April 14, 1970 C. D. GREER 3,505,945

KNOCK-DOWN FUME HOOD

Filed June 5, 1968 3 Sheets-Sheet 1

FIG. 1.

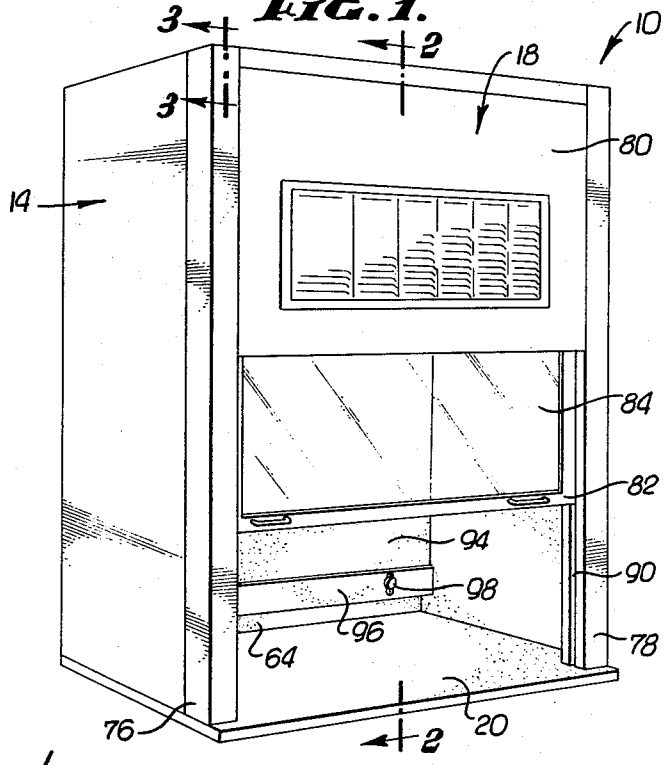


FIG. 12.

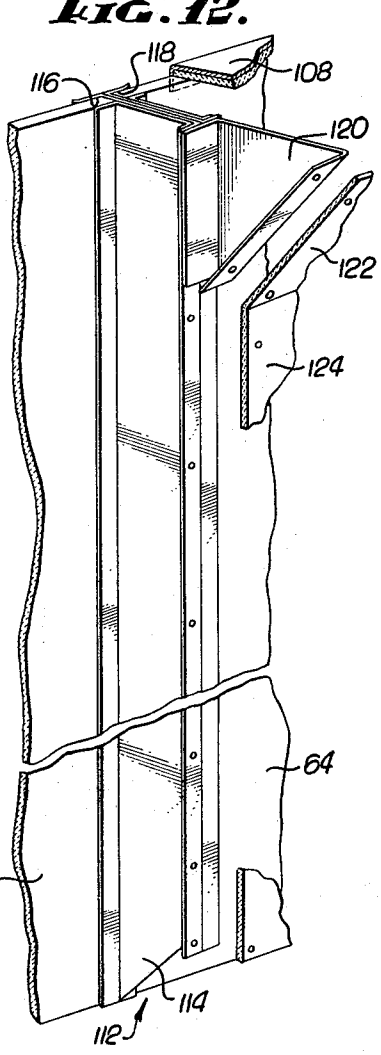


FIG. 10.

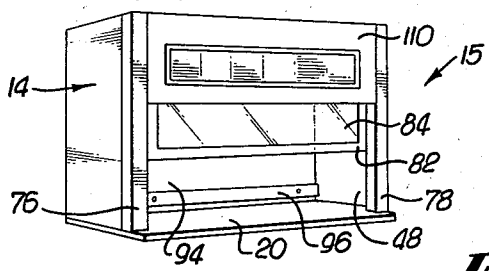
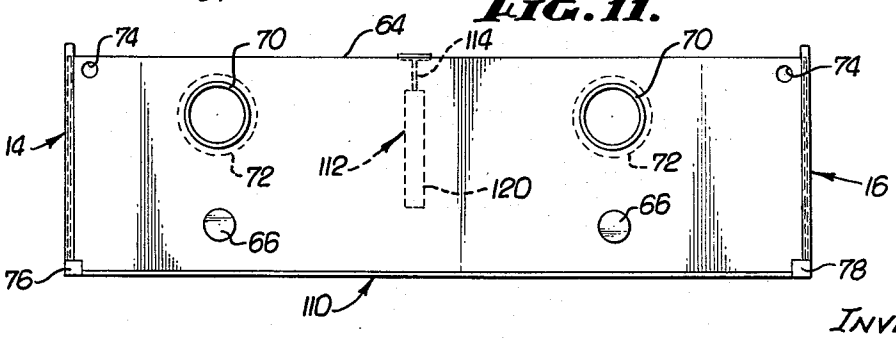


FIG. 11.



INVENTOR.
C. DOUGLAS GREER
By Beehler & Arant
ATTORNEYS.

April 14, 1970 C. D. GREER 3,505,945

KNOCK-DOWN FUME HOOD

Filed June 5, 1968 3 Sheets-Sheet 2

FIG. 2.

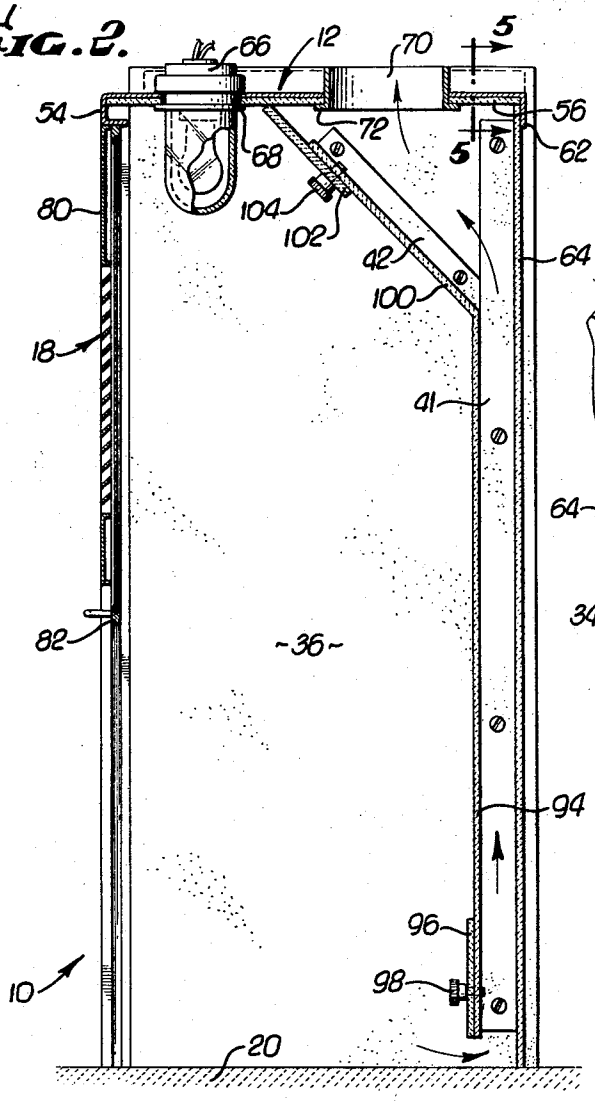


FIG. 3.

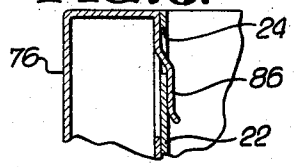


FIG. 4.

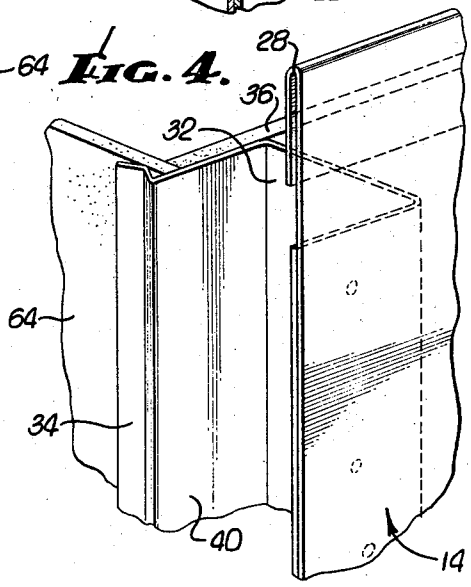


FIG. 5.

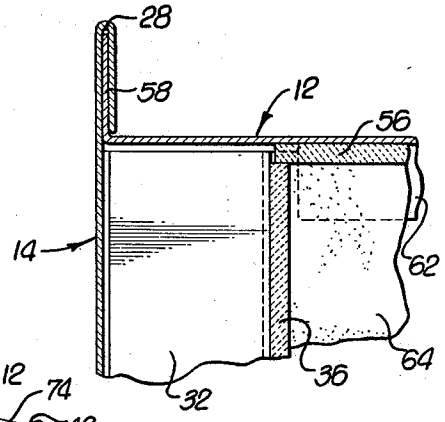


FIG. 8.

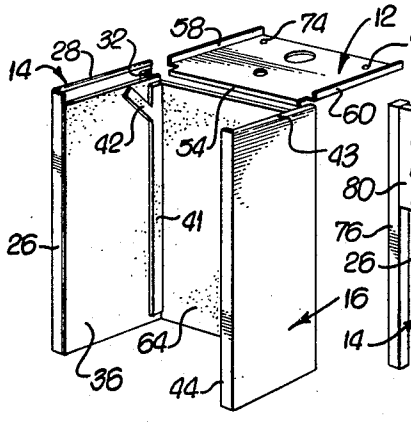
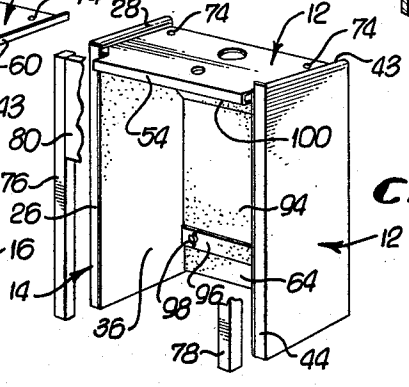


FIG. 9.



INVENTOR.
C. DOUGLAS GREER
By Beehler & Arant
ATTORNEYS.

April 14, 1970 C. D. GREER 3,505,945

KNOCK-DOWN FUME HOOD

Filed June 5, 1968 3 Sheets-Sheet 3

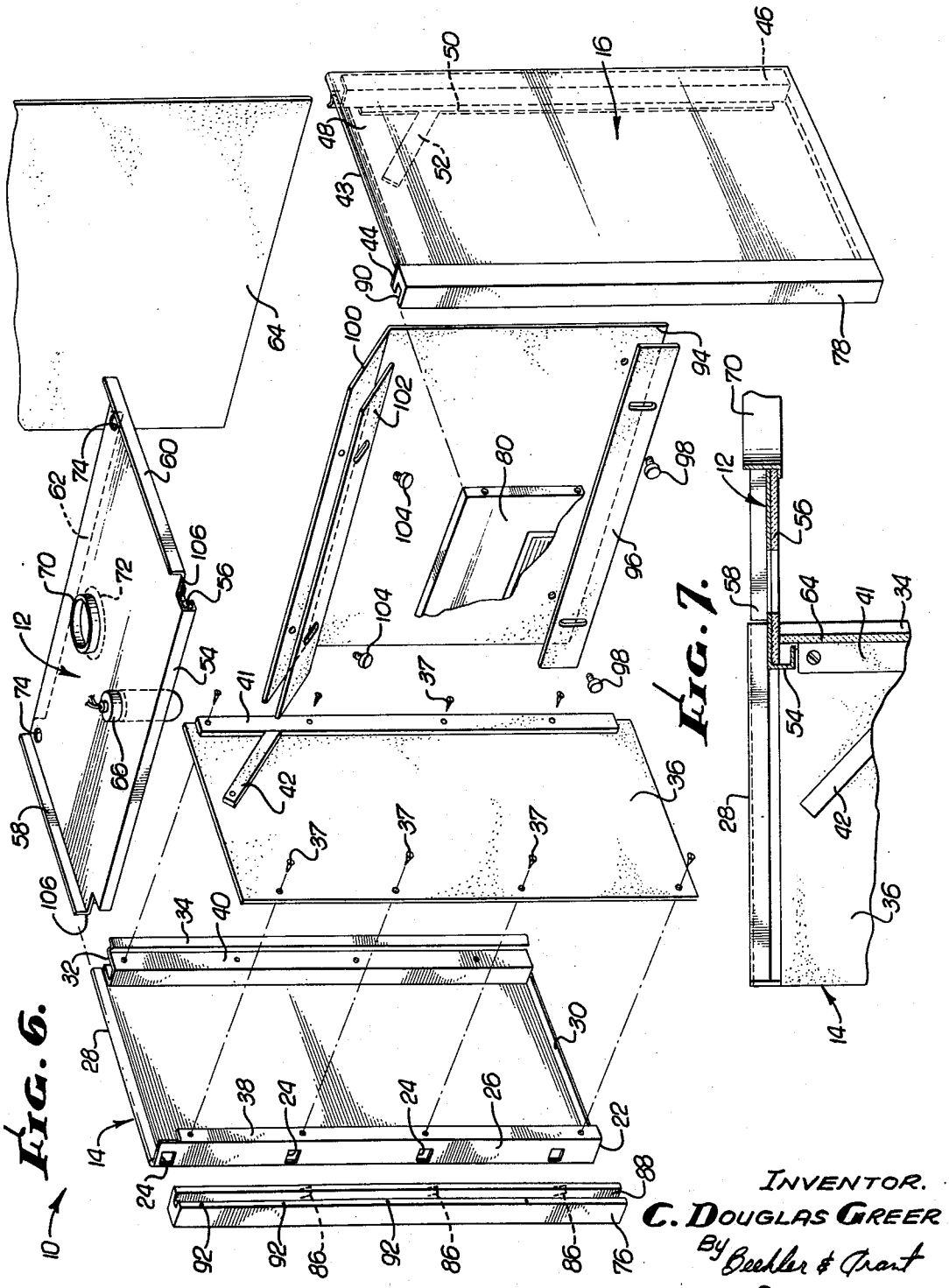


FIG. 6.

FIG. 7.

INVENTOR.
C. DOUGLAS GREER
By Beehler & Grant
ATTORNEYS.

United States Patent Office 3,505,945 Patented Apr. 14, 1970

3,505,945

KNOCK-DOWN FUME HOOD

Charles Douglas Greer, Sunland, Calif., assignor to Aerol Company, Inc., Los Angeles, Calif., a corporation of California

Filed June 5, 1968, Ser. No. 734,617
Int. Cl. F23j 11/00
U.S. Cl. 98—115 15 Claims

ABSTRACT OF THE DISCLOSURE

A fume hood comprising top, side and front panels; side, top and rear partitions; and baffle and damper partitions. Interlocking flanges and channels, formed on the top and side panels respectively, provide lateral support and ease of assembly and disassembly of the hood. The front panel has a plurality of finger members adapted for slidably engaging the inner front surfaces of the side panels so as to further increase the convenience of assembly and disassembly. The partitions are constructed from structurally rigid, heat and chemical resistant material and are mounted within the interior of the hood in such a manner to form a double wall structure possessing additional structural rigidity.

This invention relates generally to chambers which may be readily assembled and disassembled and more particularly to a knock-down fume hood.

In numerous manufacturing and testing operations it is sometimes required that a separate enclosure or hood be utilized to confine undesirable fumes and heat. Particularly in chemical operations, and to a lesser extent in electrical testing, such as destruction tests, relatively intense flash heat and annoying and sometimes dangerous fumes may be generated. Fume hoods satisfactory for usage in such operations should possess acceptable structural rigidity, be heat and chemical resistant, as well as incorporate means for effectively exhausting the fumes. Further, since in many cases the need for such a hood occurs only intermittently, it would be economical of space and time if the hood was so constructed as to be easily assembled and disassembled and if the disassembled parts were of such a shape and size that they could be stored in a minimum of space. Heretofore, numerous prior art chambers or hoods have possessed some of the just described requirements, but no single device has exhibited all of these requirements to the extent of the enclosure or fume hood in accordance with the subject invention.

Briefly, the subject invention comprises a chamber having interlocking panel members for ease of assembly and disassembly. Inner partitions of a structurally rigid, heat and chemical resistant material are mounted to the panels to form a double wall construction; and a pair of back partitions form a baffle structure having adjustable dampers for effective fume exhaustion. The panels and the partitions are of such a size and shape as to allow ease of assembly, disassembly, and for compact storage of the disassembled enclosure.

Therefore it is the general object of the present invention to provide an improved fume hood of the character described which possesses the above noted and other advantages.

A more specific object of the invention is to provide a functionally efficient fume hood which may be readily assembled, disassembled and stored.

Another object is to provide a fume hood which incorporates interlocking panels and double wall construction so as to combine ease of assembly with structural rigidity.

A further object is to provide a fume hood which is economical to manufacture, heat and chemical resistant and which includes an effective fume exhaust system.

With these and other objects in view, the invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained as herein set forth, pointed out in the appended claims, and illustrated in the accompanying drawings.

FIGURE 1 is a perspective view of a fume hood according to the invention.

FIGURE 2 is a sectional view taken on the line 2—2 of FIGURE 1.

FIGURE 3 is an enlarged sectional view taken on line 3—3 of FIGURE 1.

FIGURE 4 is an enlarged fragmentary perspective view of the left rear corner of the fume hood of FIGURE 1.

FIGURE 5 is an enlarged fragmentary sectional view taken on the line 5—5 of FIGURE 2.

FIGURE 6 is a perspective view of the disassembled component parts which comprise the fume hood of FIGURE 1.

FIGURE 7 is a fragmentary side view of the side and top panels, of the fume hood of FIGURE 1, in an aligned position prior to assembly.

FIGURE 8 is a perspective view of the assembled side panels and back partition with the top panel shown in an aligned position prior to assembly.

FIGURE 9 is a perspective view of the fume hood of FIGURE 1 with the front panel detached and partially cut away.

FIGURE 10 is a perspective view of a second embodiment of a fume hood according to the subject invention.

FIGURE 11 is a top view of the fume hood of FIGURE 10.

FIGURE 12 is an enlarged, fragmentary, perspective view of a central joining member incorporated into the back wall of the fume hood of FIGURE 10.

One embodiment of the fume hood, chosen for the purposes of illustration, according to the subject invention is shown in FIGURES 1 through 9 and is indicated generally by the reference numeral **10**. The fume hood **10** includes a top panel **12**, left and right side panels **14** and **16**, respectively, a front panel **18** and a base **20**. The top, side and front panels may be constructed from any suitable material, such as eighteen gauge sheet metal for example.

Referring primarily to FIGURE 6, the left side panel **14** has a channel **22** formed on the front edge thereof with a plurality of openings **24** in a front surface **26** of the channel **22**. The top edge of the panel **14** is folded inwardly to form a channel **28** (FIGURE 4), and the bottom edge has a support flange **30** formed thereon. Attached to the rear inner surface of the side panel **14** is a channel **32**, the inner edge of which extends inwardly as a V-shaped flange **34**.

A partition **36** is mounted to inner surfaces **38** and **40** of the channels **22** and **32**, respectively, by means of a plurality of screws **37** and a cleat **40**. A second cleat **42** is fastened diagonally to an upper portion of the partition **36**.

The right side panel **16** has a top channel **43**, a front channel **44**, a rear channel **46**, a partition **48**, a vertical cleat **50**, and a diagonal cleat **52** which are formed and/or mounted in a substantially identical manner to that just described for the corresponding parts of the left side panel **14**.

The top panel **12** has a channel **54** formed in the front edge thereof, with the channel **54** adapted for supporting the front edge of a top partition **56**. Upwardly turned flanges **58** and **60**, on the side edges of the top panel **12**, are adapted for slidably engaging the channel **28** and

43, respectively. A downwardly turned flange 62, formed at the rear surface of the top panel 12, is adapted for securing the top edge of a back partition 64. A light fixture 66 is mounted through an opening in the top panel 12 and a top partition 56 by means of a retaining nut 68. Also, an annual exhaust flange 70, having a collar 72, is mounted through the top panel 12 and the top partition 56 and may be secured to the panel 12 by spot welding, for example. Further, a pair of openings 74 are formed in the top panel 12 and in the top partition 56 so as to provide convenient access to the interior of the hood 10 for any required external connections. The openings 74 may be plugged when their use is not required.

As shown best in FIGURES 4 and 6, the side partitions 36 and 48 are mounted to the side panels 14 and 16, respectively, in such a manner that the back partition 64 may be slid into place from above and retained between the rear surfaces of the side partitions and the V-shaped flanges 34 and 47. It should be noted that all the partition and cleat members described herein may be constructed from any suitable material that possesses structural rigidity and is resistant to heat and to chemical fumes, such as asbestos cement sheeting, Flexboard, or Transite for example.

The front assembly 18 comprises a pair of post members 76 and 78, a louvered upper panel 80, a sash 82, and a window plate 84. The rear surface of the posts 76 and 78 have a plurality of finger members 86 attached thereto, which fingers are adapted for slidably engaging the inner surfaces of the flanges 38 and 44 through the openings 24, as shown best in FIGURE 3. The inner surfaces of the posts 76 and 78 have channels 88 and 90 formed therein with said channels being adapted for slidably mounting the sash 82.

To assemble the fume hood, in accordance with the subject invention, the sash 82 is positioned in the channels 88 and 90, and then the louvered upper panel 80 may be screwed to the posts 76 and 78 by means of a plurality of holes 92. Next the side panels 14 and 16, to which the side partitions have previously been attached, are mounted to the posts 76 and 78, respectively, and are secured by the attaching fingers 86. A lower baffle partition 94, which has a lower damper 96 attached thereto by means of adjustment bolts 98, may then be fastened to the inner edges of the cleats 40 and 50. Also, an upper baffle partition 100, which has an upper damper 102 attached thereto by means of adjustment bolts 104, may be fastened to the inner edges of the diagonal cleats 42 and 52. Next the back partition 64 is slid into place between the rear surfaces of the side partitions, and the assembly is completed by the insulation of the top panel 12. For the insulation of the top panel 12, the light fixture 66 is removed, and the flanges 58 and 60 on the top panel are aligned with the channels 28 and 43, respectively, as is seen best in FIGURES 7 and 8. The top panel is inserted through the side panel top channels until edges 106 of the top panel contact the inner front surfaces of the channels 22 and 44. With the top panel 12 so assembled, the top partition 56 is supported by the top surfaces of the side and back partitions; and the back partition 64 is secured at the top thereof by the flange 62 at the rear of the top panel 12. Finally the light fixture 66 may be installed by means of the mounting nut 68. The fume hood 10 may be readily disassembled by reversing the assembly steps just described.

According to a second embodiment of the subject invention, a fume hood, indicated generally by the reference numeral 15, is shown in FIGURES 10, 11 and 12 in which component parts similar to those of the fume hood 10 are assigned like reference numerals. In the fume hood 15, a top panel 108 and a front panel 110 are extended in length compared to the corresponding parts of the fume hood 10. Further, the fume hood 15 comprises a joining member 112 which has a base structure 114 of a general I-beam shape, opposingly faced channels 116 and 118 formed in the rear surfaces thereof, and an angled flange 120 attached to the front surface thereof. The top surface of the joining member 112 provides additional support to the top panel 108 and to the upper and lower damper partitions 122 and 124, which partitions may be secured to the front surface of the angled flange 120. The channels 116 and 118 allow individual sections of the back partitions 64 to be utilized so that the back partition may be more readily handled in the extended embodiment of the fume hood 15.

Thus, there has been described and illustrated a fume hood that incorporates interlocking panels for ease and simplicity of assembly, disassembly and storage. The inner partitions of the fume hood, according to the invention, provide structural rigidity as well as resistance to heat and chemical fumes. The exhaust system, formed by the back partition and the baffle partitions, include upper and lower damper which may be individually adjusted to regulate the exhaust of fumes which are lighter and heavier than air, respectively. The unique combination of the interlocking panels and the double wall construction, in which the inner partitions serve functional as well as structural purposes, provide a fume hood which is economical to manufacture, convenient and efficient to use and store, and which is fully capable of obtaining the several objects and advantages primarily set forth.

While the invention has herein been shown and described in what is conceived to be the most practical and preferred embodiments, it is recognized that departures may be made therefrom within the scope of the invention.

Having described the invention, what is claimed as new in support of the Letters Patent is:

1. A chamber comprising:
a pair of side panels with each side panel having a channel formed on the top edge thereof;
a front panel adapted for being releasably mounted to front surfaces of said pair of said panels;
a top panel having flanges formed on two sides thereof, said flanges being adapted for engaging the top channels on said side panels;
a back partition;
means for supporting said back partition so that said back partition is secured by said side panels and said top panel;
said side panels each have a front channel formed at the front edge thereof with a plurality of ports formed in the front surface of each of said front channels, and said front panel having a plurality of finger members with each finger member being adapted for slidably engaging inner surfaces of said front channels through a different one of said ports, whereby said front panel may be releasably mounted to said pair of side panels.

2. A chamber as in claim 1 further comprising a pair of rear channels with one of said rear channels attached to the rear portion of each of said side panels, and each of said rear channels having a flange projecting inwardly of said chamber; a pair of side partitions with one of said side partitions attached to inner surfaces of the front and rear channels on each of said side panels; and a downwardly turned flange formed on the rear portion of said top panel, wherein said means for supporting said back partition includes the rear edges of said side partitions, the flanges on said rear channels and the downwardly turned flange on said top panel.

3. A chamber as in claim 2 further comprising a channel inwardly formed on the front surface of said top panel; and a top partition adapted for being supported by the channel on said top panel along a first edge, and by the top surfaces of said side and back partitions at the other edges of said top partition.

4. The chamber as in claim 3 wherein said front panel includes a movable section adapted for providing access to said chamber.

5. The chamber as in claim 4 wherein said front panel

further includes a louvered section, and wherein said movable section comprises a sash slidably mounted in said front panel.

6. The chamber as in claim 4 further comprising a mounting base, and wherein said partitions and said base are constructed from a substantially rigid, heat and chemical resistant material and said panels are constructed from sheet metal.

7. A fume hood which may be readily assembled, disassembled, and stored in sections comprising:

a pair of side panels with each side panel having a U-shaped channel formed on the top edge thereof;

a front panel adapted for being releasably mounted to the front surfaces of said pair of side panels;

a top panel having upwardly turned flanges formed on two sides thereof, said flanges being adapted for slidably engaging said top channels on said side panels;

a back partition;

means for supporting said back partition so that said back partition is secured by said side panels and said top panel;

a baffle assembly mounted adjacent to said back partition;

an exhaust port formed in said top panel so that said exhaust port is located above an area defined by the front surface of said back partition and the rear surface of said baffle assembly, when said fume hood is assembled;

said baffle assembly including upper and lower baffle sections, and upper and lower damper plates adjustably mounted to the upper and lower baffle sections, respectively.

8. A fume hood which may be readily assembled, disassembled, and stored in sections comprising:

a pair of side panels with each side panel having a U-shaped channel formed in the top edge thereof;

a front panel adapted for being releasably mounted to the front surfaces of said pair of side panels;

a top panel having upwardly turned flanges formed on two sides thereof, said flanges being adapted for slidably engaging said top channels on said side panels;

a back partition;

means for supporting said back partition so that said back partition is secured by said side panels and said top panel;

a baffle assembly mounted adjacent to said back partition;

an exhaust port formed in said top panel so that said exhaust port is located above an area defined by the front surface of said back partition and the rear surface of said baffle assembly, when said fume hood is assembled;

a pair of rear channels with one of said rear channels attached to the rear portion of each of said side panels, and with each of said rear channels having a flange projecting inwardly of said chamber; a pair of front channels with one of said front channels attached to the front portion of each of said side panels; a pair of side partitions with one side partition attached to the inner surfaces of the front and rear channels on each of said side panels; and a downwardly turned flange formed on the rear portion of said top panel; wherein said means for supporting said back partition includes the rear edges of said side partitions, the flanges on the rear channels, and the downwardly turned flange on said top panel.

9. The fume hood of claim 8 further comprising a pair of vertical cleats with one of said vertical cleats attached to the rear portion of each of said side partitions; a pair of diagonal cleats with one of said diagonal cleats mounted to the upper rear portion of each of said side partitions; and wherein said baffle assembly includes upper and lower baffle partitions with said upper baffle partition adapted for attaching to the inner edge of said diagonal cleats and said lower baffle partition adapted for attaching to the inner edges of said vertical cleats.

10. The fume hood of claim 8 wherein said pair of front channels on each of said side panels have a plurality of ports formed in the front surface thereof, said front panel has a plurality of finger members with each finger member being adapted for slidably engaging inner surfaces of said front channels through a different one of said ports, whereby said front panel may be releasably attached to said pair of side panels.

11. The fume hood of claim 10 further comprising a channel inwardly formed on the front surface of said top panel; and a top partition adapted for being supported by said channel in said top panel along a first edge and by said top surfaces of said side and back partitions along the remaining edges of said top partition, and with said top partition having a port formed therein, said port being adapted for aligning with said exhaust port.

12. The fume hood of claim 11 wherein said front panel includes a movable section adapted for providing access to said chamber, and further comprising a mounting base, and wherein said top, side, back, baffle, and damper partitions and base are constructed from a substantially rigid, heat and chemical resistant material and said panels are constructed from sheet metal.

13. The fume hood of claim 12 further comprising an annular flange having a collar, with said annular flange adapted for mounting in said exhaust port in said top panel and in said top partition; at least one access opening formed in said top panel and said top partition; and a light fixture adapted for mounting in said opening.

14. The fume hood of claim 8 wherein said back partition comprises at least two sections; and further comprising a joining member having a front surface with a vertical lower portion and an angled upper portion, and a pair of oppositely facing channels formed in each rear side surface of said joining member, whereby each section of said back partition is supported on one end between one of said side partitions and one of said V-shaped flanges and is supported on the other side by one of the channels formed in said joining member.

15. The fume hood of claim 14 further comprising a pair of vertical cleats with one of said vertical cleats attached to the rear portion of each of said side partitions; a pair of diagonal cleats with one of said diagonal cleats mounted at the upper rear portion of each of said side partitions, and wherein said baffle assembly includes upper and lower baffle partitions, with said upper baffle partition adapted for attaching to the inner edge of said diagonal cleats and to the surface of the angled upper portion of said joining member; and said lower baffle partition being adapted for attaching to the inner edges of said vertical cleats and to the surface of the lower portion of said joining member.

References Cited

UNITED STATES PATENTS

2,715,359	8/1955	Mackintosh.	
3,000,292	9/1961	Wojam.	
2,072,383	3/1937	Rottman	312—263

MEYER PERLIN, Primary Examiner

U.S. Cl. X.R.

312—263