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PROVISIONAL SPECIFICATION FOR AN INVENTION ENTITLED:-

“HUMIDIFICATION SYSTEM”

This invention is described in the following statement:-

This invention relates to a humidification system and more particularly to a humidification system for a cool room.

Cool rooms are used for the storage of produce or for growing things where
5 reduced temperature is desirable for the growth of the product. Cooling done
by the technique of refrigeration which is the general method of cooling cool
rooms reduces relative humidity in the cool room and many growing
processes such as the growing of mushrooms require a degree of humidity. It
is also desirable to have humidity when storing produce as produce can be
10 dried out in dry air. By greater humidification the stored goods will remain
fresher much longer and extending storage life. For example fruits, vegetables
and cut flowers will benefit from this invention.

It is the object of this invention to provide a system by which a cool room can
15 be simply humidified.

In one form therefore although this may not necessarily be the only or
broadest form the invention is said to reside in a cool room air humidification
system for use in a cool room having a refrigerated cooling system including a
20 coolant evaporator, the air humidification system including an air inlet to the
cool room and an air outlet from the cool room, the air inlet being
downstream of the coolant evaporators and at least one of the air inlet or air
outlet having means to induce flow through the respective inlet or outlet.

25 Applicant has found by the relative simple means of inducing air flow into
the cool room or extraction of air from the cool room that sufficient moisture
is added to the room to increase the relative humidity to the desired extent.

In one preferred embodiment of the invention the air inlet may be placed in a
30 region of reduced air pressure between a coolant evaporator and a circulation
fan thereby allowing air to be drawn into the cool room. In such a situation it
may not be necessary to have an air extraction fan at the air outlet.

In a further preferred form of the invention the air inlet may be downstream of the coolant system for the cool room and the air outlet may be provided with an extractor fan system. The extractor fan system may be run continuously or controlled by measurement of relative humidity within the cool room or operated on a time switch or some other suitable control means.

The air inlet may include a filter system.

In a further form the invention may be said to reside in a modification of an existing cool room of a type having a refrigerated cooling including a coolant evaporator. The modification, providing an air inlet and an air outlet to the cool room, either the air outlet including an exhaust fan and the air inlet being downstream of the cooling unit or the air inlet being in a region of reduced pressure in the cool room and the outlet being downstream of the air inlet.

In a further form the invention may be said to reside in a method of humidifying a cool room of a type having a refrigerated cooling system including a coolant evaporator, the method including the steps of inducing a flow of fresh air into the cool room and exhausting air from the cool room.

The induction of flow of air into the cool room may be by means of an exhaust fan in the outlet from the cool room.

Alternatively the induction may be by placing an air inlet between the refrigerator evaporator and a fan drawing air through the refrigerator evaporator in a region of reduced air pressure. Alternatively the air inlet may be anywhere in the cool room downstream of the refrigeration unit and the air outlet may have exhaust fan means.

The addition of air inlet and air outlet means according to the various forms of this invention has the added advantage when growing products and

storing produce that a build-up of gaseous waste products in the cool room is prevented.

This then generally describes the invention but to assist with understanding
5 reference will now be made to the accompanying drawings which show preferred embodiments of the invention.

In the drawings:

10 Fig 1 shows a first embodiment of a cool room according to this invention;

Fig 2 shows an alternative embodiment of a cool room according to the invention; and

15 Fig 3 shows a still further embodiment of a cool room according to this invention.

Now looking at the drawings and in particular Fig 1 it will be seen that the cool room defined by walls 1 has a refrigeration unit generally shown as 2 and
20 a door 3. The refrigeration unit 2 has a refrigerator evaporator 5 and a fan 6 which draws air into a circular path as shown by the arrows within the cool room through the refrigerator evaporator. The refrigerator evaporator 5 causes cooling of the air as it passes through the evaporator and as the air is cooled moisture may be condensed on the coolant coils of the evaporator and
25 collect in tray 7. This means that the circulating air is relatively dry and not suitable for some uses of the cool room.

In this embodiment therefore there is provided an air inlet 10 including an air filter 11 which has an opening 12 in the region between the coolant
30 evaporator 5 and the fan 6 which is in effect a region of reduced pressure so that when the fan is operating a degree of air flow is induced in through the inlet 10.

An air outlet 15 is provided in the cool room downstream of the refrigeration unit 2 and the air outlet includes a fan 16 to draw a proportion of the air out.

Fig 2 shows an alternative embodiment of a cool room humidification system
5 according to this invention.

In this embodiment the items with the same function as in Fig 1 will be given the same reference numerals.

10 In this embodiment the air inlet 10 is again between the coolant evaporator 5 and the fan 6 but there is no fan in the air outlet 20 as the induction in the air inlet 10 is sufficient to exhaust a proportion of the air within the cool room.

Fig 3 shows a still further embodiment of the invention. In this embodiment
15 the cool room 1 has the refrigeration unit 2 and the air inlet 10 is placed downstream of the airflow from the fan 6 and the air outlet 25 has a fan 26 to draw a proportion of air out of the cool room and hence induce a flow of air into the cool room through the air inlet 10.

20 In each case it has been found that significant improvements in humidity have been obtained within the cool room without loss of efficiency.

In a still further embodiment an air inlet fan may be used and an air exhaust tube provided with the air inlet fan controlled by humidity within the cool
25 room or on a time switch.

Throughout this specification various indications have been given as to the scope of the invention but the invention is not limited to any one of these but may reside in two or more combined together. The examples are given for
30 illustration only and not for limitation.

Dated this day 2008.

CLAIMS

- 5 1. The invention shall provide a simple yet effective humidification
 system to a cooled room.
2. The humidity can be easily and accurately controlled.
3. The invention will also assist to remove ethylene or gasses from the
10 room created by the produce being cooled. These gases can cause the
 stored goods to age faster. (Extending storage life.)
4. This invention is also ideal for growing produce where humidity is
 important, such as mushrooms.

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