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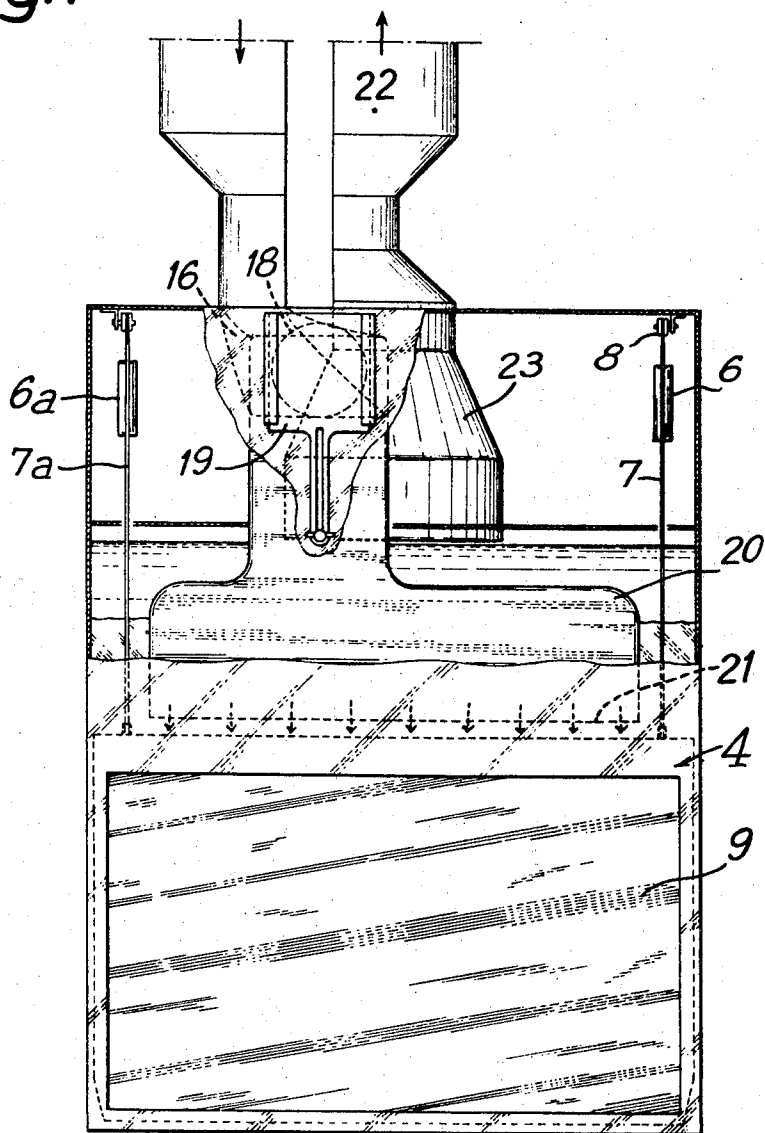
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MULTIPLE COMPARTMENT FUME CABINET INCLUDING AN EVACUATION CHAMBER

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2 Sheets-Sheet 1

Fig. 1



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Fig. 2

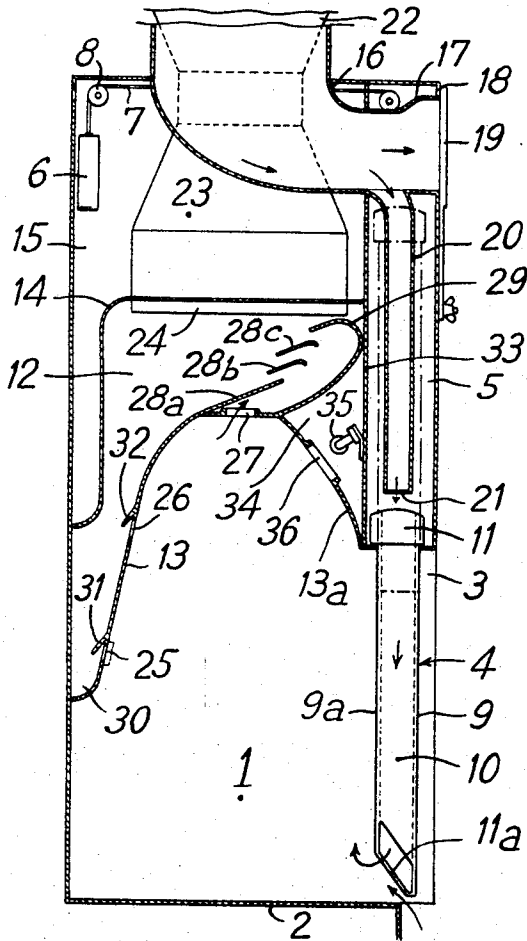
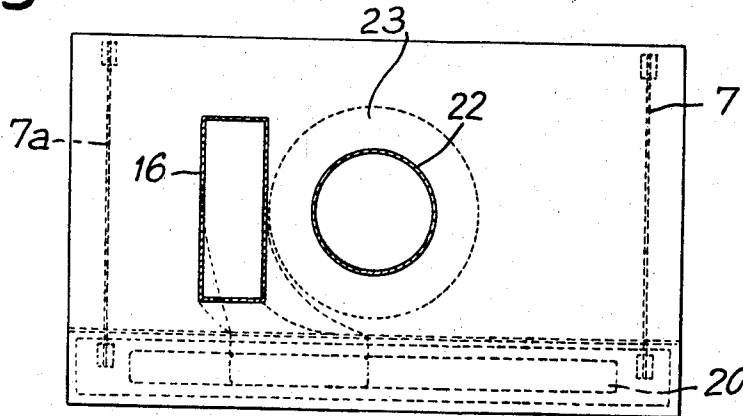


Fig. 3



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MULTIPLE COMPARTMENT FUME CABINET INCLUDING AN EVACUATION CHAMBER

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5 Claims. (Cl. 98—115)

ABSTRACT OF THE DISCLOSURE

A fume-cabinet having a lower compartment with a front opening which is opened and closed by a hollow, double-walled, transparent panel vertically slidably into a forward compartment. A medium evacuation compartment and an upper compartment are formed above the lower compartment with the upper compartment being provided with evacuation and blowing conduits. The blowing conduit is divided into two pipes one of which is connected to the atmosphere by means of a flap valve and the other of which extends into the hollow panel which is in fluid communication with the lower compartment to enable the lower compartment to be evacuated by air flowing from the blowing conduit to the evacuation conduit.

The present invention relates to improvements in fume-cabinets or fume-chambers.

In laboratories ventilated enclosures are used for the handling of products liable to give off dangerous vapours, these enclosures having an opening that may be sealed by a sliding panel and being known as "fume-cabinets" or "fume chambers", but hereinafter referred to as "fume-cabinets".

Consequently, the insulation of the fume-cabinet from the ambient atmosphere is of great importance, and the invention has an object to make this insulation more effective. To this end, the fume-cabinet has an air-blowing device independent of the atmosphere of the building that directs a curtain of air between the transparent walls of the sealing panel towards the work table over which the cabinet is mounted.

The air-blowing pipe is divided into two subsidiary pipes which allow the total amount of blown air to be directed either onto the work table or partly onto the work table and partly into the building.

A discharge device ensures the evacuation of the air carrying harmful vapours through a scrubber situated between a medium recovery compartment and a discharge shaft.

The shape of the lower compartment in which the manipulations or operations are carried out is of such a kind as to obtain a sweeping of all the areas of the enclosure.

A fume-cabinet according to the invention is made by moulding in laminated polyester material, which gives it a good resistance to corrosion and a good impermeability of the manipulation area in relation to the external atmosphere and to the means located in the cabinet for lighting and operation of the closure panel.

Moreover, the making of this kind of device in such a material enables the cabinet to be made cheaper than with the materials already in use for this purpose.

The present invention consists in a fume-cabinet comprising a lower compartment having a front opening, a double-walled transparent panel mounted to slide vertically and be retractable into a forward compartment for sealing and unsealing said opening, a median air evacua-

tion compartment and an upper compartment incorporating evacuation and blowing conduits, said air blowing shaft situated in said upper compartment being divided into a pipe having an outlet, a flap for closing said outlet, and a pipe of a substantially flat shape extending into said forward compartment of said sealing panel, the said pipe, on which the said panel is telescopically engaged, having at its lower end, outlets communicating with the space between the two walls of the panel which has at its lower part, openings for the passage of air into said lower compartment.

In order that the invention may be more clearly understood, reference will now be made to the accompanying drawings which show one embodiment thereof by way of example, and in which:

FIGURE 1 shows a front elevation and part-section view of an embodiment of fume-cabinet according to the invention;

FIGURE 2 shows a sectional view thereof taken from the side; and

FIGURE 3 shows a plan view thereof.

Referring now to the drawings, a fume-cabinet in accordance with the invention comprises a lower compartment 1 located above a work table 2 and in which the operations or manipulations are carried out. This lower compartment has towards the front an opening 3 designed to permit access to the work table 2, and which may be sealed by a sliding panel 4, retractable into a frontal compartment 5. The sealing panel 4 is balanced in any known manner by counter-weights 6, 6a attached to the said panel by suspension means 7, 7a constituted in particular by steel cables or strips sheathed in a suitable plastics material and which pass over rollers 8. These counter-weights 6 and 6a are associated with stop-means forming safety brakes (not shown), which makes it possible to avoid damage to the base of the panel 4 of the suspension means 7 and 7a.

The sealing panel comprises two panes of glass 9, 9a having between them a space 10 closed at the side and which is open upwardly at 11 and downwardly at 11a, in order to constitute an air circulation conduit.

A medium compartment 12 which will be described later in greater detail, has a lower partition 13 setting a limit for the upper part of the compartment 1, and a partition 14 setting a limit for the base of another or upper compartment 15, in which latter is located an air-blowing conduit 16 which is linked to a conduit for supplying of air to other associated cabinets, the conduit 16 being divided into a pipe 17 of which the outlet 18 communicating with the room or building in which the cabinet is situated may be sealed by a flap 19, and a distribution pipe 20 of a substantially flat shape extending into the forward compartment 5. The dimensions of the distribution pipe 20 are such that the panel 4 may engage telescopically over the pipe 20 when the panel is in a retracted position in the compartment 5.

The distribution pipe 20 has in its lower section a series of outlets 21, situated with respect to the upper opening 11 of the panel 4 in such a manner as to direct a flow of air coming from the conduit 16 into the space 10 between the panes of glass 9, 9a, from whence it escapes through the opening 11a into the lower compartment 1.

This arrangement allows either the whole of the blown air coming from the pipe 16 to be directed through the distribution pipe 20 into the fume-cabinet space 1, or, by uncovering the opening 18 by means of the flap 19, to direct it partly into the room through the pipe 17 and partly into the cabinet through the pipe 20 and the space 10.

An air extraction shaft 22 leads into the upper compartment 15 and is linked to a water-spray scrubber 23

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of a known type, whose opening 24 is directed to the interior of the median compartment 12.

The median compartment 12 has a partition 13 curved in the form of an arch, and on the back part of which are two sets of extraction louvres 25, 26 situated respectively in the lower and middle sections of the lower compartment, a third set of louvres 27 being situated at the top of the extraction chamber.

Although only one of each of the louvres 25, 26, 27 has been shown on FIGURE 2, it is clear that there is a set of louvres, spread across the width of the wall 13.

In the median compartment 12 directing blades 28a, 28b, 28c are placed above the louvres 27, which, used in combination with a curved wall 29, ensure the passage of streams of gases coming from the various louvres towards the opening 24 of the scrubber 23. Furthermore, the blades 28a, 28b, 28c form, together with the rear wall 13, a collection channel for the water from the scrubber and condensation which is collected in the lower part 30 of the median compartment.

Deflectors 31 and 32 are provided respectively on the upper part of extraction louvres 25 and 26, in order to prevent the stream of water entering the lower compartment 1.

The wall 13a of the lower compartment and the wall 29 define, together with one of the walls 33 of the forward compartment 5, a cavity 34, in which is located a lighting tube 35, access to which is rendered possible through an opening 36, closed by a cover.

The various elements of the fume-cabinet that are described above are made by moulding in a laminated polyester material, which makes it possible to obtain a unit which does not include any fastening means such as rivets or bolts.

One of the great advantages of a fume-cabinet according to the invention which has an air circulation independent of the atmosphere of the room in which it is installed, is that it makes it possible to avoid losing a single unit of heat from the room. This represents an evident economy in bringing about a thermal balance for the place of installation.

What is claimed is:

1. A fume-cabinet, comprising: a lower compartment having a front opening; a double-walled transparent closure panel mounted to slide vertically between a lowered position sealing said opening and a raised position unsealing said opening; a forward compartment formed in said cabinet into which said panel is retracted in the raised position; a median evacuation compartment and an upper compartment formed above said lower compart-

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ment; said upper compartment incorporating evacuation and blowing conduits, said median compartment having communication with said lower compartment and with said evacuation conduit, said blowing conduit being divided into a pipe having an outlet from said cabinet and a pipe of substantially flat shape extending downwardly into said forward compartment a substantial distance; said outlet being controlled by a flap; said panel being telescopically engaged with said flat pipe in said forward compartment; said flat pipe having at its lower end outlets communicating into the space within the walls of the panel; and said panel having at its lower end openings in fluid communication with said lower compartment to thereby allow said lower compartment to be evacuated by fluid flowing from said blowing conduit through said panel and into said lower chamber and then out through said median compartment and said evacuation conduit.

2. A fume-cabinet according to claim 1, wherein said evacuation conduit situated in said upper compartment is linked to said median compartment by a water-spray scrubber, said median compartment being delimited in its lower section by a curved partition in the form of an arch, the back part of which has two sets of extraction louvres situated respectively in the lower and middle sections of said lower compartment, a third set of extraction louvres being situated at the top of said lower compartment.

3. A fume-cabinet according to claim 2, wherein blades for directing the air delivered are situated in the median compartment above said third set of extraction louvres located below said scrubber, said blades being combined with a rear wall of said median compartment to form a collection channel for water from said scrubber and from condensation.

4. A fume-cabinet according to claim 2, wherein water deflectors are provided above said extraction louvres.

5. A fume-cabinet according to claim 1, constructed by moulding laminated polyester materials.

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