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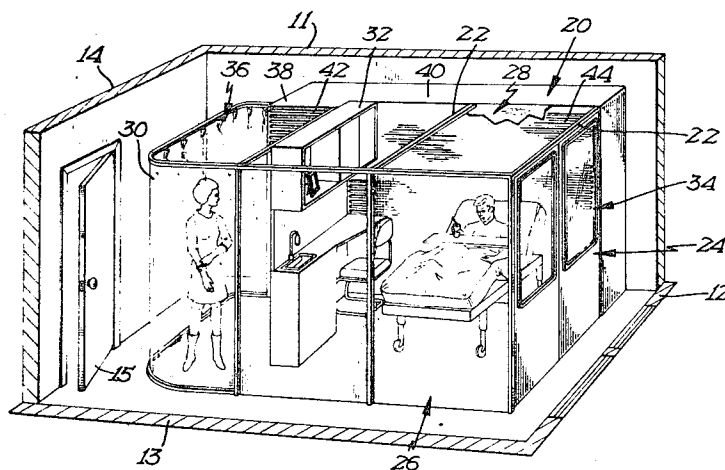
[54] **PATIENT ISOLATOR ROOM**
1 Claim, 2 Drawing Figs.

[52] U.S. Cl. **98/33,**
128/371, 62/261

[51] Int. Cl. **F24f 13/00**

[50] Field of Search **98/33, 33**
A, 33 R; 128/371, 373; 62/261

ABSTRACT: The invention relates to a patient isolator room which is designed and adapted to be assembled within the confines of an ordinary hospital room. The isolator room is equipped with an airflow and filtering system which functions to isolate a patient from micro-organisms present in a hospital environment and, vice versa, to isolate a patient having an infectious disease.



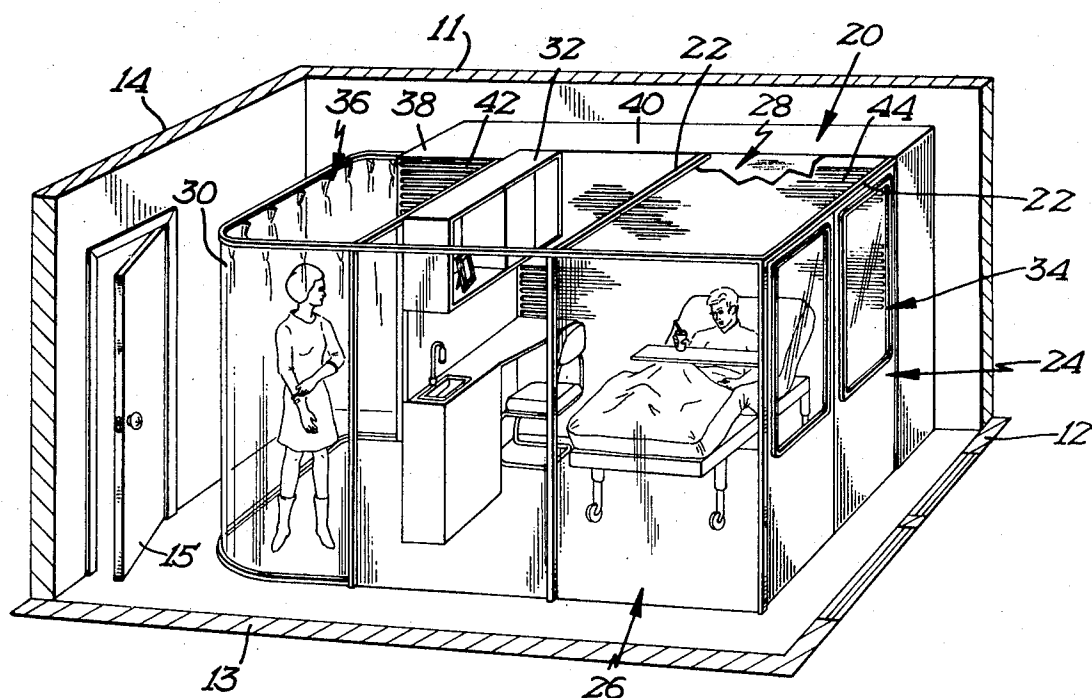


FIG 1

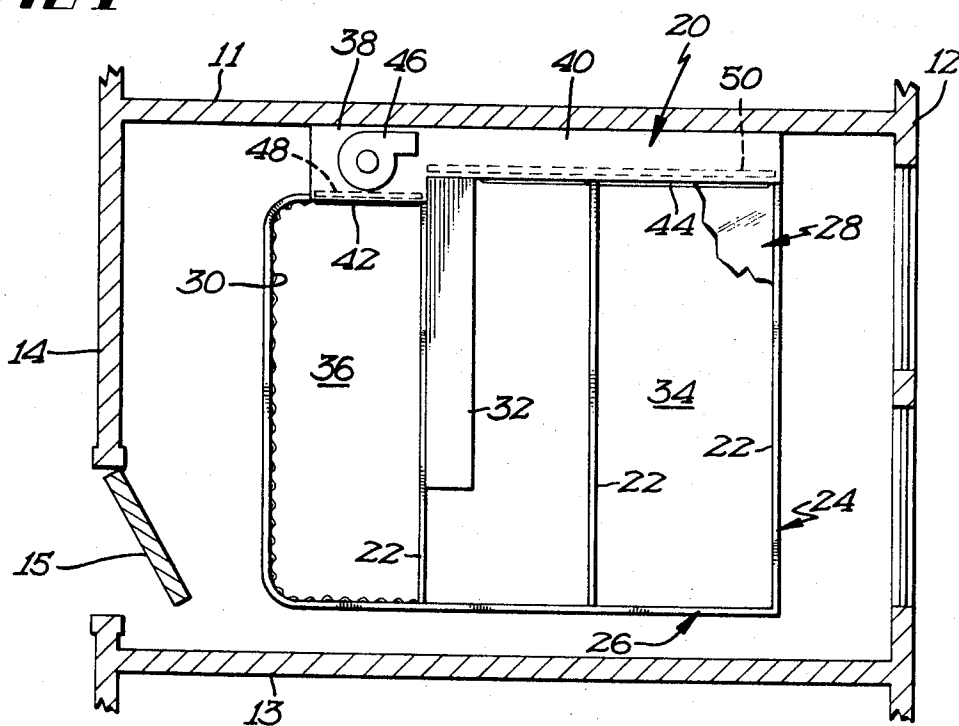


FIG 2

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PATIENT ISOLATOR ROOM

This invention relates to a patient isolator room which is designed and adapted to be assembled within the confines of a normal or ordinary hospital room. The isolator room provides a relatively germ-free environment for long term confinement of patients who require such an environment in certain instances such as for patients requiring through an environment in certain instances such as for patients cancer chemotherapy treatments, recovering from transplant operations, having severe burns, are asthmatics or are in shock.

The patient isolator room is equipped with an air flow and filtering system which functions to isolate a patient from micro-organisms present in a hospital environment and, vice versa, to isolate a patient having an infectious disease.

A main object of the invention is to provide a new and improved patient isolator room having an air flow and filtering system which creates a germ-free environment and effectively isolates the patient from the hospital environment outside the isolator room. A further object is to provide such a room which may be readily assembled within the confines of an ordinary hospital room.

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

FIG. 1 is a perspective view showing a portable patient isolator room constructed in accordance with the invention; and

FIG. 2 is a plan view of the patient isolator room shown in FIG. 1.

The environment for a portable patient isolator room constructed in accordance with the invention would normally be a conventional type of hospital room with the isolator room being assembled inside the hospital room. The isolator room can normally be assembled and installed in approximately one day. Renovation of the hospital room is held to a minimum since the isolator room itself contains all needed patient support equipment except power and water which is furnished by the hospital.

Referring to FIGS. 1 and 2, a conventional hospital room is represented by four walls 11 to 14 with walls 11 and 13 being common walls of adjacent rooms, wall 12 being an outside wall with windows and wall 14 being an inside wall with a door 15 leading to a hallway.

The patient isolator room is assembled within the confines of a hospital room and may have various forms within the scope of the invention. The isolator room illustrated has four walls, or forms of walls. One of the walls may have the form of or be a filtering module 20 which normally would have a height of about 7 feet and have a generally rectangular shape. Throughout this description the filtering module will be referred to interchangeably and indiscriminately as a filtering module or as a wall.

A frame structure 22 may be provided for supporting or forming the other walls and the ceiling but other types of erected structures may also be used. As illustrated, an end wall 24, the wall 26 opposite the filtering module 20, and the ceiling 28 have clear glass panels or panels made of a clear plastic material. These panels could also be opaque if desired but it is more convenient to disclose them as being transparent for purposes of illustration.

The "wall" 30 opposite wall 22 is illustrated as having the form of a curtain which may be drawn aside to permit entry into the isolator room.

A room divider 32 extends from the filtering module 20, from a point between the ends thereof, part way into the isolator room and terminates short of the wall 26. The divider extends from the floor to the ceiling so that there can be no air flow over the top of the divider. The exact placement of the room divider 32 is optional to some extent but in one satisfactory arrangement the spacing of the divider from the left end of wall 20 is about one-fourth the length of that wall. The

length of the divider 32 may be about three-fourths the width of the isolator room from wall 20 to the wall 26. The room divider 32 must of course be between or at the junction of the air inlet and outlets 38 and 40 in any arrangement selected.

The primary function of the room divider 32 involves and relates to the flow of air in the isolator room but, as illustrated, its presence permits it to also be used secondarily as a conventional room divider to house a sink, have the attributes of a desk, contain cabinets and have shelving at the top thereof.

The divider 32 divides the isolator room into a patient's area 34 which contains a bed and other hospital room facilities and an air return corridor 36. The filtering module or wall 20 has an air inlet section 38 on one side of the divider 32, at the end of the corridor 36, and an air outlet section 40 on the other side of the divider. The air inlet and outlet sections extend from the floor to the ceiling and occupy the entire wall surface of the wall 20 except for area where the divider 32 joins the wall 20.

The air inlet and outlet sections are provided respectively with grilles 42 and 44 which are designed to accommodate and facilitate the horizontal uniform flow of air into and out of these sections. Behind grille 42 is a motorized blower 46 for drawing air through grille 42 and blowing it out through grille 44. Between grille 42 and the blower is a low-efficiency filter 48 which is referred to as a prefilter.

Behind grille 44 is a special type of filter 50 known as a HEPA filter which means "high efficiency particulate arrestor." This type of filter is typically made of microglass fibers and organic binders. It is manufactured as a sealed unit to prevent leaks and the channeling of nonfiltered air. This type of filter must be replaced periodically but under conditions of hospital cleanliness may have an operational life of five years or more.

The purpose of the patient isolator room, as mentioned in the introduction, is to provide a germ-free environment for the patient. In operation the blower is preferably selected or adjusted so that the air emanating through the HEPA filter 50 and grille 44 into the patient's area 34 has a speed of from 30 to 100 feet per minute. Although air movement at these velocities is almost imperceptible to the patient, a cubic foot of space in the area 34 gets a change of air about 100 times per minute at the higher air flow rates. The HEPA filter functions to horizontally direct a uniform flow of air into area 34 and, as there is thus an absence of eddy currents, micro-organisms on articles in the room are constantly being swept directly and uniformly away from the patient. Air so swept away from the patient is drawn by the blower 46 around the end of divider 32 through the corridor 36 and into the air intake section 38. If the corridor 36 is one-third the width of the patient's area 34, as an approximation, the air velocity through the corridor will be several times faster, such as 300 feet per minute, for example. This added speed for the air flow in the corridor 36 has the advantage that nurses and doctors entering the room through the curtain 30 will be "washed" by higher speed air so that micro-organisms clinging to their clothing will be swept away by a higher velocity air than to which the patient is exposed. This means that medical personnel may enter and leave the isolator room with minimal special preparation.

It is not practical, feasible or desirable to seal the isolator room so as to be airtight. The flow of air past the patient and through the corridor 36 picks up air seeping into the room, however, and immediately draws it through the filtering system and cleans it.

We claim:

1. A portable patient isolator room adapted to be assembled within the confines of a hospital room comprising, vertical wall means, roof means attached to said wall means, said wall means including one wall having an air inlet section and an air outlet section, said inlet and outlet sections being horizontally adjacent each other, air-conveying means for drawing air into said inlet section and expelling air out of said outlet section, a wall divider extending partially into said isolator room from said wall from a point between said inlet and outlet sections,

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means for filtering and horizontally directing a uniform flow of air expelled from said outlet section, said wall divider dividing said room into a bed area and a corridor through which air flows to said air inlet section, said corridor being of lesser

width than said bed area and having a closeable entrance way, said air outlet section being formed to emit a horizontal laminar flow of air through said bed area, said flow of air having substantially the same height and width as said bed area.

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