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(19) **United States**(12) **Patent Application Publication**
Pinheiro(10) **Pub. No.: US 2008/0156748 A1**(43) **Pub. Date: Jul. 3, 2008**(54) **MULTIFUNCTIONS CEILING DRYING RACK****Publication Classification**(76) Inventor: **Jose Joaquim da Costa Pinheiro,**
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New York, NY 10008-0770(51) **Int. Cl.**
A47F 3/08 (2006.01)
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F28D 15/00 (2006.01)(52) **U.S. Cl. 211/1.57; 211/85.3; 165/104.28**(57) **ABSTRACT**

The multifunctions ceiling drying rack is an innovating equipment for ceiling assembling with 220V AC electrical power feed (ceiling electrical point) that allows hang up clothes on drying rack to dry by thermo ventilators integrated inside the box of this equipment. It's a motorized drying rack, with a motor (M) also integrated inside the box as well all the wheels system, allowing by this way automatic up and down movements of drying rack. It has also in all around box area integrated lights. All these functions such switch on and off the lights and thermoventilator, to program drying times and drying temperatures and up and down movements of drying rack will be operated by a remote controller device by infra-rays controlled by an electronic control pcb (C) located inside the equipment box.

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(2), (4) Date: **Sep. 5, 2007**(30) **Foreign Application Priority Data**

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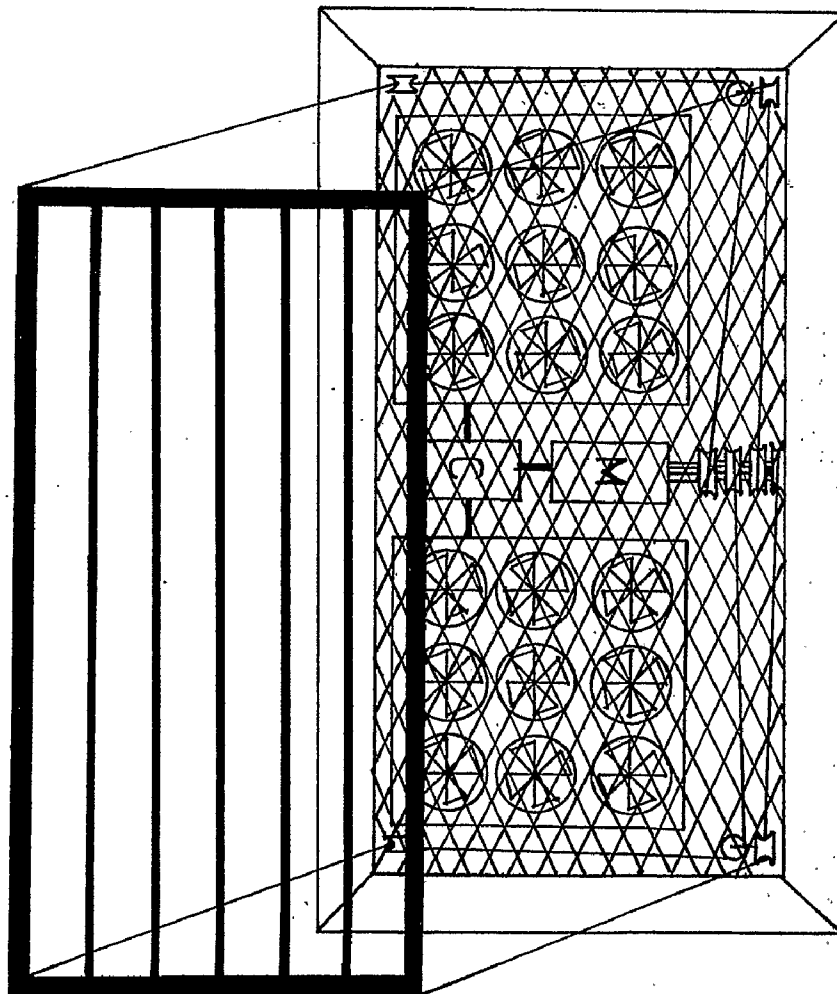


Fig.1

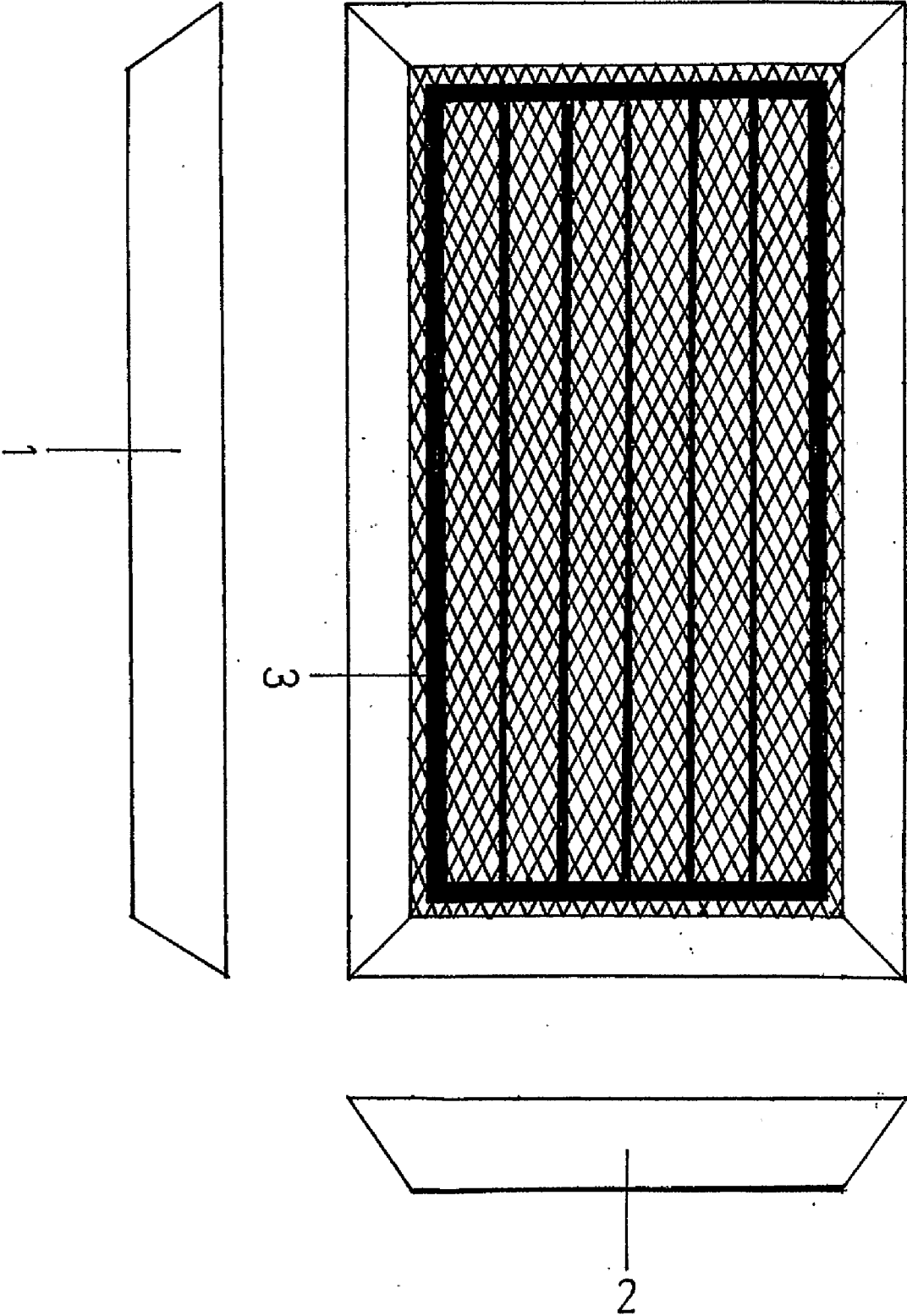


Fig.2

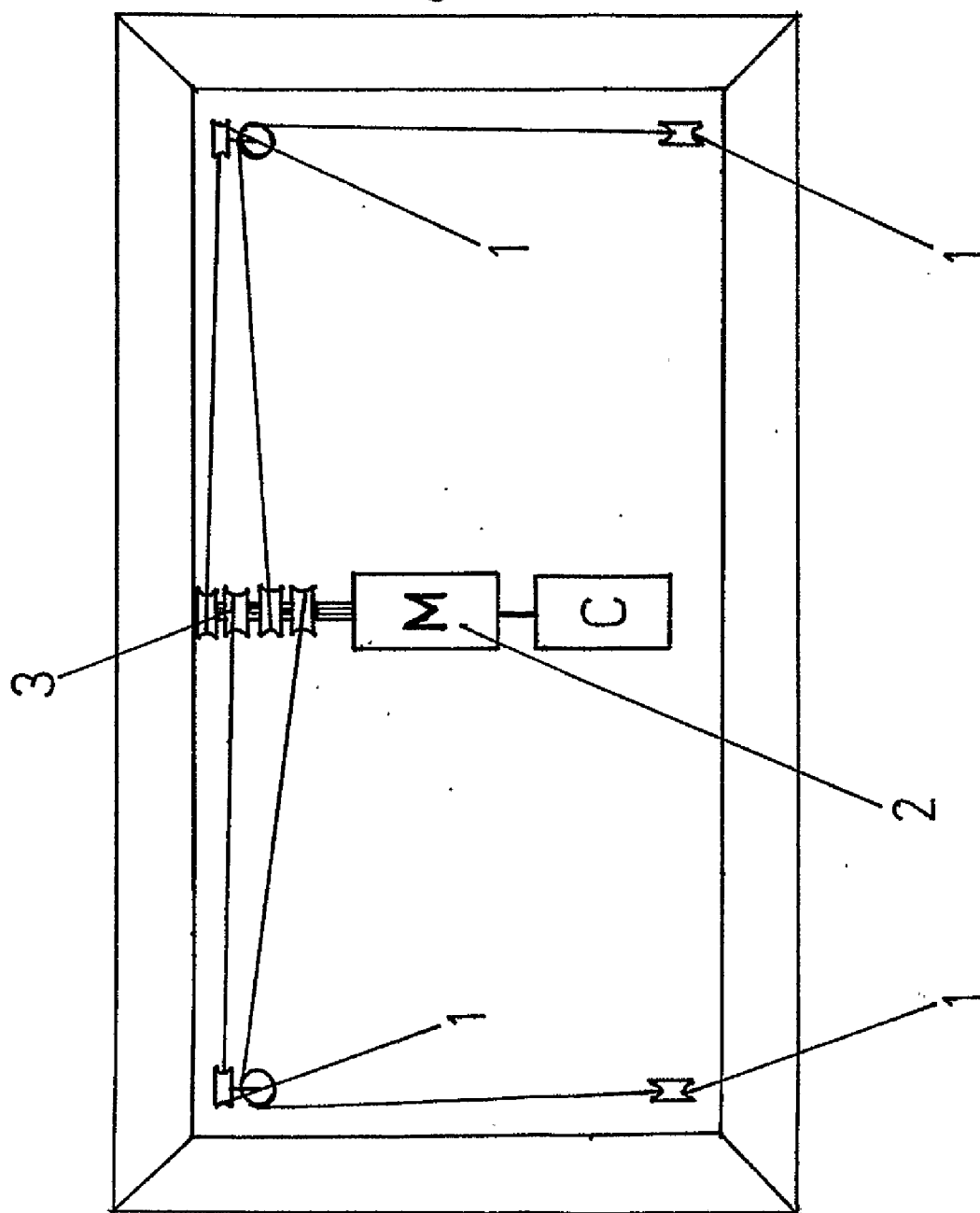


Fig.3

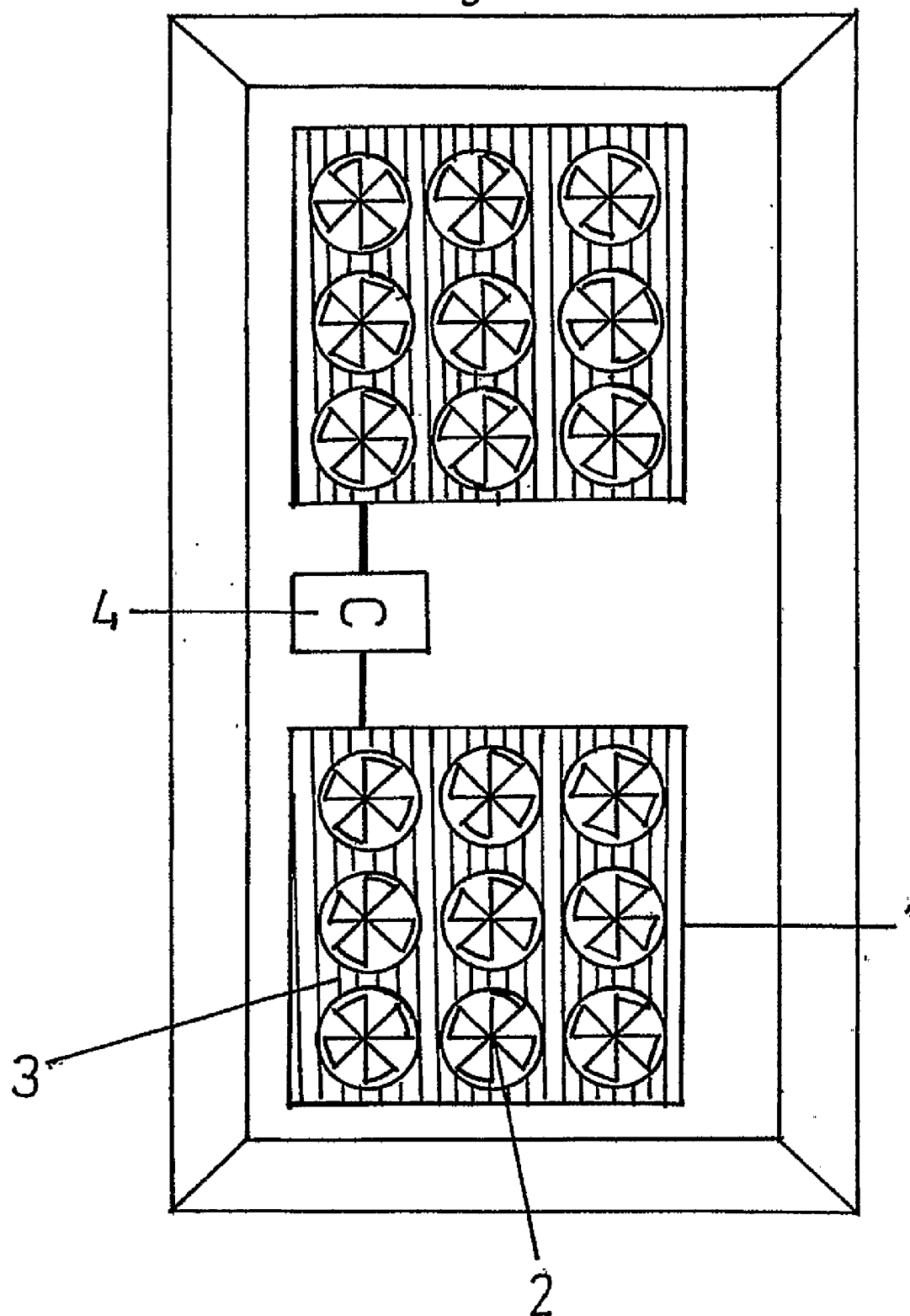


Fig. 4

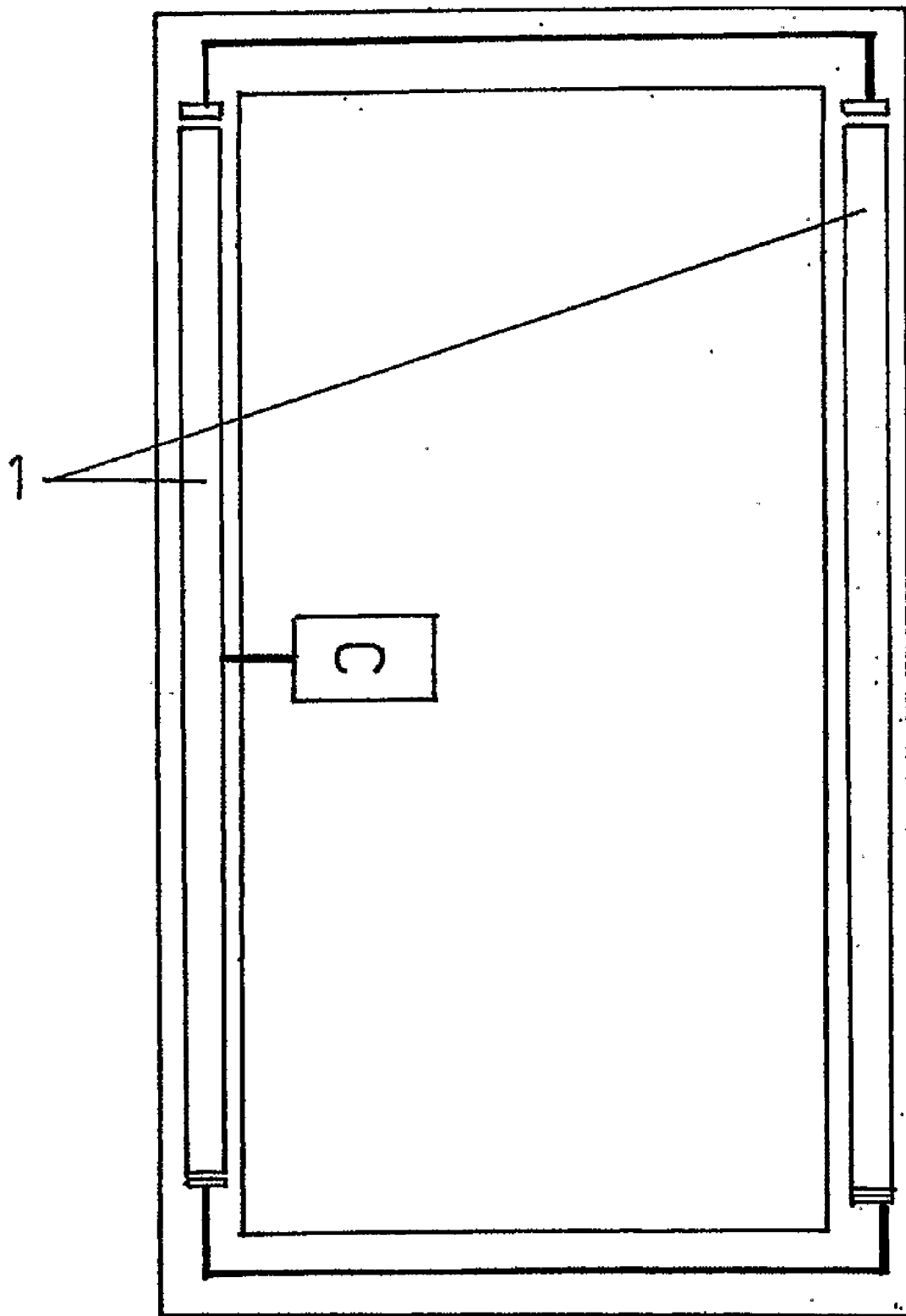
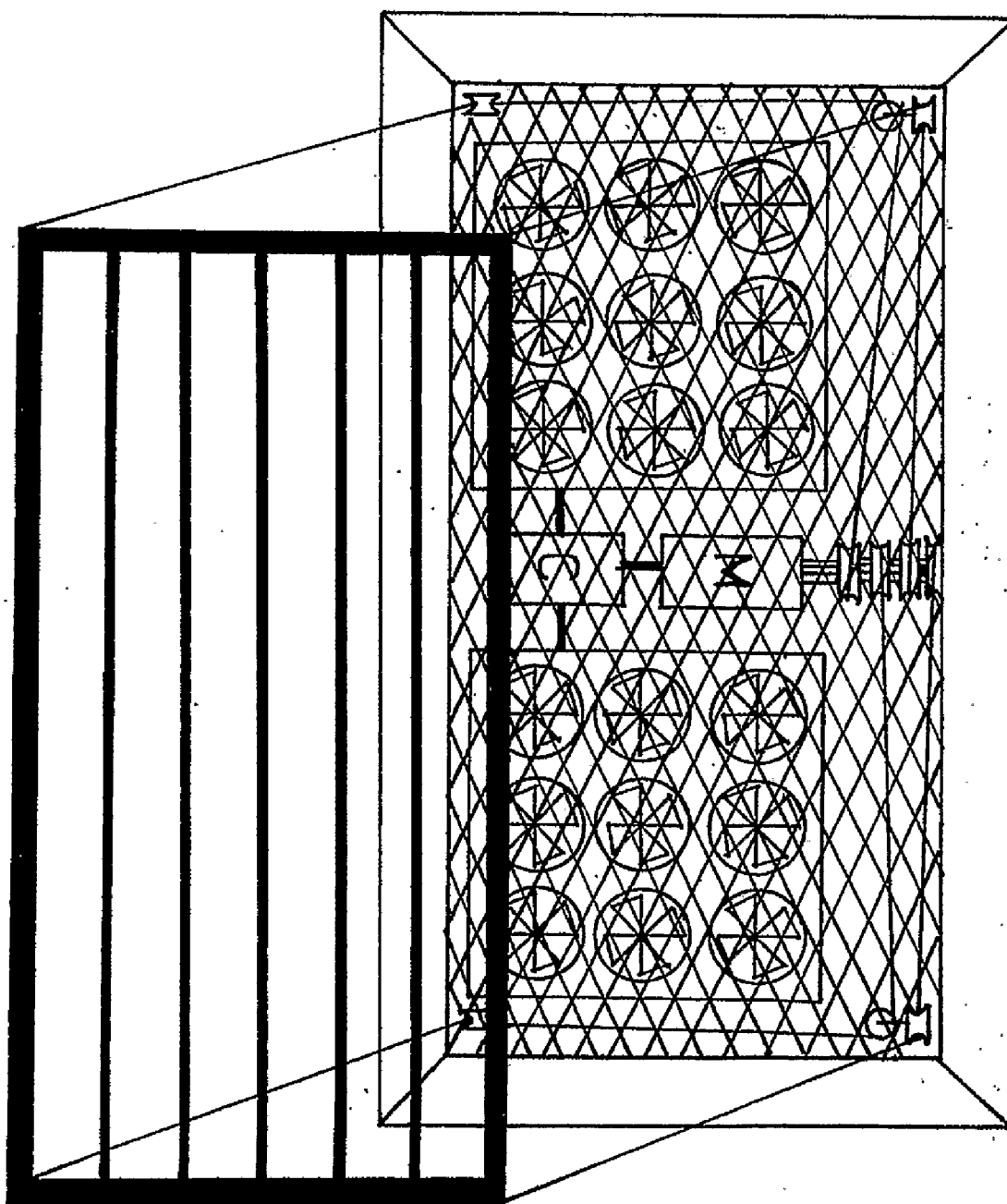


Fig. 5



MULTIFUNCTIONS CEILING DRYING RACK

[0001] The Multifunctions Ceiling Drying Rack (FIG. 5) will be a complete innovation comparing with the usual and normal ceiling drying rack that actually is in our european market, and will allow to their operators a bigger facility and commodity to handle with it and also an increasing of efficiency for its main function that is dry the wet clothes.

[0002] These new functions will be 3 and will be describe by decreasing order of its importance for this innovation:

[0003] 1) Integrated Thermo Ventilator in the rectangular main box that will be fixed to the ceiling (FIG. 3 item 1), and will be composed by motorized fans (FIG. 3 item 2), electrical resistance wire (FIG. 3 item 3) and controlled by na electronic control pcb (FIG. 3 item 4) all them also integrated inside the main rectangular box (aluminium or other metal material) and after operated by remote controller (infrarays) will send hot air in down way that will force the dry process, that means no longer by natural sun dry way, of the wet clothes and will increase a lot in this way the efficiency of this drying process, specially for big clothes quantity as well for days without sun light. This device will be also used as a normal heater for this house department, laundry/kitchen, in winter times as well as cold fan system in summer hot days.

[0004] 2) Motorization (operation by electrical motor) will be one more function of this new drying rack and will allow a smooth up/down movement of drying rack in a simple and easy way (controlled by remote control) without any effort and will avoid the use of force from operator, that specially with big wet clothes quantity was too difficult to be done before by the normal and standard drying rack wheels and wires system.

[0005] 3) Lamp illumination will be one more function of this special drying rack and will allow not only illuminate the operation area as well all the surround in the laundry or kitchen, avoiding by this way the assembly of the usual lamp in these departments that will relief free ceiling area for this drying rack assembly.

[0006] The Multifunctions Ceiling Drying Rack will be constructed by extremely simple materials that will be basically the follow components:

[0007] Rectangular main box made in metal sheet (inox/aluminium/other...) with variable dimensions (the standard with aprox. 140x90 cm) where in all around of it will have a border with 10 cm width aprox. where will be integrated 2 long lamps (one in each side) (FIG. 4 item 1) for illumination, covered by white transparent acrylic/plastic material (FIG. 1 item 1) and in the front and rear sides will have a grill integrated in this border structure (FIG. 1 item 2) in pyramid form.

[0008] In central zone with dimension aprox. of 120x70 cm will be the parking zone of drying rack grill (aprox. 5 cm height) and immediately bellow (down-up direction) and separated by an all drilling sheet (like a grill) or metal net will be assembled the thermoventilator system all long the area of this box, except the are occupied by motor, and control pcb.

[0009] Both, thermoventilator and motor will be fixed by normal screws or other fixing simple system to the top of metal box and this last one will be fixed with very strong fixing system to the ceiling.

[0010] The drying rack grill (FIG. 1 item 3) will be made in metal material (aluminium/steel/other...) similar to the ones that already exists in market and hold by 4 separated wires (metal or plastic ones), that will be fixed each of these wires

to each corner of this drying rack grill and the other extremities will pass individually by a wheels system (separated wheels) (FIG. 2 item 1) and follow to other 4 wheels system (all together) (FIG. 2 item 3) that is connected to the motor shaft (FIG. 2 item 2). Two of these wires will pass first by two other support wheels for best positioning.

[0011] In the motor shaft will be assembly a 4 wheels system that will move to the left or to the right depending if we switch the remote control key to move up or down the drying rack grill.

[0012] The power required for this device will be usually 220V AC monophasic but this can be changed depending the country normal requirement. Usually will be used the light electrical point in ceiling.

[0013] All these options and functions will be controlled by a wireless remote control device operated by infrarays as well an electronic controller pcb that will be assembled inside the main box.

[0014] The remote controller functions will be the follow ones:

[0015] Two keys with designation of Φ MAN+ Φ MAN that will work by continuous finger pressure and will stop when released. Will be a great utility to positioning the drying rack grill in exact position that we will need.

[0016] Two other keys with designation Φ AUTO+ Φ AUTO in which will be enough a finger touch to the drying rack moves automatically to the limit, in both sides no matter we touch UP or DOWN keys. This stop will be made by proximity switches or by electrical limiters.

[0017] One touch key for ON/OFF power of lamp light.

[0018] One touch key for ON/OFF power of thermoventilator.

[0019] One adjusting knob for heaters temperature.

[0020] One key for speed fans controller (1-3 speeds) and the lower will be used for night because will be the silent way.

[0021] A timer included on it to program the dry time period and switch off the heater when this time is reached. If we press the key Φ AUTO (will have a led to show this function will be on) after we start on a program, that means after the process began, the drying rack grill will automatically will go down to the remove dry clothes position (down limit) when the program process is finished. In this way the operator won't need to use the remote controller to force the drying rack grill comes to the down limit position.

[0022] 3 or 4 open keys that will be used for future options.

[0023] By all these qualities I think that this Multifunctions Ceiling Drying Rack up described will be an equipment totally innovator and that will change for sure the present offers that we found out in this field of drying rack in world market.

1. Multifunction Ceiling Drying Rack, characterized by the fact that the drying of clothes comprises a thermo ventilator integrated in a rectangular box assembled on the ceiling (1), (FIG. 3), having a central zone at mid height with dimensions that will serve as parking zone for the drying rack grill, and that comprises a set of motorized fans (2) (FIG. 3), and having below an electrical resistance wire (3) (FIG. 3), both controlled by an electronic control (4) (FIG. 3) that will send hot air in descending way, including a motorized wheels system and wire to move the drying rack grill (3) (FIG. 1) hold by 4

separate wires, each fixed to corresponding corner of this drying rack grill and the other extremities will pass individually by a wheels system (1) (FIG. 2) and follow to another four wheels system (3) (FIG. 2) that is connected to the motor shaft (2) (FIG. 2), that will allow to move the drying rack up and down for the purpose of placing the clothes to dry and also includes a set of lights that will allow to illuminate all around the area where it will be assembled.

2. Multifunction Ceiling Drying Rack, according to claim 1, characterized by having an electronic remote controller with two keys with $\uparrow$ MAN and $\downarrow$ MAN designations that will work by continuous finger pressure and will stop when released to positioning the drying rack grill in an exact position and a timer to program the dry time period and switch off the heater when this time is reached.

3. Multifunction Ceiling Drying Rack, according to claim 1, characterized in that it has an electronic remote controller with two keys with $\uparrow$ AUTO and $\downarrow$ AUTO designations in which will be enough a finger touch for the drying rack to

more automatically to the limit positions by way off proximity switches or by electrical limiters.

4. Multifunction Ceiling Drying Rack, according to claim 1, characterized in that it has an electronic remote controller with one touch key for ON/OFF power of lamp light, one touch key for ON/OFF power of thermo ventilator, one adjusting knob for heaters temperature, one key for speed fans controller.

5. Multifunction Ceiling Drying Rack, according to claim 1, characterized in that the rectangular main box is made of metal sheet, for example inox, aluminium or similar.

6. Multifunction Ceiling Drying Rack, according to claim 1, characterized in that the rectangular main box has variable dimensions, preferably with 140×90 cm and border with 10 cm of height.

7. Multifunction Ceiling Drying Rack, according to claim 1, characterized in that the drying rack grill (3) (FIG. 1) is made of a metal material, for example aluminium, steel or similar.

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