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Savage

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[54] **DEODORISATION UNIT**

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[51] **Int. Cl.**..... **F23j 11/08**

[58] **Field of Search** ..... 261/36 R, 99, 112; 55/240; 98/115 R; 417/40

[56] **References Cited**

UNITED STATES PATENTS

3,238,124	3/1966	Burton	261/112 X
3,332,435	7/1967	Anderson et al.	417/40
3,403,531	10/1968	Oesterheld	261/99 X
3,585,786	6/1971	Hardison	261/112 X

FOREIGN PATENTS OR APPLICATIONS

493,735	10/1938	United Kingdom	261/99

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[57] **ABSTRACT**

A deodorisation unit for deodorising cooking or like fumes, comprising a plurality of absorbent or porous wicks extending between an upper deodorising fluid reservoir and a lower container for surplus deodorising fluid and a pump for periodically returning surplus deodorising fluid from the lower container to the upper reservoir.

8 Claims, 3 Drawing Figures

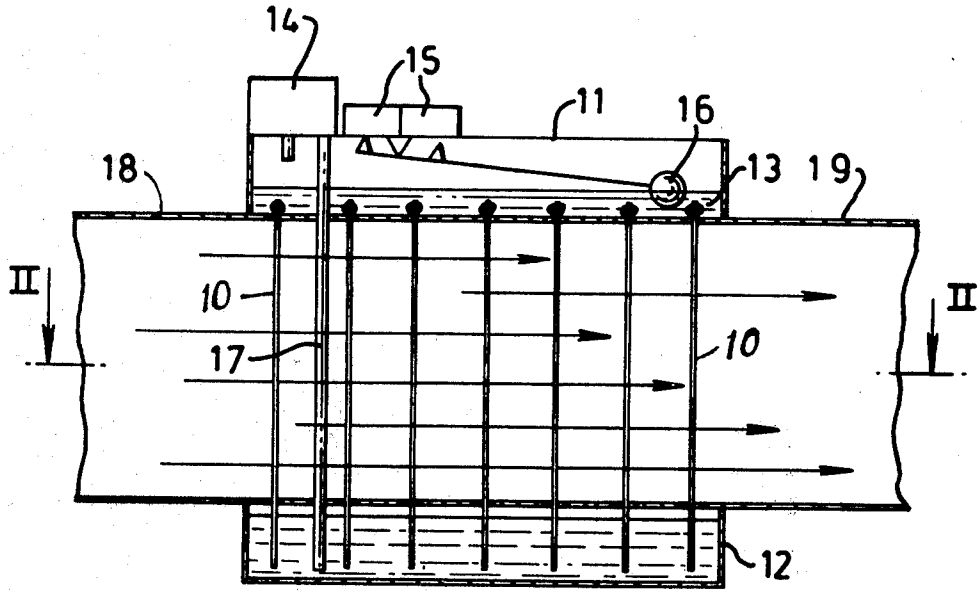


FIG. 1.

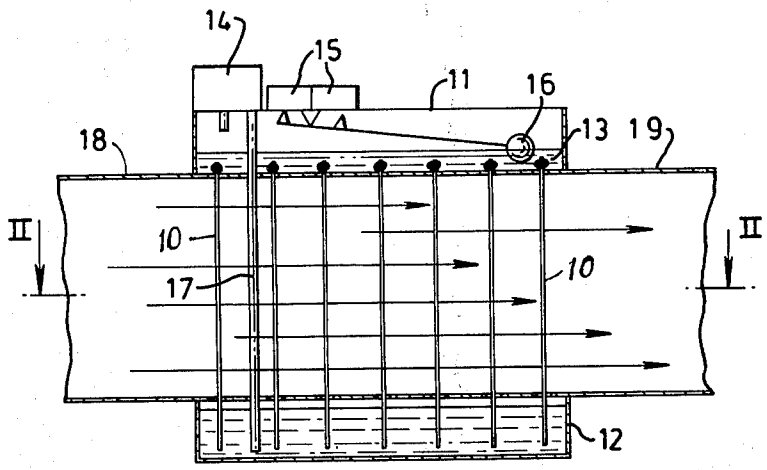


FIG. 2.

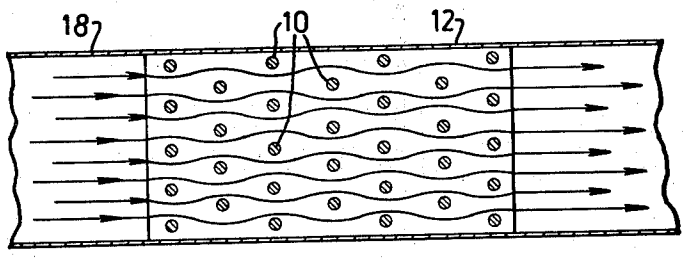
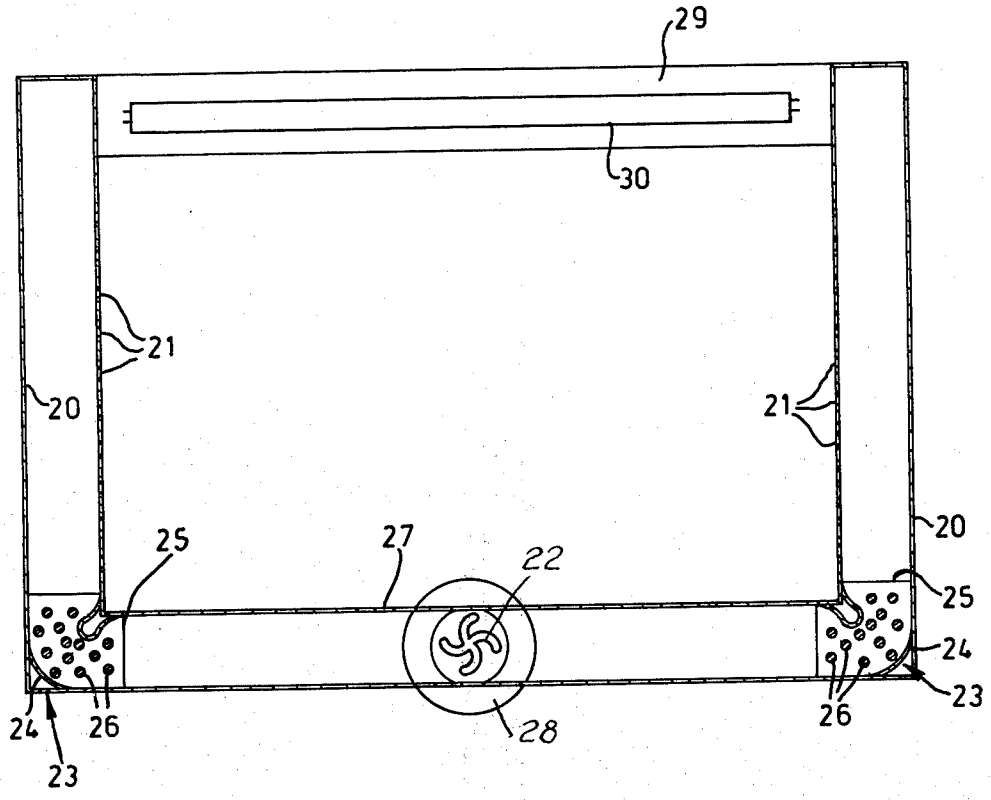


FIG. 3.



DEODORISATION UNIT

This invention relates to a deodorisation unit for deodorising cooking or like fumes emanating from, for example, large fixed cooking installations such as used in restaurants, or mobile cooking installations such as refreshment kiosks.

In order to comply with Public Health regulations and reduce atmospheric pollution it is necessary to provide efficient means of extracting and deodorising cooking fumes produced by cooking installations. Various deodorisation systems are known, all of which tend considerably to obstruct the flow of fumes therethrough and also tend to become blocked with grease and oil present in vapour form in the fumes. Many attempts have been made to overcome these problems such as atomising or fogging the deodoriser into the fumes, but these have generally proved to be very inefficient and expensive. One of the most commonly used deodorisers for cooking fumes is activated charcoal, which is expensive to use and is sometimes not particularly efficient.

It is an aim of the invention to overcome the aforementioned disadvantages and provide a deodorisation unit which is both simple and economical.

With this aim in view the invention provides a deodorisation unit for deodorising cooking or like fumes, comprising a plurality of absorbent or porous wicks extending between an upper deodorising fluid reservoir and a lower container for surplus deodorising fluid, and a pump for periodically returning surplus deodorising fluid from the lower container to the upper reservoir.

Preferably, a float and switch arrangement is provided in the upper reservoir so that the pump is operated if the fluid in the reservoir falls below a certain pre-selected level and is deactivated if the fluid rises above a second pre-selected level.

Thus, by employing gravity feed and by controlling the drip-rate (i.e. the rate with which the upper ends of the wicks can absorb fluid from the reservoir), the wicks can be kept constantly moist throughout their entire length with deodorising fluid. The wicks are advantageously arranged in a staggered manner so that the fumes to be deodorised are carried in a turbulent path past the wicks giving good contact between the fumes and the wicks.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

FIG. 1 is a diagrammatic side elevation showing a deodorisation unit constructed in accordance with the invention;

FIG. 2 is a section taken along the line II — II in FIG. 1; and

FIG. 3 is a diagrammatic horizontal section through a roof unit incorporating two deodorisation units of the invention and suitable for use on a mobile refreshment kiosk.

FIGS. 1 and 2 show a deodorisation unit constructed according to the invention and suitable for deodorising cooking or like fumes emanating from, for example, large fixed cooking installations such as used in restaurants, or mobile cooking installations such as refreshment kiosks. The deodorisation unit comprises a plurality of absorbent lint wicks **10** arranged in staggered rows and extending vertically between an upper deodorising fluid reservoir **11** and a lower container **12** for surplus deodorising fluid. The underside of the reservoir is perforated to allow the upper ends of the wicks **10** to extend into a deodorising fluid **13** contained in the reservoir **11**. The size of these perforations is chosen so that the wicks **10** always remain moist throughout their entire length under all operating conditions of the unit. Any excess deodorising fluid from the wicks **10** collects in the lower container **12**.

The reservoir **11** is provided with a pump **14** which can be switched on and off by microswitches **15** controlled from a ball **16** floating in the deodorising fluid **13** present in the reservoir **11**. When the fluid **13** falls below a certain pre-selected level, the pump **14** is activated to pump deodorising fluid from the lower container **12** up a pipe **17** and into the reservoir **11**. Similarly, when the fluid **13** reaches a second but higher pre-selected level, the pump **14** is switched off automatically by the float ball **16** and the microswitches **15**. Fumes to be deodorised are fed to the unit through a duct **18** and leave through a second duct **19**.

In FIG. **2**, the turbulent flow of the fumes past the wicks **10** can clearly be seen. The fact that the wicks **10** are arranged in staggered rows accounts for this turbulence which ensures good mixing of the fumes with the deodorising fluid vapour which has evaporated from the wicks **10**.

It will thus be appreciated that the deodorisation unit of the invention provides a particularly efficient and simple means of totally deodorising cooking and like fumes. If a unit such as illustrated in FIGS. **1** and **2** proves to be insufficient for effective deodorisation of fumes from a particular source, then a larger unit may be employed which is provided with additional wicks.

It is also noted that the deodorisation unit of the invention cannot become blocked up with grease and oil entrained in vapour form in the fumes being deodorised, which is a common problem with existing deodorisers. Although the wicks first contacted by the fumes may collect a certain amount of grease and oil, thus reducing their evaporation of the deodorising fluid, the air flow of fumes through the unit will not be impeded, nor will the effectiveness of the wicks further into the unit.

FIG. **3** shows a roof unit for a mobile refreshment kiosk incorporating two deodorisation units of the invention. Fumes to be deodorised are drawn into two rectanular sectioned ducts **20** through apertures **21**. The fumes are then drawn by a fan **22** through respective deodorisation units **23** which each have a respective curved outer side **24** and a respective inwardly projecting baffle **25** to promote the desired turbulent air flow in the units **23**. Each unit **23** is provided with wicks **26** and the operation of each unit **23** is exactly the same as the unit described with reference to FIGS. **1** and **2**. The deodorised fumes are drawn by the fan **22** along a further duct **27** to be ejected from a ventilator **28**. The fourth side of the roof unit is completed by a ducting **29** which contains a strip light **30** for illuminating a display sign **31**.

Each deodorisation unit is provided with its own deodorisation fluid reservoir and lower container (not shown), the float and switch arrangement being associated with the reservoir of one deodorisation unit and the pump being associated with the other reservoir. Appropriate piping is provided so that the pump can de-

liver fluid from both lower containers into the reservoirs.

The above described roof unit is both simple to manufacture and maintain, it only being necessary periodically to top up the level of the deodorisation fluid in the reservoirs as the fluid is used up.

What we claim is:

1. A deodorisation unit comprising ducting through which fumes to be deodorised are forced, an upper fluid reservoir for containing deodorising fluid mounted above the ducting, a lower fluid container for surplus deodorising fluid mounted oppositely below the ducting, a plurality of absorbent wicks extending from said reservoir across the ducting in the direct path of said fumes and into said container, said wicks being arranged in staggered rows to ensure good mixing of the fumes and the deodorising fluid vapour evaporating from the wicks, a pump having an inlet connected to said container and an outlet connected to said reservoir and means for periodically actuating said pump for transferring fluid from said container to said reservoir.

2. A deodorisation unit as claimed in claim 1, wherein the underside of the reservoir is perforated to allow the upper ends of the wicks to extend into the deodorising fluid, the size of the perforations being chosen so that the wicks always remain moist under all operating conditions of the unit.

3. A deodorisation unit as claimed in claim 1, wherein the wicks are arranged in staggered rows to ensure good mixing of the fumes and the deodorising fluid vapour evaporating from the wicks.

4. A deodorisation unit as defined in claim 1, wherein means is provided responsive to the liquid level in said reservoir for periodically actuating said pump.

5. A deodorisation unit as claimed in claim 4, wherein the pump is switched on and off by means of a float in the reservoir, the float acting to activate the pump when the fluid drops below a certain pre-selected level and switch off the pump when a second higher pre-selected fluid level is reached.

6. In combination with the deodorisation unit claimed in claim 1, a roof unit for a portable refreshment unit having means therein defining said ducting, there being a fan in said ducting for moving fumes therethrough and to an exhaust ventilator.

7. A roof unit as claimed in claim 6, further including a second deodorisation unit, and wherein the roof unit is generally rectangular in plan, the deodorisation units being disposed at adjacent corners of the roof and being both connected to the fan by appropriate ducting.

8. A roof unit as claimed in claim 7, wherein each deodorisation unit contains baffles in said ducting to promote the desired turbulent air-flow therethrough.

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