

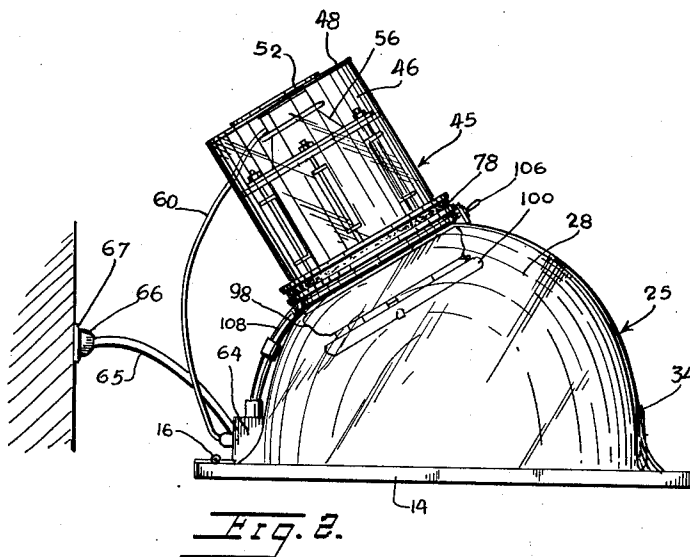
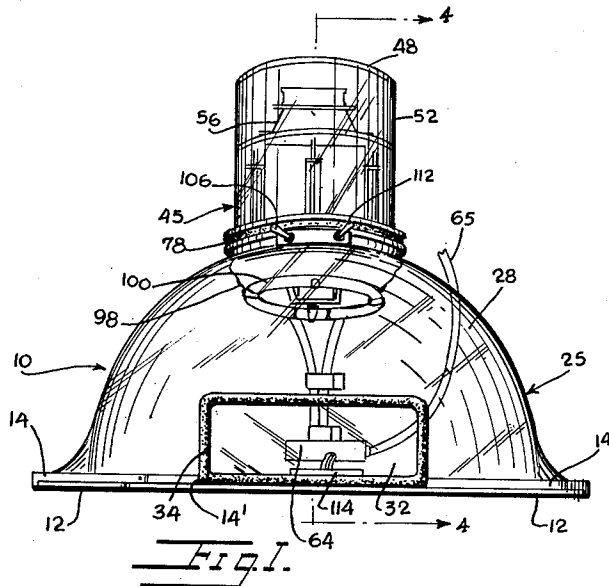
May 26, 1964

A. BASHLOW
DUST-PROOF CABINET

3,134,637

Filed Nov. 20, 1961

3 Sheets-Sheet 1

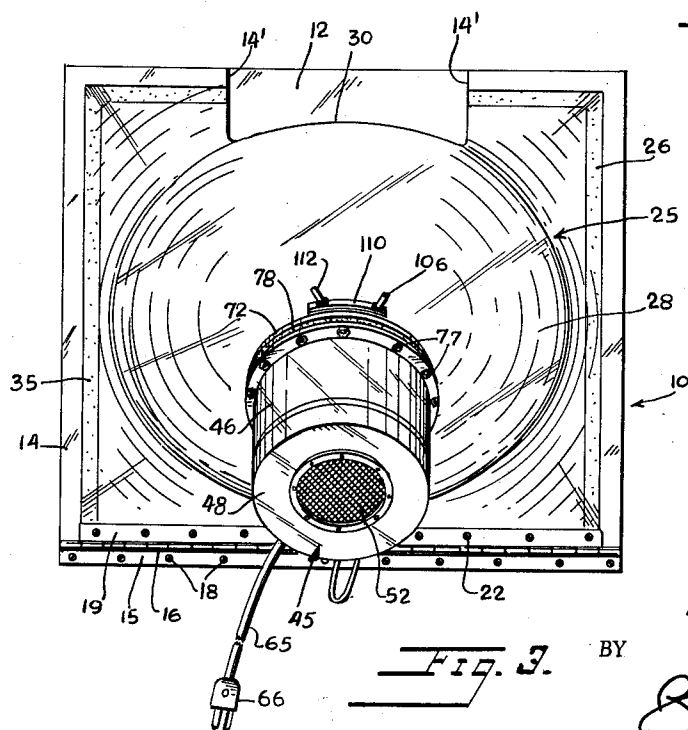
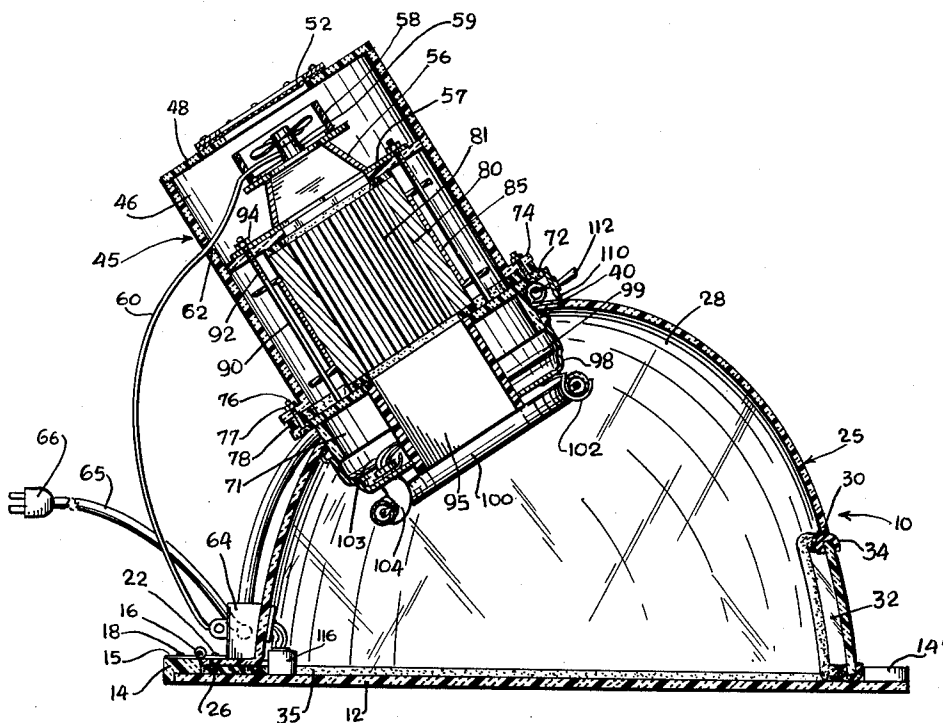


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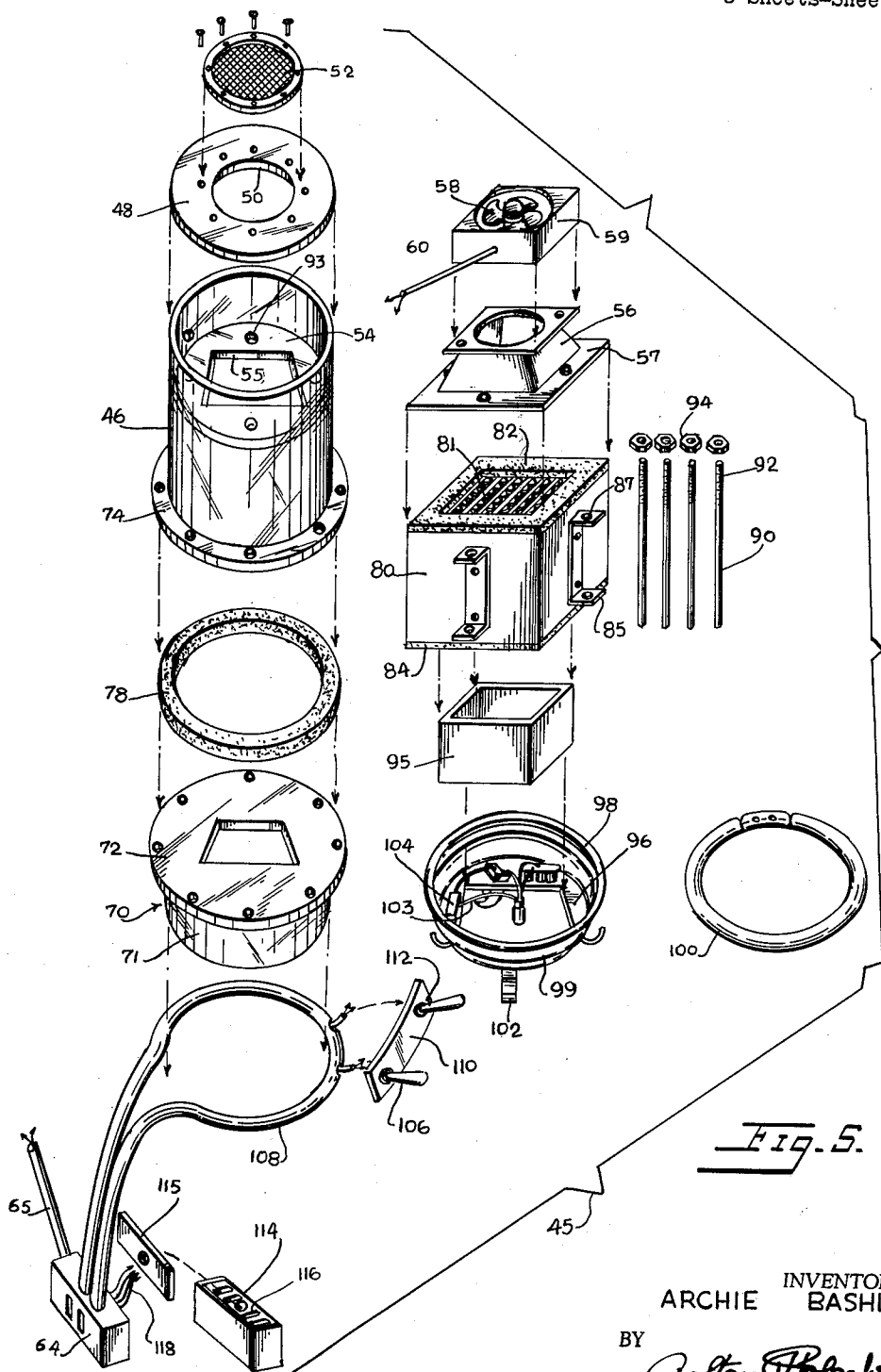


Fig. 5.

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This invention concerns an improved dust-free work cabinet.

According to the invention, there is provided a transparent plastic hood hinged to a plastic base. The hood has an opening which may be closed by a transparent removable door. Air is supplied to the interior of the hood under pressure by a blower which has an associated filter for removing dust particles. An ultraviolet, germicidal lamp may be provided for sterilizing the air in the hood. The lamp will also provide illumination inside the hood. When closed the cabinet is hermetically sealed. The cabinet is particularly useful in hospitals, laboratories, factories, and wherever there is required a work cabinet which encloses a dust-free, sterilized atmosphere.

It is therefore a principal object of the invention to provide a cabinet including a plastic hood and base hinged together so that the hood can be easily and quickly opened, provided with an opening closed and sealed by a removable transparent door, and having an associated blower, filter and air sterilizer for treating air supplied to the cabinet.

Another object is to provide a cabinet having a transparent hood adapted for assembly and test work which must be performed in a dust-free sterilized atmosphere.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

FIG. 1 is a front elevational view of the cabinet.

FIG. 2 is a side elevational view of the cabinet.

FIG. 3 is a top plan view of the cabinet.

FIG. 4 is a vertical sectional view on an enlarged scale taken on line 4-4 of FIG. 1.

FIG. 5 is an exploded perspective view of components employed in the cabinet for treating the air therein.

Referring to the drawings, there is shown the cabinet 10 including a flat rectangular plastic base 12. Secured to the periphery of the base is a rectangular plastic frame 14. One strip 15 of a hinge 16 is secured by screws 18 to the rear of frame 14. The other strip 19 of the hinge is secured by screws 22 to the rear edge of a hood 25.

The hood 25 is a generally hemispherical dome-like transparent plastic member. It has an open bottom. The periphery 26 of the bottom is a rectangular flat flange. The hood is molded so that the walls of the hood blend smoothly from the upper hemispherical portion 28 to the bottom flat rectangular flange 26. The hood may be molded of an acrylic or other suitable transparent lightweight plastic material which is rigid when set. In the front side of the hood is a rectangular opening 30. This opening may be closed by a transparent curved, rectangular plastic door 32 having a flexible rubber molding 34 around its periphery adapted to fit snugly in the opening 30 and to seal the same hermetically. A flexible, flat rectangular gasket 35 is disposed on the base 12 just within the frame 14. The flat peripheral flange 26 of the hood rests on this gasket and is sealed hermetically all around by the gasket. Part of the frame 14 is omitted at the front of the cabinet as shown at 14' in FIG. 3, to facilitate mounting and removing the door 32 and to provide a flat work surface on the base 12 extending out to the front edge 12a under opening 30 in the hood.

At the top rear of the hood is a circular opening 40.

Mounted in this opening is an air treating assembly 45. The several parts of the assembly are shown in exploded view in FIG. 5. The assembly includes a transparent, cylindrical casing 46. The casing has an open outer end on which is an annular plate 48 having a circular opening 50 covered by a screen 52. Inside the casing 46 is a partition 54 having a rectangular opening 55. A duct frame 56 is secured to the partition and on the duct is mounted a motor driven fan 58 for blowing or driving air through the cabinet. The fan motor 59 is energized via an electric cable 60 which extends out of the frame 56 of the fan and through a hole 62 in the casing; see FIG. 4. The cable terminates at an electrical connector block 64 to which is connected electric supply cable 65. Cable 65 has a plug 66 adapted to be plugged into a suitable convenience power outlet 67 shown in FIG. 2.

A casing extension 70 has a cylindrical body which extends through opening 40 in the hood. This casing extension has a circular top 72 extending radially beyond the opening 40 and the cylindrical body 71. The casing 46 has an annular flange 74 formed at its bottom open end which is secured by bolts 76 and nuts 77 to the top 72 with a circular gasket 78 therebetween.

A rectangular air filter box 80 is disposed between partition 54 and top 72 of the casing extension for filtering air passing through the filter. Rectangular gaskets 82, 84 at top and bottom of the filter box are interposed to provide hermetic sealing. Brackets 85 are secured to the sides of the box 80. Bolts 90 have upper threaded ends 92 threaded in holes 93 in the partition 54. Nuts 94 on the bolts 90 engage the lower flange 57 of the duct frame 56 to hold it on the partition 54. The bolts 90 pass through holes 87 in the brackets to hold the filter box stationary and in alignment with the duct frame and fan. A rectangular duct 95 is disposed in alignment with the bottom opening of the filter box. The filter box 80 has removable air filter elements 81 for removing dust from the air supplied via fan 58.

Duct 95 is supported on a flange 96 formed on the bottom end of a lamp support 98. The lamp support has a cylindrical body 99 which frictionally engages the bottom open end of the casing extension body 71. A ring type of fluorescent illuminating lamp 100 is removably supported in spring fingers 102 secured to the outside of body 99. Lamp 100 may be an ultraviolet sterilizing lamp. Wires 103 are connected to lamp socket 104, to switch 106, and to power supply cable 108. Switch 106 is mounted on a plate 110 along with another switch 112 on the top of the hood at the front side of casing extension 70. The switches are easily accessible for turning the fan and lamp on and off. Switch 112 is connected in circuit with fan 58 and the power supply cable 108.

A terminal box 114 may be provided inside the hood at the rear bottom thereof. This box may have power outlet openings 116 to receive plugs of appliance or tools which may be required for use inside the cabinet. For example, a microscope with an illuminated stage may be required for use in the hood. The eyepieces of the microscope could extend out of opening 30 while the platform of the microscope would be illuminated by power supplied from terminal box 114. Alternatively, the terminal box could supply power for energizing soldering irons, welding tools, etc. If desired, an ultrasonic cleaning basin could be installed in the hood cabinet and would be energized by power supplied via terminal box 114. Plate 115 at the bottom rear of the hood supports wires 118 passing from connector block 64 to the terminal box.

The structure described above and assembled as shown in FIGS. 1-4 provides a clean air environment in which work may be performed. If desired, the door 32 may be provided with integrally mounted rubber sleeves and

gloves so that work can be done by an operator inside the hood while the hood remains hermetically sealed. The cabinet makes maximum use of ambient light since the hood is transparent to admit ambient light and to provide maximum visibility of the interior of the hood. When desired, the hood can be easily opened on its rear hinge, and the front door can be easily applied and removed. The hood may be formed of amber plastic material when lamp 100 provides ultraviolet illumination to protect the operator from excessive exposure to ultraviolet light while the beneficial effect of sterilization of the air inside the cabinet is maintained.

The cabinet provides in a simplified, economical structure a clean, sterile atmosphere for assembly, test and repair of mechanical and electrical devices, laboratory work, etc. Heretofore, such a work environment could only be provided by much more complex, bulky and expensive equipment.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claims.

Having thus described by invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. A dust-free work cabinet, comprising a flat base with a frame around the base, a one-piece, rigid, transparent molded plastic hood having a closed top and open bottom, said bottom having a peripheral flange, hinge means pivotally securing one edge of the flange to one edge of said base, resilient gasket means on said base hermetically sealing the open bottom of the hood to the base, said hood having an opening in one side thereof, said frame having a discontinuity at another edge of the base registering with said opening so that the base extends flat out to said other edge thereof, said hood having another opening in the top thereof, and an air treating assembly mounted in said other opening to maintain a treated atmosphere inside the hood, said assembly comprising a generally cylindrical casing having an extension passing axially through said other opening, said casing having open opposite outer and inner ends, an air blower disposed in the casing adjacent said outer end for drawing air into the hood, a dust-removing air filter disposed in alignment with said blower and receiving and passing air therefrom.

2. A dust-free work cabinet, comprising a flat base with a frame around the base, a one-piece, rigid, transparent molded plastic hood having a closed top and open bottom, said bottom having a peripheral flange, hinge means pivotally securing one edge of the flange to one edge of said base, resilient gasket means on said base hermetically sealing the open bottom of the hood to the base, said hood having an opening in one side thereof, said frame having a discontinuity at another edge of the base registering with said opening so that the base extends flat out to said other edge thereof, said hood having another opening in the top thereof, an air treating assembly mounted in said other opening to maintain a treated at-

mosphere inside the hood, said assembly comprising a generally cylindrical casing having an extension passing axially through said other opening, said casing having open opposite outer and inner ends, an air blower disposed in the casing adjacent said outer end for drawing air into the hood, a dust-removing air filter disposed in alignment with said blower and receiving and passing air therefrom, and a germicidal lamp disposed in axial alignment with said filter for sterilizing air passing from the filter into the hood through the inner open end of the casing.

3. A dust-free work cabinet, comprising a flat base with a frame around the base, a one-piece, rigid, transparent molded plastic hood having a closed top and open bottom, said bottom having a peripheral flange, hinge means pivotally securing one edge of the flange to one edge of said base, resilient gasket means on said base hermetically sealing the open bottom of the hood to the base, said hood having an opening in one side thereof, said frame having a discontinuity at another edge of the base registering with said opening so that the base extends flat out to said other edge thereof, said hood having another opening in the top thereof, an air treating assembly mounted in said other opening to maintain a treated atmosphere inside the hood, said assembly comprising a generally cylindrical casing having an extension passing axially through said other opening, said casing having open opposite outer and inner ends, an air blower disposed in the casing adjacent said outer end for drawing air into the hood, a dust-removing air filter disposed in alignment with said blower and receiving and passing air therefrom, a germicidal lamp disposed in axial alignment with said filter and supported by said casing for sterilizing air passing from the filter into the hood through the inner open end of the casing, electric circuit means connected to said lamp and blower for energizing the same, said circuit means including switches supported on the top of the casing for controlling the lamp and blower, and a terminal box located inside the hood, said box having electric outlets connected to said electric circuit.

4. In a dust-proof work cabinet having an opening, an air treating assembly mounted in said opening, said assembly comprising a hollow transparent cylindrical casing open at both ends, an annular plate at one end thereof, a screen in the opening in said plate, a partition across the interior of the casing, said partition having an opening, a duct frame in the latter opening, a motor driven fan on the top of the duct, an air filter box in the casing at one side of the partition, removable filter elements in said box, a lamp support at the other end of the casing and protruding outwardly thereof and a ring-type fluorescent illuminating lamp carried by said lamp support, and means for including said fan and said lamp in an electrical circuit.

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