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PORTABLE MICRO-HOOD

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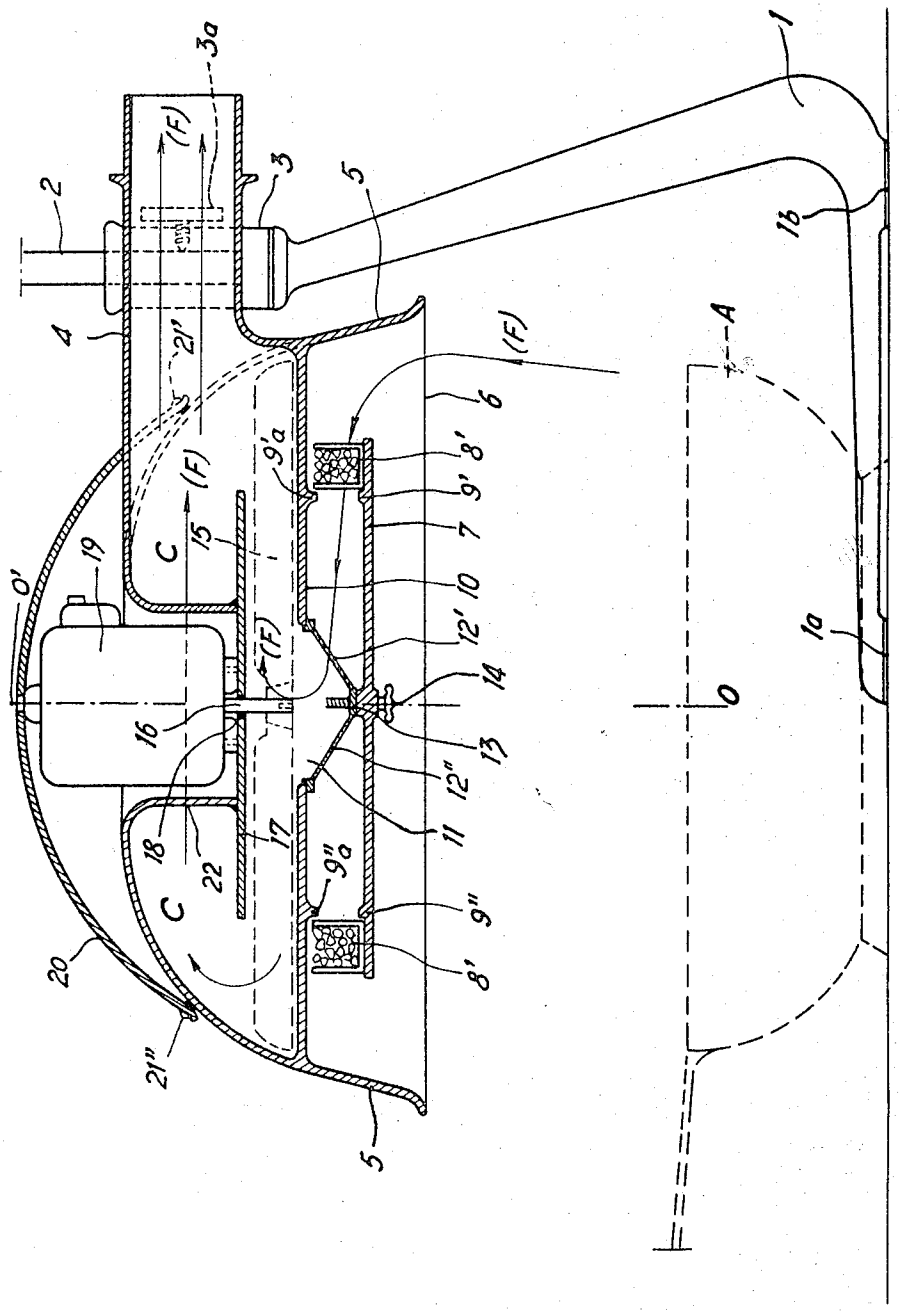

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PORTABLE MICRO-HOOD

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ABSTRACT OF THE DISCLOSURE

A portable micro-hood comprises a hood and a turbine driven by a motor aspirating gases and vapours. These penetrate in the device by an orifice passing through filters, then are rejected by the turbine in a centrifugal helical movement into an evacuation chamber and into an exhaust integral with a socket which can slide and be blocked at a given height, on a vertical rod prolonging the foot on which is mounted the apparatus. The orifice of the hood can be brought as close as possible to any source of fumes which thus ensure the continuous pick up of the fumes and vapours emitted with the use of less power.

The problem occasioned by the picking up and the evacuation of corrosive gases in industry, laboratories, and kitchens has received up to now various solutions.

The most usual system is that of the large fixed hood where evacuation is ensured either by lowering of pressure or by the aid of a mechanical suction system and under which the possible sources of fumes or vapours are placed.

The drawbacks of this system are well known.

In addition to taking up considerable space, fixed hoods required that the sources emitting the fumes or vapors be moved therein. Generally the construction of fixed hoods is such that a good part of the vapor emitted by these sources still reaches the surroundings.

This in turn necessitates the provision of ventilating means for picking up air mixed with such vapours and fumes.

The present invention avoids these various drawbacks.

It has for object an apparatus for picking up and evacuating fumes and vapours, characterised by the fact that having an independent suction system, being portable and vertically and horizontally adjustable as well as of reduced dimensions, it can be brought near any source whatever and cover it closely enough in order to pick up continuously, purify, and evacuate the fumes and vapours emitted by this source.

As a result these fumes do not reach the surroundings and accordingly the surface area which may be corroded by the escaping fumes is decreased. The apparatus of the invention is about twenty times more efficient, for the same energy consumption, as are conventional function hoods.

The apparatus consists of a bent foot, one branch of which rests on a horizontal plane. On the other, which is vertical in its working part, can slide a socket on the flank of which is secured a horizontal pipe, integral with the apparatus itself, and which provides a path of flow of vapour and fumes.

The socket can be blocked in any position by some system of screws. Additionally, the micro-hood proper, which has a generally hemispherical shape, is composed of a lower round orifice, through which penetrates fumes and vapours, of a filtering system which will be adapted to each type, of a turbine giving the fumes and vapours a helical movement which projects them into an evacuation chamber then into the previously mentioned horizontal outlet pipe, connected to a conduit or equipped with a purifier for escape into the atmosphere. Finally, the motor driving the turbine is secured under a cowl on top of the hemisphere.

One possible embodiment of the apparatus is shown in a generally vertical cross-section on the single accompanying figure.

There can be seen the foot **1** of the apparatus in the form of a V of which one horizontal branch rests perpendicularly on two supports **1***a* and **1***b*, the other branch terminating by the cylindrical vertical rod **2** making therewith a largely obtuse angle on which can slide and be blocked for example by means of blocking screw **3***a*, a socket **3** rigid with exhaust pipe **4** of the apparatus itself.

The latter is limited exteriorly in a general way by a hemisphere **5** on the periphery of which opens exhaust pipe **4** and has an opening **6** above the source emitting vapours or fumes A, shown here in dotted lines to facilitate understanding.

Above this opening **6** is located a horizontal support **7**, on which rests a circular filter **8'** which will be selected according to the type of fumes or vapours.

This filter is secured by means of small projections **9'** and **9''**.

Above support **7** is a wall **10** central opening **11**.

This wall **10** also has below small projections **9'***a* and **9''***a* facing **9'** and **9''**, which also serves to position the filter.

Support **7** is secured to wall **10** by two arms **12'** and **12''** connected to nut **13** of a screw **14** which permits to adjust the height separating **7** from **10** and consequently to adapt it in a certain measure to the thickness of the filters.

Above wall **10** is located turbine **15** and its vertical driving shaft **16**.

Finally on support **17** which includes an opening **18** through which passes shaft **16** rests motor **19** driving shaft **16** and turbine **15** in a rapid rotational movement around the general axis O, O', creating a centrifugal force sufficient for ensuring the evacuation of vapours and fumes into evacuation chamber C then by exhaust pipe **4**, into a conduit or into the atmosphere after purification.

Motor **19** is insulated from evacuation chamber C by central well **22** to the base of which is welded support **17**.

Motor **19** is surmounted by a cowl **20** having the shape of a spherical cap, secured to the body of the apparatus by two fasteners **21'** and **21''**. A part of the hemisphere **5** and of the cap **20** appear in dotted lines on the figure owing to the fact that the exhaust pipe **4** opening on chamber C, forms a nozzle on the hemispherical shape.

The process of picking up and evacuation is then simple, fumes and vapours penetrate by the lower opening **6** pass through the circular filter **8'** where they are purified.

They are sucked in by the lowered pressure created by turbine **15** by its rotation (arrow F) passing then through the turbine they are given a centrifugal helical movement (arrow F) which drives them into the evacuation chamber C from which they reach the exhaust pipe **4**. It is possible to move the apparatus to place it at any point in the work area.

It suffices for this to bring the lower opening of the apparatus as close as possible to the source of fumes or vapours by lowering the assembly by means of socket **3** sliding on tube **2** and blocked thereon in a suitable position by means, for example, of securing screw **3***a*.

The fumes and vapours are then aspirated in a continuous fashion at the cost of a very small expenditure energy on the part of the motor; since they do not remain in the area, their corrosive effect is very strongly reduced. Finally the insulation of the motor from the evacuation chamber C by well **22** gives explosion-proof characteristics to the apparatus.

By way of a first modification, there can be indicated the use with socket 3 of a pivoted system, for example with a ball and socket joint, which would permit to move the assembly of the apparatus not only horizontally around the foot and vertically along the same foot, but additionally to incline it in such a way that the axis of the exhaust pipe 4 makes various angles with the axis of rod 2.

In the same manner, it is possible to separate the apparatus from its foot and to fix it directly by means of clamps in any point whatever of a chemical reaction apparatus in which occurs a source of vapours or fumes.

The use of several of these devices, if necessary, in several points of such apparatus, ensures the cleanliness of the air of the locale of the apparatus and makes unnecessary the extraction of all the surrounding atmosphere in order to purify it at the end of the work.

In the same manner, it is possible, by eliminating the motor from the micro-hood, to connect the exhaust pipe 4 on a flexible sleeve itself connected to a more powerful extracting system. There too it will be possible to use in the same given area several micro-hoods connected by this system to a single central extractor.

The multi-purpose nature of the apparatus with respect to vapours and fumes is assured by the possibility of interchanging filters 8' according to the kind of purifying to be done and if need be, to assemble several concentric filters.

Moreover when the emitting source is at a high temperature it is possible to attach to an extension of skirt 5, a circular heat-resistant grill which would surround the source itself.

Finally, it is possible to make this apparatus in larger dimensions and with another kind of attachment for industrial or home uses giving rise to the picking up and the evacuation of vapours and fumes.

What is claimed is:

1. Portable exhaust device comprising a base carrying a vertical support; an exhaust member for gases and fumes adjustably mounted on said support, said exhaust member having an inlet forming an evacuation chamber and an outlet for said gases and fumes, said exhaust

member carrying and communicating with a hemispherical hood adapted to be placed above a source which emits said gases and fumes; said hood having at its lower extremity a horizontal support, a wall member positioned at a distance above said support so as to form a peripheral opening therebetween and forming part of said evacuation chamber, said wall member having an opening therein communicating with said hood, a filter in said peripheral opening between said wall member and said support such that gases and fumes emanating from said source must pass through said filter and driving means for urging said fumes and gases through said evacuation chamber and thence through said exhaust.

2. Portable exhaust device according to claim 1, wherein said exhaust is secured to a sleeve slidably mounted on said vertical support.

3. Portable exhaust device according to claim 1, having a well surrounded by said evacuation chamber and said driving means consist of a motor positioned on said well and a turbine driven by said motor.

4. Portable exhaust device according to claim 1, wherein said outlet of said exhaust is adapted for connection to a central extracting apparatus.

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