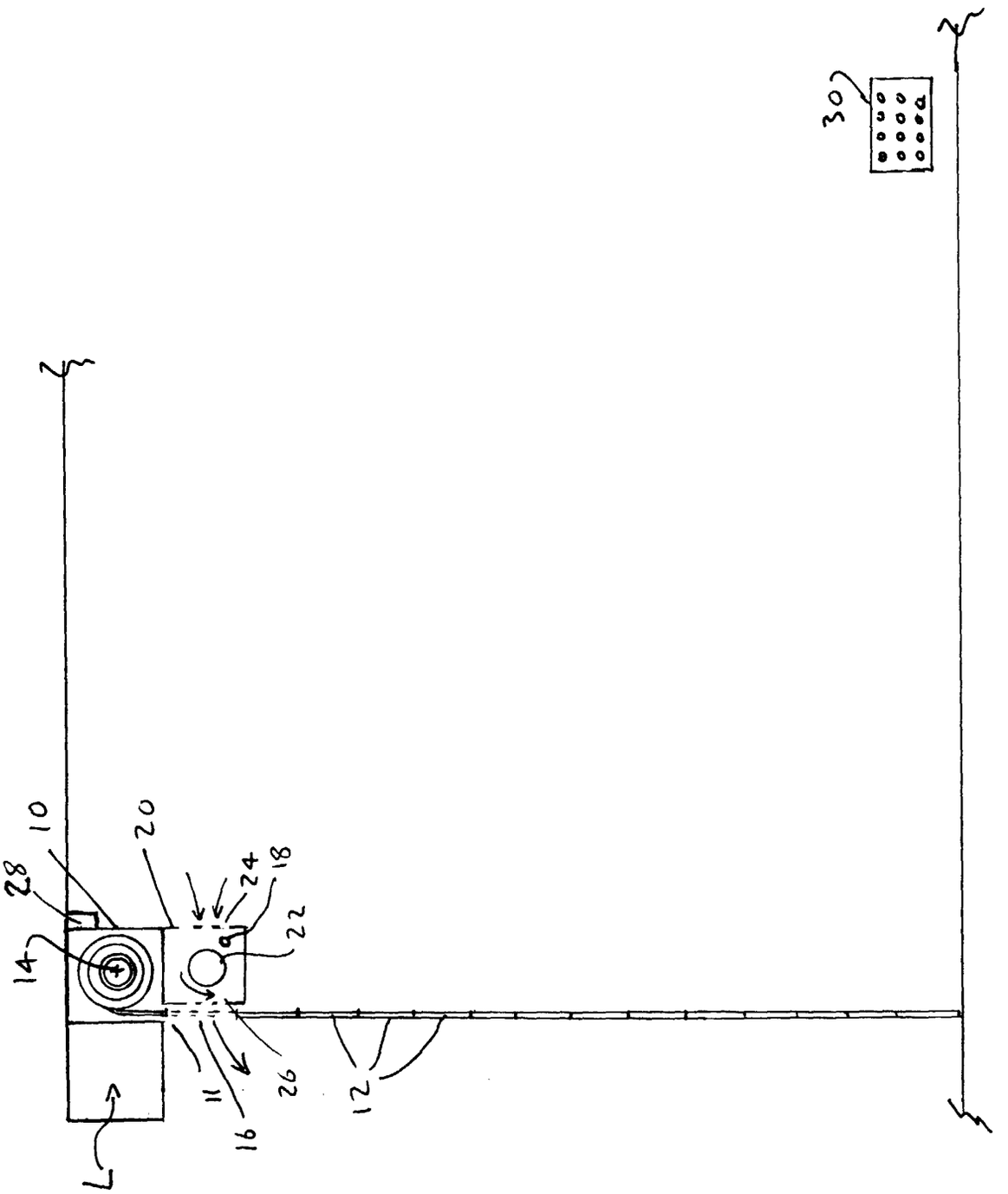
14. A ventilating installation as claimed in any preceding claim, further comprising an inlet for fresh air to replace air extracted by said extraction fan assembly.

15. A ventilating installation as claimed in claim 14, in which said air inlet is installed at a position, in said building enclosure in which said door is fitted, remote for said extraction fan assembly.

16. A ventilating installation as claimed in claim 14 or 15, in which said air inlet is provided with a fan assembly for the positive introduction of fresh air.

17. A ventilating installation as claimed in claim 16, ar-

ranged for said inlet fan assembly to switch on and off with said extraction fan assembly.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