May 1, 1962 E. T. KELLY ETAL 3,031,945

AIR SUPPLY GRILLE

Filed June 27, 1960

FIG. 1

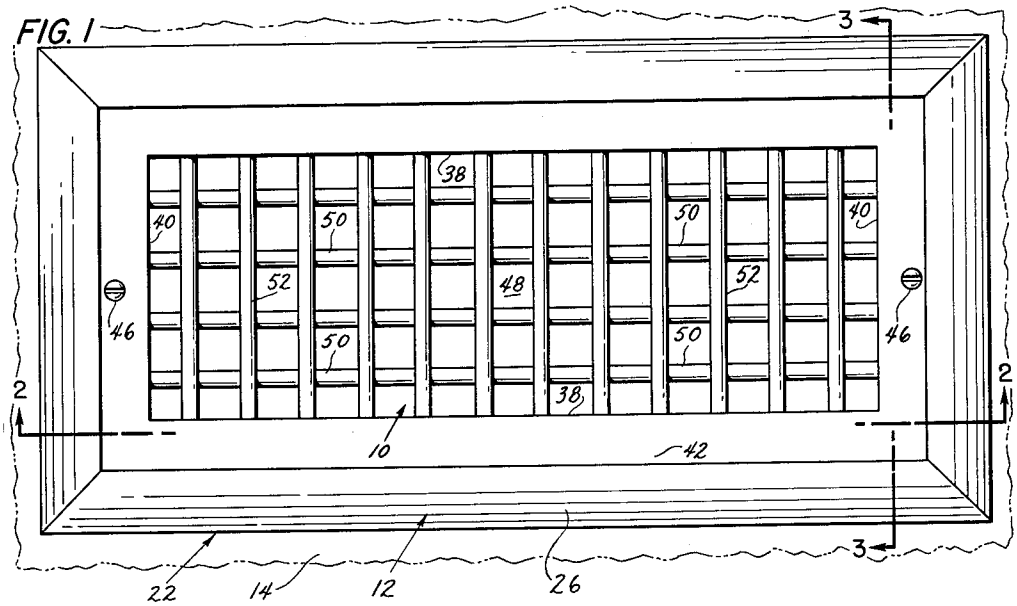


FIG. 2

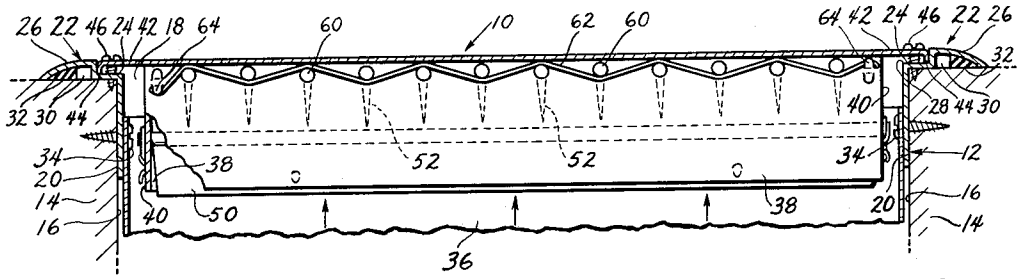


FIG. 3

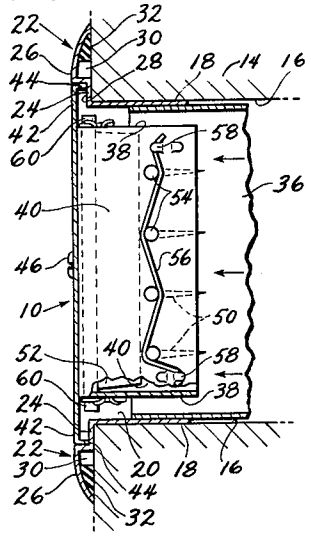


FIG. 4

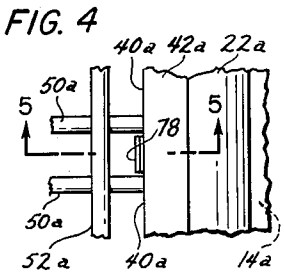
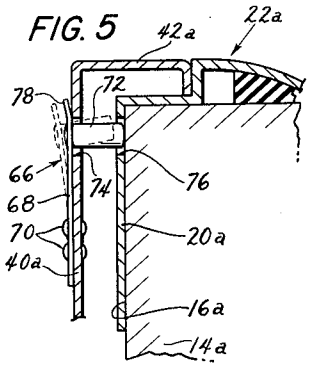


FIG. 5



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AIR SUPPLY GRILLE

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This invention relates to grilles for supplying air to a room or other enclosure for heating, cooling, ventilating, or other purposes and, more particularly, the invention relates to air supply grilles of the type which are adapted to be mounted in an opening in a room wall for the discharge of air to the room, and which have their front edge portions substantially flush with the front surface of the wall.

It is the general object of the present invention to provide an air supply grille of the type mentioned which comprises separable core and frame assemblies, the latter assembly being fixedly mounted in an opening in a room wall and the former being removably secured therewithin.

A more specific object of the invention resides in the provision of an air supply grille of the type mentioned wherein concealed locking devices are provided for removably securing the core within the frame, a grille having a smooth unbroken and attractive front surface thus being provided.

The drawing shows two embodiments of the invention and such embodiments will be described, but it will be understood that various changes may be made from the constructions disclosed, and that the drawing and description are not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawing:

FIG. 1 is a front view of an air supply grille constituting a preferred embodiment of the present invention.

FIG. 2 is a longitudinal section through the grille taken as indicated by the lines 2—2 in FIG. 1.

FIG. 3 is a transverse section taken as indicated by the lines 3—3 in FIG. 1.

FIG. 4 is a fragmentary front view of an air supply grille equipped with a concealed locking device and constituting an alternative embodiment of the invention.

FIG. 5 is a longitudinal section taken as indicated by the lines 5—5 in FIG. 4 and showing the detailed construction of the concealed locking device.

Referring particularly to FIG. 1, it will be observed that an air supply grille illustrated therein includes a core or core assembly indicated generally at 10, and a frame or frame assembly indicated generally at 12. The grille is shown in association with a room wall 14 and, as best illustrated in FIGS. 2 and 3, the frame 12 thereof is mounted within an opening 16 in the wall. The opening 16 is generally rectangular and the frame 12 is of similar configuration and comprises elongated spaced parallel side walls 18, 18 and short connecting end walls 20, 20. Preferably, the frame 12 is formed of sheet metal and the side walls 18, 18 and end walls 20, 20 thereof are formed integrally or welded together.

Formed along the front edges of the side walls 18, 18 and the end walls 20, 20 of the frame 12 is an outwardly projecting marginal flange indicated generally at 22. The flange 22 engages and covers a marginal portion of the front surface of the room wall 14 adjacent the opening 16 when the frame 12 is mounted in said opening as shown. Said flange comprises inner and outer portions 24 and 26. The inner portion 24 of the flange flatly engages the front surface of the room wall 14 adjacent the opening 16 and the outer portion 26 thereof is preferably forwardly offset with respect to said inner portion so as to define an inwardly and forwardly open marginal

groove 28. As shown, said forwardly offset outer portion 26 of the flange is inclined and curves gradually rearwardly to the room wall 14 from its inner to its outer edge so as to define a channel 30 for receiving a generally rectangular gasket 32. The gasket 32, held in the channel 30, engages the room wall 14 and is preferably formed of a suitable soft rubber or other similar material.

The frame 12 may be secured within the opening 16 in the room wall by screws 34, 34 entered in said wall and passing through suitable openings in the end walls 20, 20 of the frame. Air for heating, cooling, ventilating, or other purposes is supplied to the opening 16 in the room wall by means of a supply duct 36. The duct 36 may be secured within the opening 16 with its discharge end projecting within the frame 12 by attachment with the screws 34, 34 as shown, or said duct may be otherwise held in place so as to discharge air through the aforementioned core 10 which will be described presently.

As best shown in FIGS. 2 and 3, the core 10 has elongated spaced parallel side walls 38, 38 and short connecting end walls 40, 40. The core is preferably formed of sheet metal and the side and end walls 38, 38 and 40, 40 may be formed integrally or may be welded together. When the core is secured within the frame 12 as shown, its side walls 38, 38 are adjacently parallel to but spaced from the side walls 18, 18 of the frame and its end walls 40, 40 are similarly situated in adjacent parallel but spaced relationship with the end walls 20, 20 of said frame. An outwardly projecting marginal flange 42 formed at the front edge of the side and end walls of the core 10 is disposed in the aforementioned marginal groove 28 defined by the frame flange 22. The front edges of said core side and end walls and the front surface of said flange 42 are substantially flush with the front surface of the frame flange 22, and, more specifically, said edges and surface are substantially flush with the front surface of the forwardly offset portion 26 of said flange. Preferaby and as shown, the rear surface of the core flange 42 is spaced slightly forwardly from the inner portion 24 of the frame flange by a small rearwardly projecting spacer flange or bead 44 formed along said core flange at its outer edge.

The core 10 is removably held within the frame 12 in the preferred embodiment of the invention shown in FIGS. 1, 2 and 3 by means of suitable screws 46, 46 which are entered in aligned openings in the core flange 42 and the inner portion 24 of the frame flange 22. Said screws 46, 46 may also project rearwardly into the room wall 14 and, as shown, two screws 46, 46 are provided and they are located respectively in the core and frame flanges adjacent the end walls 20, 20 and 40, 40 of said core and frame.

As best shown in FIG. 1, the side walls 38, 38 and the end walls 40, 40 of the core 10 cooperatively define a generally rectangular air passageway 48 for receiving air from the supply duct 36 and for discharging the same to the room or enclosure. Means are provided in said air passageway for varying the free area thereof and controlling air flow therethrough and said means preferably comprise a series of longitudinal louvers 50, 50 and a series of transverse louvers 52, 52. The longitudinal louvers 50, 50 are spaced transversely and are parallel with respect to each other and extend between the end walls 40, 40 of the core 10. At opposite ends said louvers 50, 50 have integral pivot pins 54, 54 which project outwardly through suitable bearing apertures in said end walls 40, 40 of the core as best shown in FIG. 3. Exteriorly of the end walls 40, 40, the pivot pins 54, 54 are engaged by retaining wires 56, 56, one shown, so as to be frictionally held in adjusted positions and to frictionally hold their respective louvers in adjusted positions. The retaining wires 56, 56 are threaded serially through the spaces be-

tween the pivot pins 54, 54 and are held at their ends by suitable ears 58, 58 formed on the end walls 40, 40 of the core 10 and which may be crimped over said wires.

The transverse louvers 52, 52 are spaced longitudinally and extend in parallel relationship between the side walls 38, 38 of the core 10 with integral pivot pins 60, 60 at opposite ends thereof projecting outwardly through suitable bearing apertures in said side walls. Retaining wires 62, 62, one shown, are threaded serially through the spaces between the pivot pins 60, 60 exteriorly of the side walls 38, 38 and engage and frictionally hold said pins and their respective louvers in adjusted positions. Ears 64, 64, like the ears 58, 58, are formed on the side walls 38, 38 and hold the retaining wires 62, 62 in place at opposite ends.

From the foregoing, it will be apparent that the frame 12 of the air supply grille may be fixedly mounted within an opening in a room wall with the core 10 removably secured within said frame. The direction of air flow through the core passageway 48 as well as the quantity of air supplied through said passageway may be readily controlled by manual adjustment of the positions of the louvers 50, 50 and the louvers 52, 52. The grille presents an attractive appearance in the room wall and is yet particularly well suited for the convenient removal of its core 10 permitting easy access to the air supply duct 36 or other interior elements for cleaning or other purposes. The room wall 14 may be painted or otherwise decorated as desired to or under the outer edge of the frame flange 22 and subsequent removal of the core 10 will in no way mar or otherwise destroy the attractive appearance of the wall decoration.

In order to eliminate the need for connecting screws, such as the screws 46, 46, and to provide for a clean, unbroken and attractive appearance of the front surfaces of the supply grille, a concealed locking device may be provided in accordance with another aspect of the invention. In FIGS. 4 and 5, there is shown a portion of an alternative air supply grille comprising a frame having an end wall 20*a*, a marginal flange 22*a*, and a core with a marginal flange 42*a*, an end wall 40*a*, longitudinal louvers 50*a*, 50*a*, and transverse louvers 52*a*, 52*a*. The frame and the core of FIGS. 4 and 5 may be identical with those of FIGS. 1, 2 and 3 except for the omission of the connecting screws 46, 46 and the flange openings through which said screws pass.

A concealed locking device as indicated generally at 66 is associated with each end wall 40*a* of the core shown in FIGS. 4 and 5 and said locking devices perform the function of the aforementioned connecting screws 46, 46. Each locking device 66 includes a leaf spring 68 which is mounted at one end on an end wall 40*a* of the core as by means of suitable rivets 70, 70. A locking pin 72 carried on and adjacent the free end of the leaf spring 68 projects outwardly through an aperture 74 in the adjacent end wall 40*a* and is biased outwardly by the spring to a locking position as shown in full lines in FIG. 5. In such position the locking pin 72 is entered in an aperture 76 in the end wall 20*a* of the grille frame which lies adjacent the end wall 40*a* of the core carrying the locking device.

In addition to its locking position, the locking pin 72 has an inner or releasing position, shown in broken lines in FIG. 5, and said pin may be urged manually to such position against the bias of its supporting spring 68. When the locking pin 72 is in the releasing position, it is withdrawn from the aperture 76 in the end wall 20*a* of the frame permitting the core to be removed from the frame. To facilitate the movement of the locking pin 72 from its locking position to its releasing position, the free end of the spring 68 carrying the pin is preferably formed to extend angularly inwardly away from the adjacent core end wall 40*a* as shown at 78. A screw driver or other instrument may be conveniently inserted between said free end of the spring and the core end wall whereby to pry the spring away from said end wall and to urge the locking pin 72 to its releasing position. As best seen in FIG. 4, the free ends of the spring 68, 68 of the locking devices 66, 66 are the only portion of said devices which are visible when the grille is viewed from the front.

From the foregoing, it will be apparent that the air supply grille described and shown may be utilized as a "return" grille or for exhausting air from a room or other enclosure. Accordingly, it will be understood that the term "air supply grille," as used heretofore and in the claims which follow, is to be taken as illustrative of one use of the grille only and is not to be construed as limiting the invention to a grille usable only for "supplying air" to a room or enclosure.

The invention claimed is:

1. An air supply grille comprising a generally rectangular sheet metal frame which is adapted to be mounted in an opening in a room wall and which has spaced parallel side walls and connecting end walls and an outwardly projecting marginal flange along the front edges of said walls for covering a marginal portion of the room wall adjacent the opening therein, a generally rectangular sheet metal core disposed within said frame and having spaced parallel side walls adjacent said frame side walls and connecting end walls adjacent said frame end walls, said side and end walls of said core serving to define an air passageway and having their front edges substantially flush with the front surface of said marginal flange on said frame and said end walls of said core being provided with bearing apertures arranged in longitudinally aligned pairs, a concealed locking device on each end wall of said core comprising a leaf spring mounted at one end on the inner side of the wall and carrying a locking pin adjacent its free end, said locking pins projecting outwardly through and being movable in openings in said end walls from outer locking positions toward which they are urged by their respective leaf springs to inner releasing positions, the end walls of said frame being provided with openings which receive said locking pins in their locking positions to removably hold said core in said frame, a series of transversely spaced parallel and longitudinally extending louvers disposed in said air passageway and having pivot pins at opposite ends entered in and projecting outwardly through said bearing apertures so as to be pivotally supported by said core end walls and manually adjustable to vary the open area of of said air passageway, and retaining wires threaded in series through the spaces between the projecting end portions of said pivot pins exteriorly of said end walls and engaging and frictionally holding said pivot pins and their respective louvers in adjusted positions.

2. An air supply grille as set forth in claim 1 and including a parallel series of longitudinally spaced transverse louvers having pivot pins at opposite ends which project outwardly through bearing apertures in the side walls of the core, and said grille also including additional retaining wires which are threaded through the spaces between the projecting end portions of said pivot pins on said transverse louvers exteriorly of said side walls and which engage and frictionally hold said pivot pins and their respective louvers in adjusted positions.

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