ELECTRICAL APPLIANCE THAT CAN ALSO BE USED IN INDUSTRY FOR COOLING OR FREEZING PRODUCTS WITH MAXIMUM SPEED

DESCRIPTION

OBJECT OF THE INVENTION

The patent object of the description, in this case relates to novel design and creation of a determined apparatus or electrical appliance with which products can be cooled in an accelerated manner such as e.g. beverages, and all kinds of food, both domestically in households and industrially in bars, restaurants, ice cream parlors, or in venues where events are held, and in other possible industrial environments, where it can serve for cooling or freezing products, regardless of whether or not they are food, and even in fishing ports, vessels and fish markets, or markets for the agri-food industry, due particularly to the new electrical appliance that operates with a system of ducts full of a specific gas, the rubbing and moving friction of which generate, helped by turbines, cooling and faster execution, which may be programmable or calculated based on weights and capacities. Therefore, through the application of this invention, conceived with the purpose of providing numerous advantages of use applied directly to cooling or freezing, the problems relating to the need, urgency, or capricious action of cooling, and if required, freezing beverages or food, and other products very quickly are completely solved.

FIELD OF THE INVENTION

The scope of application of the invention is the one encompassing the entire industry dedicated to the production and marketing or processing, storage and supply of all kinds of perishable products in general, as well as sectors intended for the restaurant and catering trade, or cafeterias and restaurants or ice cream parlors, in general, together with clubs and leisure environments, and on the other hand, also including in this same area sectors framed in the manufacture of small and large electrical appliances, and manufacturing sectors dealing with the production of duct systems and open or closed circuit coil systems, which serve to incorporate both fluids and substances generally as liquids or gases.

BACKGROUND OF THE INVENTION

At present, the existence of an invention having the features described in the specification of the Patent itself is unknown to the applicant, therefore its use is entirely novel.

Currently, in all types of kitchens, there is a series of electrical appliances which contribute in a multitude of tasks providing cooking, refrigeration, heating and freezing or thawing of foods and beverages, so that for some cases, such as cooking and heating or thawing, the speed and speed of execution have been optimized, but the same has not happened, relatively, when you need to cool or freeze very quickly or in the shortest possible time any food product, with the important advantage that would represent to always have water, soft drinks, beverages in general, or, ultimately, food, rapidly cooled in a few seconds, or in minutes if they need to be frozen.

In addition, all domestic needs have been industrially adapted to shops, markets, and a wide variety of companies engaged in cooking that need to maintain foods and beverages hot or cold, and that even need to keep all foods frozen.

As for ways or means of accelerating or keeping the cold in a closed environment to produce a greater decrease in temperature, the existence of some fairly rudimentary processes is known, based on the addition and mixture of salt and ice in combination with a rotating container in which the product to be cooled is introduced rotating it to achieve with patience its cooling and keeping it cold.

To date, there is no knowledge of any electrical appliance or apparatus applied in industries and in public facilities, that is capable of cooling and, if required, freezing, with maximum speed beverages in general together with foods previously cooked or also mainly perishable products, or which need to be kept at a certain temperature and freshness, so that it is essentially practical, useful, and highly functional as electrical appliance in households, as well as for its use industrially applied with dimensional variations of the electrical appliance which effectively serve in numerous sectors in which it can be presented as an invention that offers multiple features of practicality and usability with regard to any need to cool very quickly, in addition to functioning as an electrical appliance that freezes in seconds or minutes, depending on the product and its volume, weight, and the condition of the same.

DESCRIPTION OF THE INVENTION

This electrical appliance which can also be applied to the industry for cooling or freezing products with maximum speed, to which the description refers as such, in this case corresponds to the creation of a specific domestic and industrial electrical appliance, which is configured from insulation structures or paneling that give rise, after being integrated forming part of metal plate or plastic material supports surrounding tightly in an enveloping manner the insulating paneling, to a set of delimiting walls of both cubic and prismatic container receptacles and more or less elongated or, if necessary, enlarged when convenient.

The insulation paneling must meet insulating qualities which protect and prepare the interior space of the electrical appliance, with combinations of materials or with layers that are located more toward the outer side of the paneling in order to protect the electrical appliance itself from adverse external conditions, with fireproof and moisture insulating material to prevent dangerous accidents.

And the walls mentioned above provide the entire peripheral boundary of the electrical appliance, for use also applicable in the industry, which can be joined together by brackets, fittings, grid structures, and even split from a single object based on molds or drawing processes, generating the hollow walls inside, for placing the insulation paneling at a later stage of manufacture of the entire electrical appliance, which allows achieving a uniform and accelerated cooling in a programmable manner in time or by the weight of the product. Also the desired temperature at which you want to cool or freeze beverages and foods in general can be selectable.

On the other hand, turbines are installed in each of said delimiting walls in order to generate several air currents, said turbines being located in the inner faces of the walls to allow air to flow into the interior space of the electrical appliance, or receptacle that is reserved for the temporary accommodation of foods and beverages which are to be cooled or frozen with the greatest possible speed.

The interior space of the industrial and domestic electrical appliance, produced by the assembly of all the walls with integrated insulation paneling is shown delimited by perforated plate panels or elements made of another

material with millimeter perforations always respecting a usually front opening, although it can also be a side or top opening, and in all cases with hinged door, or removable by sliding, which covers the entire opening, the function of which is to allow a comfortable introduction of products in the electrical appliance, and allowing open or closed access to the interior space thereof.

Between the perforated plate panels and the inner faces of the walls of the apparatus, where the air turbines will be installed, there is a chamber or space for housing and assembly of a coil, consisting of tubular ducts preferably made of copper, and with certain tube thickness, the leading end of which is bent so that it can be connected to an air compressing motor and serve as inlet port of the gas R410A to the coil, the opposite end of the coil being the outlet port of the gas after going through the circuit, which also will be connected to the compressing motor to allow the redirection of the gas flowing through the inside of the coil continuously.

Alternatively it has been shown, with the intention of reducing the operating temperature of the apparatus as much as possible, that it is possible to replace the duct circuit that originate the entire coil by a radiator or a condenser, which consists of a series of horizontal and vertical plates, with endless cells through which the turbine air circulates, so that in this way, in combination with a coil included in the radiator itself, the action exerted by the turbines is far more productive, since they are able to generate air with freezing temperatures through the cells, transferring it inside the electrical appliance directly driven by the turbines going through the panel of cells, which acts as a kind of filter which serves as an air sink after cooling by the movement and friction of gas, redirected through coils connected to the panels of cells, filters, or radiators, so that the present novelty considers both the use of the coil alone separately, and of coils in combination with radiators, enabling greater cooling of the air since it does not let the slightest benefit of cooling offered by the gas to be wasted, regulating and evenly distributing all the cold through the cells enabled, for a more prolonged cold retention caused from gas friction driven by the compressing motor, being applicable a compressing motor with one turbine, coil and cell panel in one wall of the electrical appliance, or even several radiators with coil associated with one or more compressing motors, all of this installed either in a single wall of the electrical appliance or whether appropriate, in several or all of the walls of the apparatus.

And, with the possible formal configuration of the radiator or condenser produced particularly for the invention, both of rectangular or prismatic shapes known and of new condenser objects and cold accumulators, emerging from the coil, which are, for example, tubular or enveloping with or without cells or horizontal and vertical plates to produce these condenser panels or radiators, provided that the purpose of their manufacture is based on a concept of cold retaining action to optimally take advantage of the performance and qualities of the gas without losing any cold.

As for the gas, which is preferably used and therefore applicable to the invention, the so-called R410A fits perfectly as essential refrigerant compound in the novel electrical appliance, because it provides a very high volumetric capacity that simply because of its natural characteristics reaches high pressure, resulting in less displacement of the molecules making up the gas R410A and in increased cooling capacity.

The gas R410A is a hydro fluorocarbon (HFC) and it is a refrigerant gas classified as completely ecological that does not damage the ozone layer, and is not detrimental to the health of people, in addition to being a non-flammable gas, so that in case of leaks, accidents or intoxication causing side effects when inhaled would not occur.

Compositionally the R410A is obtained by mixing two gases, R32 and R125 in varying proportions, which are gases that are employed in air-conditioning systems separately or in combination and mixture, to produce the gas R410A.

Hence, the invention does not consider exclusive the use of this gas R410A, although initially it is the most appropriate, but in the case of this product being removed or disappearing from the market, other gases with similar qualities having identical cooling functions may be used, based always on the characteristics and performance of R410A.

This gas is acquired bottled in a gas cylinder or certain cartridge and with special valves and pressure gauges, due to the high natural working pressure and cooling that the R410A itself has, since it has a boiling point of -52ºC, such that when installing a cartridge the outlet port of which is connected via ducts to a gas shut-off and inlet valve, and then with successive ducts to the air compressing motor, the copper coil is filled and a decrease in the temperature inside said coil is generated, which can range between 10º C below zero and

40º C below zero, with the optimum working temperature for the function of the apparatus being normally between -15º C and -20º C.

Since this is an electrical appliance, all functional and performance action is done from a control panel, which allows the selection of time and the temperature at which cooling is desired by means of keys or regulatory elements, with which, since the gas acts as a coolant which further reduces its temperature when the friction by the action of the compressing motor increases, it is necessary to electronically link to an integrated circuit plate the operation and the intensity of pressure with which the compressor drives at all times for each case and with the effective force, that is, if the user indicates in the control panel that they want to cool for example beer in one minute, the electrical appliance is designed to calculate the optimum working performance of each internal component.

When the gas R410A inside the coil has already acquired a sufficiently cold temperature, about -15º C, the turbines on the side walls, the bottom and if it is also appropriate, the upper turbine, are activated, resulting in an increased cooling speed, since the cold moves from the ducts or the coil into the interior space through the holes in the perforated plates limiting the interior space of the electrical appliance, wherein the beverages and food containers or foods to be cooled are placed, and to be frozen if desired, or if it is necessary to prolong life or the condition of the product, even to cool to a desired temperature to maintain the freshness that certain products require, so that in addition to its many features, the electrical appliance for cooling or freezing products with maximum speed achieves, with short-term use, reducing the consumption of refrigerators having no need to fill the fridge so that many products of those that are consumed can be cold when eventually consumed, with the advantage of not failing to ourselves or to our guests when for example forgetting to put the beverages in the refrigerator or freezer to be cooled, as with the speed offered by the electrical appliance characteristic of the present invention numerous situations that have to do with accelerated cooling or freezing are solved.

Also, it is important to highlight as a part considered in the invention, the use of a central swivel base located at the bottom of the interior space, as those used in microwaves, which will advantageously contribute to the much more homogeneous distribution of cold over the product to be cooled, until freezing it if desired, and said swivel base the same as the operation of the novel electrical

appliance, is coordinated from the control panel itself, with features of time of exposure to cooling, selectable temperature of cooling, calculation of the weight and volume to provide an efficient time of intense cold or freezing programmed, and for the features to be performed in an automatic mode simply by selecting the desired temperature.

There is the possibility of including, in the system described as highly functional for cooling or freezing, a thermostat associated with a conventional heat pump, used in air conditioners and air ovens, in order for the electrical appliance to have, in addition to the claimed features of its components, features currently used for heating or defrosting foods and beverages, so as to enable the offer of a more complete and functional electrical appliance, integrating a variety of uses and advantages in a single apparatus appearing installed as new electrical appliance applied to home kitchens and multiple areas of the industrial sector.

Finally, and as it occurs with the rest of apparatus operating by air and resistances as the case of ovens, and by microwaves with air, the electrical appliance also applicable to the industry for cooling or freezing with maximum speed, must have, at the rear, side or front an overflow channel or outlet acting as a vent when all the air pressure exerted on the interior space of the apparatus increases too much.

And the gas R410A may conveniently be combined with non-mineral polyester or polyvinyl ether oil, also using the gas R410A or gas mixture always in the liquid state. The use of the oils mentioned above is essential for producing a longer lasting electrical appliance and totally free of specialized maintenance, since only these oils are miscible with a liquid gas with the characteristics of R410A, and the oil helps facilitate good return of the gas to the compressing motor, which reduces the deterioration of the qualities of the gas. With only one maintenance, consisting of gas refilling after years of use, replacing the cartridge and all the gas of the closed circuit or coil where the R410A circulates, or any other gas with characteristics very similar providing equivalent cooling features.

DESCRIPTION OF THE DRAWINGS

To complement this description being carried out and with the object of contributing to a more detailed understanding of the features offered by the

novelty a series of line drawings is attached to this specification and as an integral part thereof, representing the following illustrative purposes:

Figure number 1. – It is the depiction of an electrical appliance for cooling or freezing beverages and any food product with maximum speed, all this from a perspective where, the location of the coil and the compressing motor is shown through the cut made, as well as the interior space since the apparatus is depicted with the door open, showing, as examples, canned beverage containers.

Figure number 2. – It depicts, from a perspective view, the whole cooling structural system showing only the cartridge connected to the compressing motor, and this in turn the inlet and outlet port of the coil, without depicting walls or door forming part of the electrical appliance, appearing only a portion of the console or control panel, and a swivel base integrated into the bottom enclosure wall, where in this case are placed beverages.

Figure number 3. – It shows, from another perspective view, all the elements forming the invention, moving the majority of the components from their final positions to be observed separately, and making various cuts in several objects such that elements that are hidden can be appreciated.

PREFERRED EMBODIMENT OF THE INVENTION

In view of figure 1, this novel electrical appliance also applicable in the industry for cooling or freezing products with maximum speed (1), is configured from insulation paneling (2) which are framed within metal plate supports (3) to produce the walls (4) of the sides and bottom together with the top and bottom of the electrical appliance (1) characteristic of the present invention.

The walls may be assembled with each other through brackets (5), for example, so that it results in a kind of receptacle or interior space (6), the front of the electrical appliance (1) being open with a door (7), hinged or removable by sliding, for access and closing of said interior space (6).

On the inner faces of the walls (4) there are centrally installed air-generating (9) turbines (8), which move and insert the low temperature of the air (9) obtained from a gas (10) such as R410A, into the entire interior space (6).

This interior space (6) of the electrical appliance (1) is delimited by a series of perforated plates (11), through which the air (9) of the turbines (8) passes through to be fully inserted into the interior space (6), and between the

delimiting perforated plates (11) and the inner faces of the walls (4) with the turbines (8), there is a chamber (12), with variable separation, intended for the assembly of the coil (13) or circuit through which the gas (10) R410A flows.

The inlet port (14) of the coil (13) is housed and installed so that it is connected to a compressing motor (15), and the end of the coil (13) at the opposite end after the path of the circuit, is also connected by an outlet port (16) to the same compressing motor (15), so that the gas (10) flows, returns and is continuously inserted inside the entire coil (13) in an efficient way, existing as an alternative, the possibility of using a coil (13) connected and installed next to a radiator or panel of cells to better disperse all the cold generated by the gas, and thereby achieving that the index of operating temperature for cooling with the maximum speed is reduced mostly to lower temperatures, resulting in better performance and efficiency to execute accelerated cooling or freezing functions and performances.

These radiators, panels or filters that are associated or linked to the coil (13) offer various formal aspects, always conveniently adapted to optimize the accumulation and subsequent dissipation of air (9) through the turbines (8) into the interior space (6), and they can be displayed with or without the cells.

The gas (10) R410A bottled in cylinder or cartridge (17) is inserted into the coil (13) to fill it completely, by means of the compressing motor (15) which in turn is connected by ducts (18) and safety valves (19) with special pressure gauges (20) to the gas (10) R410A cartridge (17), from where it exits at high pressures and reaches very low temperatures.

The application of the invention is initiated, after having an operating temperature around the entire coil (13) of at least -15º C in a short time, automatically regulating the compression intensity of the compressing motor (15), and next the operation of the turbines (8) is activated, moving these low temperatures cooling the air (9) so that it passes very cold to the interior space (6).

Like any apparatus with programmable functions and also of immediate action, the new electrical appliance (1) includes a console or control panel (21), connected to a circuit board (22) for processing times, speeds, temperatures, weights, volumes and automatic programming.

It will also operate connected to the power supply directly at 220V, and it will have, the same as air ovens or microwaves, a relief area (23), through

which the excess air (9) or that exceeds the pressure supported by the interior space (6) can exit from within.

Its use is very practical, simply by placing foods, products or beverages (24) on a swivel base (25), located in the lower part of the interior space (6), closing the door (7) and subsequently from the control panel (21), selecting one of the multiple implementation possibilities related with time of action or selectable temperature and other possible settings.

A heat pump that allows offering, along with the characteristic features, features of heating of food and beverages (24), as well as the thawing of the products can also be included in this system.

So it can be concluded that, overall, a more complete electrical appliance (1) is obtained, created under the important purpose of cooling or freezing products with the maximum cooling and freezing speed, depending on the action to be exerted on the product, with features and use and implementation advantages almost instantaneous.

The elements and materials used in the manufacture of the electrical appliance that can also be used in industry for cooling or freezing products with maximum speed (1), are all described in the present invention and any of the dimensions and shapes of the elements forming it may be varied or modified, by virtue of the possible variations that occur in the market.

The terms in which the present Patent specification is described will always be taken with a broad and non-limiting character.

ADDITION

ELECTRICAL APPLIANCE THAT CAN ALSO BE USED IN INDUSTRY FOR COOLING OR FREEZING PRODUCTS WITH MAXIMUM SPEED

DESCRIPTION

OBJECT OF THE ADDITION

The addition object of the description, in this case relates to novel the double filtration system built into the electrical appliance object of the patent, with which rapidly cooling products is achieved, for example beverage, cans, bottles, food, etc. in a few minutes.

It is applicable for domestic and industrial use in bars, restaurants, ice cream parlors, etc. where the rapid cooling of products is needed.

To the new electrical appliance comprising a compressing motor (15), with a condenser (27) and an evaporator coil (13), it has been added a double filtration system (26) strategically placed which consists of mounting the second filter (26) before the gas returns to the compressing motor (15) allowing the rapid cooling to which we refer and we now claim in this addition. So through the application of this double filtration (26) designed in order to accelerate cooling times, the problem referred to the need, the urgency to obtain cold beverages or foods quickly is solved.

FIELD OF THE INVENTION

The scope of application of the invention is the one encompassing the domestic, industrial or hotel and restaurant use, with a general character, in order to rapidly cool products such as beverages or foods simplifying the daily tasks and work, also including the sectors framed in the manufacture of small or large electrical appliances and manufacturing sectors that deal with the production of duct systems and coils in open or closed circuits that serve to incorporate both fluids and substances such as liquids or gases in general.

BACKGROUND OF THE INVENTION

At present, the existence of a system with these features is unknown, the state of the art and relevant claim related to this system, since, as we add in this manuscript, its use is entirely novel.

DESCRIPTION OF THE INVENTION

The use of a second filter dryer located between the evaporator coil (13) and the inlet to the compressing motor (15), speeds up to three times the gas state exchange process. Namely: from liquid to gas, thereby optimizing the speed and rate of cooling.

To that already mentioned in the initial patent application to which the present is added, we add that the double filtration system (2 or more filters) is essential to generate a uniform and accelerated cooling, with which to obtain the best energy output and conservation of the elements.

OPERATION OF THE INVENTION

The compressing motor (15) pushes, by thermodynamic action, the gas to the condenser (27) where it is compressed, at high-temperature, which heat contrast is then eliminated (by a fan) into the atmosphere.

In the cooling cycle, the gas is, obviously, in the gaseous state and fully compressed at high pressure (high-pressure system) when passing through the condenser (27).

When it reaches the first filter dryer (26), it reaches the capillary tube. The capillary tube breaks down the gas and misaligns the particles changing the state from high pressure to low pressure. There it is in liquid state and therefore it begins to produce cold.

When it returns circulating in the liquid state it PASSES THROUGH THE BUILT-IN SECOND FILTER DRYER (26) (object of the addition), and thus when entering the compressing motor it enters in a gaseous state. Thus far, that cold chain is modified. That heat state and cold state cycle is accelerated up to three times, ALL THANKS TO THE NOVEL BUILT-IN DOUBLE FILTRATION SYSTEM, because in conventional devices, the first and only filter of the current cooling system was placed after the condenser, namely at the condenser (27) outlet and connected to the capillary tube to clutter those particles.

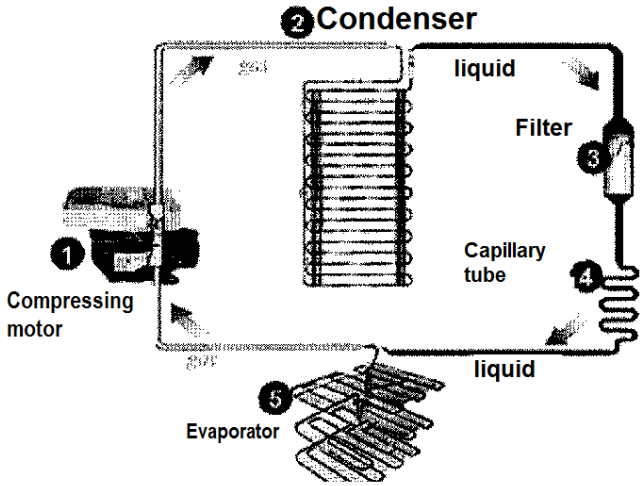
Now, in addition to the single filter located between the compressing motor and the capillary we add another filter, placing it between the evaporator coil (13) and the compressing motor (15).

In short: In cold cycles there is a high pressure system and a low pressure system. With this novel system this process can be accelerated up to three times.

SCHEME OF CONVENTIONAL COOLING CYCLE

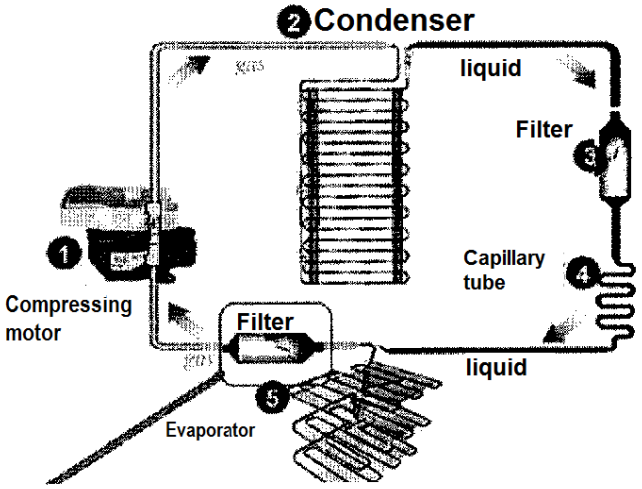
Comparison of the conventional cooling cycle and the electrical appliance cooling cycle with double filtration mentioned in Figures A and B.

Figure A



SCHEME OF ELECTRICAL APPLIANCE COOLING CYCLE WITH DOUBLE FILTRATION

Figure B



This is the position or system of the second filter dryer which is the cause of the addition claimed as novelty.

CLAIMS

1. Electrical appliance that can also be used in industry for cooling or freezing products with maximum speed (1), characterized by being configured from enclosing walls (4), consisting of a metal plate support (3) that covers moisture-proof, fire-retardant or other insulators insulation paneling (2), so that these walls (4) generate a receptacle or interior space (6), being assembled with each other through, for example, brackets (5) , anchored at the rear of the electrical appliance (1), which will always have an opening in which to install a door (7), hinged or removable by sliding.

2. Electrical appliance that can also be used in industry for cooling or freezing products with maximum speed (1), according to the previous claim, characterized by the incorporation of turbines (8) on the inner face of all or part of the walls (4) generating the electrical appliance (1) itself, redirecting all of the air (9) into the interior space (6), as well as by the incorporation of a coil (13) with inlet port (14) and outlet port (16) which are connected directly to a compressing motor (15), said coil (13) being housed in a space or chamber (12) which is created between the turbines (8) and perforated plates (11), delimiting the entire interior space (6) where the foods or beverages (24) that need to be cooled or frozen with maximum speed of execution shall be deposited on a swivel base (25), being also possible to replace the simple coil (13) by a coil (13) integrated in a radiator or condenser with many cells that dissipate all the air (9) much more effectively to the interior space (6), and even another radiator or condenser configuration, tubular or enveloping, with or without cells, linked in any case to a coil (13) through which the gas (10) flows.

3. Electrical appliance that can also be used in industry for cooling or freezing products with maximum speed (1), according to the previous claims, characterized by a gas (10) called R410A being preferably the gas (10) used as refrigerant, or, in the case of disappearance of specifically that gas (10), one with the most similar characteristics as possible, acquiring it packaged in cylinders or cartridges (17) equipped with safety valves (19) together with special pressure gauges (20), suitable for the high pressures of this gas (10) R410A, such that the cartridge (17) is linked to the compressing motor (15) by

ducts (18) and, therefore through the inlet (14) and outlet (16) port to the coil (13), creating a circulation circuit of the gas (10) R410A, which, if appropriate and in order to lengthen the life of the electrical appliance (1) may be mixed with non-mineral oils, such as for example polyester oil or polyvinyl ether oil.

4. Electrical appliance that can also be used in industry for cooling or freezing products with maximum speed (1), according to all the previous claims which is characterized by having a console or control panel (21), associated with a circuit board (22), from which are selected processing times, temperatures and other programmed or programmable actions and, also characterized by including, like any electrical appliance that operates with air (9), a relief area (23), through which the air (9) may exit without prejudice of the features provided in the interior space (6) of the electrical appliance (1).

5. Electrical appliance that can also be used in industry for cooling or freezing products with maximum speed (1), according to all the previous claims, characterized by the novel **double filtration system** (26) object of the addition, incorporated in the apparatus (1) for industrial or domestic use which achieves very rapid cooling of products such as beverages or food, for example, cans, bottles, tarts, etc. (24), in a few minutes, which being applicable for domestic and commercial use in bars, restaurants, ice cream parlors, etc, where it can serve for rapid cooling, which is characterized by being configured from the claims already mentioned in the initial patent, incorporating the new double filtration system (26), which specifically assembled in the outlet duct of the evaporator coil (13) generates speed in the relative times of the process thus accelerating the cooling and reducing the cycle time, which system is also applicable in industry for cooling with maximum speed, according to all the previous claims that characterize the system essential for accelerating the processes and cooling features, this system can have two or more filters, for greater cooling efficiency and uniformity; the terms used for describing the present claims of the patent shall always be construed broadly and without limitation.