March 22, 1966 R. J. HANSEN 3,242,334

STERILE BOOTH FOR PHARMACIES

Filed Feb. 18, 1963 2 Sheets-Sheet 1

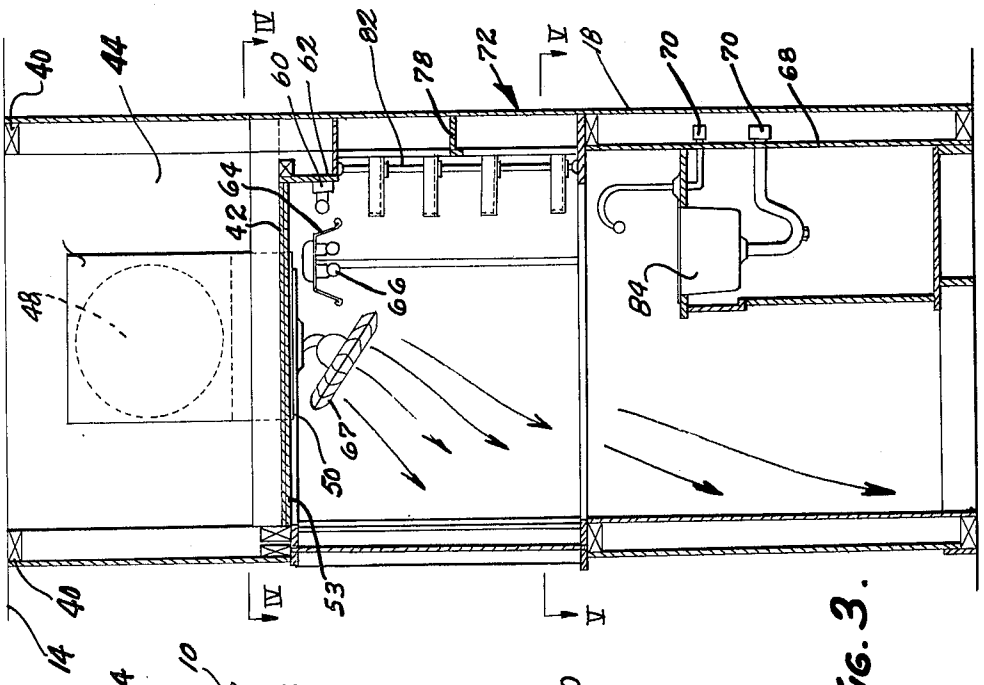


FIG. 3.

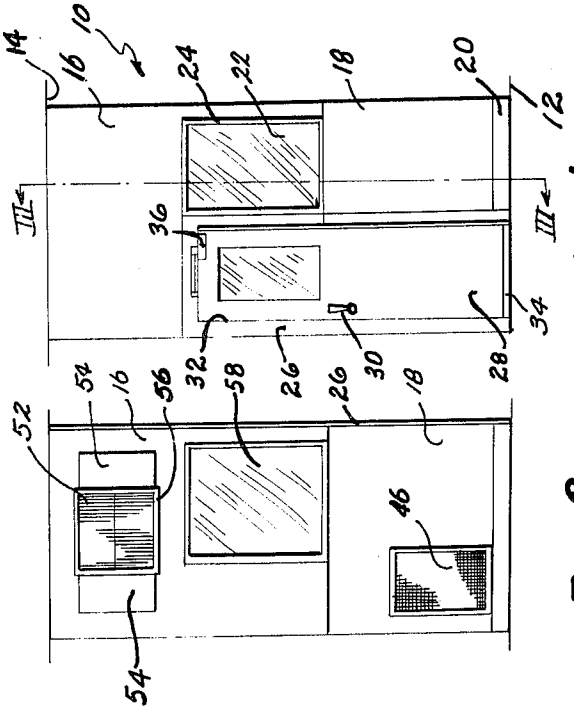


FIG. 1.

FIG. 2.

INVENTOR.
RAYMOND J. HANSEN

BY Price & Heneveld

ATTORNEYS

March 22, 1966 R. J. HANSEN 3,242,334

STERILE BOOTH FOR PHARMACIES

Filed Feb. 18, 1963 2 Sheets-Sheet 2

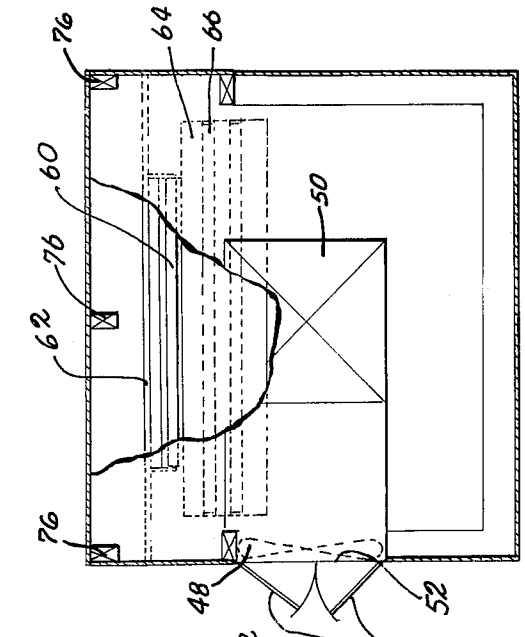


FIG. 4.

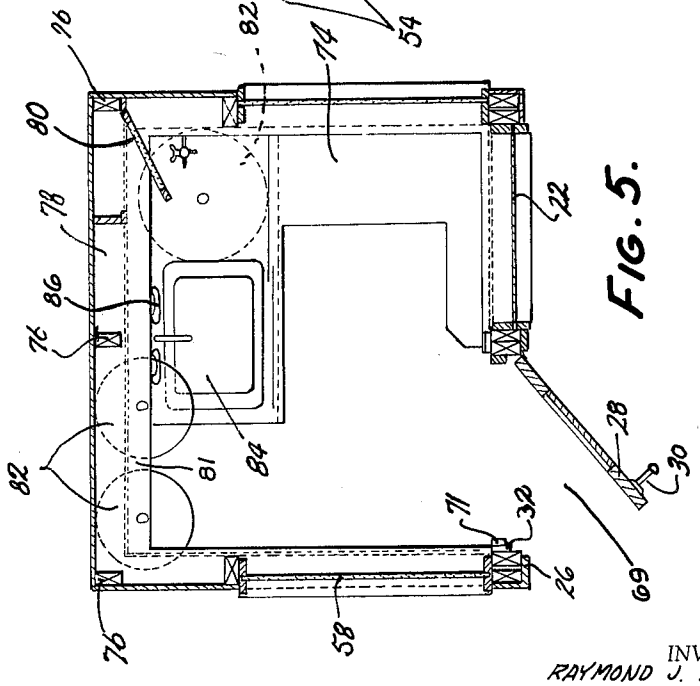


FIG. 5.

INVENTOR.
RAYMOND J. HANSEN

BY Price & Heneveld

ATTORNEYS

United States Patent Office 3,242,334 Patented Mar. 22, 1966

3,242,334

STERILE BOOTH FOR PHARMACIES

Raymond J. Hansen, 2460 Oakwood Drive SE., Grand Rapids, Mich.

Filed Feb. 18, 1963, Ser. No. 259,242
2 Claims. (Cl. 250—42)

This invention concerns prefabricated compounding booths for pharmacies, and more particularly a booth compactly arranged and equipped to permit compounding of prescriptions under sterile conditions in most any type of building suitable for use as a pharmacy or drug store.

There is a very real possibility of contaminating pharmaceutical goods during their reconstitution or other handling in pharmacies due to the heavy and uncontrollable traffic of customers in the vicinity of the compounding facilities in the average pharmacy. In addition, customers of a pharmacy are inherently often sick with highly infectious conditions especially of the respiratory tract which would produce a greater pollution of the air with the offending pothogens. Therefore, so as not to pass these along to other subsequent customers, it has long been desirable to extend the aseptic procedures of the pharmaceutical manufacturer to the pharmacies and drug stores. However, the average pharmacy is ill equipped for this purpose because of its open construction and the location of its facilities within the store. It has therefore become desirable to create a relatively inexpensive prefabricated "white room" which can be easily set up in a pharmacy in a minimum of space and contains within its confines the facilities and equipment necessary to assure sterile compounding of prescriptions.

The present invention fills this need and furthermore provides means for the close observation of the pharmacist by customers or supervisors to provide more adequate training of internes and instill more confidence in customers, and also to provide an incentive for the pharmacist to use the most stringent health precautions possible. In addition, the booth of this invention provides a soundproof working place to promote concentration and reduce the possibility of error.

It is therefore the object of this invention to provide a prefabricated, airtight, contamination-resistant compounding booth for pharmacies effectively equipped in a minimum of space with the essential equipment for the compounding of prescriptions.

These and other objects of the invention will become apparent from the following specification, taken in connection with the accompanying drawings in which:

FIG. 1 is a front elevation of the booth of this invention;

FIG. 2 is a side elevation of the booth of FIG. 1;

FIG. 3 is a vertical section along line III—III of FIG. 1;

FIG. 4 is a horizontal section along line IV—IV of FIG. 3; and

FIG. 5 is a horizontal section along line V—V of FIG. 3.

Basically, the invention is concerned with a prefabricated booth specially equipped for the continuous disinfecting of its air supply and work surfaces without harming the pharmacist, and specially designed to reduce the possibility of outside contamination. The invention provides means of fitting this booth in dust-tight relationship to any available store space of any height and in any desired position.

In the drawings, FIG. 1 shows a front elevation of the booth **10** of this invention. The booth **10** extends between the floor **12** and the ceiling **14** of a store. The front wall of the booth **10** is composed of an upper panel **16** and a lower panel **18**. The junction of the lower panel **18** with the floor **12** is sealed against dust by a resilient

molding **20**. The upper panel **16** partially encloses a window **22** whose frame **24** is airtightly sealed by any convenient means to the panels **16** and **18** and to the door frame **26**. The door frame **26**, whose bottom ends are sealed against the floor **12**, and whose junction with the panels **16** and **18** is also sealed by convenient means, receives a door **28** equipped with a wrist-type door pull **30** and a resilient seal **32** of a material such as foam rubber around its head and jambs. The bottom of the door **28** is equipped with a movable seal **34** mounted on its inside and equipped with a well-known lifting mechanism (not shown) to lower the seal into position when the door is closed and raise it off the floor when the door is being opened. In order to increase the effectiveness of the jamb seal **32**, the door does not have any latch or lock but is biased into the closed position by a door closer **36**.

The upper panel **16** has a vertical extent determined by the height of the store ceiling **14**. The minimum vertical dimension of the panel **16** is dictated by the height of the fan housing **38** (FIGS. 2 and 3). In installing a booth **10** in a store, the panel **16** is merely cut to the exact vertical dimension necessary and is then attached to headers **40** (FIG. 3) mounted on the ceiling **14**. Although desirable, a hermetic seal between the panel **16** and the ceiling **14** is not absolutely necessary because the booth ceiling **42** is sealed against the fan chamber **44**.

Air is supplied to the hermetically sealed interior of the booth **10** through an air intake **46** whose edges are sealed against the lower panel **18** in which the air intake **46** is located. The air intake **46** contains a pair of air filters of sufficient fineness to prevent the passage of dust therethrough. Air is pulled through the air intake **46** into the interior of the booth **10** by a fan **48** (FIG. 4) which exhausts air from the booth **10** through the ceiling grill **50** and the fan duct **38**, and is located immediately behind the exhaust fan grill **52** shown in FIG. 2. The fan **48** is sufficiently powerful to create a partial vacuum in the booth **10** when it is running so as to pull the door **28** tightly against the seal **32**.

Doors **54** may be provided for either manual or automatic operation to seal the frame **56** of the grill **52** against outside air when the fan is turned off to prevent backflow of contaminated air into the booth **10**.

The booth ceiling **42**, and the inner walls of the booth if desired, may be equipped with soundproofing material **53** to provide a very quiet working environment inside the booth **10** to enable the pharmacist to concentrate on his work and be free of error-causing distractions.

Additional windows such as **58** may preferably be provided to improve lighting conditions and to permit customers or training supervisors to closely observe the procedures carried on in the booth **10**.

In order to neutralize such contamination as may occur in spite of the precautions taken, the booth is provided with an ultraviolet germicidal lamp **60** mounted on the bulkhead **62** (FIGS. 3 and 4) in a position such that its rays strike the entire working area and floor of the booth **10**, but that the eyes of the pharmacist are shielded from its radiation by the reflector **64** of the fluorescent lights **66**. The lamp **60** is so disposed that its radiation strikes the inside of the air filter **46**. Thus, the filtered air drawn into the booth is immediately disinfected before striking any object in the booth. In addition, the air in the booth is continuously subjected to ultraviolet radiation from the lamp **60** to destroy any remaining or spuriously introduced airborne organisms.

A fan **67** may be mounted in the booth **10** to blow a strong air current toward the lower part of the opening **69** (FIG. 5) when the door **28** is opened. This causes the dust which usually accumulates more heavily on the shoes and the lower portions of a person's clothing to be

blown away from the booth when he enters it. A double-throw switch **71** may be mounted on the door frame **26** to alternatively power fan **67** when the door is open and fan **48** when it is closed.

As will best be seen from FIG. 3, the connections for the utilities such as, e.g., water and sewer are brought through an interior wall panel **68** in hermetically sealed relationship so as to expose connections **70** for connection to the store's utilities upon removal of the lower panel **18** of the rear wall **72**. Alternatively, the utilities may be connected to connections in the floor underneath the booth.

The counter top **74** may be kept free for working space by utilizing the space between the studs **76** to provide narrow shelves **78**. Some of the shelves may be provided with a door **80** for the lockable storage of dangerous items such as poison. Additional storage space protruding into the interior of the booth **10** may be provided by a wider shelf **81** and by Lazy Susan shelves **82** mounted thereon. Wherever the space between studs is not used for shelves, the studs are preferably faced on both sides to conceal wiring or plumbing and to avoid dirt pockets which might escape normal cleaning procedures and be out of the reach of the radiation from the germicidal lamp **60**. The sink **84** may preferably be equipped with wrist blades **86** to permit its operation without contact with the pharmacist's hands.

It should be understood that the booth **10** may be manufactured from metal panels or other appropriate construction materials, and that its arrangement may be modified to suit the materials used.

It will be seen that the present invention provides a compact, highly sterile compounding booth which can be readily made to fit any existing store and requires a minimum of installation labor. Obviously, the teachings of the invention can be carried out in many different ways of which the embodiment shown is merely illustrative. I therefore do not desire to be limited by the embodiment shown, but only by the scope of the following claims.

I claim:

1. A sterile booth for pharmacies, comprising: an air-tight enclosure having a door; work surfaces within said enclosure; first fan means and filter means cooperating to provide the interior of said enclosure with filtered, continuously exchanged air; second fan means inside said enclosure directed toward the lower portion of said door; electric means operated by said door for energizing said first fan means when said door is closed and said second fan means when said door is open; said door when closed being sealed against its frame by resilient sealing means forming an airtight seal between said door and its frame; said first fan means being of sufficient capacity for partially evacuating said enclosure when said door is closed to hold said door and frame in tight engagement with said sealing means; germicidal lamp means for illuminating said work surfaces and filter means with germicidal radiation; and light fixture means within said enclosure so positioned with respect to said germicidal lamp means as to shield the eyes of a person working on said work surfaces from said germicidal radiation.

2. A sterile booth for pharmacies, comprising: an air tight enclosure having a door frame and a door therein; work surfaces within said enclosure; resilient sealing means between said door and said frame to form an air tight seal therebetween when said door is tightly closed; fan means mounted to discharge air from said booth when said fan means is operated; an air inlet into said booth, and filter means in said inlet cooperative with said fan to filter air entering said enclosure and to create a negative pressure therein; said door being tightly closed by the pressure differential resulting thereon with said negative pressure; and electrical actuating means in operative relation to said door to be actuated with closure of the door and deactivated with opening thereof.

References Cited by the Examiner

UNITED STATES PATENTS

2,145,196	1/1939	Biggs	250—42 X
2,784,465	3/1957	Fuchs	20—3.5 X

FOREIGN PATENTS

484,076	4/1938	Great Britain.

RALPH G. NILSON, *Primary Examiner.*