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(54) **MEDICAL STORAGE CASE WITH REMOTE UNLOCKING REFRIGERATOR WITH THERMAL SPOILAGE PROTECTION**

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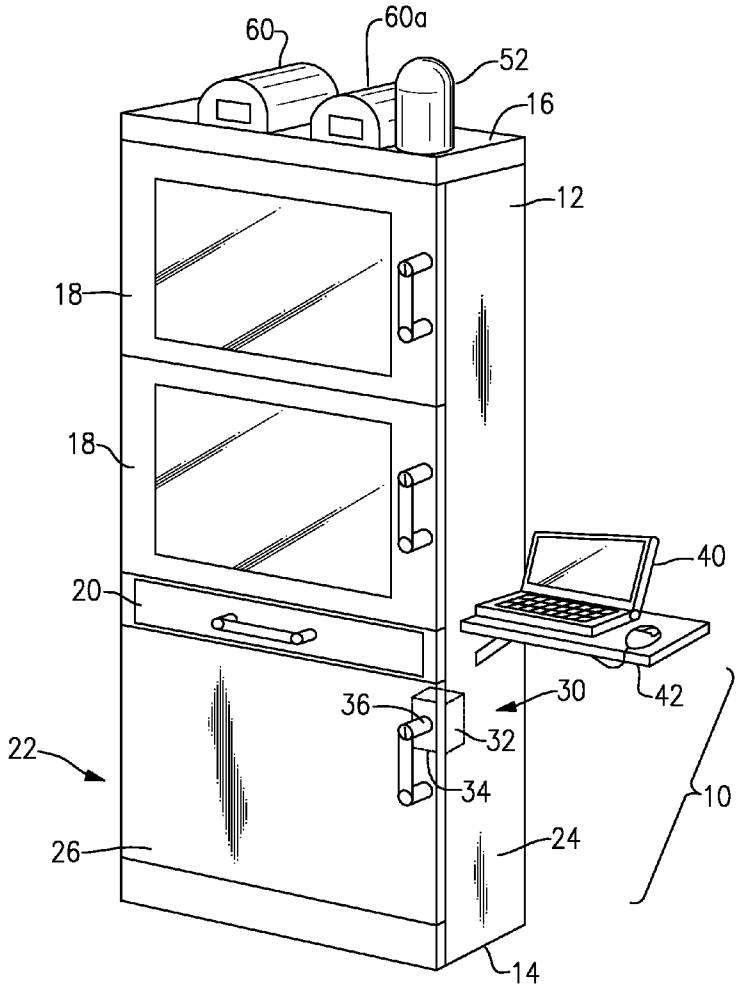
(57) **ABSTRACT**

A controlled access pharmaceutical storage case has storage spaces arranged vertically one above the other and a pharmaceutical refrigerator located at its base. A remotely actuable refrigerator door lock on the refrigerator door has a data port connecting with a programmed electronic control arrangement, e.g., a computer or network. The refrigerator has a compressor at the top of the case that operates on line AC or on battery DC backup power. A battery backup arrangement is located at the top of the case. When AC is detected to be absent or insufficient, i.e., during general or localized power failure, the refrigerator operates on battery, and the door lock is prevented from unlocking. Internal temperature and humidity levels are tracked and sent at intervals to a predetermined destination for action.



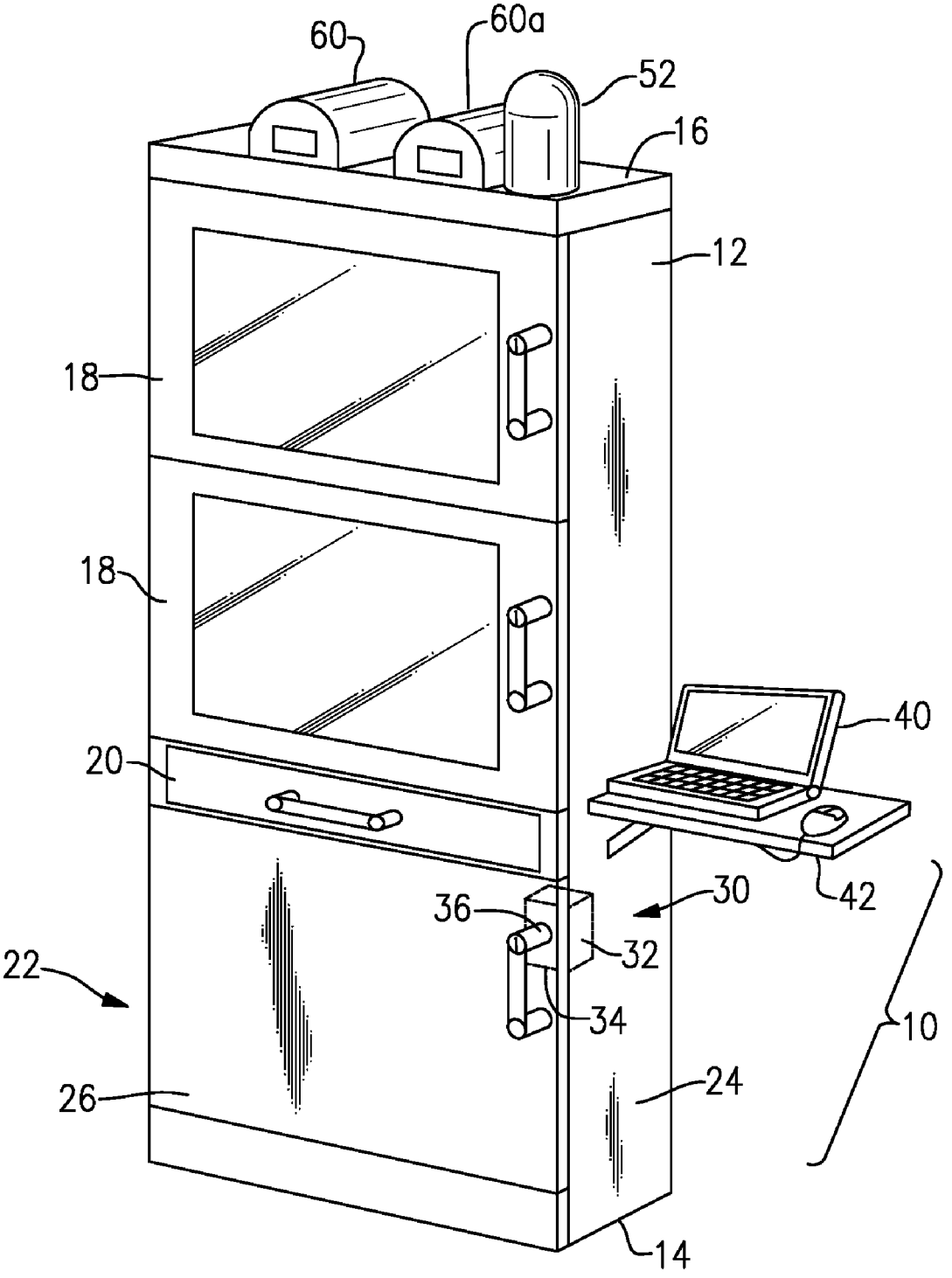


FIG.1

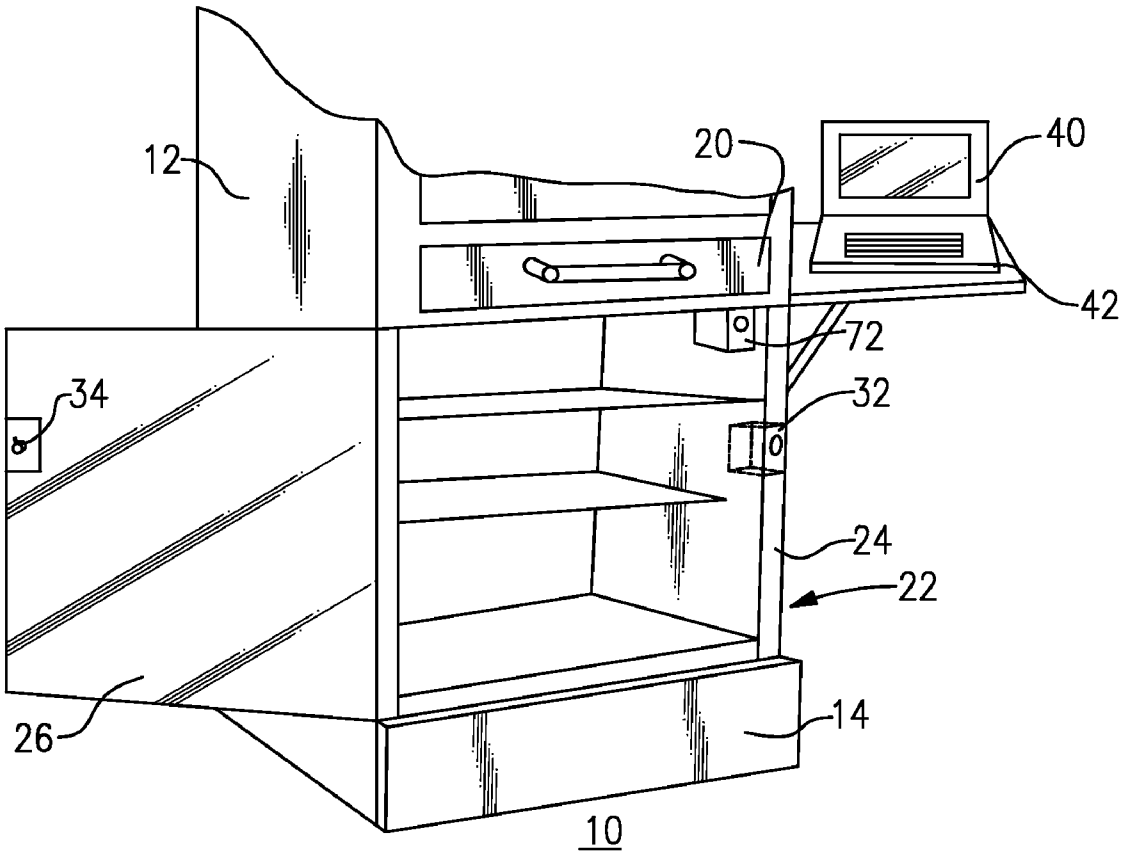


FIG.2

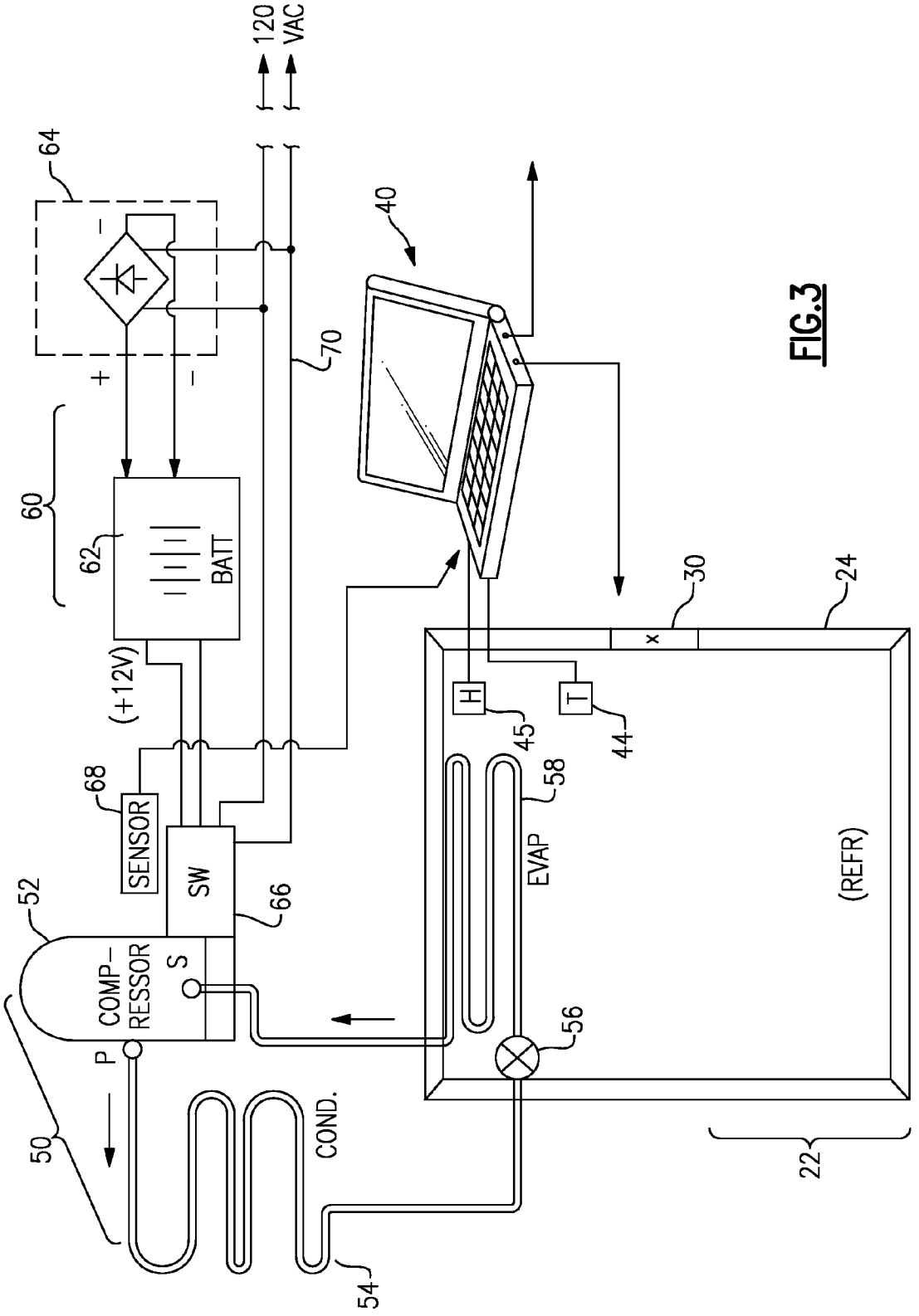

120 VAC
64
40
70
60
62
BATT
(+12V)
30
24
H
T
45
44
68
SENSOR
SW
66
58
EVAP
(REFR)
52
COMP-
RESSOR
S
56
P
50
COND.
54
22

FIG.3

MEDICAL STORAGE CASE WITH REMOTE UNLOCKING REFRIGERATOR WITH THERMAL SPOILAGE PROTECTION

[0001] This is a Continuation-in-part of co-pending U.S. patent application Ser. No. 12/470,541, filed May 22, 2009, which is a Continuation-in-part of U.S. patent application Ser. No. 11/391,986, filed Mar. 29, 2006, now abandoned. Applicant also claims priority of co-pending applications Ser. No. 11/653,726, Jan. 16, 2007, now U.S. Pat. No. 7,728,711, and Ser. No. 11/800,937, May 8, 2007, pending. The contents thereof are incorporated by reference herein.

BACKGROUND OF THE INVENTION

[0002] This invention relates to an electronically accessible locked storage cabinet for storing consumable items for patient care, such as pharmaceuticals. The invention is more particularly concerned with a storage cabinet or case that incorporates a pharmaceutical refrigerator for storing certain sensitive drugs that are considered perishable and need to be kept refrigerated and not exposed to temperatures outside an optimal temperature range. The invention is also directed to a cabinet with an incorporated refrigerator that connects to a remote computer system, e.g., in a hospital or health care facility, to secure pharmaceuticals that need to be refrigerated, and which has a provision for maintaining the pharmaceuticals under refrigeration in the event of a power failure. The system may also adapted for keeping an audit trail of access to the refrigerator.

[0003] In general, pharmaceuticals and other patient care supplies such as bandages, injectable IV solutions, and the like, are delivered to patients when needed, and those that need to be kept refrigerated are stored in a refrigerator in the pharmacy of the hospital or other facility. However, those drugs that need refrigeration cannot simply be stored in a conventional secured room-temperature dispensing cabinet, but have to be kept in a refrigerator until needed. Any record of access to the refrigerator would have to be maintained on a paper record, or by separately keying in information on separate computer work station. There is also no means provided to ensure that the refrigerator is kept locked, to alarm if the refrigerator is left open or unlocked, or to monitor the refrigerator's operating temperature or the humidity within the refrigerator cabinet.

[0004] An additional problem is that many pharmaceuticals, including many used for oncology, are of extreme high value, and that the value of the drugs contained in a single pharmaceutical refrigerator may exceed two-hundred and fifty thousand dollars. In that case, a power failure to the refrigerator may result in a devastating financial loss to the hospital or other health care institution. Because of holiday staffing during long weekend periods, the status of a given pharmaceutical refrigerator may be unknown, and this risk from a power failure can be quite significant.

[0005] There is a pressing need to protect the integrity of refrigerated medications, including vaccinations and oncology medications, and to keep "suspect" medications out of the supply chain where patient harm can result. The health care system must protect patients from risk of harm.

[0006] Real-time temperature monitoring, with some alarm capability, does exist. However, because the rise in temperature can occur before pharmacy personnel can take action to halt distribution or to salvage the high-value pharmaceuticals, there is still a large risk that the medications may become unsafe and not usable, and that some may be administered to patients.

[0007] It would be desirable to employ a refrigerator as a part of the medications cabinet, arranged in the same footprint, as floor space in the hospital is always quite limited. Then prescribed medications, both those that require refrigeration and those that do not, can be loaded by pharmacy staff and stored securely until administered. It is also desirable to track access automatically for the non-refrigerated and refrigerated cabinet, and which can be accessed by the pharmacy staff electronically (e.g., using RFID, bar code, or wireless means). It is also desirable to ensure that the refrigerated cabinet is kept secure, and that the operating temperature is sufficiently cool even in the event of power failure. However, systems that are currently available cannot carry out all these functions.

[0008] It is also desirable to integrate the refrigerator lock with the continuous monitoring of the internal temperature (and/or humidity) of the refrigerator, and to take steps to prevent materials from being distributed from the refrigerator if conditions indicate that the contents may potentially be compromised. The software associated with the refrigerator should be able to lock out or disable the unlock function for normal users (i.e., staff) but still permit over-ride unlock capability for a "master" user, e.g., pharmacy director.

OBJECTS AND SUMMARY OF THE INVENTION

[0009] Accordingly, it is an object of the present invention to provide a pharmaceutical cabinet with storage compartments or drawers for non-refrigerated drugs and other items, to provide refrigerated storage for temperature sensitive materials.

[0010] It is an important object to protect patients from harm by keeping suspect refrigerated medications out of the supply chain.

[0011] It is a further object to provide a cabinet and incorporated refrigerator with remotely actuated door lock and with a power back up that permits the refrigerator to continue to function in the event of a power failure.

[0012] Another object is to provide an electronic door lock mechanism with key-lock override that can be used, e.g., during a power outage, to obtain access to the medications kept in the refrigerator.

[0013] A further object is real-time temperature monitoring, minute-by-minute, and maintenance of a real-time log, which can be available over a computer network, as well as notification of power interruptions which may exceed some threshold, such as five minutes.

[0014] In accordance with an aspect of the present invention, a controlled access pharmaceutical storage case has a vertical frame having a base and a top, with a number of storage spaces, i.e. compartments and drawers, arranged vertically one above the other. At the lower end, or base, a pharmaceutical refrigerator is installed in the frame. The pharmaceutical refrigerator has a cabinet, a door that closes against the cabinet. A remotely actuable refrigerator door lock, i.e., solenoid lock, allows authorized hospital personnel to open the refrigerator door. Typically, the door lock has a data port that connects with a programmed electronic control arrangement (such as a hospital PC computer device that is incorporated into the cabinet). The refrigerator employs a refrigerant circuit. A compressor is mounted at the top of the

storage case and has a pressure port or discharge port, and a suction port or return port. The compressed refrigerant gas is supplied from the pressure port to a condenser coil. Then high-pressure liquid passes through an expansion valve to an evaporator coil situated within the refrigerator cabinet. Then another conduit brings the low pressure gas from the evaporator coil back to the compressor suction port.

[0015] In the embodiments of this invention, the compressor is adapted to operate either with standard AC line power (i.e., 110 volts/60 Hz) or with DC battery power (i.e., 12 volts). There are standard AC power cables that can connect to a wall outlet or similar a source of standard AC line power, and there are also a battery back-up system(s) that serves the refrigerator compressor and the incorporated PC computer. The battery back-up system(s) can be situated at the top of the cabinet near the compressor. The battery back up can include a 12-volt storage battery or batteries (at suitable voltage) for providing DC battery power to the compressor (and/or to the control electronics), as well as a trickle charger or similar charging mechanism coupled to the AC power cables for supplying charging power to the storage battery arrangement. A power sensor detects whether there is AC power available, and if so then the compressor is switched to the AC power and operates on normal line power. If it detects that there is no AC power available, which would mean that a power outage is occurring, or that the unit has become unplugged from the wall outlet, then the compressor is switched over to the 12 volt storage battery, and continues to operate. The power sensor means is coupled to a data input of the PC or elsewhere in the control electronics, so that an alert can be sent to a predetermined destination. The software for this may send out the alert immediately, or may send it out if the power outage continues beyond some interval, i.e., more than five minutes. Normally, the computer or control electronics is receptive to unlock commands specific to the refrigerator door lock, so that the hospital care staff can access the patient's medications. Thus, during normal power conditions, where the AC line power is available, the authorized staff can unlatch and open the refrigerator door lock with an access code. However, during a power outage, when the refrigerator is powered only by the 12 volts storage battery, the unlock facility is disabled, and the staff are prevented from accessing the contents of the refrigerator. The refrigerator can still be opened by a supervisory person with "master" access, which may be a physical key or may be a special access code. This feature keeps the refrigerator closed during the power outage (if it exceeds more than a few minutes), to minimize the risk of temperature spoilage of the refrigerator contents, and to avoid distributing or releasing suspect medications to the patient population.

[0016] Favorably, the PC has its own backup or UPS system, so as not to drain off the refrigeration battery during a power failure. The PC UPS needs to be ON long enough (at a minimum) to send an email notifying the pharmacist that there is a power issue, and preferably with a tracking of temperature curve over a longer interval. For this reason it is preferred to keep the refrigeration back-up battery and PC back-up battery separate.

[0017] In one preferred embodiment, the refrigerator lock includes a key lock cylinder permitting override access for allowing supervisory (i.e., pharmacy) personnel to open the pharmaceutical refrigerator during absence of said AC power. The lock can be maintained in a disabled state after resumption of AC power, if there has been a possible temperature compromise.

[0018] A temperature probe that senses temperature inside said refrigerator cabinet is coupled with control electronics, and the latter is operative to store at least one predetermined temperature limit, or upper and lower limits. The sensed temperature is compared with the stored temperature limit(s), and is operative to disable the refrigerator unlock facility if the sensed temperature is beyond the limit(s), so that the staff is denied normal access if the temperature has been beyond the acceptable range for longer than some maximum time. The temperature is tracked, minute by minute, and a real-time log is maintained and is made available, e.g. to pharmacy staff, either via the hospital computer network or over the Internet. Alarm message are sent out when a temperature alarm condition is reached, and also when there is a power outage. In some embodiments, a humidity sensor positioned in the refrigerator cabinet sends a sensed humidity signal to the control electronics, where it is compared with stored humidity threshold values. Then the unlock facility can be disabled if the sensed humidity is outside predetermined humidity limits so that the refrigerator door lock is prevented from being unlocked. Audit trail software can recording each time of opening of the refrigerator door lock and can also record the identity of each requesting person associated with such openings of the refrigerator door lock.

[0019] The cabinet PC computer may use the same storage battery arrangement as is used for powering the compressor during a power outage, or more preferably a separate UPS device is used for the computer.

[0020] The pharmacy staff or other person responsible for the refrigerated cabinet can monitor the temperature remotely for each individual patient pharmaceutical storage cabinet, using the temperature and power outage logs that are available over the computer network or over the Internet. This allows the staff to make decisions about recovery of pharmaceuticals from the refrigerated storage cabinets, and allows them to set priorities for recovery, resupply, and for disposal, if necessary, of possibly compromised materials.

[0021] Similar refrigerator or temperature controlled cabinets may be used in the radiology laboratory for controlled storage of items such as radiology contrast materials of or other temperature-sensitive pharmaceuticals. Also, the refrigerator may be used for storage of certain sensitive food products, where the patient has a prescribed dietary routine.

[0022] The above and many other objects, features, and advantages of this invention will become apparent from the ensuing description of a selected preferred embodiment, which is to be considered in connection with the accompanying Drawing.

BRIEF DESCRIPTION OF THE DRAWING

[0023] FIG. **1** is a perspective view of a medications cabinet with incorporated pharmaceutical refrigerator, according to one preferred embodiment of this invention.

[0024] FIG. **2** is a perspective view of a portion of the embodiment.

[0025] FIG. **3** is a schematic diagram for explaining this embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0026] A preferred embodiment of this medications cabinet can be favorably applied in a satellite pharmacy (on the patient hospital floor). In addition, the mechanism can be

used to control drug monitoring in any location where temperature sensitive/humidity sensitive pharmaceuticals are stored. Anytime there is a problem, the PC and remote lock, powered by an uninterruptible power supply, can send a text message to the facility director to notify him that there is an issue, in time to deal with the problem and before the need arises to simply dispose of a large quantity of expensive medications. Inventory of the pharmaceutical cabinet can be automatically tracked and reported to the pharmacist, so that refill can be scheduled in a convenient manner.

[0027] With reference to the Drawing, and initially to FIGS. **1** and **2**, a medication dispensing arrangement in a hospital pharmacy or pharmacy of other health care facility employs a dispensing cabinet **10**, for storage and controlled access to medications and pharmaceuticals, some of which may need to be kept refrigerated. The cabinet shown here is a floor mounted medications cabinet **10**, although other cabinets could be mounted on the wall of the patient room. The purpose of the medications cabinet **10** is to provide controlled access to non-refrigerated medications in one or more computer locked drawers or to refrigerated medications in an included refrigerator.

[0028] The cabinet **10** has a vertically arranged frame **12** which extends upward from a base **14** to a top **16**, and has a number of locking compartments **18** as well as a locking drawer **20**, in which medical supplies, medications, dressings, etc, can be stored for use with a patient. A medical refrigerator **22** is built into the cabinet, here between the base **14** and the lowermost locking drawer **20**. The refrigerator **22** has an insulated cabinet **24** built into the frame **12**, and has a front door **26** that closes off the front of the refrigerator cabinet **24**. Here the door **26** is hinged at the left and opens from the right, but the unit could be arranged otherwise. As shown in FIG. **2**, the refrigerator cabinet **24** can be provided with a number of shelves for storing the refrigerated materials.

[0029] The refrigerator **22** is provided with a door lock **30**, which can be of the general type described in Shoenfeld published application US 2009/0231132. Here the door lock **30** has a body portion **32** (shown in broken line) built into the right front post of the cabinet frame **12**, and a door portion **34** (also shown in broken line) that is built into one edge of the refrigerator door **26**. The door lock body portion **32** has a solenoid and controlling electronics to permit remote actuation, e.g. via a network such as the hospital LAN. The door lock **30** releases the refrigerator door **26** by actuation of a solenoid. Also, the door portion **34** may have a key lock **36** to permit access in the event of a lockdown event, such as AC power loss. Presumably, only a person with master access, e.g., pharmacy director, would be provided with a key.

[0030] The cabinet itself has solenoid locks with momentary contact switches built into the right front post support of the cabinet frame. There are three such locks here, one each for the doors for the two compartments **18** and one for the refrigerator door **26**.

[0031] In this embodiment, the cabinet **10** is provided with a personal computer **40**, with keyboard, screen, and other interactive devices, and this interconnects with controls for the refrigerator door lock **30** as well as locking devices for the compartments and drawers **18** and **20**. The computer **40**, shown here supported on a shelf **42** at one side of the cabinet frame **12**, is suitably programmed to recognize access codes from authorized persons, and to generate unlock signal(s) for the refrigerator lock and other cabinet locks. In other embodiments an associated touch-screen computer can be employed for the authorized health care provider to enter an authorization code to achieve access to the cabinet drawer(s) and refrigerator. The same personal computer or touch screen computer may communicate via the hospital LAN to generate and send alert messages, and to track activity involving the cabinet and keep an audit trail of times of opening and closing of the refrigerator **22**.

[0032] The door lock assembly **30** may be directly connected with the LAN or network. The body portion **32** of the refrigerator lock **30** contain an electronics circuit board with an ethernet port or USB port and suitably programmed controller microprocessor, which can be programmed to accept and/or transmit self-descriptive command data packets, so that the hospital computer system will assign each refrigerator lock assembly a unique identifier code. A customized USB driver engineered specifically for this refrigerator lock can also be uploaded onto the hospital server. A similar system is employed when ethernet or other network system is employed. A microprocessor that is included on the refrigerator door lock is programmed to open the refrigerator lock remotely when an unlock code is received. The microprocessor may also be programmed with a predetermined temperature limit, i.e., a high temperature limit, a low temperature limit, or both, which can be set by pharmacy personnel. A humidity limit can also be set and programmed into the microprocessor. In the event that there is a temperature event (or humidity event) detected, i.e., the temperature in the interior of the refrigerator cabinet is outside the temperature limit (or alternatively the temperature remains outside the limit for some period of time), the microprocessor will automatically block the facility for remote opening of the lock. The microprocessor also includes a facility for generating an alert message if a temperature event of that type occurs (or if the detected humidity is too high or too low). The alert message will identify the refrigerator and the nature of the problem, and will automatically be transmitted (as an email or text message) to a predetermined addressee (or addressees), and sent over the hospital computer network.

[0033] Also shown here are a temperature sensor **44** and a relative humidity sensor **45** that are positioned in the interior of the refrigerator cabinet **24** and connected by wire to the circuit board of the refrigerator lock. A proximity sensor or microswitch is disposed at or adjacent the refrigerator door **26**, and is coupled to the circuit board to provide an indication of the open/closed status of the door **26**, which can then be communicated via the cable and LAN to the hospital computer system. The system can be programmed to alert the pharmacy personnel if one of the refrigerators fails to maintain a sufficiently cool interior temperature. This may be done by transmission of a text message or electronic mail automatically generated by the microprocessor of the circuit board.

[0034] Here, the refrigerator **22** has a refrigeration circuit **50** that is capable of operating either on standard AC mains power (e.g., 110 volts, 60 Hz) or on DC backup power (e.g., 12 volts DC).

[0035] The refrigeration circuit **50** has a compressor unit **52** that is favorably mounted on the top **14** of the cabinet. The compressor **52** has a pressure port P supplying high-pressure gas and a suction port S receiving low-pressure vapor. The pressure port P of the compressor leads to a condenser coil **54**, where the refrigerant condenses to high pressure liquid, which passes through an expansion valve **56** to an evaporator coil **58** that is positioned inside the refrigerator cabinet **24**.

There, the liquid evaporates at low pressure, and is returned to the suction port S of the compressor. A battery back up system **60**, e.g., a so-called uninterruptible power supply or UPS, is located at the top **14** of the cabinet **10**. Preferably, there is a separate UPS device **60***a* (FIG. **1**) for the computer **40**. The back up system **60** contains a storage battery **62** and a trickle charger **64**. The latter has inputs connected with AC power cable **70** for recharging the battery from the standard AC line power. Power cables from the 12 volt storage battery **62** and the AC power cable **70** are coupled with a switching mechanism **66**, which applies AC power to the compressor when available, but switches to battery power when the AC power is not present, i.e., during a power outage, or in the event that someone inadvertently unplugs or damages the cabinets's power cord. A sensor **68** detects whether the AC power is present. This sensor **68** is also connected to a data input of the computer **40**, so the latter can send an alert message to predetermined addressees in the event the AC power disappears and the unit switches over to DC backup power. The switching mechanism **66** and sensor **68** may also be operative to switch over to battery power if low AC line voltage conditions (i.e., "brown out" conditions) are detected.

[0036] Preferably, the UPS or back up battery power is also furnished to the computer **40** so that it remains operative during a power failure.

[0037] As shown, e.g., in FIG. **2**, the refrigerator **22** has a temperature control **72** for setting the internal temperature. This may include the humidity sensor **45** and a temperature sensor **44** (FIG. **3**) which may be coupled to data input(s) of the computer **40**.

[0038] This permits the computer **40** to continuously monitor temperature and humidity conditions in the interior of the refrigerator. As long as the temperature and humidity are within limits (established by presets loaded onto the computer **40**), i.e., if the temperature and humidity are in the acceptable ranges, normal access is available. If not, the normal refrigerator unlock feature is disabled and an alert message is sent electronically, e.g., through the hospital network.

[0039] Once a temperature condition (or humidity condition) occurs such that the refrigerator contents are potentially compromised, the staff will be unable to open the refrigerator and access the possibly-compromised materials. This means that the potentially compromised drugs will not be distributed. However, the pharmacy director (who has been alerted to this situation by electronic message) can access the refrigerator lock by key, and can retrieve the contaminated or potentially compromised drugs. The pharmacy personnel can then replace those drugs with fresh ones, and reset the refrigerator lock to open normally.

[0040] In the event that AC power is lost, the compressor **52** will automatically switch over to battery power, and will continue to run the refrigeration circuit to keep the contents cool in the interior of the refrigerator cabinet. The loss of AC power is detected and sent to the computer **40**, which then disables the unlock facility for the refrigerator door lock **30**. Consequently, during the time that the refrigerator is operating on battery backup, the staff will not be able to open the refrigerator door. This conserves the cold air within the unit, and reduces the chance that the contents will become compromised due to elevated temperatures. At the same time, the pharmacy personnel are alerted to the power failure, and are provided with minute-by-minute temperature and humidity status. The pharmacy director may authorize release of the door lock if the pharmaceuticals are still uncompromised and are immediately needed for patient use. This allows the pharmacy staff to plan to recover some of the temperature sensitive drugs from the cabinet(s) **10**, as need be, and to set a priorities for recovery. The authorized pharmacy personnel can be provided either with key access or with a master override code.

[0041] While the invention has been described hereinabove with reference to selected preferred embodiments, it should be recognized that the invention is not limited to those precise embodiments. Rather, many modification and variations would present themselves to persons skilled in the art without departing from the scope and spirit of this invention, as defined in the appended claims.

What is claimed is:

1. A controlled access pharmaceutical storage case comprising a frame having a base and a top, a plurality of storage spaces within said frame arranged vertically one above the other; and a pharmaceutical refrigerator located in said frame on said base, and including a refrigerator cabinet and a door that closes against the refrigerator cabinet; a remotely actuable refrigerator door lock for locking and unlocking the refrigerator door including a data port connecting with a programmed electronic control arrangement;

a refrigeration circuit that includes a compressor mounted at the top of the storage case and having a pressure port and a suction port, a condenser coil coupled to said pressure port and leading to an expansion valve, followed by an evaporator coil within the refrigerator cabinet and being connected with the suction port of the compressor;

wherein said compressor is adapted to be operable when powered by standard AC line power or when powered by DC battery power;

AC power cables coupled to a source of said standard AC line power;

a storage battery arrangement providing DC battery power to said compressor and to said electronic control arrangement;

charging means coupled to said AC power cables for supplying charging power to said storage battery arrangement;

power sensor means coupled with said AC power cables and said storage battery arrangement for sensing whether AC power is present and coupling the compressor to the AC power cables when AC power is present but connecting the compressor to the storage battery arrangement when AC power is absent;

said power sensor means being coupled to a data input of said electronic control arrangement;

said computer arrangement having an unlock facility operative for receiving unlock commands specific to the refrigerator door lock, and unlatch the refrigerator door lock upon receipt of said unlock command to permit authorized hospital personnel access to the contents of the refrigerator, but operative to disable said unlock facility and prevent access to the contents of the refrigerator if the power sensor means detects that the AC power is absent for a period of time that exceeds a predetermined time interval.

2. Controlled access pharmaceutical cabinet of claim **1** wherein said storage battery and said charging means are disposed at the top of said storage case.

3. Controlled access pharmaceutical cabinet of claim **1** wherein said programmed control arrangement is adapted to

generate and transmit an alert message to a predetermined addressee in the event that said AC power is absent for longer than a predetermined time interval.

4. Controlled access pharmaceutical cabinet of claim **1** in which said refrigerator lock includes a key lock cylinder permitting override access for allowing supervisory personnel to open the pharmaceutical refrigerator during absence of said AC power.

5. Controlled access pharmaceutical cabinet of claim **1** further comprising a temperature monitor having a probe sensing temperature inside said refrigerator cabinet, the temperature monitor being coupled with said programmed control arrangement to transmit the sensed temperature thereto; and wherein said control arrangement is operative to store at least one predetermined temperature limit, and to compare the sensed temperature with said at least one predetermined temperature limit, and is operative to disable said unlock facility if the sensed temperature is outside said predetermined temperature limit so that the refrigerator door lock is prevented from being unlocked remotely.

6. Controlled access pharmaceutical cabinet of claim **5** further including means for communicating a temperature alarm to said remote computer system when the sensed temperature is beyond said limit.

7. Controlled access pharmaceutical cabinet of claim **1** wherein said programmed control arrangement is adapted to generate and transmit an alert message to a predetermined addressee in the event that the power sensor means detects that the AC power is absent.

8. Controlled access pharmaceutical cabinet of claim **7** further comprising a humidity sensor positioned within said refrigerator cabinet and being coupled with said programmed circuit arrangement to transmit a sensed humidity thereto; and wherein the programmed circuit arrangement is operative to store at least one predetermined humidity limit, and to compare the sensed humidity from said humidity sensor with said at least one predetermined humidity limit, and is operative to disable said unlock facility if the sensed humidity is outside said predetermined humidity limit so that the refrigerator door lock is prevented from being unlocked.

9. Controlled access pharmaceutical cabinet of claim **1** wherein said control arrangement includes audit trail software for recording each time of opening of the refrigerator door lock and also recording identity of each requesting person associated with such openings of the refrigerator door lock.

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