Nov. 4, 1952 W. REYNOLDS 2,616,269

THERMOCABINET

Filed Jan. 23, 1948 2 SHEETS—SHEET 1

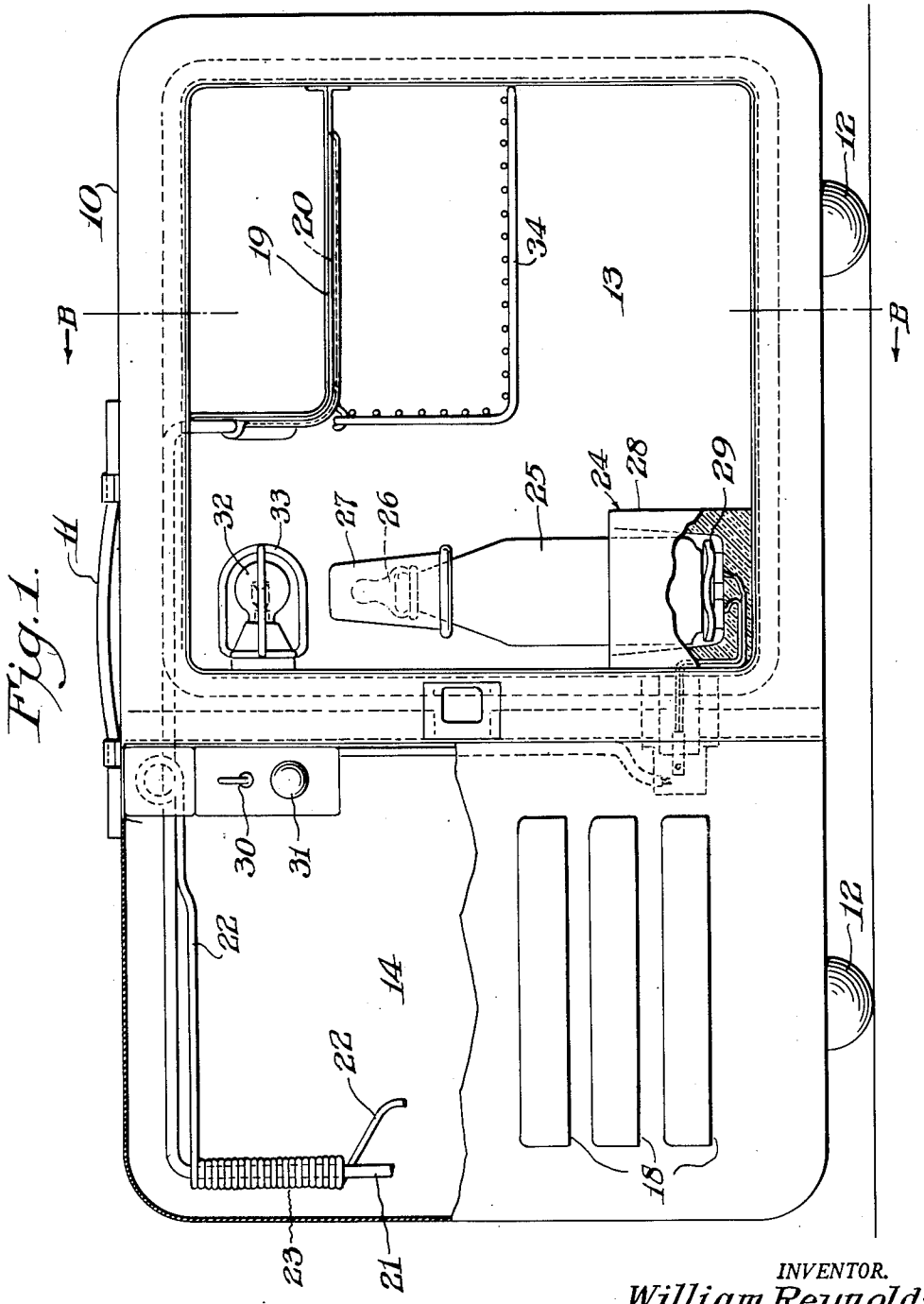


Fig. 1.

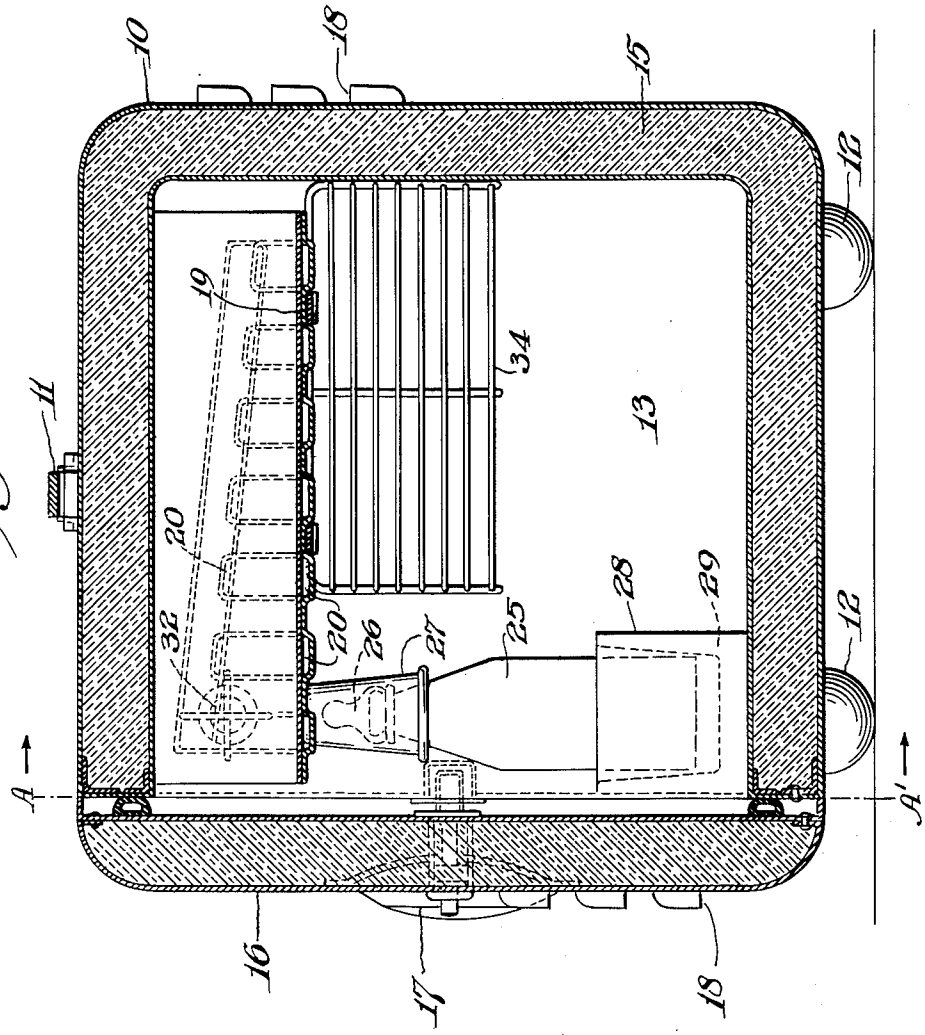
INVENTOR.
William Reynolds
BY
Arthur G. Connolly
his ATTORNEY

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Fig. 2.



INVENTOR.
William Reynolds
BY
Arthur J. Connolly
his ATTORNEY

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THERMOCABINET

William Reynolds, Media, Pa.

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2 Claims. (Cl. 62—89)

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My present invention relates to a cabinet wherein materials, such as foods, medicines and the like, may be stored under refrigeration and then heated just prior to consumption or use. More particularly, it concerns a portable chest especially designed for storing a plurality of bottles of nursing milk and warming them individually at the infant's feeding times, all with a minimum of handling and under sterile conditions.

An object of my invention is to provide a portable device that can be set up in the nursery or at any other convenient location, in which may be stored at least a 24-hour supply of bottled nursing milk under proper conditions of refrigeration, and wherein the individual bottles may be heated to the proper temperature for feeding, as required. A further object is to provide heating means within the refrigerated space, so as to minimize the necessity for handling the sterilized bottle, when preparing it for feeding. Another object is to produce and maintain sterile conditions throughout the entire time that the bottles are in the device, i. e., both during storage and heating. Additional objects and advantages will become apparent as the description of my invention proceeds.

A portable cabinet embodying my invention is illustrated in the accompanying drawings in which

Fig. 1 is a some diagrammatic view mostly in vertical section on the line A—A' of Fig. 2 and

Fig. 2 is a similar view on the line B—B' of Fig. 1. In both figures several parts in front of the sectional lines are indicated and some conventional parts are shown schematically or not at all. This is done for the purpose of greater clarity and does not detract from a full understanding of my invention.

Referring to these drawings, the reference numeral 10 indicates the exterior wall of my cabinet. This is preferably formed of white enameled metal, but may be finished as desired. The cabinet somewhat resembles a conventional, portable radio, although slightly larger, and weighs in the neighborhood of 50 pounds, so that it can easily be carried by the average individual. A handle 11 is provided at the top for this purpose, and four pads 12 are provided at the bottom, so that the cabinet may be set down at any convenient location without marring the surface upon which it rests.

The cabinet is divided into two compartments, one for storing and heating, indicated generally by 13, and the other, indicated generally by 14, for housing a conventional type of mechanical refrigerating unit (not shown). The storage and heating compartment 13 is provided with thermal insulation 15 and a door 16 with a convenient handle 17, permitting ready access thereto.

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Louvres 18 are provided in the front and back walls of the compartment 14, in order to permit circulation of air therein and balanced cooling of the mechanical refrigerating unit.

The compartment 13 is refrigerated by means of a cold wall 19 containing the usual evaporating tube 20 through which the refrigerant circulates. This cold wall is conveniently shaped in the form of a shelf upon which solid foods, small cans, jars and the like may be stored at low temperatures. The compartment 13 is high enough, so that the ordinary nursing milk bottle with nipple attached and protective cap thereon, may be stored in upright position below the shelf formed by the cold wall 19. Thus ample space is provided for the storage of at least a 24-hour supply of nursing milk, thereby eliminating the need for mixing up the infant's formula more than once a day.

The motor, compressor and other parts of the mechanical refrigerating unit housed in compartment 14 are not shown. 21 indicates the exhaust line for the refrigerant from the compressor to the evaporating tubes 20, and 22 the supply line leading back from the evaporating tubes to the compressor. 23 indicates a conventional heat exchanger for cooling the compressed refrigerant. The refrigerating system is provided, as is usual, with a thermostatic control (not shown) that will insure maintenance of a desired storage temperature in the compartment 13. The refrigerating unit is driven by an electric motor that will operate upon the normal house current, thus permitting my device to be plugged in at any convenient electrical outlet in the home.

Within the refrigerated storage compartment 13 near the door 16, there is located a device 24 for heating individual bottles. A conventional nursing bottle 25 with nipple 26 and protective cap 27 is shown therein. This heating device comprises an insulated receptacle 28 at the bottom of which is located an electrical heating element 29 that also operates on the house current. The current supply to said heating element is controlled by a switch that is operated from outside the cabinet by means of the button 30. Adjacent to said button is an indicating light 31.

In the form of heating device illustrated, the electrical circuit can be closed only when sufficient water is present at the bottom of the receptacle 28 to cover the heating element 29. If the switch button 30 is then moved to the "on" position, the heating element 29 heats up and brings the water to a boil. The hot water and steam thus developed serve to heat the bottle 25 and its contents. As the water boils off to below the level of the heating element 29, the electrical heating circuit is automatically broken and the heating element will cool down. The indicating light 31 is so arranged in the heating circuit that

it will light up at this point, when the switch button 30 is "on," thus warning the person feeding the infant that it is time to remove the bottle for feeding. The desired temperature of the nursing milk can be assured by pouring sufficient water into the receptacle 28 at the time the bottle is placed therein.

Other electrical heating devices may be employed that are thermostatically controlled and combined with an indicating device to show when the proper feeding temperature of the nursing milk has been achieved. Some heat will always be dissipated into the remainder of the storage compartment 13 and will require additional refrigeration in order to maintain the proper storage temperature therein. However, with a properly constructed heating device the amount of additional work to be performed by the refrigerating unit is remarkably small and represents no handicap. On the other hand, there is the great advantage that the bottle to be warmed can be stored in the heating device 24 under refrigeration, until feeding time, and can then be heated to the desired temperature without any handling whatsoever. More sterile conditions, as well as greater convenience, are thereby assured.

In order to produce and maintain sterile conditions within the storage compartment 13, I may provide a convenient source of ultraviolet light, such as the sterile lamp 32. This is preferably, though not necessarily, located above the heating device 24, as shown. A guard 33 surrounds the sterile lamp 32 to avoid accidental breakage without substantially reducing its effectiveness. The operation of the lamp may be controlled by another conveniently located switch (not shown). It is desirable to have it in operation whenever nursing milk bottles are in the compartment 13, because absolutely sterile conditions within the compartment are thereby assured. However, it is generally sufficient to connect the sterile lamp in such a manner that it will go on and off simultaneously with the electric motor of the refrigerating unit.

Although my cabinet is particularly designed for the storage and heating of bottles of nursing milk, it will obviously be useful for many other purposes. As the infant becomes older and begins to take solid food, such food may conveniently be stored in the shelf provided by the cold wall 19. It may be kept in suitable containers and heated in the heating device 24. Additional storage space for such solid food may be provided by hooking below the cold wall a removable shelf 34. In this manner my thermocabinet will continue to be a great time saver and convenience throughout at least the first year of the infant's life.

The operation of my device should be apparent from the foregoing description of its structure. One or two days' supply of the infant's formula may be made up as usual, placed in sterile bottles, the sterilized nipples attached, and the usual sterilized caps applied to protect the latter. All of the bottles are then transferred to my thermocabinet which is most conveniently located for feeding of the infant. One of the bottles is immediately placed within the heating device. A measured amount of water is placed in the receptable of the heating device along with the bottle.

When it is time to feed the infant, all that need be done is to turn on the switch controlling the heating device. As soon as the indicating light shows that the bottle contents have reached the desired temperature, the warm bottle is removed for use and another bottle, along with a measured amount of water, is put in its place. These operations are repeated, until the supply of the nursing milk in the thermocabinet has been exhausted. In this manner a great deal of the usual handling and contamination of the nursing milk bottles is eliminated. The great convenience and saving of time represented by the use of this thermocabinet is so apparent as to require no further discussion.

While I have illustrated and described in detail a specific embodiment of a device constructed in accordance with my invention, it is obvious that many changes in the details of construction and operation may be made without departing from the spirit of the invention. It is to be understood that my invention is not limited to the foregoing details, except as defined in the appended claims.

I claim:

1. A portable cabinet of the type described, comprising a refrigerating system, an insulated compartment connected for refrigeration thereby and adapted for the storage of a plurality of bottles of nursing milk, an open liquid-receiving well within said compartment in open communication therewith for receiving individual bottles as required, without removing the received bottle from direct contact with the atmosphere in the refrigeration compartment, electrical elements including a switch connected for heating liquid in the container to thereby heat the contents of a bottle in the container to the feeding temperature, and an electrically operated source of ultra-violet ray light located within the refrigeration compartment and also connected to said electrical elements.

2. A portable cabinet of the type described, comprising a refrigerating system, an insulated compartment connected for refrigeration thereby and adapted for the storage of a plurality of bottles of nursing milk, an open liquid-receiving well within said compartment in open communication therewith for receiving individual bottles as required, without removing same from direct contact with the atmosphere in the refrigerator compartment, electrical elements including a switch connected for heating liquid in the container to thereby heat the contents of a bottle in the container to the feeding temperature, said electrical elements including heating electrodes between which heating current will not flow unless liquid is present in the well, and said elements being connected to cause a measured amount of liquid to boil away for automatically cutting off the supply of heating current when the contents of the bottle placed in the well are sufficiently heated.

WILLIAM REYNOLDS.

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