United States Patent

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[54] **ISOLATOR CRIB BANK**
1 Claim, 1 Drawing Fig.

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[50] **Field of Search** ..... 312/236; 5/8, 284, 93, 97; 128/1 B

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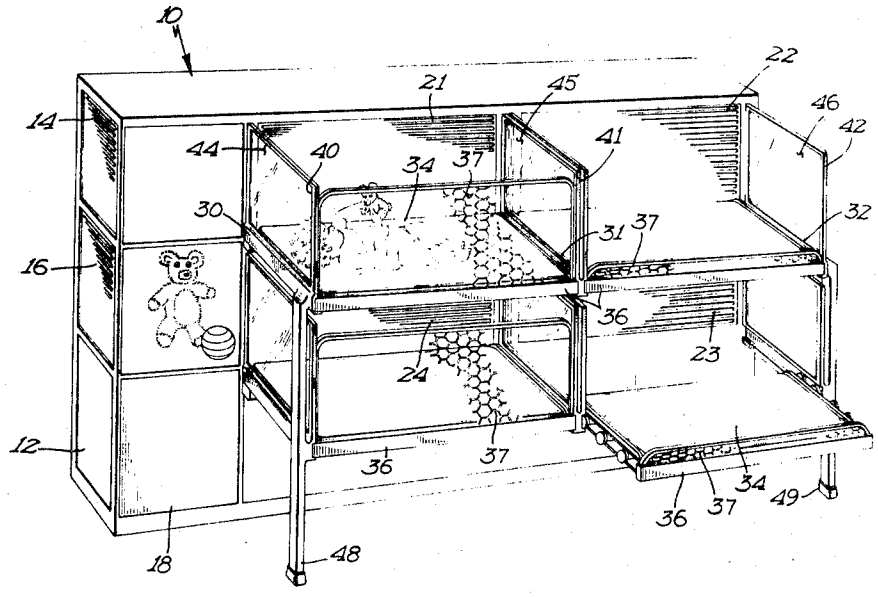
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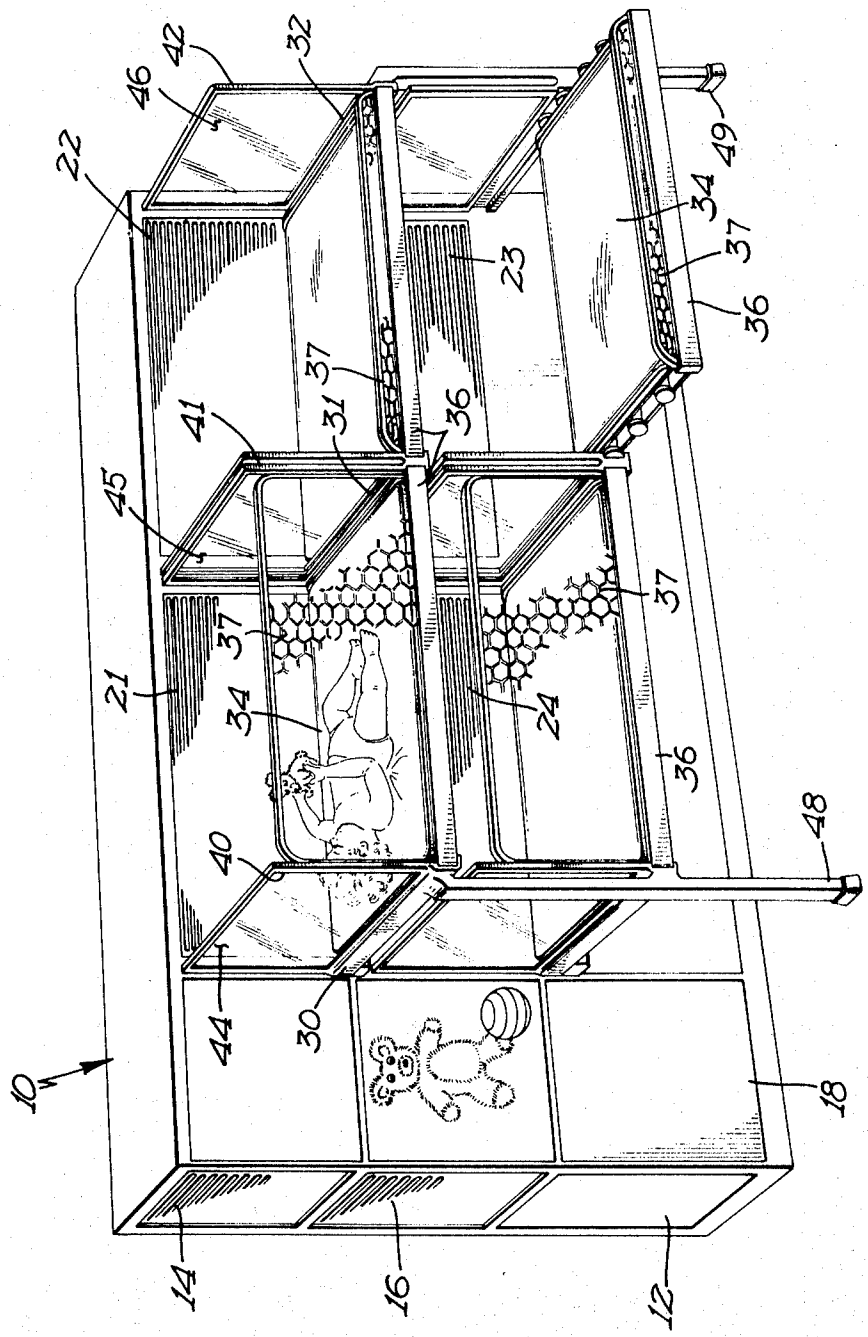
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ABSTRACT: The invention relates to an isolator crib bank. A filtering unit or module is provided for supplying a filtered, uniform flow of air through a group of cribs. The group of cribs is constructed with a frame structure and other apparatus which is attached to the filtering unit.



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ISOLATOR CRIB BANK

The invention relates to a new and improved isolator crib bank.

Infants in a hospital are more vulnerable to developing infectious diseases than adults and it is desirable to provide them with a relatively germ-free environment. The invention is directed to an isolator crib bank in which a filtered, uniform flow of air is continuously and unidirectionally moved through the interior spaces of the cribs thereof. A filtering unit or module is used for supplying such air and a frame structure and other apparatus is used for constructing multiple crib enclosures through which the air is directed.

A main object of the invention is to provide a new and improved isolator crib bank.

Other objects and advantages of the invention will become apparent from the following specification, the drawing and appended claims.

In the drawing:

The drawing shows a perspective view of an isolator crib bank embodying the invention.

The isolator crib bank has as a main part thereof an elongated, rectangularly shaped filtering module or unit **10** which is relatively narrow compared to its height. The unit **10** has an end wall **12** having two rectangularly shaped air inlet openings closed by grilles **14** and **16** and a sidewall **18** having four rectangularly shaped air outlet openings closed by grilles **21**, **22**, **23** and **24**. Grilles **21** and **22** are positioned in side-by-side relation to each other above grilles **23** and **24** which are also in side-by-side relation to each other. The set of grilles **21** to **24** occupy most of the area of wall **18** leaving unoccupied only relatively smaller areas on the left side and bottom thereof.

Inside the unit **10** immediately adjacent the grilles **4** and **16** is a low-efficiency filter (not shown). Inside the unit **10** immediately adjacent the air outlet grilles **21** to **24** is a HEPA filter (not shown), the letters of which stand for "high-efficiency particulate arrestors." HEPA filters are 99.99 percent efficient in removing airborne particulates as small as 0.3 micron and are normally made of microglass fibers and organic binders. This type of filter is manufactured as a single sealed unit to prevent leaks and channeling of nonfiltered air. Uniform porosity of HEPA filters provides a uniform airflow.

Also contained in the unit **10**, but not shown, is a blower and an electric motor therefor. The blower has the function of drawing air in through the air intake grilles **14** and **16** and forcing the air out through the air outlet grilles **21** to **24**. The air outlet grilles **21** to **24** are of an aerodynamic design so as to accommodate and facilitate the laminarizing of the air flowing therethrough in conjunction with the HEPA filter.

Air-conditioning apparatus may also be contained in the unit **10** for controlling the temperature and humidity of the air but such apparatus forms no part of the invention per se.

A frame structure is provided for a crib bank which in this instance is illustrated as comprising four baby cribs. The frame structure may be attached to the unit **10** in various ways as will be obvious and well understood and thus no particular way is disclosed herein. Each of the cribs has the same type of construction as the other cribs and a description of one will also serve as a description for the others.

Referring to the grille **21** and the air outlet closed thereby, a pair of horizontally extending guide tracks **30** and **31** are attached to the unit **10** at the lower left- and right-hand corners of the grille **21**. The guide tracks have mutually facing slots and a rectangularly shaped pallet **34** is disposed between the

guide tracks with the side edges of the pallet slidably engaging the slots. The pallet may thus be freely moved inwardly and outwardly relative to the filtering unit wall **18**.

At the outward edge of pallet **34** is a roll-type screen unit comprising a housing portion **36** and a flexible screen **37**. At the outward ends of the guide tracks **30** and **31** there are attached a pair of vertically extending guide tracks **40** and **41** which have mutually facing slots. When the pallet **36** is in its most inward position the screen **37** may be pulled up with the side edges thereof inserted in the slots of the guide tracks **40** and **41**. The fit between the screen and slots may be snug so that the screen is held in its raised position by friction or other retaining means (not shown) may be provided for securing the screen in its raised position.

The crib is completed by providing side panels **44** and **45** which are preferably of polycarbonate or other transparent material so that an infant in the crib is readily viewable. Frames for the side panels **44** and **45** may be integrally formed with the horizontal and vertical guide tracks as illustrated or may be fabricated in other commonly known ways. The bank of cribs may be partially supported by two legs **48** and **49** if desired.

When an infant in a crib is to be attended to for a diaper change, or other treatment and care, the screen **37** is caused to be retracted to its housing **36** and the pallet **34** is pulled out as indicated in the crib-adjoining grille **24**.

Filtered air emanating from the air outlets through the grilles **21** to **24** flows horizontally through the cribs and the uniform flow thereof is not materially disturbed by its flow through the screens **37**. An adjustable airflow rate of about 30 to 100 f.p.m. is barely perceptible to an occupant of a crib and, as the airflow is unidirectional in an outwardly direction, the longest time an airborne micro-organism could spend in a crib would only be a second or two. Micro-organisms clinging to an occupant would also be constantly urged to be freed and thus the occupant is subjected to a form cleaning action by the filtered air passing through the crib.

An arrangement is also contemplated wherein the filters **14** and **23** and the airflow are reversed so that an infected patient would be effectively isolated from the rest of the ward.

We claim:

1. An isolator crib bank comprising an elongated rectangularly shaped air-filtering unit, said unit having a sheet metal housing with at least one air inlet opening and a plurality of rectangularly shaped grilles forming air outlet openings, said grilles being in a vertical wall of said housing, a pair of horizontally extending guide tracks extending outwardly from the lower corners of each of said grilles, a flat rectangularly shaped pallet slidably disposed between each pair of said guide tracks so as to be movable inwardly and outwardly relative to said vertical wall, a pair of vertically extending guide tracks extending upwardly from the outward ends of each pair of said horizontally extending guide tracks, a roll-type screen mounted at the front edge of each of said pallets with each screen being guidable by a pair of said vertically extending guide tracks when the pallet to which it is attached is in its most inwardly position, and vertically extending partition means attached to said guide tracks, said partition means extending normal to said vertical wall, said guide tracks being in the form of slots for receiving said pallets and said screens and at least four of said air outlet openings being arranged with one pair of side-by-side openings being immediately above a second pair of side-by-side openings.