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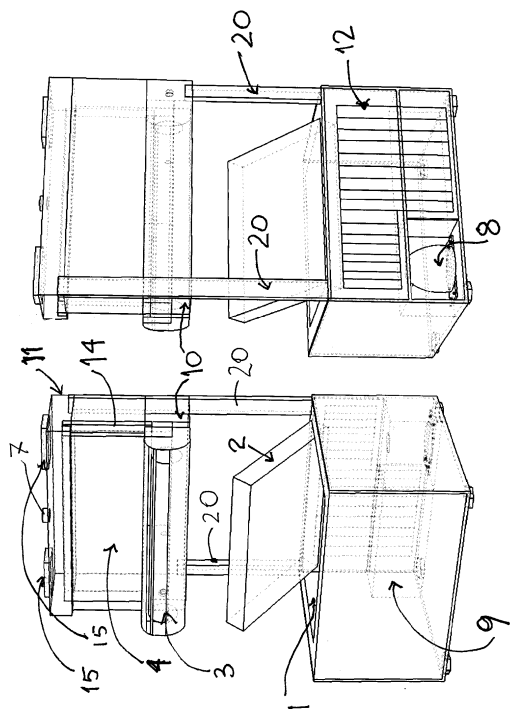
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(54) **A HEATING AND COOLING SYSTEM**

(57) An appliance that could incorporate a refrigerator, hot and cold ventilation. It may use a limited amount of electricity or several other forms of energy, for the performance of the embodiment. It will not require installation as with air-conditionings or like most of the presently heating and cooling systems in use. The embodiment

has the capability to operate as a split system air-conditioner, or just like a heater or to provide forced ventilation, or by the combination of all-in-one unit, as shown in Drawing 1/8. It had the capability to use several kinds or energy, especially suitable for some remote areas.

FIG 1/8



Description

BACKGROUND

[0001] Several apparatus and methods have been previously being introduced which combined heating and colling systems, in most cases the energy consumption was far above our embodiment.

[0002] The refrigeration adopted is some parts of our embodiment could also provide, apart from producing the cold air benefit, some storage facility like a normal refrigerator.

[0003] It is our understanding that with a further improvement of the present, embodiment, it would even reduce the energy for its proper operation, this could be achieved by better insulation and perhaps far less liquid being used in the embodiment, as the more liquid used will require more time to reach the desired temperature. Also, some advantage could be acquired by using the heat and cold generated from the heat exchange coils.

[0004] It must also be considered that the total unit could be used inside an Apartment/house/room, without requiring installation, in most case of any parts outside of a dwelling.

[0005] Some evidence has been included as part of our specification, but they should not be considered those to form part of the embodiment of our project, as we affirm that it was to the best of our knowledge, and every possible invention created in the past of future would give different results due to the conditions that may exist during the trail of any creation'

[0006] In our embodiment the area of the radiating element will be taken care to some extent from the pressure exerted by the fans or other means, but it is not limited to mechanical ventilation, as the radiating element, could to some extent able to produce and emanate heating just like the present oil or water radiators in the market.

[0007] Most of the present systems adopted to give benefits during the various climatic situations, appear to be using an excessive amount of energy and very little regard to the simple natural benefits that can be provided even by the movement of the hand-held fan, and revolve its operation in a simple and economical mechanical way. For instance, the principle of the bellow has hardly been exploited in designing the air transfer from any heating and cooling applications.

SUMMARY

[0008] To initiate the ambiguity of wording like "Include" or "Involve" or "Consist" should not be considered imperative or limited to the embodiment for its operation. It is a known fact that the adoption in an embodiment of ball bearing instead of bushes should not be considered any different in most cases, when they perform the same task.

[0009] The various storages of water or other liquid, used in our embodiment, should also not to be imperative

to be as illustrated in our drawings, it is important to consider that many shapes and contents will vary with the design of the preferred embodiment by the users.

[0010] In our embodiment we have illustrate various parts like of fans and heater using electricity, when in fact the heat generated by the external and internal heat exchange coils item (21/23) could well be to some extent used to heat the liquid contained in the various tanks. Further, gas or other forms of energy could be used to heath or cool the liquid contained in the various tanks.

[0011] Normally the liquid circulation in the seal unit of the refrigerator, could ultimately be adopted to either cool or heat the liquid as the case may require, for the optimum temperature to be obtained to perform the heating and cooling performance of the embodiment. In our embodiment we did not consider to show it, as it is a well-known fact of the benefit that it would provide by being adopted, we did not consider this to be a relevant benefit to illustrate it. We have mentioned in "BACKGROUND"

[0012] We have no bothered to show in our artwork any kind of insulation or wiring of the various parts, as anyone familiar with a Fridge or Air Conditioning would be well aware that the insulation would improve the performance and saving of energy. It is much the same as in the adoption of any electrically operated motor or heather (including gas or other form of fuel), it would be required to be connected to the energy source.

[0013] We did not disregard that the embodiment could well operate without having a forced circulation. As in our embodiment we took in consideration, that in some case the liquid may need to be added, for this we have considered to adopt non-sealed units, then as a safety feature, we have installed a heat resisting glass (5), that would indicate the level of the liquid contained in the tanks and also in the radiating element. We have intended to install several warning devices (including switching the unit off) and inform when the unit may require filling, the top tank with have a cap (7) having the similar feature as to the one adopted in the cars of the liquid-cooled radiators.

[0014] The various control for the flow of the liquid, in most case will be accomplished if ever it may be needed to perform more efficiently this embodiment, it is much the same with the flow of the liquid to the top element it could be well be control by a computerised system that would take in consideration the a) temperature b) rate of flow in and out of the various parts c) the external and internal temperature d) the temperature required to give the best comfort to the end user, plus direct all control of the various valves positioned inside the tanks, before entering or at the exits of the tanks. e) the temperature of the refrigerator should not be lesser that 1 Degrees Celsius, as this may affect the liquid tank residing inside of the refrigerator (9) of this embodiment. While, if the liquid tank is kept outside of the refrigerator, instead of being kept inside of the refrigerator, as shown in our embodiment, then the refrigerator could if required operate at a much lower temperature.

[0015] A possible variation not shown in our artwork, it may be possible to combine the cooling and heating tanks to reduce space and manufacturing costs. In our present embodiment we chose not to separate the cooling and heating liquid holding tanks. The reason behind the separation of the hot and cold liquid tanks would impart less time to switch over from one mode to the other (heating and cooling). In our embodiment the amount of liquid contained in the tanks of the MAIN UNIT is very small and to switch from hot to cold it would not take more than 2 hours, and it also be done in less than 30 minutes for the units to enter in full heating operation. Admittedly, cooling the liquid from says from 22 to 1 degree Celsius will take at least 1 .5 to 2 hours. In most cases the cold liquid contained in the refrigerator storage should be available at all time if the refrigerator is kept running continually while it is operating as normal refrigerator.

[0016] In this embodiment we have indicated the use of a rotary fan, when in fact several other ways could be implemented to transfer the hot or cold air from the MAIN UNIT, as in the case of a normal fan, then it would need to be positioned behind the heat source, this being in the opposite side of the rotary fan.

[0017] Most if not all components of the unit will be constructed with various metals, plastics, ceramics and glass that would be able to withstand temperature of at least 100 Degrees Celsius.

[0018] The heaters in this particular embodiment are electrically induced, but they could well be substituted by others means of heating the liquid or solids. For example, external rod heated by the concentrate sunrays, or some other form of energy like gas. In this particular embodiment we have only installed the heating element in the bottom tank, while this could well have been installed in several other parts of the embodiment.

[0019] The top tank in our embodiments will contain a certain amount of stainless-steel wool, we considered the adoption of this measure, to reduce the bubbling effect of the liquid if ever the cap over (item 7) the tank is being removed. We have discovered that the effect of the stainless-steel wool will reduce the bubbling of the liquid, which it is a common problem whenever any radiator cap is being removed, while the liquid is at a boiling temperature.

[0020] Perhaps it was an important consideration as we were developing this Invention, to consider the energy required to perform its objective. Due to this we have mentioned in this embodiment several ways to construct it, and by the adoption of various product and technology.

[0021] To simplify the demonstration and the capability of our Invention we have only limited to one radiating part, while as it will be noticed from the drawings that several other parts could be added to take advantage of the MAIN UNIT, as the attached unit may only consist of the hot or cold liquid circulating in the radiating element and the fans or other means helping with a better propagation of the heating or cooling from the radiating element. It should not be discounted that the MAIN UNIT by

attaching other units, could well operate as the central heating or cooling unit for any area that would require several heating or cooling stations. The heater, the fans, or the pump or any other part can be controlled by thermostats, switches, valves or anything manually or by any other means that would improve the safety and efficiency of the embodiment, as it may be required.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] Views of the present discovery may be better illustrated by refereeing to the various drawings. The drawings are only meant to illustrate only some of the possible way that out embodiment was possible, but it is not limited, they are not in any scale or proportionated. The best possible way to describe it is a at follow:

Fig.1/8, fridge with cold or hot air above, showing side and rear view.

Fig.2/8, top part section being extended through an imagining wall.

Fig.3/8, fridge and no fridge with hot and cold air above.

Fig.4/8, possible layout of internal and external heat exchange coils.

Fig.5/8, top unit being splitter to show its components.

Fig.6/8, top unit ability to be independent.

Fig.7/8, main unit supplementing another unit, without heater.

Fig.8/8, TOP UNIT by using gas or other forms to heat the liquid of the bottom tank.

DETAILED DESCRIPTION PREFEREED EMBODIMENT

[0023] Fig. 1/8, it indicates a simple chest fridge (1), with a lid (2), with a small container placed on the bottom left corner (9) that if being filled 90% with liquid that should never be lower than 1 deg, Celsius. Above the Chest refrigerator (1), is what we have named as the Top Unit, which consists of a rotary fan (3), a liquid tank (10) with an electric heater (as indicated in Fig 2. 14), a condenser similar to a car radiator (4) (but can be different in many ways, and not limited to a car radiator as we took the liberty to simplify our embodiment. As a safety feature, we have included the liquid indicator (14), an expanding evaporator (15), a safety cap (7) (similar to the car radiator cap, above the top water tank (11). The cooling is being performed by the compressor (8), compressing the refrigerant which circulates in the internal and external

coils (12).

[0024] In Fig. 2/8, it indicates the MAIN UNIT, also servicing another area by joining another unit. In this case on the other side of a wall, and also it could have, if ever required a separated heating element (14). The extra unit being added to the MAIN UNIT appear almost identical, but in this particular embodiment, it may not have the cooling capacity, again it would still be possible, if ever required by extending the MAIN UNIT cooling pipes.

[0025] In Fig 3/8, (3 a/8) it shows a combination with a refrigeration, while on the (3b/8), it would have the same property as far as the refrigeration is concern, but not the refrigeration storage as mentioned in the 3a/8, and only would hold the liquid being cooled to the required temperature being lesser than 1 deg. Celsius.

[0026] In Fig. 4/8, in this case that the refrigerator is being adopted, the possible lay out of the heat exchanging pipes attached to the compressor. item (21) is the internal heat exchange pipe positioned under the liquid tank. The expansion valve for the refrigerator (22) is dividing the internal and the external heat exchanger pipes (23).

[0027] in Fig.5/8, it indicates the MAIN UNIT assembled 5b/8, and then being separated into 3 parts in 5a/8. In the Fig 5a/8, the bottom liquid tank (11) normally containing the electric heater, unless the liquid is it being heated internally or externally by other means but not limited to just a gas flame. It will be noted that the condenser (4) as indicated in Fig. 5a/8 by a line on the bottom and top (24) of the condenser (4), is the line indicating the level that the condenser (4) that will be lodged inside the top and the bottom part of the top tank, as those parts are meant to rest at all time in the liquid, when the TOP UNIT assembled as in Fig 5b/8.

[0028] In Fig.6/8, It indicates a possible variation, where the refrigerator is not being considered, and only the heating unit is being adopted. In this case the MAIN UNIT on its own would have the capability provide the heating capability. In this particular embodiment the electric or other heater was not installed, but a variant is possible by the heater being considered.

[0029] In Fig. 7/8, it indicates a simple version of the heating system where the heater is contained in a very small tank (24). it would still have a top tank (25), the condenser (4) and the rotary fan (if required) (5).

[0030] In Fig.8/8, it indicates in this embodiment a possible use for the heating by using oil or other products to flame the MAIN UNIT, instead of electricity. Including a small oil storage if it is being used instead of gas.

AGENDA: LIST OF DETAILS:

[0031]

- 1) Chest fridge
- 2) Top door of chest fridge
- 3) Rotary fan for hot or cold air
- 4) Radiator (Evaporator)

- 5) Liquid level indicator
- 6) Safety high temperature indicator
- 7) Filling cap and safety valve
- 8) Seal unit compressor for fridge
- 9) Cold water storage
- 10) Liquid storage bottom of radiator
- 11) Liquid storage top of radiator
- 12) External heat exchange coil
- 13) Building wall (imagined)
- 14) Water heater
- 15) Liquid transfer between units
- 16) Cold liquid transfer bottom tank
- 17) Cold liquid transfer top tank
- 18) Refrigerated Liquid
- 19) Cover of liquid container being cooled
- 20) Inlet and outlet to additional units
- 21) Bottom of liquid tank heat exchange coils
- 22) Expansion Valve
- 23) Internal heat exchange coils
- 24) External heat exchange coils
- 25) Storage liquid
- 26) Wicks flames or jets of gas

25 Claims

1. An economical system to provide heating and cooling efficiently with a very small use of energy, it exploited several ways to heat with the minimum amount of liquid at a desired temperature.
2. An apparatus intended to provide economically heating and cooling benefits to where ever it may be needed, without an expensive installation.
3. It may consist of one or many outlets as they may be required, at the same time the user will have the choice to take advantage of the combination of cold or hot air benefit.
4. The large variety of way that the embodiment would be able to operate by using various fuels or energy for its operation.
5. Combination of several appliances, that had little in common, which could be used at different times of the year depending on the climatic situation, of where they may be used. Plus, the normal refrigerator is well able to provide cool water as a very low cost, the amount of water that the MAIN UNIT require is less than 0.5 litre of water in embodiment, which need to be very slowly feed to the TOP UNIT, and then the same quantity of the liquid being returned to the tank in the refrigerator.
6. Most UNITS could well function individually or jointly, and provide cold water, refrigeration storage, hot water and ventilation.

7. In case of a refrigerator being alimented with gas, or oil or even kerosine and other type of liquid or solid forms of fuels it could also heat the liquid under the TOP UNIT. The rotary fan in the TOP UNIT it would not be imperatively for the operation, as the hot water will still rise toward the top tank of the TOP UNIT naturally, as it is the case of the present sealed electric oil heaters on the market. In some remote area it would certainly, be suitable this embodiment, to operate with a simple solar panel, of 100 watts could aliment a battery, and very well run a rotary fan of 5 watts 12 volts.

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FIG 1/8

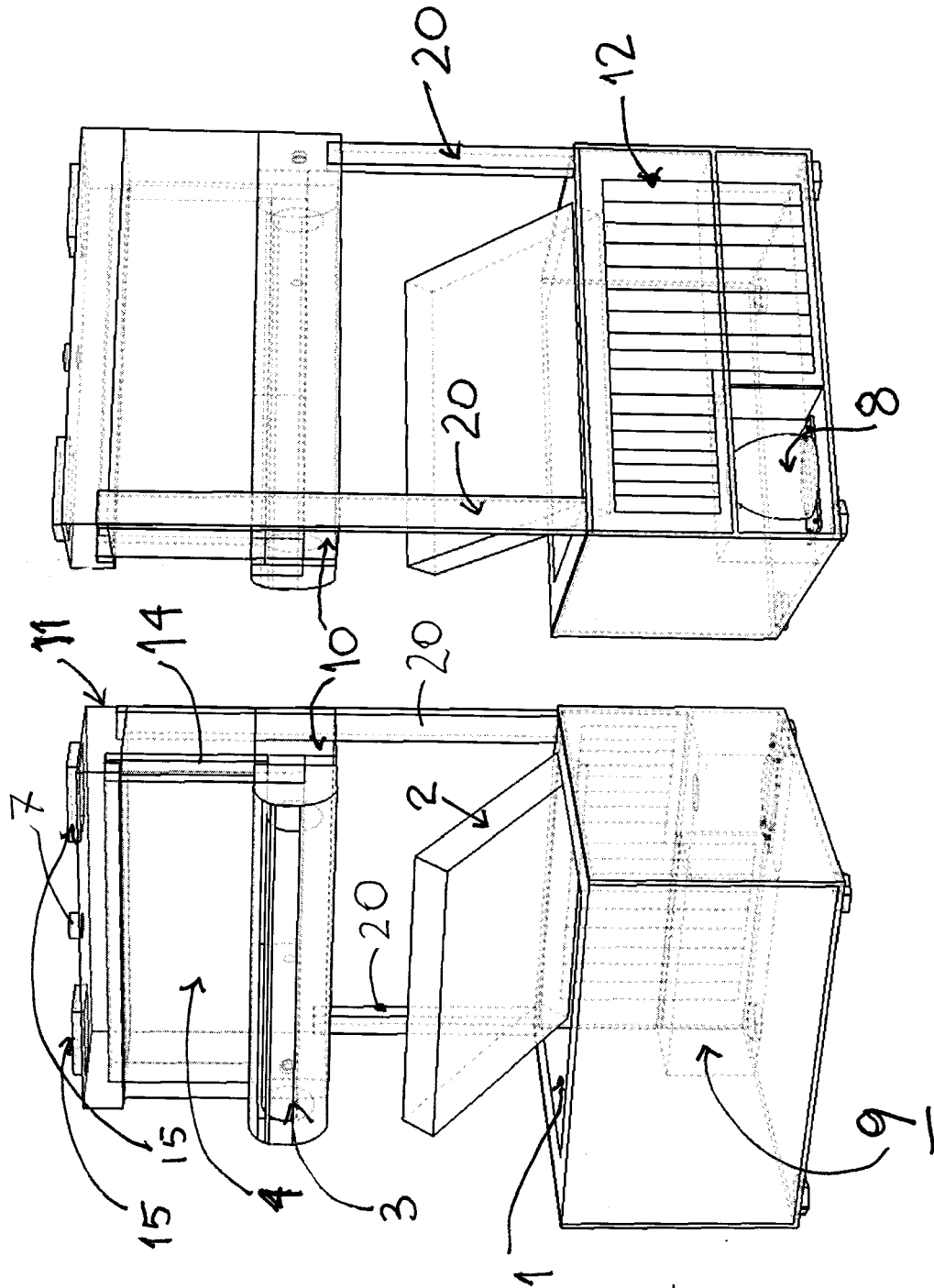


FIG 2/8

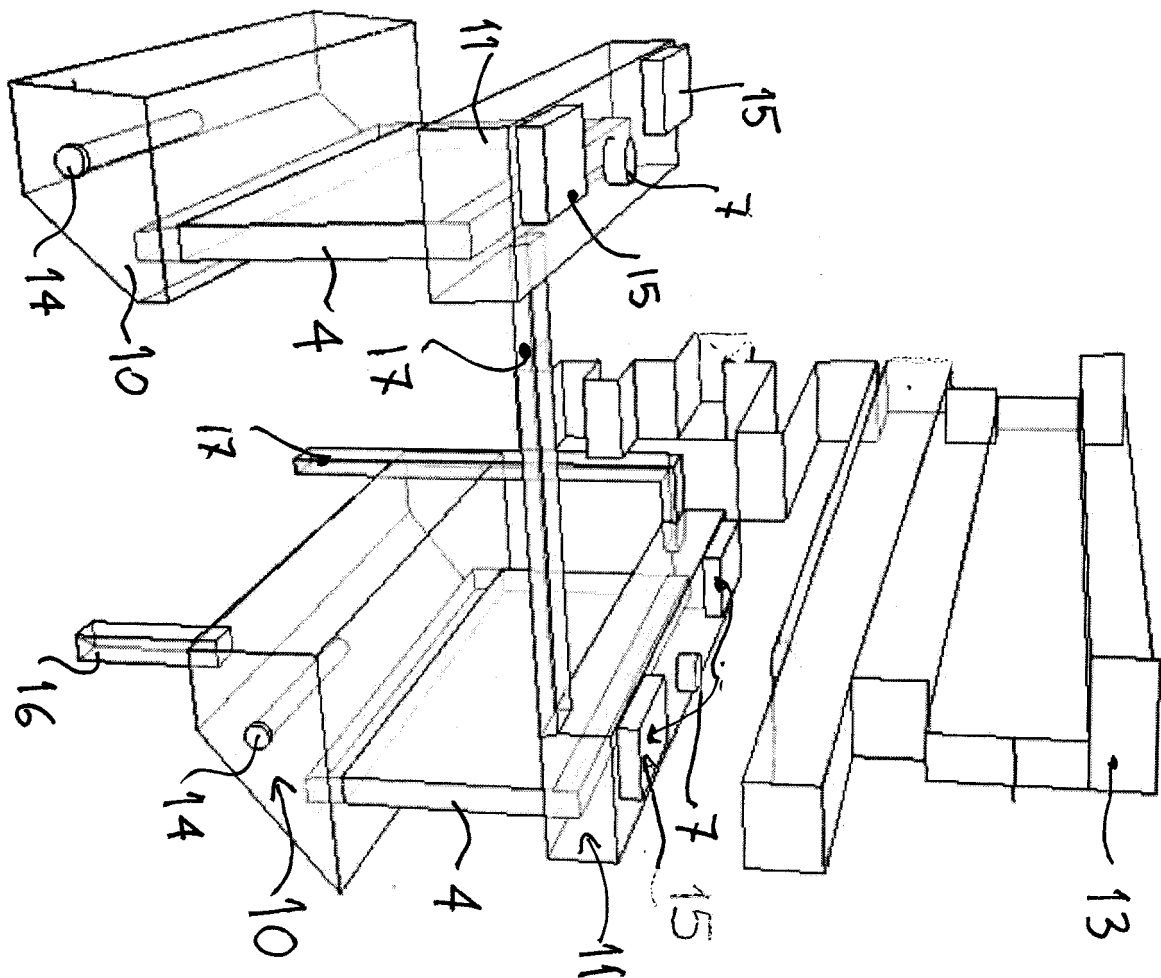


FIG 3/8

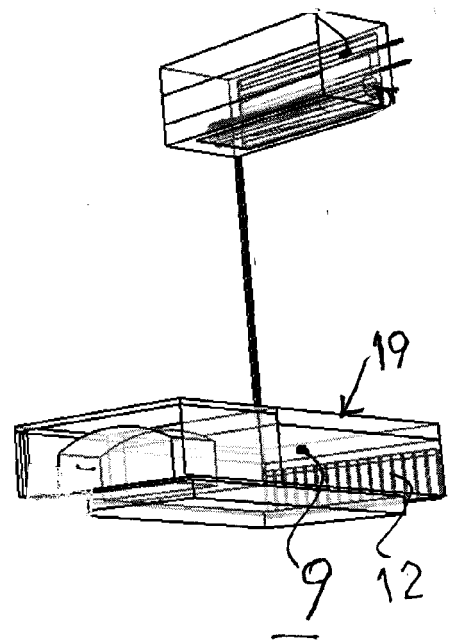
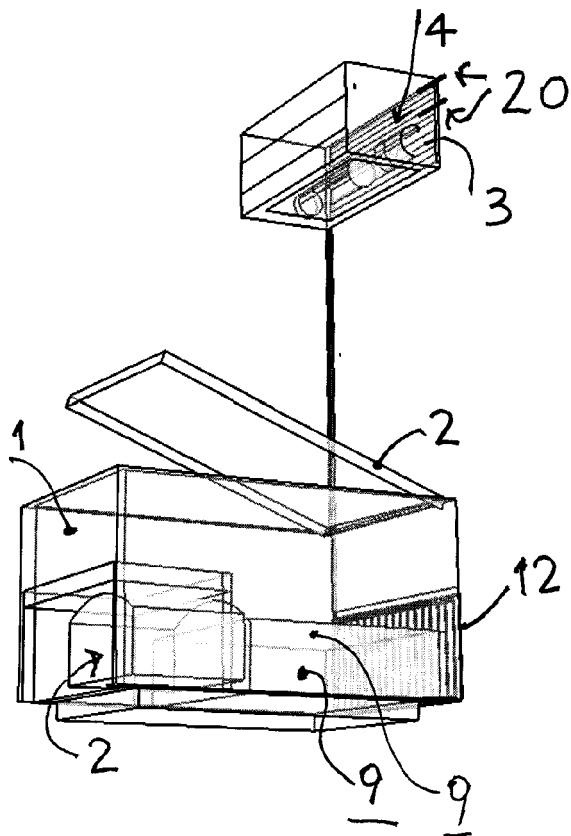
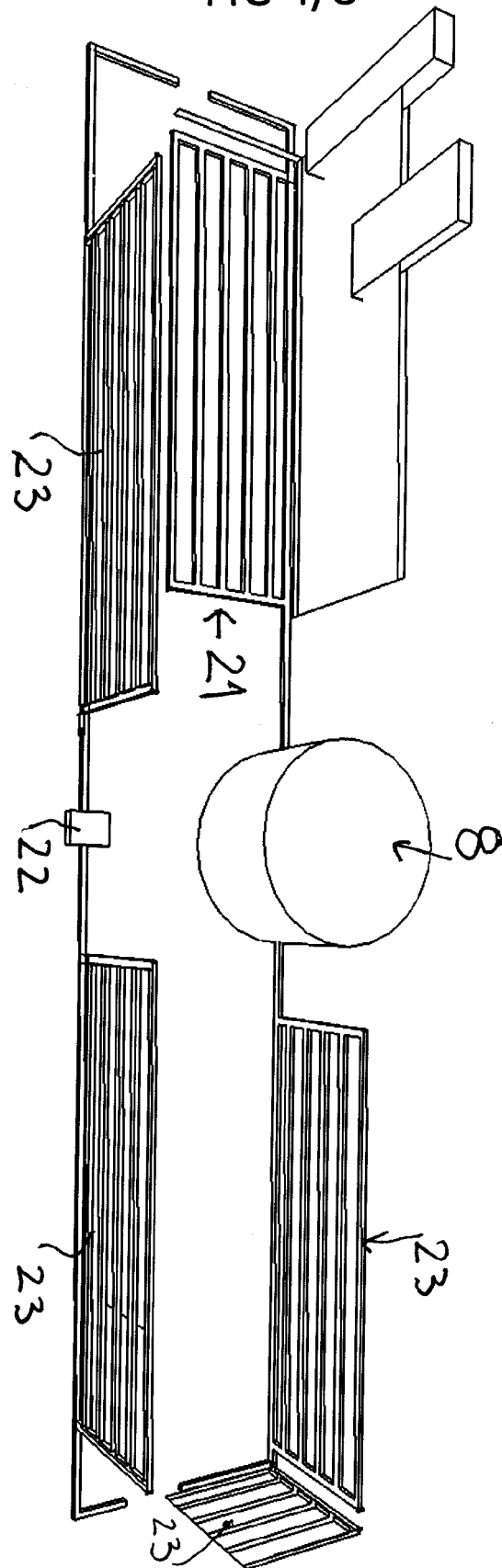


FIG 4/8



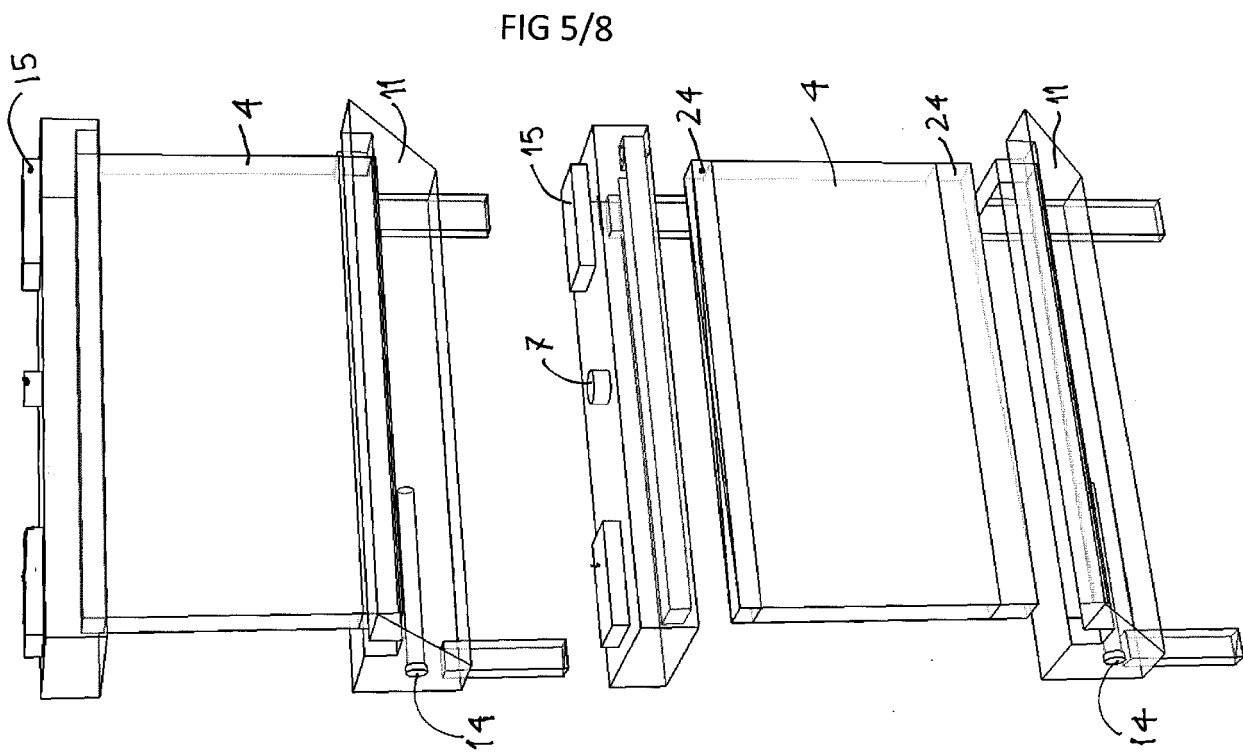


FIG 6/8

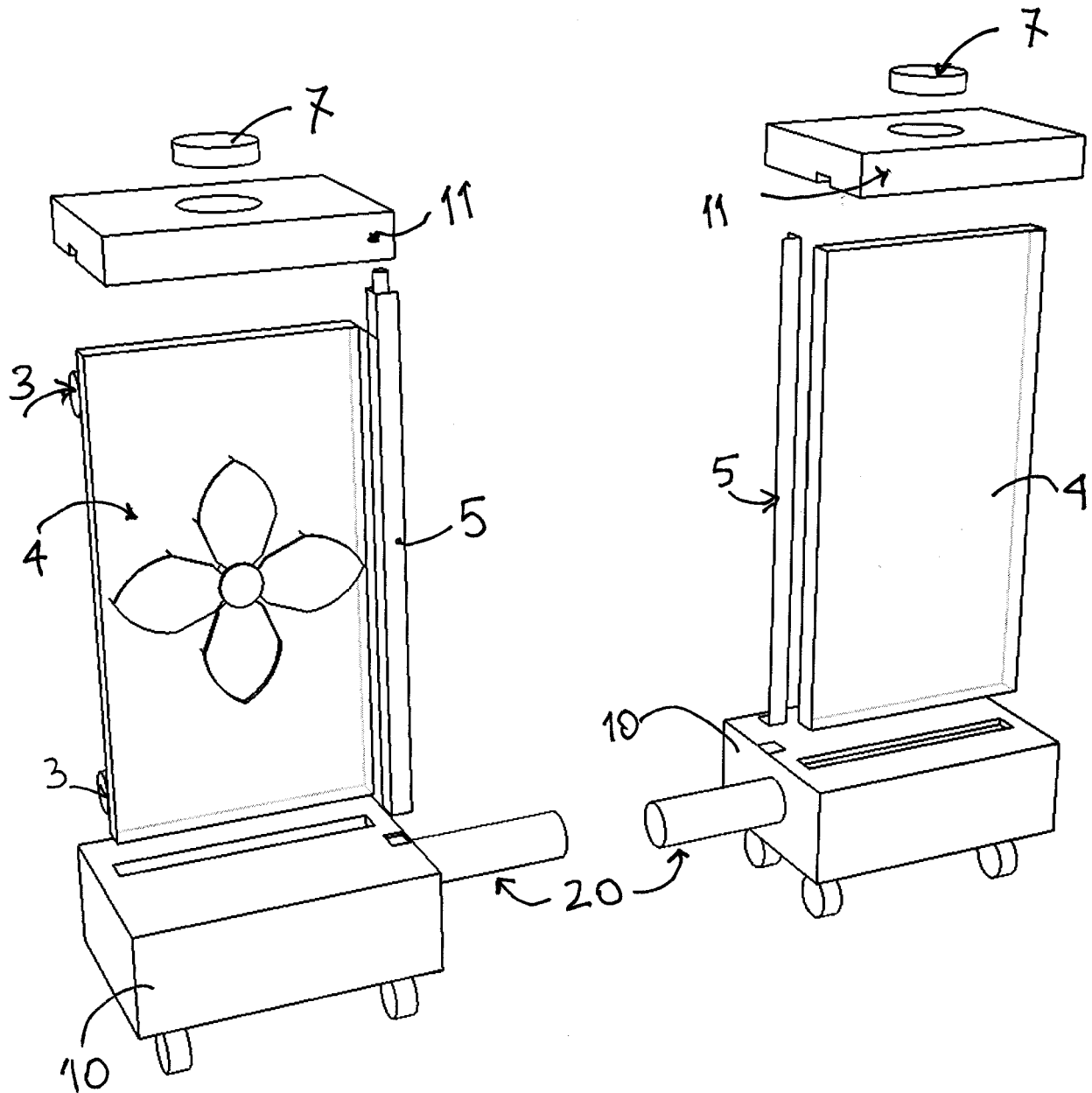


FIG 7/8

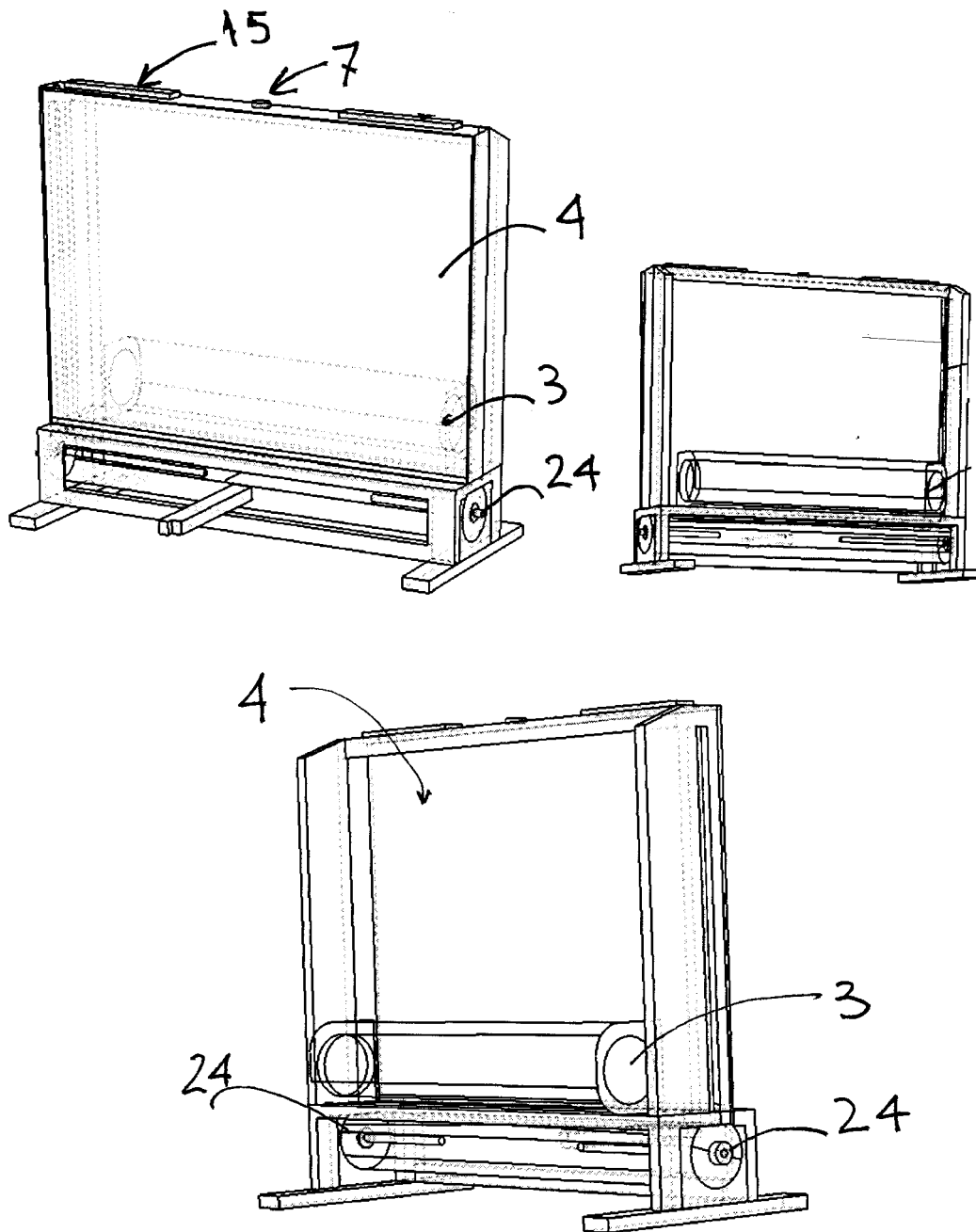
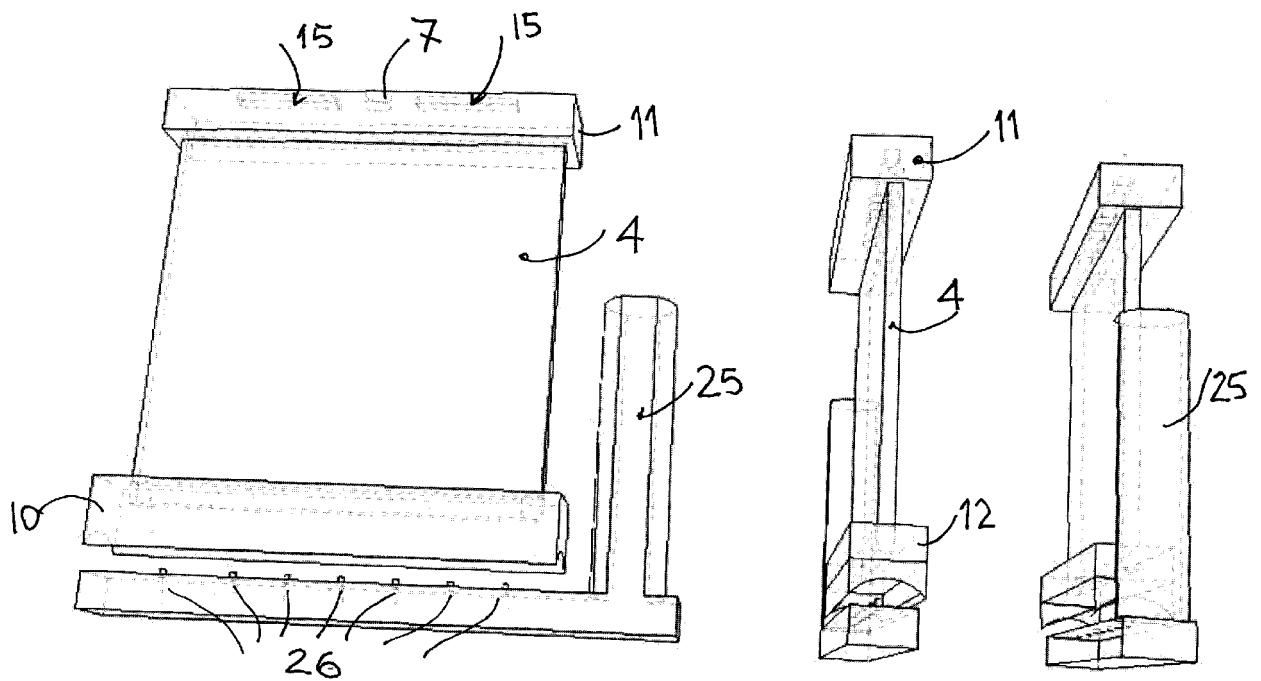


FIG 8/8





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Application Number
EP 20 02 0636

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 2 June 2021	Examiner Bejaoui, Amin
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			

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