July 13, 1937. C. EISLER 2,087,104

GRILLE AND REGISTER CONSTRUCTION

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Fig. 1.

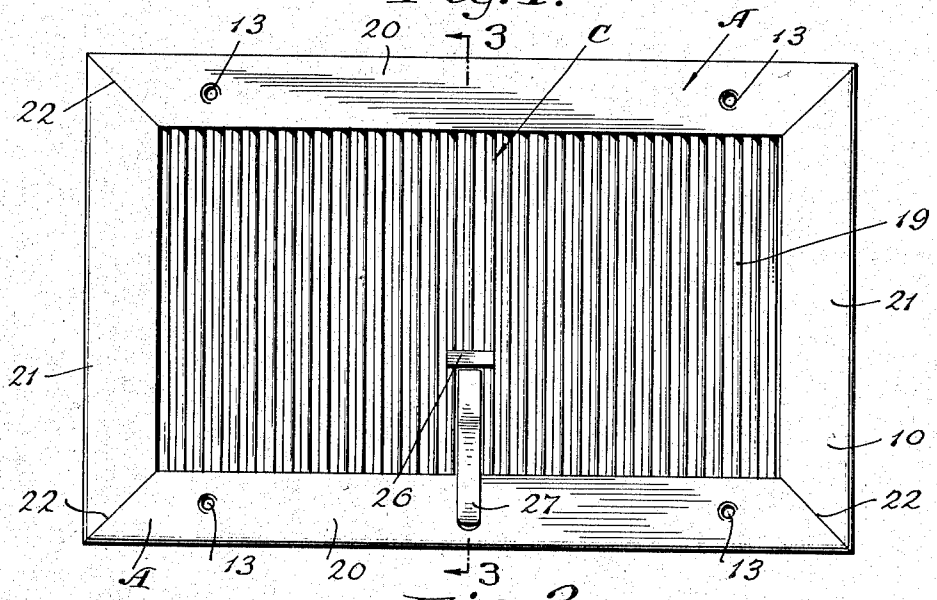


Fig. 2.

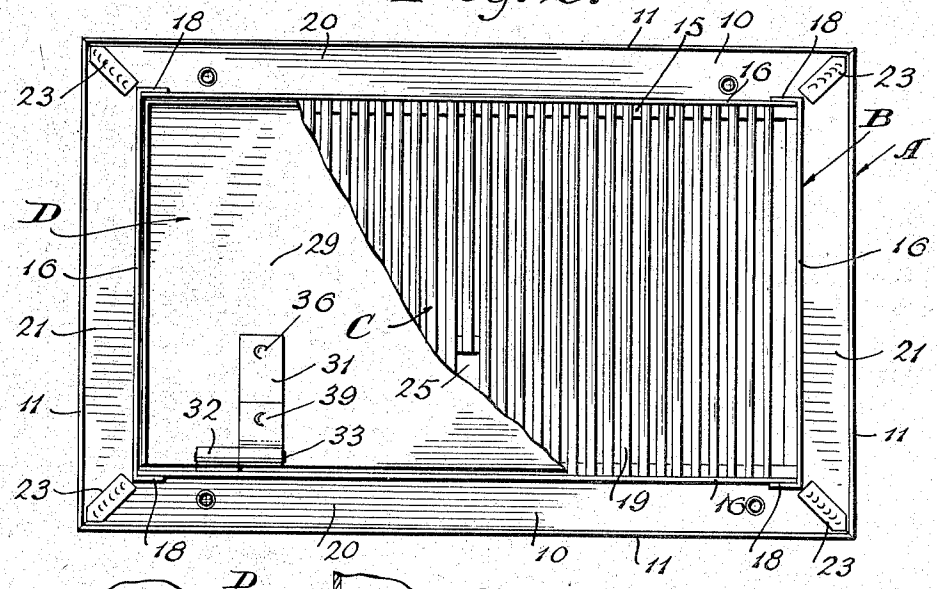


Fig. 7.

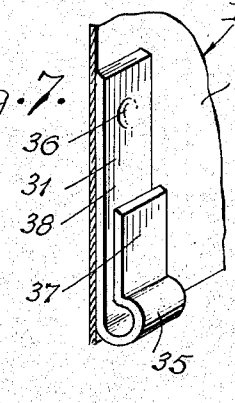
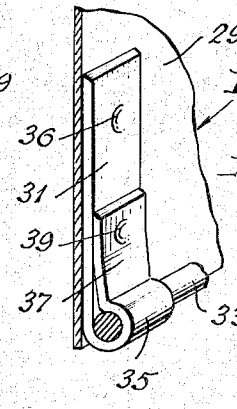


Fig. 8.



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GRILLE AND REGISTER CONSTRUCTION

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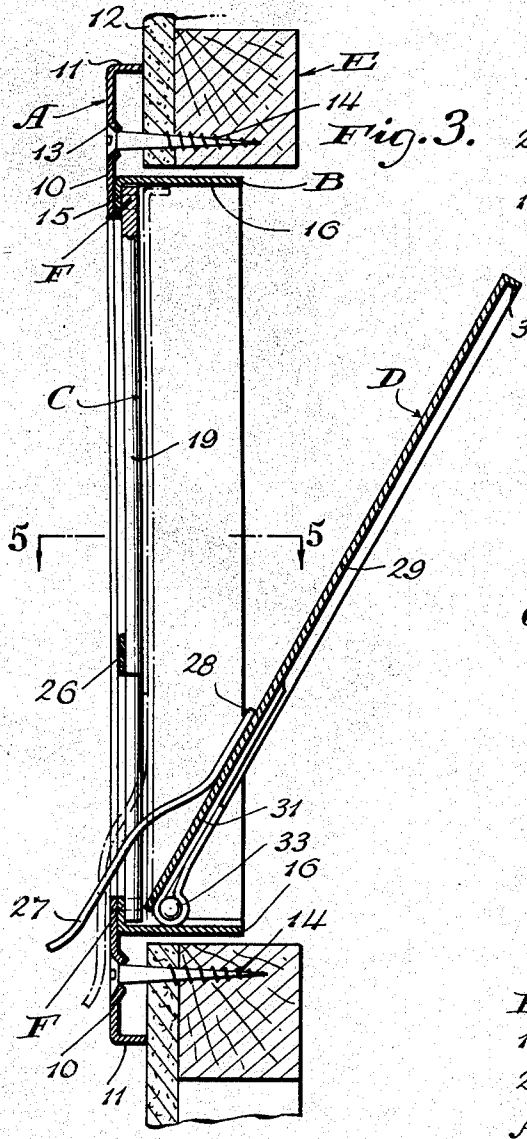


Fig. 3.

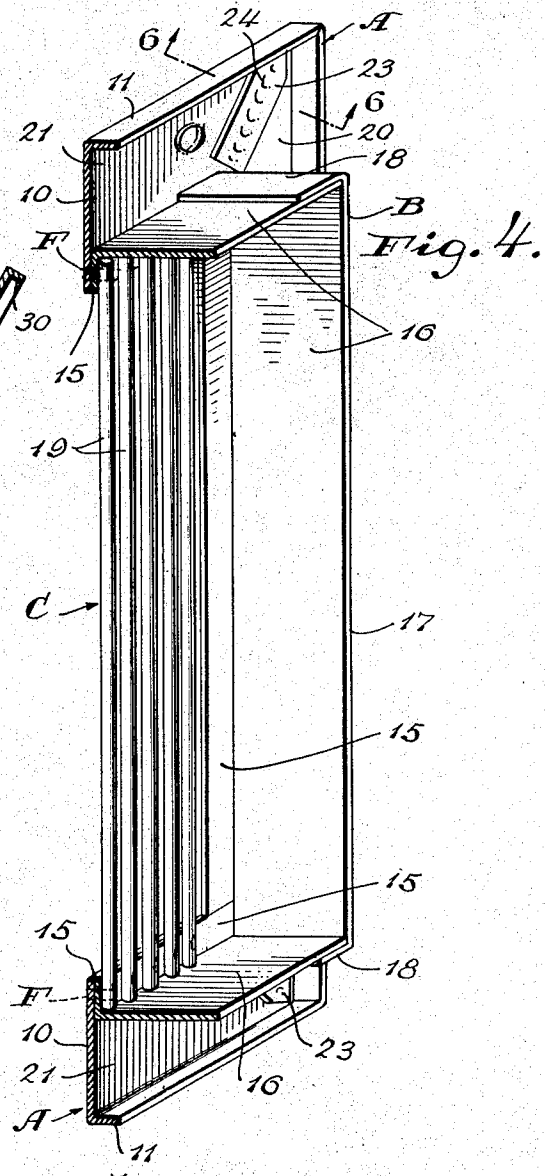
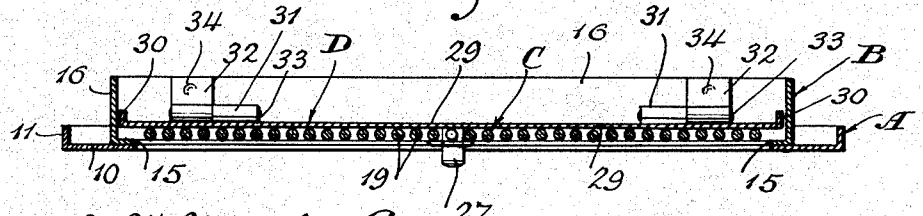


Fig. 4.

Fig. 5.



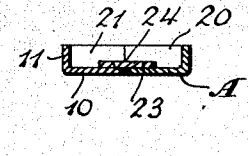


Fig. 6.

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GRILLE AND REGISTER CONSTRUCTION

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Fig. 10.

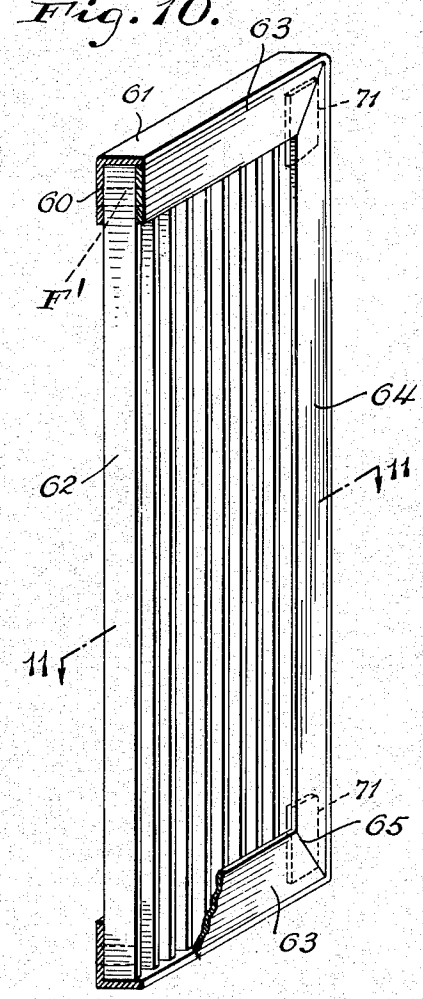


Fig. 9.

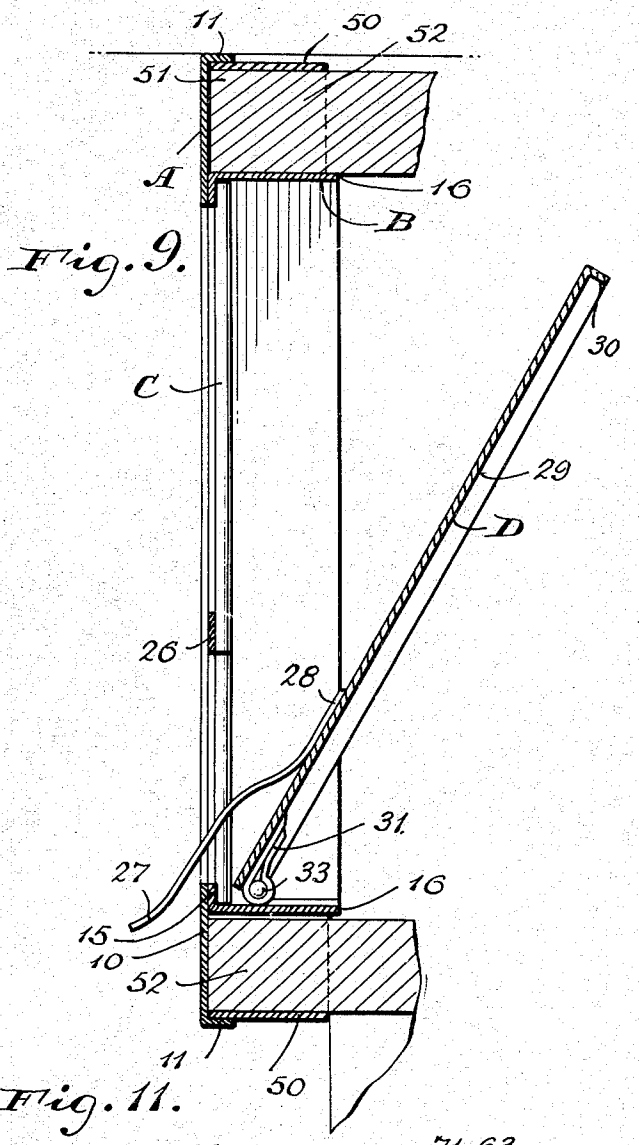


Fig. 11.

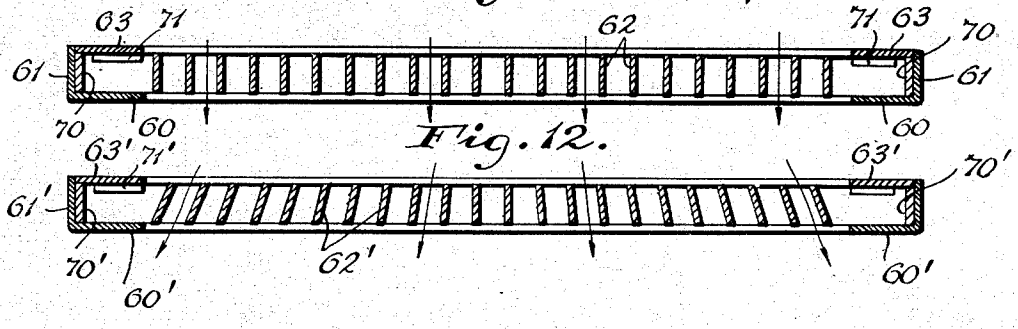


Fig. 12.

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Fig. 13.

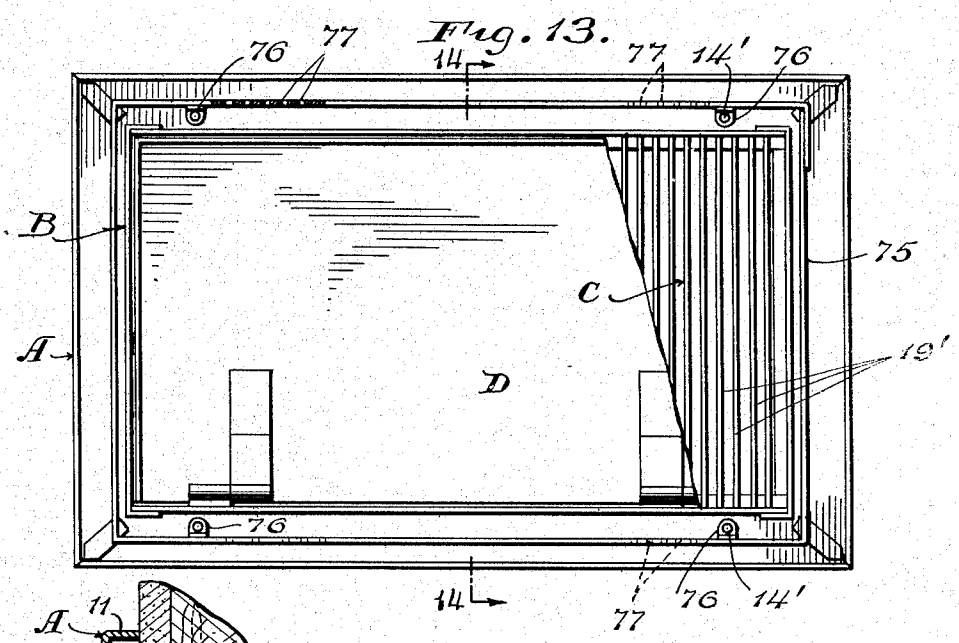


Fig. 14.

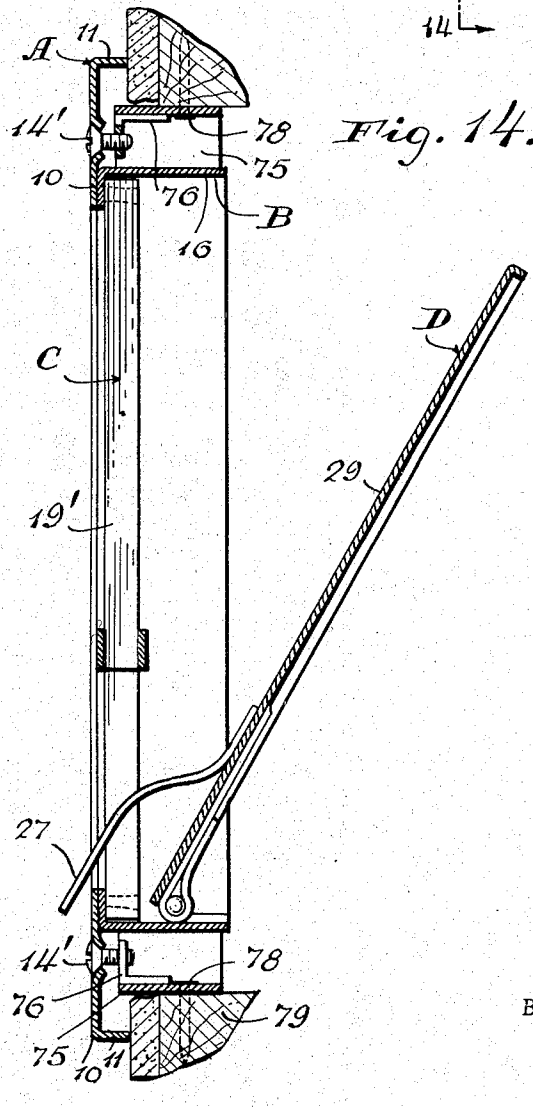
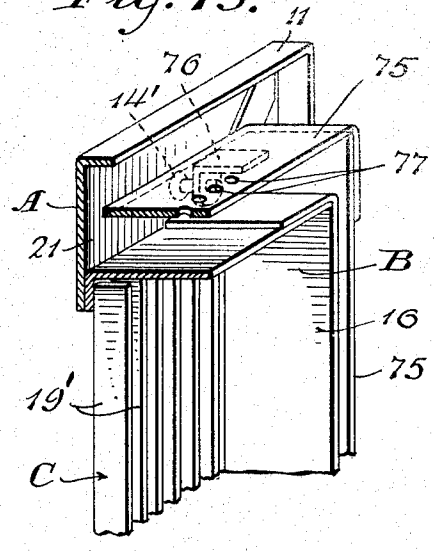


Fig. 15.



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Patented July 13, 1937 2,087,104

UNITED STATES PATENT OFFICE

2,087,104

GRILLE AND REGISTER CONSTRUCTION

Charles Eisler, South Orange, N. J.

Application November 12, 1936, Serial No. 110,426

2 Claims. (Cl. 98—114)

The present invention relates to an improved grille or register construction and particularly relates to an improved grille and register construction for air circulating systems adapted for utilization in connection with air conditioning and heating apparatus.

It has been found that many types of grille and register constructions made of folded sheet metal or cast iron substantially obstruct the flow of air, with the result that it is necessary to use a greater area of register opening.

Furthermore, many types of grilles and registers of this character are not only expensive to construct and manufacture, but in addition, are not exceptionally durable and require a substantial number of assembly operations.

It is among the objects of the present invention to provide an improved, durable inexpensive and readily assembled grille and register construction, readily adapted to air conditioning or air heating systems, which will give a maximum of air passage with a minimum of air obstruction and which may be readily constructed by simple manufacturing procedures.

Another object is to provide an improved grille and register construction of the character above described in which the various elements and parts thereof may be conveniently and readily assembled together by spot welding, with the result that the register grille will form a unitary rigid device.

Another object of the invention is to provide an organization of register and auxiliary frame which will enable a systematic installation of the devices, whereby the auxiliary frames may be first attached to the wall structure or mounting conduits, and at some later time the register or grille structures may be attached thereto. Of course the register or grille structure might immediately be attached after the installation of the auxiliary frame. However, it often happens that one man may make the rounds to install the auxiliary frames, and some time later someone else may follow up with the register or grille structures to be attached to the auxiliary frames. This makes a very neat arrangement.

Other objects will be obvious or will appear during the course of the following application.

In accomplishing the objects of the present invention, it has been found possible, according to one preferred embodiment to provide a grille with inner and outer frame members and transverse bars for slat members, the two frames and the ends of the slat members being simultaneously connected together by a spot welding operation. with the slats or bars being devoid of any transverse connection.

The slats or bars may be of varying cross section either rectangular or round and they may be readily held in a frame during the spot welding operation.

The outer frame may be so formed in respect to the inner frame that the outer frame will abut and be screwed against the wall encircling a conduit, or both the inner and outer frames may have extensions to form a recess in which the end of an air or gas conduit may be received. If desired, the inner and outer frames may be attached to opposite sides of the transverse bars, instead of the same side, and the convenient and compact unit thus obtained may be inserted into a receptacle or recess in a suitable apparatus.

Generally, the grille is provided with an adjustable swinging shutter pivotally mounted at one side of the inner frame with a handle member extending through a recess in the transverse bars or slat members.

In mounting the swinging shutter, it has been found most convenient to form two loops of sheet metal with an interconnecting pin, one of the loops being fixedly attached to the pin and to the frame and the other loop being rotatably mounted on the pin and spot welded to the back of the shutter.

Preferably, the spot welding of the loop involves bringing together the ends of the loop with the result there is a substantially resilient friction retarding movement of the shutter about the fixed pivot pin.

In constructing the frame members, and particularly the outer frame member, it has been found convenient to form the outer frame members of four elements with oblique contacting edges and then to provide a small insert piece to extend across the junction. This insert piece may be spot welded to both abutting pieces and thus attach them together.

The entire grille or register may be conveniently finished in a lacquer or varnish, such as "Duco".

The above and other objects will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing preferred embodiments of the inventive idea.

In the drawings:—

Figure 1 is a front view of one type of register construction according to the present invention.

Figure 2 is a rear view with the shutter partly broken away to show the grid construction.

Figure 3 is a transverse sectional view upon the line 3—3 of Figure 1, and upon enlarged scale, with the shutter partly open and with the grille or register attached to a wall structure.

Figure 4 is a side perspective view of the grille of Figure 3 upon about the same scale as Figure 3, without the shutter in position.

Figure 5 is a transverse sectional view upon the line 5—5 of Fig. 3 and upon reduced scale showing the shutter closed.

Figure 6 is a transverse sectional view of the corner of the outer frame showing the spot welded connection upon the line 6—6 of Figure 4 and upon a slightly reduced scale.

Figures 7 and 8 illustrate the hinge construction of the shutter upon enlarged scale in perspective view, Figure 7 showing the hinge before the spot welding has been completed and Figure 8 after the spot welding has been completed.

Figure 9 shows an alternative construction in side sectional view similar to Figure 3 in which the outer and inner frame members form a recess to receive the outer end of an air conduit.

Figures 10 and 11 show another alternative construction, Figure 10 being a side perspective view partly in section and Figure 11 being a transverse sectional view upon the line 11—11 of Figure 10.

Figure 12 shows still another alternative construction similar to the construction of Figures 10 and 11 in which the grid bars are angularly disposed.

Figure 13 is a rear view in elevation of an alternative construction in which an auxiliary frame is attached to the mounting conduit or wall structure preliminary to installation of the register proper.

Figure 14 is a sectional view upon the line 14—14 of Fig. 13 with the shutter partly opened and with the grille or register attached to the auxiliary frame.

Figure 15 is an enlarged view in perspective of a corner of the register and auxiliary frame in assembled relationship.

Referring to Figures 1 to 8, the grille is provided with an outer frame A, an inner frame B, a grid C, a shutter D and a mounting conduit or wall structure E.

The outer frame A has a front piece 10 the outer edge of which is inturned to form the flange 11. The flange 11 abuts the plaster-fastening 12 of the mounting wall E (see particularly Figure 3). The outer frame 10 is provided with spaced openings 13, which receive the screws 14 extending through the plaster face 12 into the body of the conduit end or wall structure, E.

The inner frame B is provided with a fastening flange 15, the ends of which are bent rearwardly to form the backing flange 16. The longer members 17 of the frame B have been over extensions 18, as shown in Figure 4, which may be spot welded to the flanges 16.

Extending between the flanges 16 of the inner frame B are the cross bar grid members 19 which constitute the grid C, the ends of said members 19 terminating just inside the flanges 16 and said ends and said frames A and B being simultaneously spot welded, as indicated at F (see particularly Figures 3 and 4).

Referring to Figures 1, 2, 4 and 6, it will be noted that the constituent elements 20 and 21 of the exterior frame A do not overlap but have an oblique abutment 22, which is interiorly covered by the connecter plate 23, spot welded, as indicated at 24 in Figure 4, to both sides of the abutting edges 22.

The front of the grid C is recessed as indicated at 25 omitting a portion of one grid rod and spot welding the border plate 26 (see Figures 1 and 3) to the grid. Through the recess 25 projects the finger piece or lever 27 spot welded at 28 to the base plate 29 of the shutter D.

The sides of the shutter D away from the pivotal mount are provided with a short inturned flange 30 and at the pivotal mount the loops 31 and 32 carry the pivot pins 33.

In the loops 32, the pins 33 are fixed and said loops are spot welded at 34 (see Figure 5) to the flanges 16 of the inner frame member B.

The pins 33 ride loosely in the loops 35 of the loop members 31, which loop members are spot welded at 36 to the back of the plate 29 of the shutter D.

The flange 37 of the loop member 31, as shown in Figure 7, is ordinarily spaced away from the flange 38. However, when the two flanges 37 and 38 are spot welded at 39 in Figure 8 after the pin 33 has been inserted in the loop 35, this will close the opening within the loop 35 sufficiently to exert substantial friction upon the pin 33 as the shutter is moved from open position, as shown in Figure 3, to closed position as shown in Figure 2, or vice versa.

It will, therefore, be noted that in the embodiment of Figures 1 to 8, there is provided a unitary grille or register structure, the parts of which are all connected together by spot welding.

In assembly, the elements 19 of the grid structure C may be held in a suitable frame or holder while they are spot welded together with the outer and inner frames A and B, as indicated at F, previous to the assembly of the inner and outer frames A and B and the elements 19 of the grid C.

The elements 20 and 21 are assembled by the connecting plates 23 and the inner frame elements B are assembled together by spot welding the overlapping extensions 18.

The connections 23 in the outer frame A and the hinge constructions, as shown in Figures 7 and 8, may all be conveniently made by ordinary spot welding procedures to give a firm, durable and compact construction which will be relatively inexpensive and readily handled and mounted, as indicated at Figure 3.

In Figure 9, the only change which has been made is that an extension plate 50 has been welded inside of the flange 11, the outer frame member A, the inner frame B, grid C and the shutter D being of the same construction as already indicated.

The extension 50, together with the flange 16 will form a recess 51 into which may be inserted the conduit extension 52.

In the embodiment of Figures 10 and 11, the outer frame 60 has a flange 61 which extends over the outer ends of the grid member 62.

Across the inside extends an inner frame including the plates 63 and 64 which abut, as indicated at 65, and are attached together by a spot welded connecting plate 71.

The rear bars 63 and the front frame 60 are welded to each other and to the grids 62, as indicated at F'. The spacer plates 70 enable correct positioning of the inside frame elements 63 and 64.

The device, as indicated in Figures 10 and 11 may be conveniently fitted into a recess provided

for it in some suitable conduit or air heating or conditioning apparatus.

Figure 12 differs only from Figures 10 and 11 in that the grid members **62'** have been turned at suitable angles to deflect the air flowing through the grille or register in the desired direction.

The grids **62** and **62'** may be suitably held in a rack or jig during the spot welding operation so that they will be properly welded in position.

Figures 13, 14 and 15 differ from the register of Figs. 1 to 8 in the use of an auxiliary frame for attachment to the mounting conduit or wall structure. As in Figures 1 to 8 the grille is provided with an outer frame A, an inner frame B, a grid C and a shutter D. It should be particularly noted, as in Figure 15, that the bars **19'** of the grid C are rectangular in cross-section as distinguished from circular in the grid of Figure 4.

An auxiliary frame **75** is provided, which as seen in Figure 13, circumscribes the inner frame B and is spaced on all four sides from said inner frame. This auxiliary frame **75** has a plurality of nail holes **77** provided thereon, so that the auxiliary frame may be attached or nailed to a mounting conduit or wall by the use of nails, such as **78** of Figure 14.

Also welded to the frame **75** are the four right-angled bracket members **76**. The upstanding portions of the brackets **76** are apertured and screw threaded to receive the register attaching bolts **14'**.

In the assembly of the mechanism it is clear that the auxiliary frame **75** is first attached to the wall structure by the use of nails **78**, as shown in Figure 14. After the auxiliary frame is so located, the inner wall B of the register is inserted within the frame **75** and properly aligned, so that the attaching bolts **14** may secure the register in proper position. It can be appreciated that the register or grille structure might readily be removed by unscrewing the bolts **14'** from the auxiliary frame **75** without in any way damaging the wall structure.

It is apparent that the specific illustrations shown above have been given by way of illustration and not by way of limitation and that the structures above described are subject to wide variation and modification without departing from the scope or intent of the invention, all of which variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. A grille or register construction to be connected to an air conduit of an air conditioning or heating arrangement comprising an outer frame having an opening, said frame having its outer periphery adapted for engagement with the wall around said conduit, an inner frame positioned adjacent to and in engagement with the inner surface of the outer frame around the opening, said inner frame having an inwardly extending flange along its outer periphery, spaced individual bar members forming a grid, the ends of said bar members being positioned adjacent to the engaging surfaces of the inner and outer frames and substantially contacting the inwardly extending flanges of the inner frame, said frames and bar members being connected together by spot welding at the ends of said bar members.

2. A grille or register construction to be connected to an air conduit of an air conditioning or heating arrangement comprising a flat rectangular outer frame having an opening, said frame having an inwardly extending flange along its outer periphery, a rectangular inner frame of less width than the outer frame and being positioned adjacent to and in engagement with the inner surface of the outer frame around the opening, said inner frame having an inwardly extending flange along its outer periphery, spaced individual bar members forming a grid, the ends of said bar members being positioned adjacent to the engaging surfaces of the inner and outer frames and substantially contacting the inwardly extending flanges of the inner frame, said frames and bar members being connected together by spot welding at the ends of said bar members.

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