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(54) Title: FLUSH MOUNT BAFFLE FOR FINISHED CEILINGS AND WALLS

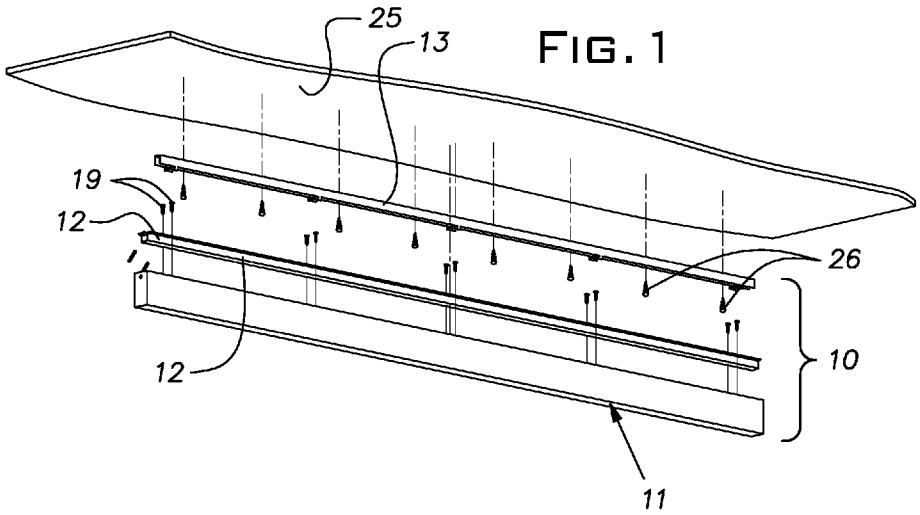

FIG. 1

(57) Abstract: A baffle assembly for installation on a finished ceiling or wall membrane comprising an elongated base and an elongated panel mountable on the base, the base having fastening areas spaced along its length for receiving fasteners therethrough and anchored on the membrane, the panel having front and rear edges bounding a width of the panel, the panel having a hollow space at the rear edge extending along substantially the full length of the panel, the hollow space being constructed and arranged to receive the base and the base being constructed and arranged upon reception in the hollow to laterally stabilize the panel, the base and panel having interengaged part s concealed in the hollow that maintain the panel on the base.

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FLUSH MOUNT BAFFLE FOR FINISHED CEILINGS AND WALLS

BACKGROUND OF THE INVENTION

The invention relates to baffles having aesthetic and sound absorbing qualities.

PRIOR ART

In recent times, acoustical baffles have been hung from suspended ceilings or where no such ceiling exists from overhead building structure. Prior baffle systems for walls and finished ceilings have been complex, relatively expensive to manufacture, and not easily installed. PET felt has been utilized to form baffles due to its sound absorbing character and self-supporting structure. Until now, as far as known, no inexpensively manufactured and easily installed baffle system for finished ceilings and walls has been available.

SUMMARY OF THE INVENTION

The invention provides a system for mounting acoustic baffles on finished ceilings and walls that is relatively simple to manufacture and install. A completed installation provides a flush mounted baffle having an aesthetically clean appearance with no visible fasteners or bracketry.

In the disclosed arrangement the baffle includes a board of needled polyethylene terephthalate (PET) fibers that is grooved and folded into an elongate U-shaped form. Two elongate sheet metal channels form the other principal parts of the inventive baffle assembly. One of the metal channels has a hat-shaped cross-section that all but its "brim" elements are received in the interior of the folded fibrous board. The "brim" elements are each fastened to the board edges at its open or rearward

face. The other metal channel has a plain U-shape and is proportional to fit closely into the hat channel. Free edges of the flanges of the U-shaped channel have integral hooks.

During installation of the baffle, the U-shaped channel is first fixed to a ceiling or wall, with its flanges projecting outwardly using suitable mechanical fasteners. The board fitted with the hat channel is assembled over the fixed channel. The hat channel has slots engaged by the hooks of the fixed channel so as to fix the board to the ceiling or wall. The "brim" elements of the hat channel do not extend beyond the width of the folded board so that in a completed installation all parts of the metal channels and any related fasteners are covered by the folded board.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded isometric view of the baffle assembly;

FIG. 2 presents fragmentary isometric views of parts of the baffle assembly;

FIG. 3 is similar to FIG. 2 with baffle parts in assembled relation; and

FIG. 4 is a cross-sectional view of the baffle assembly installed on a ceiling or wall.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A baffle assembly 10 has three principal, elongate parts comprising a board 11, an insert 12 and a base 13 all of essentially the same length. The board 11 is an elongated rigid body, preferably made of porous structure such as commercially available needled PET fiber of a nominal thickness of about one-half inch (12 mm). Ideally, the board 11 is formed of a single continuous

sheet or panel that is folded on lines 17 parallel to its edges 14. To enable this folded structure, the board 11 is cut with a 90 degree notch at each fold 17 with a depth leaving a continuous web of a thickness of about .020 inch. The insert channel 12 has the cross-section of a hat. "Brim" elements 18 of the channel 12 are fixed with screws or like mechanical fasteners 19 to the board edges 14 and the remainder of the channel fits widthwise and is fixed in a hollow 22 formed between sides 23 of the U-shaped board 11 (FIG. 4).

The base channel 13 is attached to a finished ceiling or wall hereafter sometimes referred to as a membrane 25 with suitable mechanical fasteners 26, with its web, designated 27, abutting the ceiling or wall, extending through associated holes in the web 27 (FIG. 4). The channels 12, 13 are proportioned so that the base channel 13 slides into the insert channel 12 with a small clearance fit of about .010 to .015 inch. Distal edges of flanges 28 of the base channel 13 are formed with regularly spaced hooks 29, oriented upright when mounted on a wall. A web or "top" element 30 of the insert channel 12 is formed with longitudinally oriented spaced slots 31 located to receive and catch the base channel hooks 29. Longitudinal edges of the hooks 29, proximal to the web 27, are configured so that they are closer to the web as the edge is closer to the base of the hook so that the insert channel 12, and therefor the baffle or board 11 is drawn tightly against the supporting membrane 25. By attaching the hat or insert channel 12 to the edges 14 of the board 11, the channels 12, 13 can be used with a folded board 11 of any depth or projection from a ceiling or wall 25 beyond the projection of the insert 12.

With reference to FIG. 3, sheet metal extending from the insert "top" portion or web 30, at one end of the insert channel 12 is bent to close the respective channel end and to provide an angled tab 32 that abuts a beveled surface on an end cap 36 of the same porous material as that of the board 11. A screw or other mechanical fastener 35 (FIG. 2) is inserted in an inclined small pilot hole in the cap end cap 36 and an aligned hole in the angled tab 32 and driven into the ceiling or wall membrane to which the assembly 10 is mounted thereby releasable locking the baffle assembly in place. Owing to the fibrous nature of the board material, the small pilot hole in the end cap will return to its original size and conceal the fastener.

It should be evident that this disclosure is by way of example and that various changes may be made by adding, modifying or eliminating details without departing from the fair scope of the teaching contained in this disclosure. The invention is therefore not limited to particular details of this disclosure except to the extent that the following claims are necessarily so limited.

WHAT IS CLAIMED IS:

1. A baffle assembly for installation on a finished ceiling or wall membrane comprising an elongated base and an elongated panel mountable on the base, the base having fastening areas spaced along its length for receiving fasteners therethrough and anchored on the membrane, the panel having front and rear edges bounding a width of the panel, the panel having a hollow space at the rear edge extending along substantially the full length of the panel, the hollow space being constructed and arranged to receive the base and the base being constructed and arranged upon reception in the hollow to laterally stabilize the panel, the base and panel having interengaged parts concealed in the hollow that maintain the panel on the base.

2. A baffle assembly as set forth in claim 1, wherein the interengaging parts are constructed to interengage when the cover is moved longitudinally relative to the base.

3. A baffle assembly as set forth in claim 2, wherein the interengaging parts include hook elements on one of the base and panel members and hook catches on the other member.

4. A baffle assembly as set forth in claim 1, wherein the panel is U-shaped in cross-section such that the sides and the front edge thereof are of essentially uniform thickness.

5. A baffle assembly as set forth in claim 1, wherein the panel includes sound absorbent fiber.

6. A baffle assembly as set forth in claim 1, wherein the base is formed of sheet metal and has a U-shaped cross-section with two flanges and an intermediate web, the web providing said fastener receiving areas.

7. A baffle assembly as set forth in claim 6, wherein the base flanges provide said hooks and a sheet metal channel fixed in said hollow provides slots that form said hook catches.

8. A baffle assembly as set forth in claim 6, wherein the channel has spaced flanges extending from a common web and outwardly disposed portions at free ends of said channel flanges, the portions abutting and being secured to associated rear edge portions of the panel on opposite sides of the hollow.

9. In combination, a baffle and a mounting base for the baffle, the baffle being formed of an elongated porous board with two parallel longitudinal notches generally equally spaced from a longitudinal center of the board and on an inner face of the board, the board being folded at said notches into a U-shaped cross-section with parallel sides, an end face between said sides, and an opening between said sides remote from said end face, an elongated sheet metal insert of hat-shaped cross-section in said opening, parts of the insert corresponding to a hat brim secured to edges of the board at said opening, a part of the insert corresponding to a hat top having longitudinally oriented slots open to an interior of a space formed between said board sides, the mounting base being formed of sheet metal bent into a U-shaped cross-section with sides and a common web, a distance across the base sides being less than a distance

between sides of the insert corresponding to sides of a hat, free edges of the base sides forming hooks registerable with the slots of the insert and being capable of securing the baffle to the base, the base web being capable of receiving fasteners to attach the base to a wall or ceiling membrane.

10. The combination of claim 9, wherein the top hat channel at one end has an angled tab joined to the web, covered by material the same as the board and adapted to receive a locking screw that can be driven into the ceiling or wall membrane.

AMENDED CLAIMS
received by the International Bureau on 17 January 2023 (17.01.2023)

WHAT IS CLAIMED IS:

1. A baffle assembly for installation on a finished ceiling or wall membrane comprising an elongated base and an elongated panel mountable on the base, the base having fastening areas spaced along its length for receiving fasteners therethrough and anchored on the membrane, the panel having front and rear edges bounding a width of the panel, the panel having a hollow space at the rear edge extending along substantially the full length of the panel, the hollow space being constructed and arranged to receive the base and the base being constructed and arranged upon reception in the hollow to laterally stabilize the panel flush against the membrane, the base and panel having interengaged parts fully concealed in the hollow that maintain the panel on the base.

2. A baffle assembly as set forth in claim 1, wherein the interengaging parts are constructed to interengage when the cover is moved longitudinally relative to the base.

3. A baffle assembly as set forth in claim 2, wherein the interengaging parts include hook elements on one of the base and panel members and hook catches on the other member.

4. A baffle assembly as set forth in claim 1, wherein the panel is U-shaped in cross-section such that the sides and the front edge thereof are of essentially uniform thickness.

5. A baffle assembly as set forth in claim 1, wherein the panel includes sound absorbent fiber.

6. A baffle assembly as set forth in claim 1, wherein the base is formed of sheet metal and has a U-shaped cross-section with two flanges and an intermediate web, the web providing said fastener receiving areas.

7. A baffle assembly as set forth in claim 6, wherein the base flanges provide said hooks and a sheet metal channel fixed in said hollow provides slots that form said hook catches.

8. A baffle assembly as set forth in claim 6, wherein the channel has spaced flanges extending from a common web and outwardly disposed portions at free ends of said channel flanges, the portions abutting and being secured to associated rear edge portions of the panel on opposite sides of the hollow.

9. In combination, a baffle and a mounting base for the baffle, the baffle being formed of an elongated porous board with two parallel longitudinal notches generally equally spaced from a longitudinal center of the board and on an inner face of the board, the board being folded at said notches into a U-shaped cross-section with parallel sides, an end face between said sides, and an opening between said sides remote from said end face, an elongated sheet metal insert of hat-shaped cross-section in said opening, parts of the insert corresponding to a hat brim secured to edges of the board at said opening, a part of the insert corresponding to a hat top having longitudinally oriented slots open to an interior of a space formed between said board sides, the mounting base being formed of sheet metal bent into a U-shaped cross-section with sides and a common web, a distance across the base sides being less than a distance between sides of the insert corresponding to sides of a hat, free edges of the base sides forming hooks registerable with the

slots of the insert and being capable of securing the baffle to the base, the base web being capable of receiving fasteners to attach the base to a wall or ceiling membrane.

10. The combination of claim 9, wherein the top hat channel at one end has an angled tab joined to the web, covered by material the same as the board and adapted to receive a locking screw that can be driven into the ceiling or wall membrane.

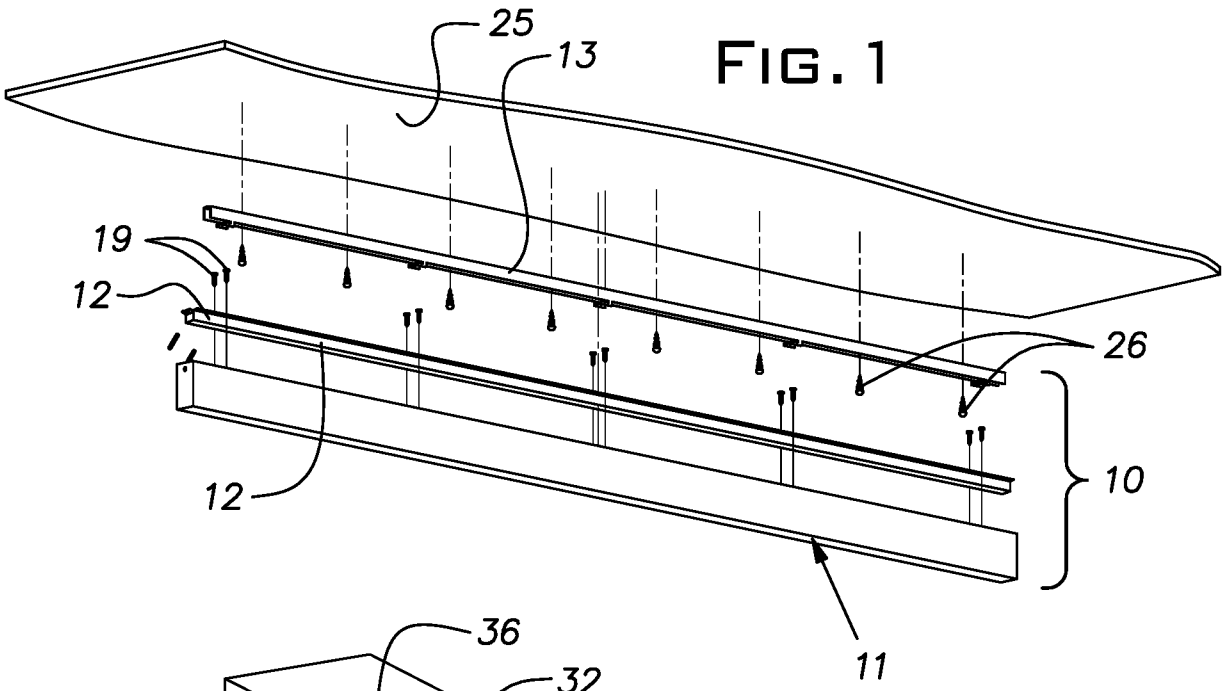
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FIG. 1

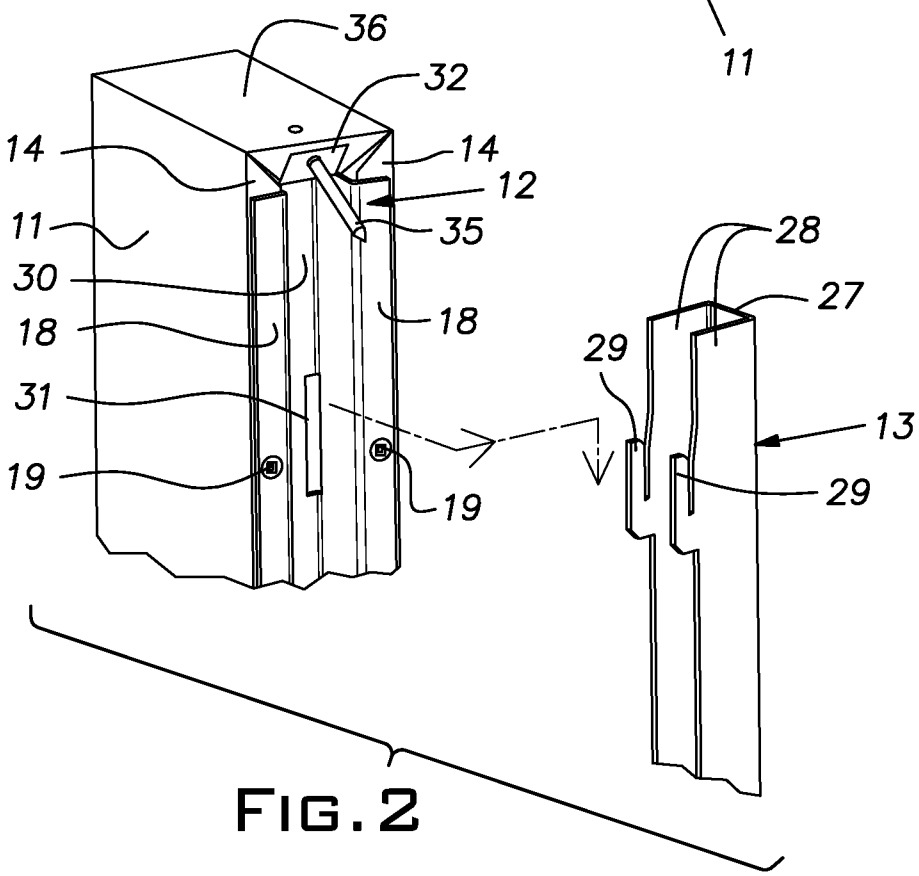
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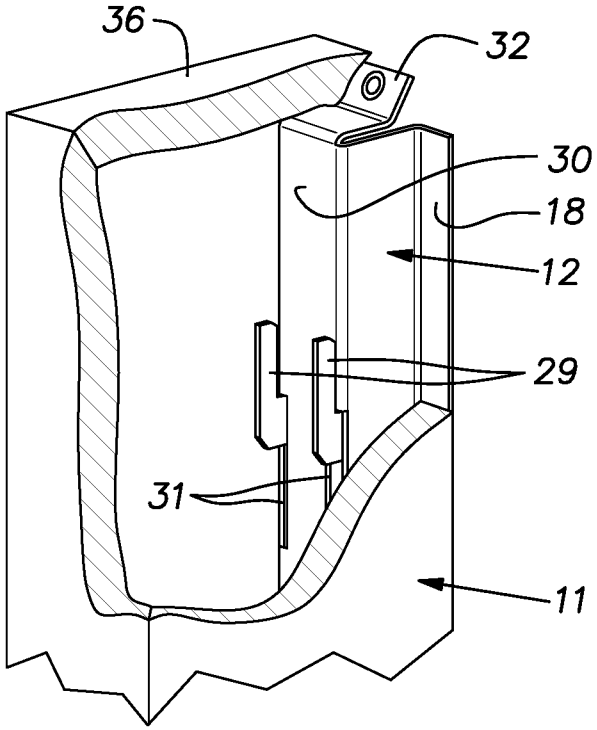
FIG. 2

FIG. 3



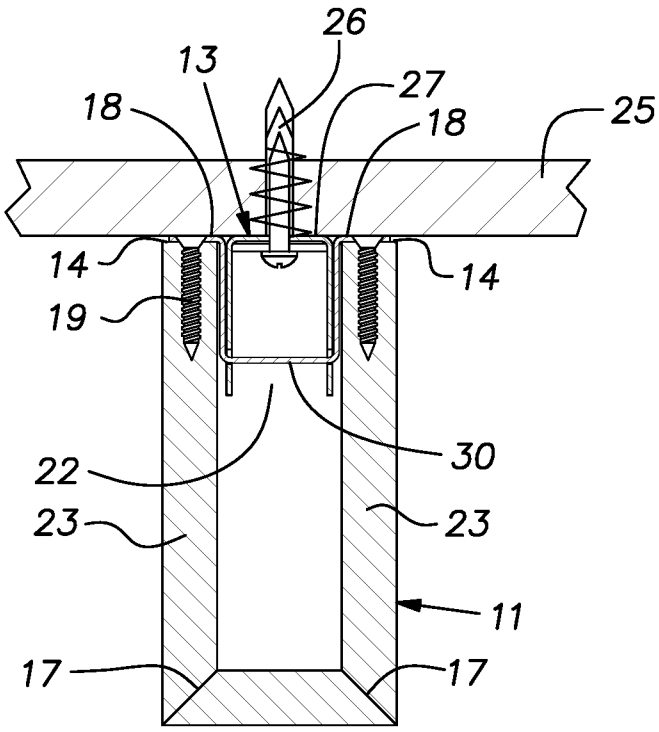


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2022/076561

A. CLASSIFICATION OF SUBJECT MATTER
INV. E04B9/36 E04B9/00 E04B9/04
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2021/083863 A1 (HUNTER DOUGLAS IND BV [NL]) 6 May 2021 (2021-05-06)	1-9
A	figures 1-10	10
	page 2, line 12	

X	US 10 359 163 B1 (HETTWER STEPHEN [US] ET AL) 23 July 2019 (2019-07-23) figures 1-11	1-6

X	US 2011/232219 A1 (WILKINSON JR EDGAR L [US] ET AL) 29 September 2011 (2011-09-29) figures 1-5	1-6

X	US 10 174 501 B1 (UNDERKOFLER ABRAHAM M [US] ET AL) 8 January 2019 (2019-01-08) figures 1-8	1-4,6

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
25 November 2022	05/12/2022

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Petrinja, Etiel

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2022/076561

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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