Sept. 6, 1932. J. L. WATERBURY 1,875,684

REGISTER GRILLE

Filed Nov. 23, 1929

Fig 1

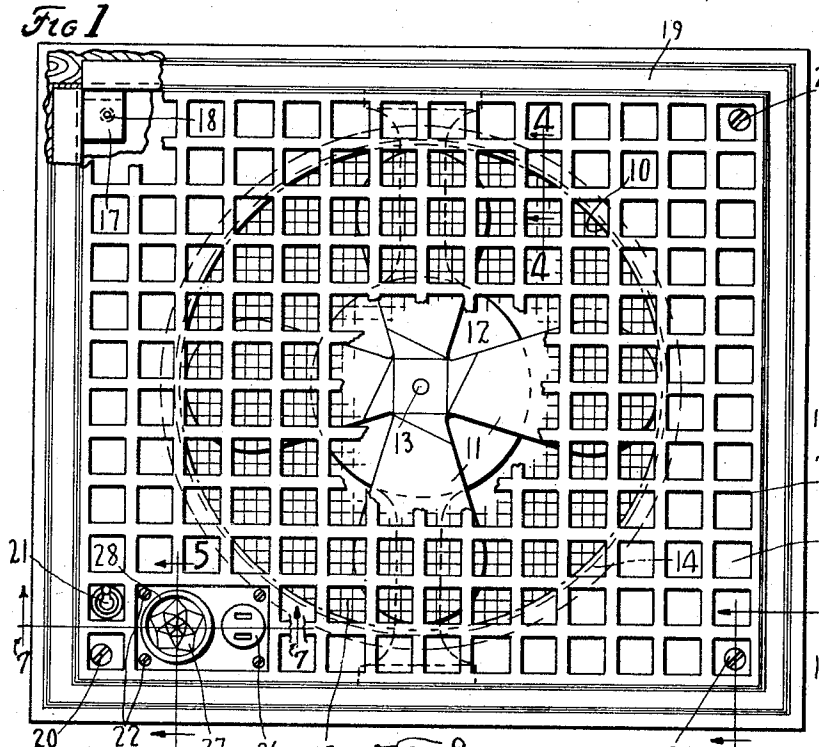


Fig 2

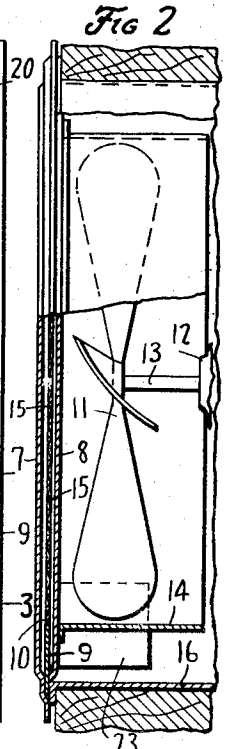


Fig 3

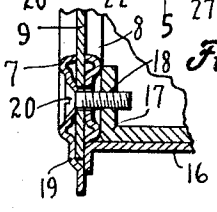


Fig 5

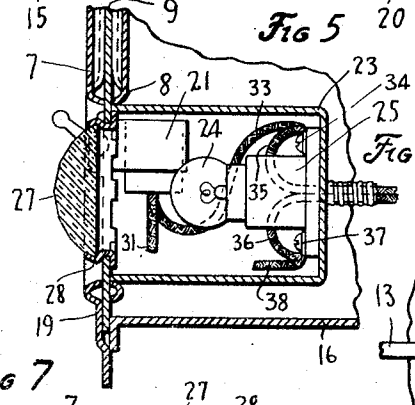


Fig 6

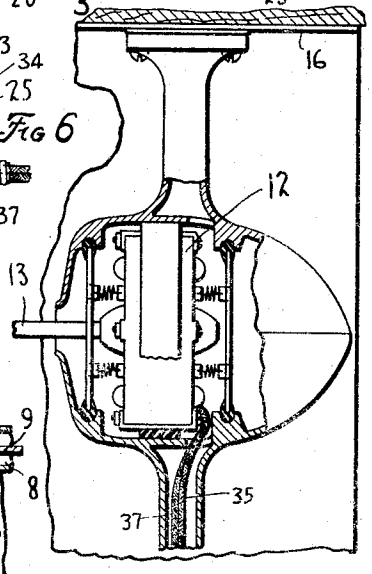


Fig 4

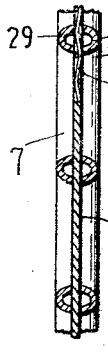
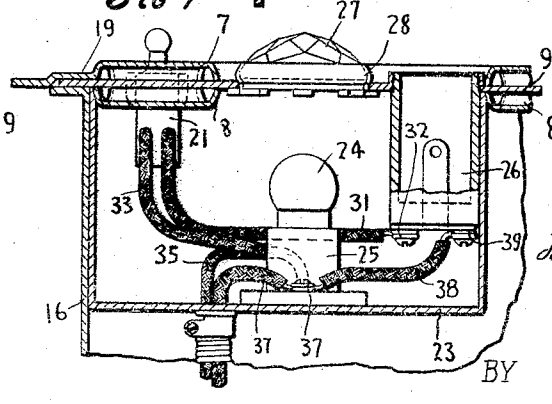


Fig 7



INVENTOR.

James L. Waterbury

BY

ATTORNEY.

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UNITED STATES PATENT OFFICE

JAMES L. WATERBURY, OF SPRINGFIELD, OHIO

REGISTER GRILLE

Application filed November 23, 1929. Serial No. 409,376.

The present invention relates to improvements in register grilles and has for an objective to provide a grille unit of economical construction and unusual strength, one that may be successfully employed with either a power driven fan or with a gravity system of air circulation and one that offers a minimum of resistance to the flow of air passing in either direction through the openings of the grille.

A further object of this invention is to provide a grille unit which may be associated in close relation to a power driven fan, offering a protective means against injury of persons from the fan blades and in such a position that it prevents counter air currents from entering the fan in opposing direction to the fan delivery of air.

Another object of this invention is to economically furnish a means of supplying a flush plate for an outlet box associated with the grille unit

With the foregoing and other objects in view, which will readily suggest themselves to those skilled in the art, the invention consists in the constructions, combinations and arrangements of parts hereinafter described.

In the drawing, in which like reference characters denote like parts throughout the several views:

Figure 1 is a fragmentary front elevation of the present invention.

Figure 2 is a side elevation partly in vertical section.

Figures 3 and 4 are enlarged partial vertical sections on the lines 3—3 and 4—4 respectively of Figure 1.

Figure 5 is an enlarged partial vertical section on the line 5—5 of Figure 1, the scale being enlarged over views in Figures 3 and 4.

Figure 6 is a partial vertical section showing a preferred method of motor mounting, this view being a continuation of Figure 2.

Figure 7 is an enlarged partial horizontal section on line 7—7 of Figure 1.

Referring more particularly to the drawing, 7 and 8 designate two conventional steel grilles such as are commonly used in hot air installations.

In Figure 1, 10 is a large circular opening in reinforcing plate 9 to allow air driven by fan 11 to pass through the openings of grille plates 7 and 8 and through plate 9 as shown in Figure 2. The grille plates 7 and 8 are secured to the plate 9 preferably by spot welding.

In Figure 2, 12 is a motor in close proximity to the grille unit rotating motor shaft 13 and fan 11 in either a clockwise or in an anti-clockwise direction. Fan 11 is partially housed within a circular collar 14 which is secured to the grille plate 8 by spot welding, causing all air entering fan 11 when driven in anti-clockwise direction to be drawn through the openings of the grilles 7 and 8 within opening 10 to the exclusion of air that might otherwise enter the fan from the motor side of the grille unit.

Screen 15 shown in Figure 1, is secured to the inner surfaces of the grille plates 7 and 8 and to the reinforcing plate 9.

16 is a rectangular border frame to which grille plates 7 and 8 and intermediate plate 9 are attached by means of four screws 20 secured through tapped holes 18 in four right angle metal flanges 17, spot welded to border frame 16 as shown in Figures 1 and 3. 19 is the border frame of grille plate 7.

In Figures 1, 5 and 7, 21 is a switch secured to plate 9 in conventional manner. Four screws 22 secure air outlet box 23 to the plate 9, plate 9 serving as its flush plate. Lamp 24 and lamp socket 25 and plug-in receptacle 26 are secured to outlet box 23. 27 in Figures 5 and 7 is a pilot light jewel secured by flange 28 to plate 9.

In Figure 4, 29 and 30 are grille bars of the grille plates 7 and 8 respectively showing how the convex and concave surfaces of the grille bars are positioned so that air passing through the grille plate openings in either direction passes over stream line surfaces and how counter currents of air are eliminated that otherwise would develop if the concave surfaces of the grille bars of grille plate 7 were exposed to the direction of the air passing from the fan through the openings of the grille plate 7.

In Figure 7, 31 is an electric line leading to switch 21 from binding post 32, on plug-

in receptacle 26. 33 is an electrical line leading from switch 21 to binding post 34 on lamp socket 25. 35 in Figure 5 is an electrical line leading from binding post 34 to motor 12. 36 is an electrical line leading from binding post 37 to motor 12. 38 is an electrical line leading from binding post 37 in Figure 7 to binding post 39, on plug-in receptacle 26.

Screen 15 in Figure 1 affords personal protection against injury from fan blades of fan 11. In the operation of the device electrical current from the house line when switch is closed enters plug-in receptacle 26, lighting lamp 24 and operating motor 12. The light of lamp 24 is diffused by pilot jewel 27 indicating that the motor is in operation. When the motor is rotating the fan in anti-clockwise direction, air passes through the grille within circle 10, toward fan 11, while plate 9 and collar 14 prevent air from entering blades of fan 11 other than from the front side of the grille plate 7. When fan is rotated in clockwise direction by motor 12 the direction of air is limited by plate 9 and collar 14 to flow toward fan 11 to flow in the fan delivery direction only.

Plate 9 strengthens and assists in holding grille plates 7 and 8 in alignment. Collar 14 assists in like manner. Plate 9 therefore, combines to afford an economical means for strengthening and holding in alignment the grille unit at the same time acts as a baffle plate to prevent counter currents of air. It further acts an economical means of affording a flush plate for the outlet box 23. The two grilles 7 and 8 are also secured to each other maintaining the conventional grille design and further strengthening the grille unit.

The tendency of the steel grille plates 7 and 8 to bow inwardly toward the inner side of each grille plate is corrected in the straightening process when the two grille plates are spot welded together or otherwise secured on their inner surfaces. The grille unit is thereby thoroughly reinforced. It is of economical construction and offers the minimum of resistance to air when passing in either direction through the openings of the grille unit.

Screen 15 affords a simple built in feature of the grille unit.

It is obvious that various changes and modifications may be made in details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims:—

What is claimed is:—

1. In a structure of the character described, the combination of two grilles placed together, and an intermediate supporting plate between said grilles to which said grilles are secured and having a central opening for the circulation of air through said grilles but being otherwise imperforate, said opening being of smaller dimensions than said grilles.

2. In a structure of the character described, the combination of two grilles placed together, an intermediate supporting plate secured between and to said grilles to support the same and having a central opening for the circulation of air through said grilles but being otherwise imperforate, said opening being of smaller dimensions than said grilles, and a screen within said opening.

3. In a structure of the character described, the combination of two grille plates having similarly formed grille bars, each bar having one side thereof formed of a rounded surface, an intermediate supporting plate for said grille plates and having a circular opening of smaller dimensions than the grille plates but being otherwise closed to the passage of air, said grille plates and intermediate plate being secured together with the grille plates back to back and the bars thereof in registry with each other.

4. In a structure of the character described, the combination of two grille plates having similarly formed grille bars, each bar having one side thereof formed of a rounded surface, an intermediate supporting plate to support said grille plates and having a circular opening of smaller dimensions than the grille plates but being otherwise closed to the passage of air, said grille plates and intermediate plate being secured together with the grille plates back to back and the bars thereof in registry with each other and a screen extending over said opening.

5. In a structure of the character described, the combination of two grille plates, an intermediate supporting plate for supporting said grille plates, said grille plates being placed on opposite sides of said supporting plate, said supporting plate having a central opening for the circulation of air through said grilles but being otherwise imperforate, said opening being of smaller dimensions than said grilles, a fan in line with said central opening, and an open ended casing surrounding said fan of substantially the same diameter as the opening in said supporting plate.

6. In a structure of the character described, a supporting plate, a grille plate on each side of said supporting plate and secured thereto so as to be supported thereby, said supporting plate having an opening, a screen within said opening, said grille plates having similarly formed grille bars shaped to an elongated concavo-convex form with the edges of the bars placed against said supporting plate and screen and in registry with each other.

JAMES L. WATERBURY.