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Applicant: **Gonzalez Garcia, Luis Emilio**
Ouintanal, 6
E-39200 Reinosa (Cantabria)(ES)

Inventor: **Gonzalez Garcia, Luis Emilio**
Ouintanal, 6
E-39200 Reinosa (Cantabria)(ES)
 Inventor: **Gutierrez Portilla, Ma del Pilar**
Lopez Muniz, 2
E-39200 Reinosa (Cantabria)(ES)

Representative: **Ungria Lopez, Javier et al**
Avda. Ramon y Cajal, 78
E-28043 Madrid (ES)

Industrial machine for dust removal, washing and drying of car mats.

It has a ventilator (2) which is placed in a chamber (3) where the mats (6) are located. It includes a pipeline with water sprinklers (8), and is provided with an electrovalve (7) to control the water intake, by means of an electric circuit that controls the operating of the ventilator (2), producing the dust removal from the mats (6), and subsequently it permits the flow of water that is scattered and accelerated by the ventilator (2); thrusting itself against the mats(6) and washing them.

It has an air heater to reduce the drying time of the ventilator (2.)

It includes an opening (9) to remove the mud produced in the washing process.

There is a second chamber (10) provided with: an exhaustor (13), separated from the rest of the chamber (10) by a porous screen (12); and an outlet to the outside, determined by an elastic suction hose (14.)

It includes a proportioner (16) of packages that contain a mini-cloth (17) soaked in aromatic silicones.

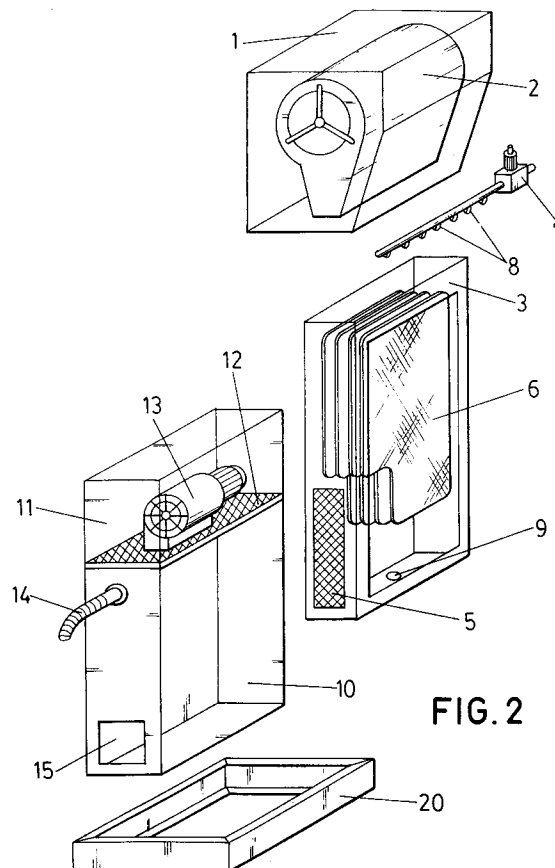


FIG. 2

OBJECT OF THE INVENTION

Just as is expressed in the title of this specification, the present invention consists of an industrial machine for dust removal, washing and drying of car mats and has the purpose of determining a complement to the services rendered in automatic car washes and garages in general, determining a complement to the car washing and polishing services, and especially to washing and drying the mats used to cover the inside floor of the car, in such a way that the car is protected against the dirt that normally accumulates from contact of the user's shoes with said mats.

BACKGROUND OF THE INVENTION

Presently there are mat washing machines, comprised of rollers that rotate inside a water tank, which by means of mechanical movement the mats are submerged into the liquid and afterwards they are removed to the outside leaving them washed.

These machines have the inconvenience that the mechanical action of the cylinders, prematurely wears out the mats, at the same time that an effective washing is not done.

Besides, in these systems the mats come out totally soaked, therefore the user must put them inside the car in such a state, which can end up rusting the bottom parts of the car, as well as all the metal parts, with the above cited wear and tear of the same, a circumstance which is worsened in the winter.

DESCRIPTION OF THE INVENTION

In order to solve the above mentioned inconveniences, the invention consists of an industrial machine for dust removal, washing and drying of car mats, in an efficient manner protecting the car against possible damage caused by the moisture of the mats; at the same time that it carries out an effective washing of the same.

Besides, by means of the present invention, while the mats are being washed and dried, the user can clean the inside of the car by means of a suction system included in the machine itself and with some cloths obtained from the same.

In order to achieve these purposes the invention is comprised of a general body in whose top part there is a centrifugal turbine ventilator that remains placed above a chamber or tunnel to which there is access through a front door to permit placement of the mats inside said chamber.

In the chamber means that permit hanging of the mats are included, which in the specific embodiment consist of a wire system wherein the mats are hung vertically.

Between the mats and the centrifugal turbine ventilator there is a pipeline with water sprinklers in whose end an electrovalve which is controlled by the controls of an electric circuit is included, in such a way that the water intake is controlled during a certain period of time.

There is a soap container, that is connected to an electric pump which introduces it inside the water pipeline following the electrovalve, for a more effective washing.

Besides, the electric circuit is connected to the centrifugal turbine ventilator, in such a way that initially the ventilator starts to operate causing the dust removal from the mats, in order to subsequently permit the flow of water which is scattered and its particles accelerated by the ventilator, violently thrusting against the mats washing them. Afterwards the flow of water is cut off and the centrifugal turbine ventilator continues to operate so that the mats are dried.

The chamber or tunnel has a screen from which outflow of air from the centrifugal turbine ventilator is made possible, performing a more effective drying of the mats.

Besides, so that the drying of the mats is more effective, the invention is capable of having an air heater defined by electric resistors placed at the outlet of the ventilator and above the water sprinklers, in such a way that the drying time of the mats is reduced considerably.

Besides, the washing chamber includes in the bottom part thereof an opening towards the collector that permits the removal of the mud produced in washing.

Over the rear part of the chamber or tunnel a second chamber is abutted in whose top part there is an exhaustor separate from the rest of the chamber by means of a porous screen. In this chamber an outlet towards the outside defined by an elastic suction hose is included; this all in order to provide suction means that can be used by the user while the washing and drying of the mats take place.

This second chamber has a gate from which one has access to the inside to permit the removal of the residue that is deposited in it.

This second chamber can have a space for placement of a proportioner of stacked packages that contain a mini-cloth soaked in aromatic silicones that are supplied to the outside through a gate by means of electric operation and a push button, in such a way that the user can acquire a mini-cloth to clean the splashguard, steering wheel, etc., while the washing and drying of the mats take place.

On the other hand, the machine of the invention has the option of including a water heater or a vaporizer, so that the outflow of steam or hot water towards the mats is permitted, carrying out a more

effective washing.

Each and every one of the elements remain arranged in a frame that defines the base of the same establishing a compact structure that is terminated at the top by a base in which the centrifugal turbine ventilator that acts upon the dust removal, washing and drying chamber, is located.

The centrifugal turbine ventilator can carry out the functions of the exhaustor provided in the second chamber that does the suction, for which purpose the apparatus would not have said exhaustor and said second chamber would communicate with the centrifugal turbine ventilator.

Hereinafter to provide a better understanding of this specification and forming an integral part of the same, a series of figures in which the object of the invention has been represented in an illustrative and non-restrictive manner are attached hereto.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1.- It shows a perspective view of the outside structure of the machine object of the invention.

Figure 2.- It shows a perspective exploded view of the elements that comprise the apparatus of the invention, showing the different components included in the inside of each one of said elements.

Figure 3.- It shows a perspective view of a variation of the suction element wherein a proportioner is included.

Figure 4.- It shows a perspective view of the proportioner and of the arrangement inside thereof of the mini-cloths that it contains.

DESCRIPTION OF AN EMBODIMENT OF THE INVENTION

Hereinafter a description of the invention based on the figures previously commented on is made.

Hence, the machine has a top base (1) wherein a centrifugal turbine ventilator (2) is housed, capable of providing a flow of air of approximately 8000 m³ of air per hour.

Underneath the centrifugal turbine ventilator (2) there is a chamber or tunnel (3) wherein the dust removal, washing and drying of the mats (6) take place.

The centrifugal turbine ventilator (6) has a narrowing in the bottom part thereof so that, and on the grounds of the above cited features, it thrusts air upon the chamber or tunnel (3) at speeds of up to 200 kilometers per hour, this air coming out after passing through said chamber through the bottom part of the same through some screens (5) placed on both sides of the chamber or tunnel (3.)

In the bottom part of the ventilator (2) a copper piping with water sprinklers (8) of the line is placed.

The piping is connected to an electrovalve (7) through which the water intake is controlled by means of a signal provided by an electric circuit whose operation is controlled by controls (19.)

Besides, there is a soap container (not represented) that is connected to an electric pump which introduces it into the water pipeline following the electrovalve (7), in order to carry out a more effective washing.

A mat (6) separation wire system is included in the chamber or tunnel (3), in such a way that the mats can be placed vertically and fastened by means of clamps and other conventional coupling elements.

Access to the chamber or tunnel (3) is done through the gate (4), in such a way that once the mats (6) have been placed into the chamber (3), the access door (4) is closed and by means of a push button or coin contact, placed in the control panel (19), the turbine (2) is put into movement at its highest capacity; removing the dust from the mats (6.)

Once the dust removal has taken place, the centrifugal turbine ventilator (2) continues to operate and the electrovalve (7) is opened letting the water that comes from the water main flow through the sprinklers (8) and it mixes with the soap. This water can be previously heated by means of immersion resistors in a separate tank (if necessary), for a time controlled by a timer or time relay, integrated in the electric equipment existing for this purpose.

Besides, the invention is capable of including a vaporizer so that the water coming out of the sprinklers (8) comes out in the form of steam to wash the mats (6).

Thus, the machine washes the mats, providing the water or steam a speed that is generated from the main itself or pumping equipment, plus that thrust by the air of the turbine (3) at a rate of 100 m/second.

Once the pressurized washing time has gone by, the electrovalve (7) closes preventing the flow of water, a situation in which the ventilator (2) is kept operating long enough to dry the mats (6.)

The machine can include an air heater included by means of electric resistors at the outlet of the ventilator and above the water sprinklers (8), in such a way that during the drying time the resistors are fed which reduces said drying time.

Besides, the chamber or tunnel (3) includes an opening (9) comprised of a valve towards the collector whereby through the same the removal of the mud produced in the washing process takes place.

Once the washing has been carried out, it is indicated on the control panel by means of a signal, advising that the cycle has ended the mo-

ment from which the mats (6) may be removed for their subsequent placement in the car.

The rear part of the chamber or tunnel (3) is abutted to a second chamber (10) in whose top part there is an exhaustor (13) separated from the rest of the chamber (10) by a porous screen (12.)

The chamber (10) has an outlet to the outside defined by an elastic hose (14), with which when the exhaustor (13) is put into operation, a suction effect is produced through the elastic hose (14); all in order to allow the user to clean the inside of the car by suction while the mats are being washed.

The second chamber (10) includes a gate (15) that permits removal of the residue accumulated in said chamber.

The chamber (10) can include a space for placement of a proportioner (16) of stacked packages that contain a mini-cloth (17) soaked in aromatic silicones that are supplied to the outside through a gate (18) by means of electric operation and with a push button.

The cloths (17) make it possible to completely polish all the vinyl plastic parts of the elements of the car, steering wheel and splashguard in general, this operation being up to the user's choice, operation which may be done while the dust removal, washing and drying of the mats (6) take place.

The first chamber (3) as well as the second chamber (10) and the proportioner (16) remain arranged in a frame (20) that defines the base of all of the elements establishing a compact structure that is terminated at the top by the top base (1) in which the centrifugal turbine ventilator (2) is located.

The electric circuit that is controlled from the control panel (19) includes all the necessary accessories, relays, timers, etc., for a better and simpler operation of the apparatus of the invention, as well as visual follow-up indicators of the different stages or steps that the machine automatically carries out progressively.

Besides, it should be indicated that the exhaustor (11) is capable of being eliminated, thus its function may be carried out by the ventilator (2.)

Therefore, by means of the machine (1) of the invention, the dust removal, washing and drying of mats (6) take place, at the same time that the inside of the car can be cleaned by suction and the vinyl plastic parts of the elements of the car may be cleaned with mini-cloths.

Claims

1. Industrial machine for dust removal, washing and drying of car mats, that is essentially characterized in that it is comprised of a general body in whose top part (1) a centrifugal turbine ventilator (2) is included and which remains

placed upon a chamber or tunnel (3) to which there is access through a front door (4) to permit vertical placement of the mats (6) in the same; and with the particularity that between the mats (6) and the ventilator (2) there is a pipeline with water sprinklers (8) in whose end there is an electrovalve (7) to control the water intake through the controls (19) of an electric circuit in order to determine for a time the flow of water so that the ventilator (2) operates initially, causing the dust removal from the mats (6), in order to subsequently permit the flow of water that is scattered and the particles thereof accelerated by the ventilator (2), violently thrusting against the mats (6) cleaning them, the flow of water cutting off afterwards from which moment the drying of the mats (6) takes place and it being provided for that in the bottom part of the chamber or tunnel (3) there is an air outlet screen (5.)

2. Industrial machine for dust removal, washing and drying of car mats, according to claim one, characterized in that it is capable of having an air heater defined by electric resistors placed at the outlet of the ventilator (2) and above the water sprinklers (8), all in order to reduce the drying time of the mats (6.)

3. Industrial machine for dust removal, washing and drying of car mats, according to claim one, characterized in that the washing chamber (3) is capable of including in the bottom part thereof an opening (9) towards the collector that permits the removal of mud produced during the washing process.

4. Industrial machine for dust removal, washing and drying of car mats, according to claim one, characterized in that the rear part of the chamber or tunnel (3) is capable of being abutted to a second chamber (10) whose top part includes an exhaustor (13) separated from the rest of the chamber (10) by a porous screen (12); and with the particularity that said chamber (10) has an outlet to the outside defined by an elastic suction hose (14); allowing access to the inside of the chamber (10) through a gate (15); in such a way that a manometric vacuum is produced in the chamber producing the suction through an elastic hose (14) and storing the residue inside the chamber that can be removed through the gate.

5. Industrial machine for dust removal, washing and drying of car mats, according to claim three, characterized in that the second cham-

ber (10) is capable of having a space for placement of a proportioner (16) of stacked packages that contain a mini-cloth (17) soaked in aromatic silicones that are supplied to the outside through a gate (18) by means of electric operation and with a push button. 5

6. Industrial machine for dust removal, washing and drying of car mats, according to the above claims, characterized in that the first chamber (3), as well as the second chamber (10) and the proportioner (16) remain placed in a frame (20) that defines the base of all the elements establishing a compact structure that is terminated at the top by a top base (1) in which the centrifugal turbine ventilator (2) that acts upon the dust removal, washing and drying chamber (3) is housed. 10 15
7. Industrial machine for dust removal, washing and drying of car mats, according to claim one, characterized in that the electrovalve (7) is capable of being connected to a heater or to a ventilator in such a way that the outflow of steam or hot water towards the mats (6) is permitted. 20 25

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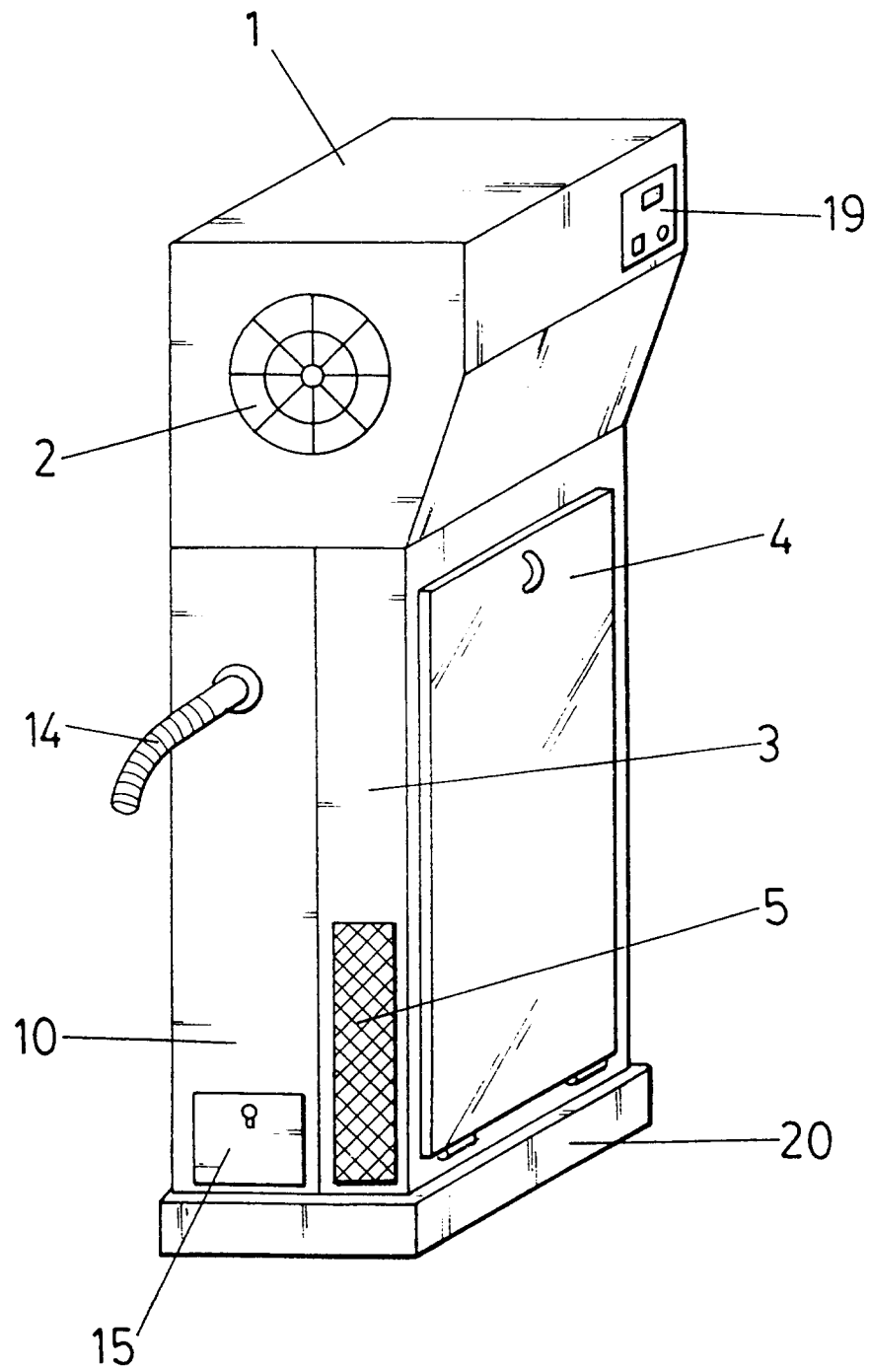


FIG. 1

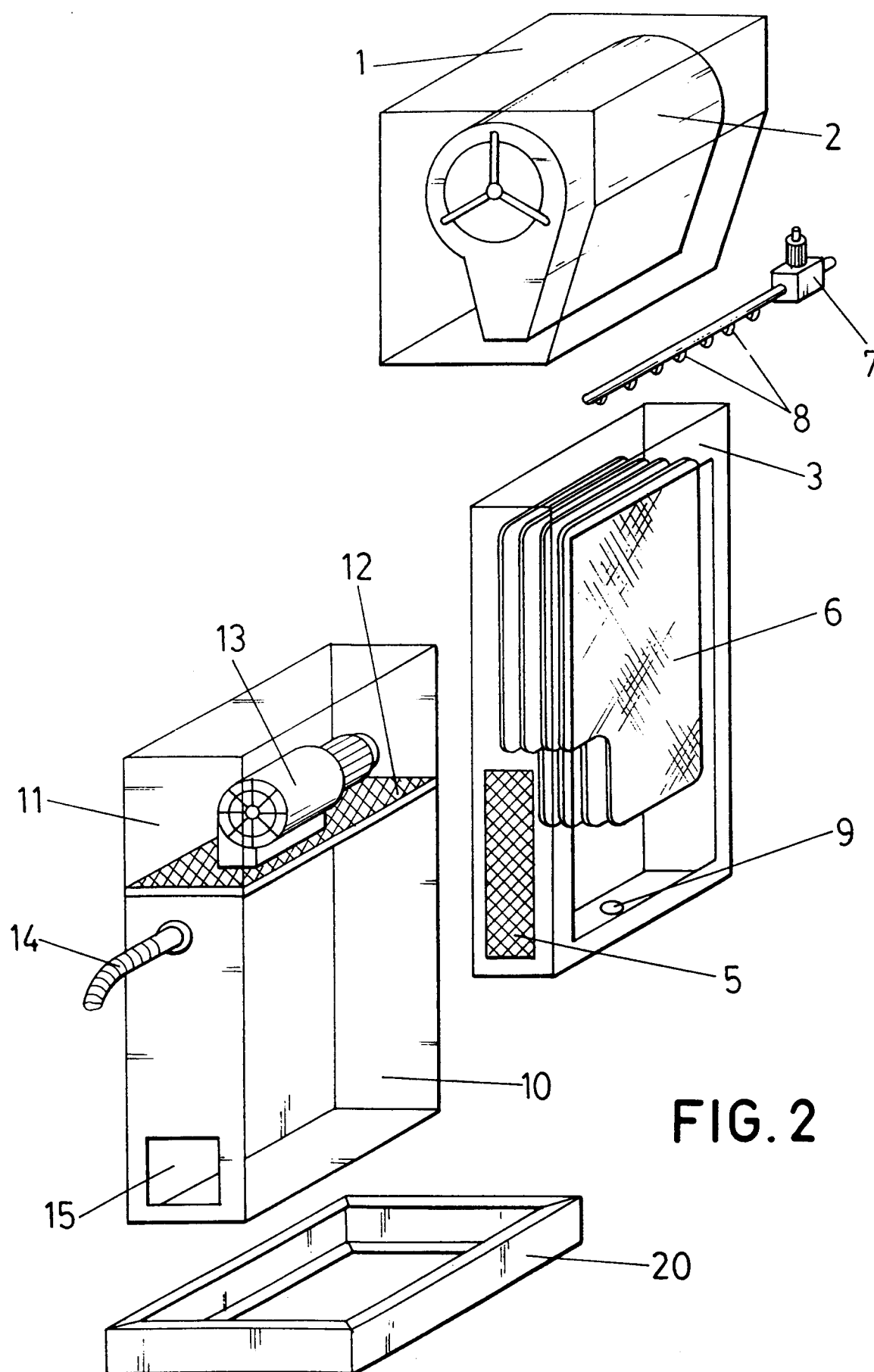


FIG. 2

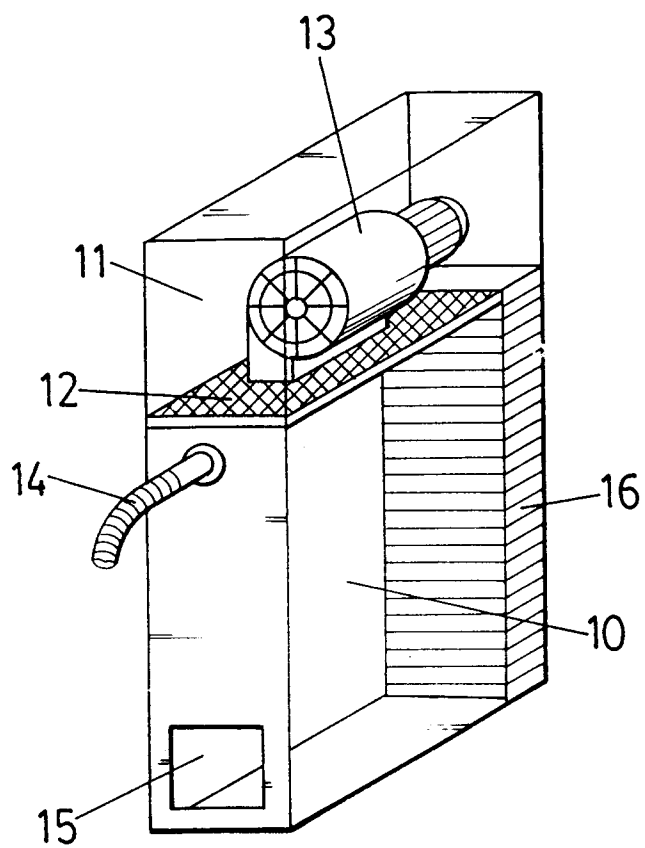


FIG. 3

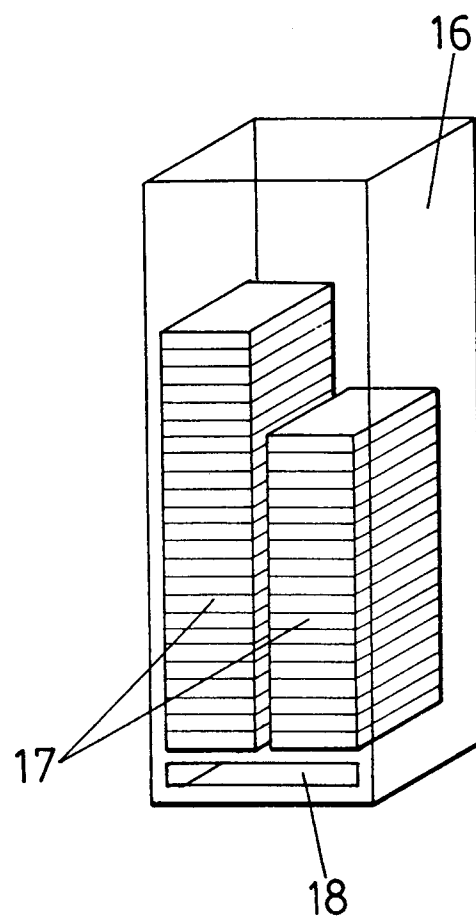


FIG. 4



European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 93 20 1692

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	DE-A-2 167 000 (BEGES AG) * the whole document *	1-7	A47L7/00 D06F18/00

Y	PATENT ABSTRACTS OF JAPAN vol. 9, no. 279 (M-427)28 June 1985 & JP-A-60 121 159 (TOUKIYOU TATSUNO KK) * abstract *	1-7	

A	PATENT ABSTRACTS OF JAPAN vol. 15, no. 049 (M-1078)21 November 1990 & JP-A-22 83 553 (MK SEIKO CO LTD) * abstract *	1-7	

A	PATENT ABSTRACTS OF JAPAN vol. 13, no. 555 (M-904)13 September 1989 & JP-A-12 29 751 (SENSHIYAKI SERVICE KK) * abstract *	1-7	

A	US-A-4 194 262 (B.G. FINLEY & AL) * abstract; figures *	1	

A	NL-A-7 016 386 (INDUSTRIE A. ZANUSSI SPA) * the whole document *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.5)

A	DE-A-3 309 636 (M. PEHL) * the whole document *	1	A47L D06F

The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 AUGUST 1993	Examiner M. VANMOL
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	