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**I-33100 Udine (IT)**(54) **Extraction hood for kitchens.**

(57) Extraction hood for kitchens, of the type comprising a forced suction means and a frontal air space, that allows a laminar air flow that extends downwards in front of the opening of the hood (f), characterised by the fact that within said air space, slides a deflector panel that is downwardly extractable and is able to downwardly extend the front wall of the hood to varying degrees.

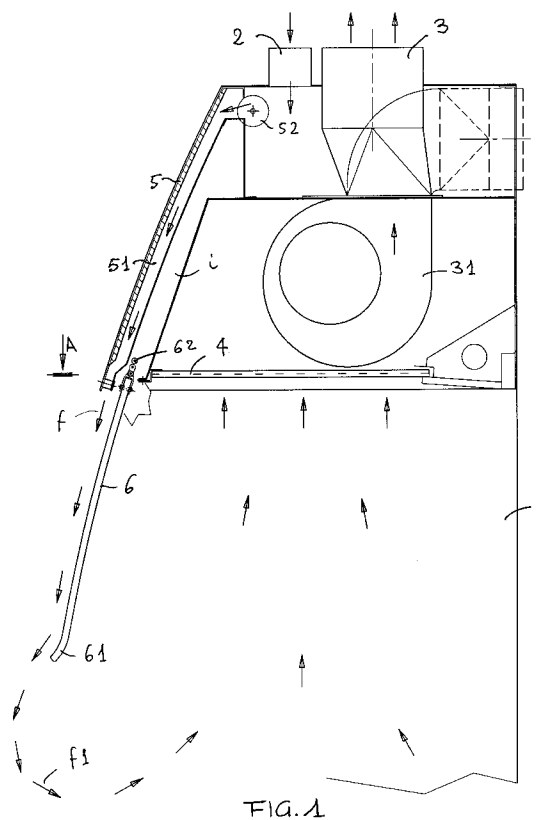


FIG. 1

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This invention relates to an extraction hood for kitchens.

By the term kitchens is intended any kitchen ensemble including kitchen units and cooking elements.

At the present stage of technology it is known that extraction hoods are used in the kitchen environment.

To avoid the emission of fumes and odours into the surrounding environment, said extraction hoods also have forced suction means.

Notwithstanding the presence of the forced suction means, it is very difficult to avoid the diffusion of cooking odours into the surrounding environment.

The patent US 4043319 of the 23.08.1977 describes a suction system and in particular a suction system with an exit into the atmosphere comprising a discharge duct with a double wall and a hood structure with a double wall, in which the space between the walls of the discharge duct and the hood is intended as a communication space. A first blower is mounted on the external end of the discharge duct for ingesting the external air into the space between the walls, this ingested air, that goes downwards, is injected along the internal surfaces of the hood. A second blower is mounted in the discharge duct to extract the combination of injected air and all the fumes collected in the said hood.

The patent US 4153044 of the 08.05.1979 describes an air ventilation duct and more particularly an air duct of the type with a tow profile backshelf, having side, upper and back walls mounted either on the floor or to a wall to form an enclosure system for a source of fumes and vapours. The air under pressure, not contaminated externally, is directed through the top of the air duct and towards the top front of the air duct, where it is directed, as a narrow curtain at high velocity, backwardly and downwardly through the enclosure towards an exhaust opening. A filter is placed inside the opening and oriented at an angle in such a way that the high velocity air curtain engages the upper third part of the filter and is perpendicular to the filter. The fumes that climb upwards pass through the exhaust opening along with the injected air; the exhaust fumes and air are extracted upwardly and externally through an exhaust channel within the hood enclosure ductwork, leading to the exhaust fan. Provision is also made for discharging combustion fumes that originate from gas-fired equipment.

The patent US 4127106 of the 28.11.1978, describes an air duct system and more particularly a system of an air duct to partially define an enclosure system in which two or more continuous air streams, moving rapidly in a non-parallel way,

co-operate to draw minute air borne particles carried in the enclosure system, to recover the latter and to prevent the escape of the particles through an opening in the anterior part of the enclosure system. The air that defines the continuous air streams can, fully or partly, be discharged into the atmosphere, substantially free from air borne particles, or can be subsequently recycled through the enclosure system. The air duct assembly is especially suitable for spray painting rooms, but is useful and effective, in the same way, when the air borne particles are smoke or fumes.

All these solutions only partly obviate the above-mentioned drawbacks and do not manage to avoid the diffusion of gases, vapours and cooking odours into the surrounding environment due to the fact that these need ventilation systems so powerful that they are inconvenient, as they are too noisy and irritating for the people who live in the house.

The aim of the present invention is to obviate the above-mentioned drawbacks.

This and other aims are achieved as claimed by means of an extraction hood for kitchens, of the type using forced suction means, in that it comprises a frontal air space, connected with an external upper suction means able to produce a laminar air flow that extends downwardly in front of the opening of the hood, before being definitively conveyed by suction into the hood, said air space containing a sliding deflector panel which is downwardly extractable and is able to extend the front wall of the hood downwardly to varying degrees.

In this way the diffusion of most of the odours and fumes is prevented by said deflector panel in association with said laminar air flow that forms an inconsistent but efficacious wall against this diffusion.

Advantageously, said laminar air flow is produced by the same vacuum made inside the hood.

Advantageously said laminar air flow is produced by the same vacuum made inside the hood, therefore solving in a simple and effective way the problem of diffusion of fumes and odours.

In an alternative way, said laminar air flow is produced by a forcing ventilator which is separate from the suctioning one.

In this way is achieved a more efficient prevention of the diffusion of smokes and odours.

Advantageously said deflection panel is transparent and in this way the cooking surface can be seen better and it remains better illuminated.

Advantageously said deflection panel has at its lower end, an edge that curves outwardly.

In this way the laminar air flow is slightly deflected towards the exterior to counteract the immediate suctioning action from hood and to improve the wall effect.

Advantageously said deflection wall is retractable.

In this way the size of the opening of the hood can be varied depending on specific needs (raising the hood for intervention over the cooking surface, lowering it to prevent the diffusion of odours and fumes).

Advantageously said deflection wall is positionable in the position desired.

In such a way, once positioned, it remains fixed in the wanted position.

Advantageously said deflection wall is movable by means of a cable or chain, pulleys and a counterweight.

In this simple and reliable way the problem of positioning the deflector panel in equilibrium, is solved.

It is to be noted that with this hood solution the drawback of the cooling of the environment caused by suctioning to the outside of the hood is also obviated. In fact, in traditional solutions, air suctioned by the hood, if conveyed outside, causes re-entry of cold air due to the vacuum produced. Notoriously, due to its greater specific weight, this cold air sinks, whilst the upper hot air is instead extracted by the suction hood, whereupon we have an immediate cooling of the environment.

Instead with this solution, the fresh air introduced from the outside, will be the recycled air that forms the laminar air wall and that, after having formed the wall, will be re-suctioned by the hood. Thus there will be no vacuums produced in the environment and consequently the hot air in the surrounding environment will be maintained, without being cooled due to a vacuum effect.

These and other advantages will appear from the successive description of preferential illustrative solutions in connection with the drawings included. Figure 1 is a transversal vertical sectional view of the hood with a suction system and a laminar air flow produced by a vacuum.

Figure 1.1 is a transversal vertical sectional view of the hood with a suction system and a laminar air flow produced by forced ventilation.

Figure 2 represents a schematic view from the top of the hood.

Figure 3 represents in a schematic view an example of the hood installed above a cooking surface.

In the figures it is disclosed that the hood may be supported by a cooking area b having a cooking surface p Fig. 3, or may be hung.

The hood has a generally prismatic form with a suction space 1 via a forced suction tube 3 with ventilator 31.

Between the suction means 31 and the hood space 1, filtration means 4 may be installed.

The hood extends forwards with the tilted front 5 forming an air space 51 in upper communication

with an air socket 2.

Said air socket 2 may also be endowed with a forcing ventilator 21 to force the airflow rather than having only the suction action from beneath 1.

Under this air space 51 a deflector panel 6, with a deflection curve at its lower edge 61, passes downwardly.

Said deflector may be raised and lowered by means of a cable or chain 62 with pulleys 52-521 and balancing counterweight 63.

The sliding takes place in guides "i".

Therefore the laminar airflow "f" extends downwards and outwardly and then curves in the direction of the mouth of the hood "f1", favouring the suction of fumes and odours and preventing them from diffusing into the surrounding environment.

### Claims

1. Extraction hood for kitchens, of the type comprising a forced suction means (3,31) and a frontal air space (51), that allows a laminar air flow that extends downwards in front of the opening of the hood (f), characterised by the fact that within said air space, slides a deflector panel that is downwardly extractable and is able to downwardly extend the front wall of the hood to varying degrees.
2. Hood according to claim 1, characterised by the fact that said laminar air flow (f-f1) is produced by the vacuum realised inside the hood.
3. Hood according to claim 1, characterised by the fact that said laminar air flow (f-f1), is produced by means of a forcing ventilator (21) which is separate from the suctioning (31) one.
4. Hood according to claim 1, characterised by the fact that said deflector panel (6) is transparent.
5. Hood according to claim 1, characterised by the fact that said deflector panel (6) has an outwardly curving edge (61) at its bottom.
6. Hood according to claim 1, characterised by the fact that said deflector panel (6) is retractable until hidden (62-52-521), is able to be positioned where desired and is movable by means of a counterweight (63).
7. Hood according to claim 1, characterised by the fact that said deflector panel (6) is retractable, is able to be positioned where desired and is movable by means of a cable or chain (62), pulleys (52-521) and a counterweight (63).

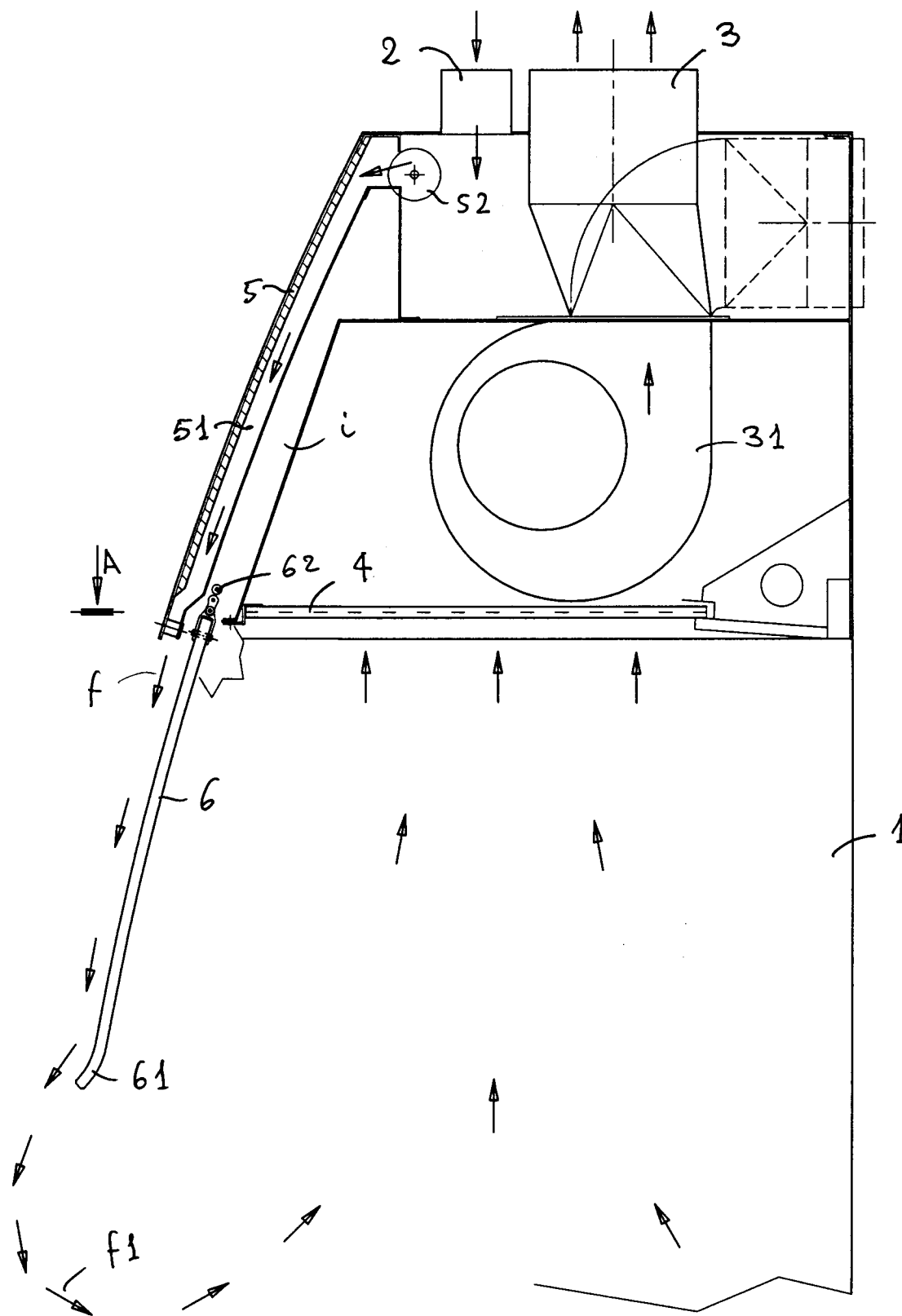


FIG. 1

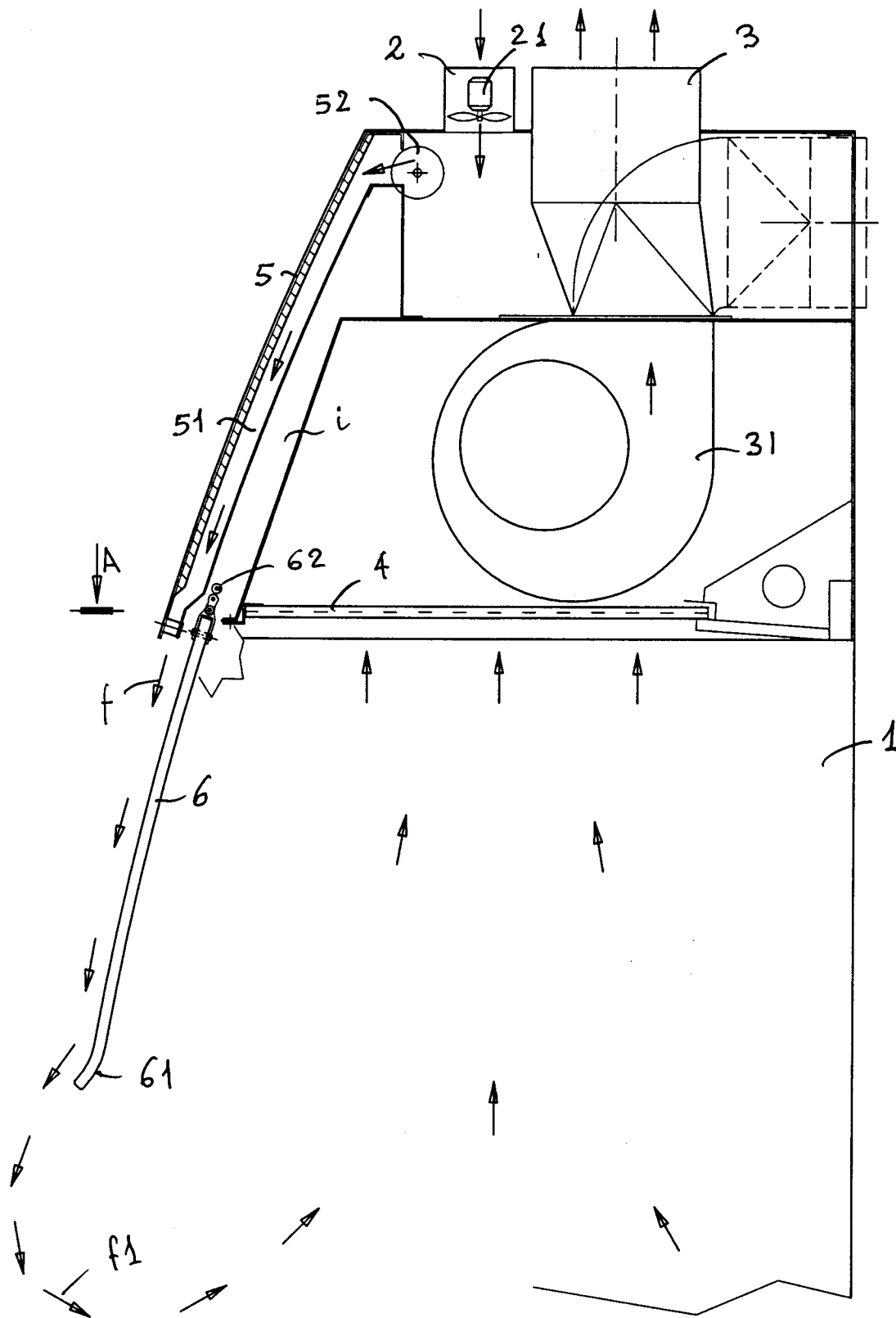


FIG. 1.1

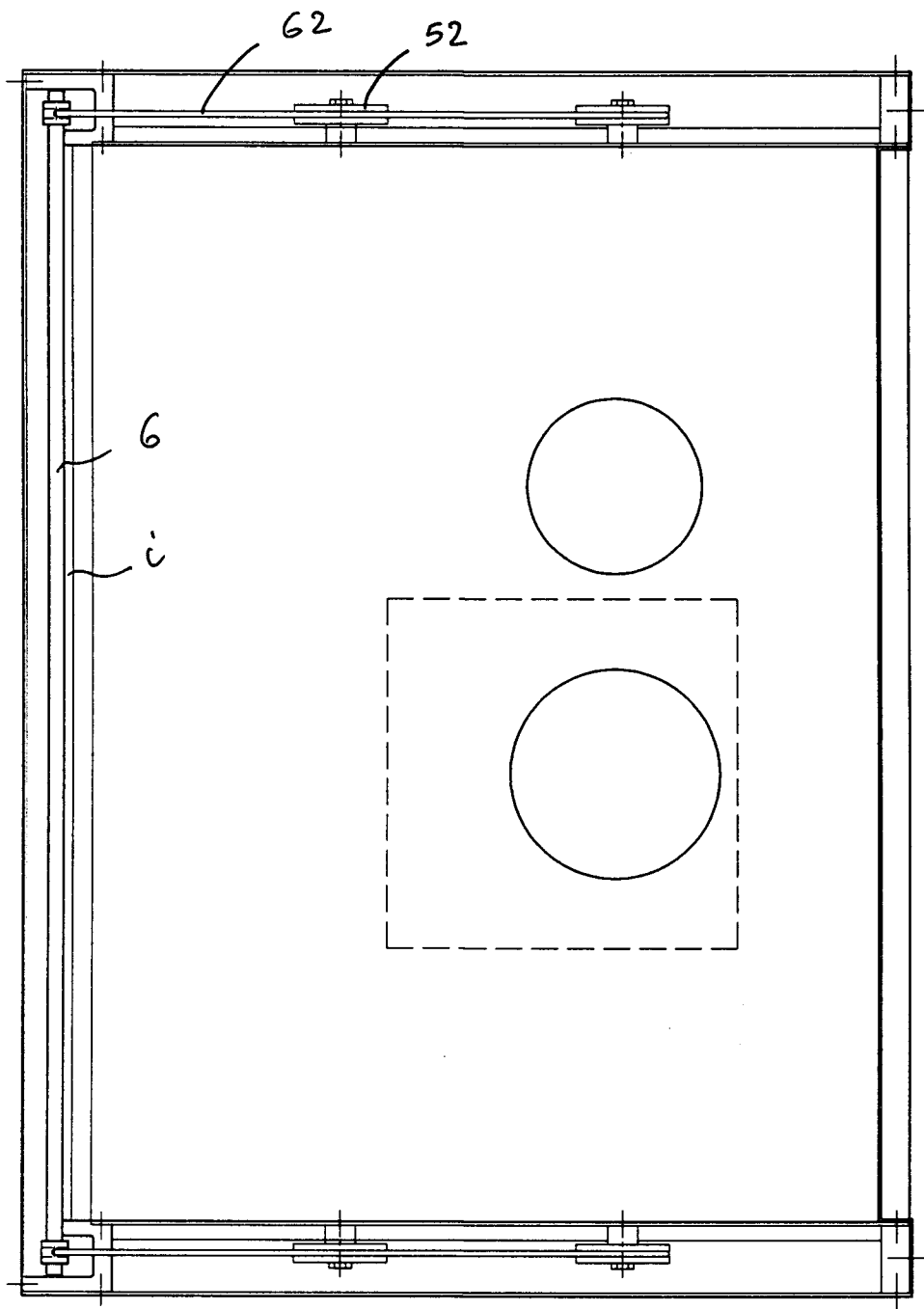
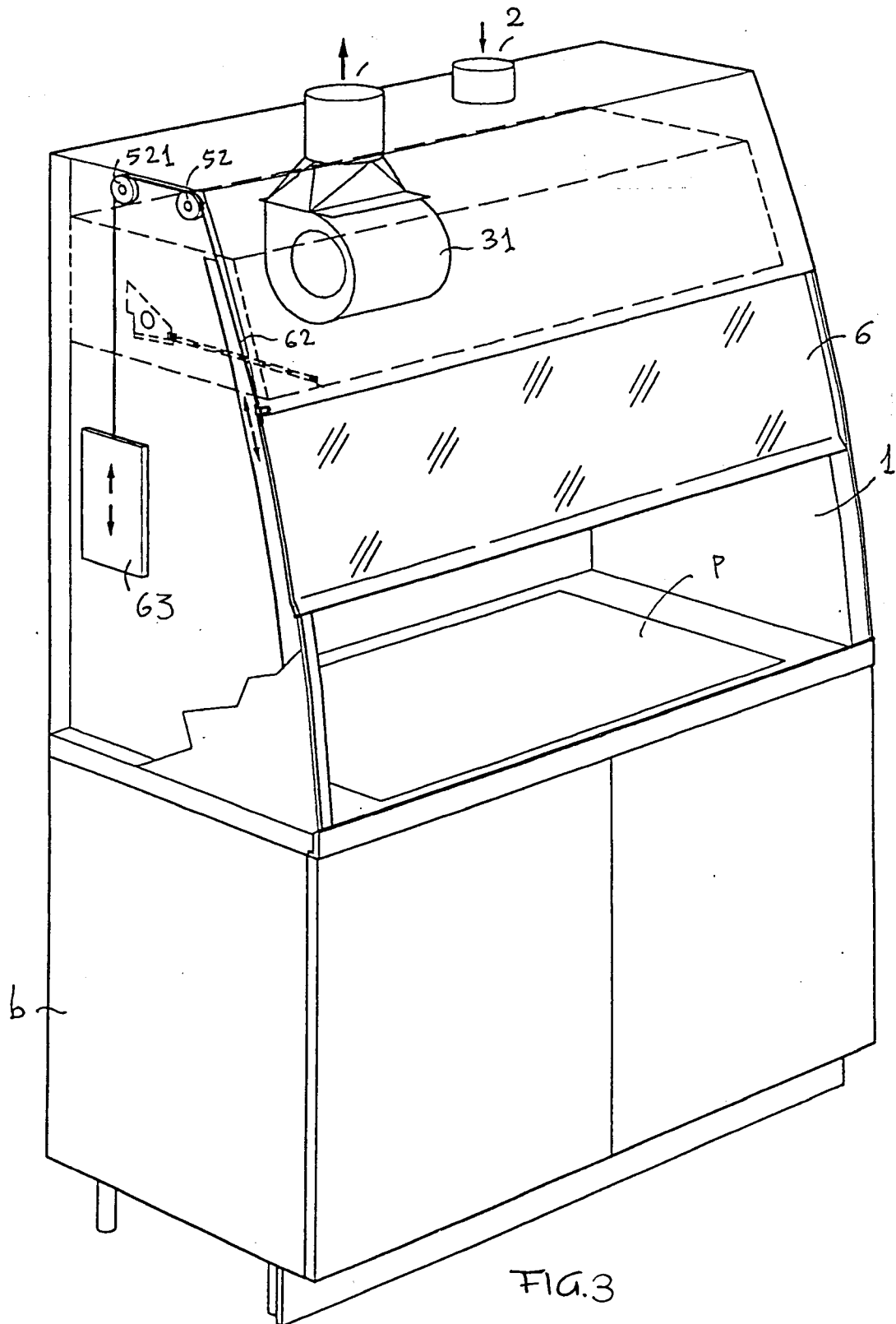


FIG.2





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## EUROPEAN SEARCH REPORT

Application Number  
EP 94 10 0949

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                               |                                                   |                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim                                 | CLASSIFICATION OF THE APPLICATION (Int.Cl.5) |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US-A-3 980 072 (JACOBS)<br>* column 2, line 41 - line 66; figure 2 *<br>---   | 1,3                                               | F24C15/20                                    |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | GB-A-2 140 913 (GLENN CHAN)<br>* page 2, line 24 - line 71; figure 1 *<br>--- | 1,3                                               |                                              |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DE-A-25 31 862 (SCHMITT)<br>* page 4, line 10 - line 23; figure 1 *<br>---    | 4,6,7                                             |                                              |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US-A-4 788 964 (DORSEY)<br>* column 3, line 59 - line 65; figures *<br>-----  | 5                                                 |                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                               |                                                   | TECHNICAL FIELDS SEARCHED (Int.Cl.5)         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                               |                                                   | F24C                                         |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                               |                                                   |                                              |
| Place of search<br>THE HAGUE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                               | Date of completion of the search<br>28 April 1994 | Examiner<br>Vanheusden, J                    |
| <b>CATEGORY OF CITED DOCUMENTS</b><br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |                                                                               |                                                   |                                              |