April 1, 1969 R. C. GREENHECK 3,435,911

ACOUSTIC CURB

Filed Nov. 14, 1966

FIG. 1

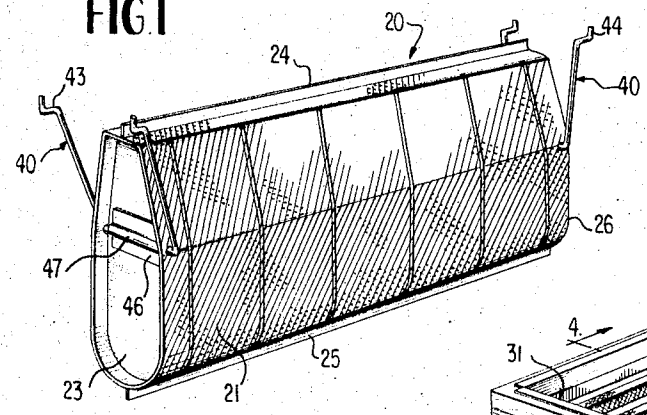
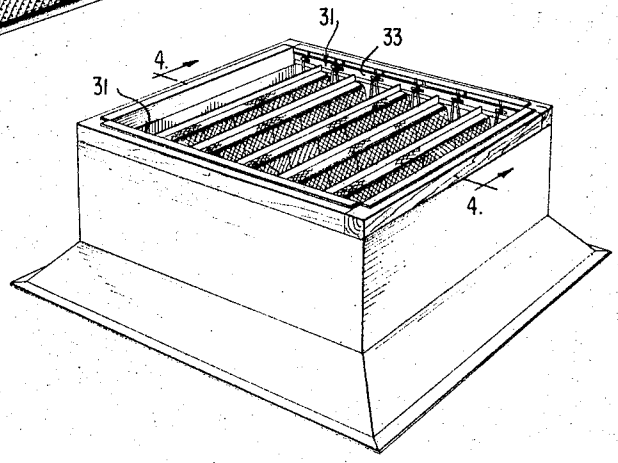



FIG. 2



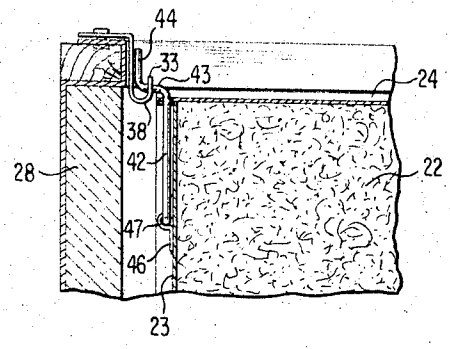




FIG. 3

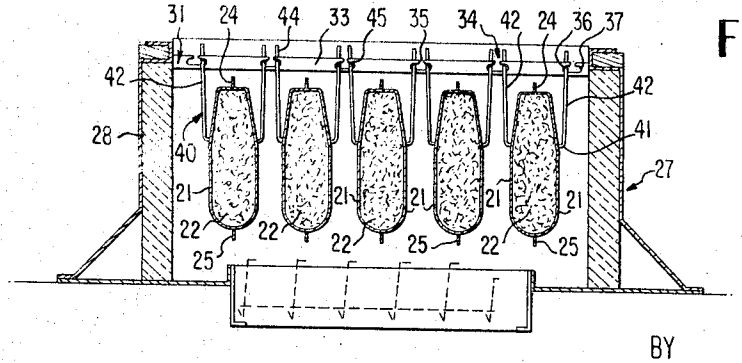



FIG. 4

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United States Patent Office 3,435,911
Patented Apr. 1, 1969



3,435,911

# ACOUSTIC CURB

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Filed Nov. 14, 1966, Ser. No. 593,848
Int. Cl. F01n 1/10
U.S. Cl. 181—50 5 Claims

This invention relates to an acoustic curb for use with a fan. More particularly, this invention relates to an acoustic curb having a plurality of removeably mounted aligned baffles of high sound absorption characteristics positioned in the body of the curb to define uninterrupted substantially straight flow paths therethrough. The curb is preferably installed immediately downstream of a fan; on roofs, the curb connects between the building duct and the fan.

The design enables prefabrication of a structure of high quality with the added advantage of providing a simple removable suspension system for the baffles.

In-line sound absorbing baffles have been used previously and are exemplified by those shown in the Patent No. 3,219,143 of Nov. 23, 1965.

The instant invention produces a low resistance of about 7 percent reduction in cubic feet per minute and about a 50 percent reduction in sound or sone value. The baffles themselves are self-contained permanently constructed units and are uniquely attached to the curb body to facilitate installation and removal. In this manner, cleaning, when required, or replacement is facilitated. The baffles in the form of an elongated panel include an outer envelope of perforated aluminum sheeting, end plates which serve as formers during manufacture of the unit and fiber glass wool in the envelope. Preferably, the baffle connection means are at each end of the baffle and comprise a resilient U-shaped wire member, the bight of which is attached to the midsection of a baffle end plate with the legs engaging open-ended keyhole slots in the supporting means at the upper portion of the curb body; the legs when in engagement with said slots being in a distorted condition.

The sound curb is normally mounted between an inlet and an exhaust fan and a major use is with roof fans.

These and further objects and advantages of the present invention will become more apparent upon reference to the following specification, appended claims and drawings wherein:

FIGURE 1 is a perspective view of the baffle;

FIGURE 2 is a perspective view of the acoustic curb with the baffles in operative position;

FIGURE 3 is a fragmentary cross-sectional view of a portion of a baffle in operative position within the curb with its outer envelope removed, and

FIGURE 4 is a cross-section of the acoustic curb taken on lines 4—4 of FIGURE 2.

Referring now to the drawings, it will be seen that the instant invention includes a prefabricated baffle **20** made up of an envelope **21** of perforated aluminum sheeting filled with fiber glass wool **22** with its ends joined to end plates **23** and with top and bottom fins **24**, **25** further rigidifying the integrated structure. The baffle **20** has a rounded downstream end **26** for reducing turbulence and for producing smooth in-line flow paths between the inlet and outlet of the curb body **27**. The curb body **27** is preferably rectangular having side walls **28**, the upper portions of a pair of opposed side walls having supporting means **31**. The end portions of each baffle **20** are provided with connection means **40** which are removably connected with the supporting means **31** for rigidly positioning and suspending the baffle **20** within the curb body **27**.

Preferably, the supporting means **31** is provided by a pair of upwardly extending support flanges **33** on opposing



side walls, each connected to the upper portion of the curb body by a U-shaped inner part **38** which extends inwardly to the inner face of the side wall **28**. Each support flange **33** has a series of open-ended keyhole slots **34** predeterminedly spaced therealong. Each slot **34** includes a narrow outer passage **35** extending downwardly from the top edge of the flange seats **36** and **37** which extend substantially horizontally therefrom.

Each resilient member **40** at the end plate **23** of the baffle **20** is preferably in the form of a U-shaped wire member, the bight **41** of which extends horizontally of and is attached to the end plate **23** at about the vertical midsection thereof for stabilizing the suspended baffle. The legs **42** of the U-shaped member **40** extend upwardly into interlocked relationship with the flange **33**.

Each leg **42** includes a horizontal portion **43** and a terminal vertical portion **44**, the horizontal portion **43** being seated in the slot **34** and the vertical portion extending upwardly behind the lug **45** of the flange **33** and terminating above the flange to define a handle for facilitating the manipulation of the wire member upon installation or removal of a baffle.

Because of tolerance variations, it is preferred that the wire member **40** be pivotally mounted at its bight **41** to the baffle end plate **23**, this being accomplished through the strap **46** affixed to the end panel which provides a bearing **47** for the bight.

Upon installation each keyhole slot **34** receives and seats two legs **42** and as shown in FIG. 4 the preferred embodiment involves the seating of adjacent legs of adjacent panels or baffles in each slot. The legs **42** are somewhat resilient and are normally spaced apart a distance less than the distance between adjacent inner seats of two adjacent keyhole slots **34**. The legs **42**, therefore, are in a distorted condition when in seated position in seats **36** and **37** exerting a force horizontally away from their respective outer passages.

The resultant structure suspends each baffle in a rigid fashion enabling no significant movement thereof as air flows through the curb.

I claim:

**1.** An acoustic curb for a fan comprising a curb body having an inlet and an outlet and having opposed side walls, a pair of upwardly extending support flanges disposed along the upper portions of the inner faces of a pair of opposed side walls, each flange having a series of open-ended slots predeterminedly spaced therealong, a plurality of suspended baffles, each baffle having high sound absorption characteristics and being substantially in the form of an elongated panel having end plates, resilient members attached to the end plates of each panel and removably interlocked in their respective open-ended slots, said plurality of baffles being suspended within said curb to define uninterrupted substantially straight flow paths between said inlet and outlet.

**2.** An acoustic curb for a fan as defined in claim **1** and wherein the resilient members for the end plates each include a U-shaped wire member, the bight of the U-shaped wire member extending horizontally and being attached to an end plate at about its vertical midsection for stabilizing the suspended baffle, and the legs of the U-shaped member extending upwardly to interlocked condition in said slots.

**3.** An acoustic curb for a fan as defined in claim **2** and wherein each open-ended slot includes a narrow outer passage in communication with a pair of opposed inner seats extending substantially horizontally therefrom, the legs in seated position being in a distorted condition and exerting a force horizontally away from their respective outer passages, adjacent legs of adjacent U-shaped wire members for adjacent baffles being positioned in the pair of opposed inner seats of a predetermined slot.

4. An acoustic curb for a fan as defined in claim 3 and wherein the upper end of each leg of each U-shaped wire member includes in series a horizontal portion and a terminal vertical portion, said horizontal portion being seated in its respective seat and the top of said terminal vertical portion extending above said support flange and defining a handle facilitating the manipulation of the resilient U-shaped wire member upon installation and removal of a baffle.

5. An acoustic curb for a fan as defined in claim 4 and wherein the bight of each- U-shaped member is pivotally mounted to an end plate of a baffle to facilitate installation.



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U.S. Cl. X.R.

98—43; 181—56