

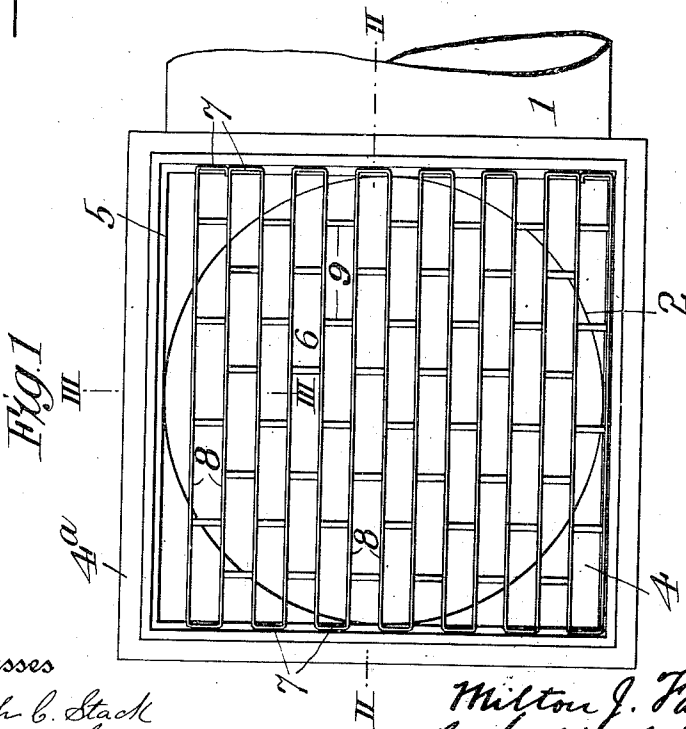
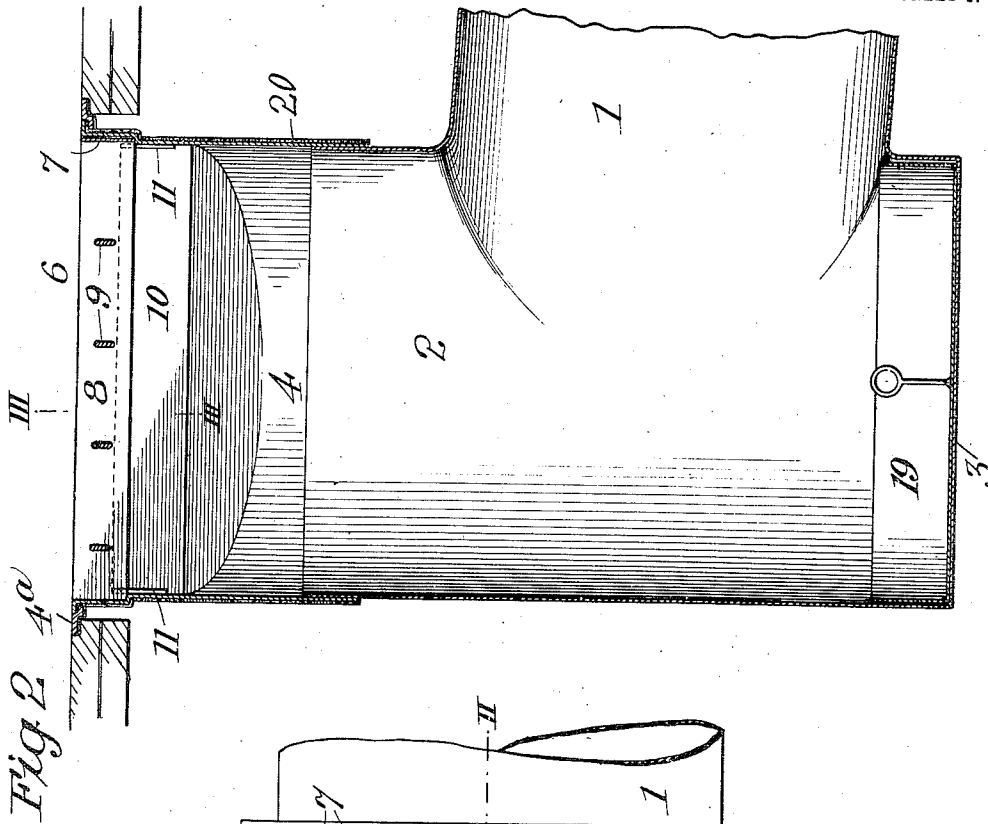
M. J. FARQUHAR.
REGISTER.

APPLICATION FILED MAY 14, 1909.

1,018,750.

Patented Feb. 27, 1912.

3 SHEETS—SHEET 1.



Witnesses
Joseph C. Stack
Annette Leeds

Inventor
Milton J. Farquhar
By Julian C. Howell & Son
his Attorneys.

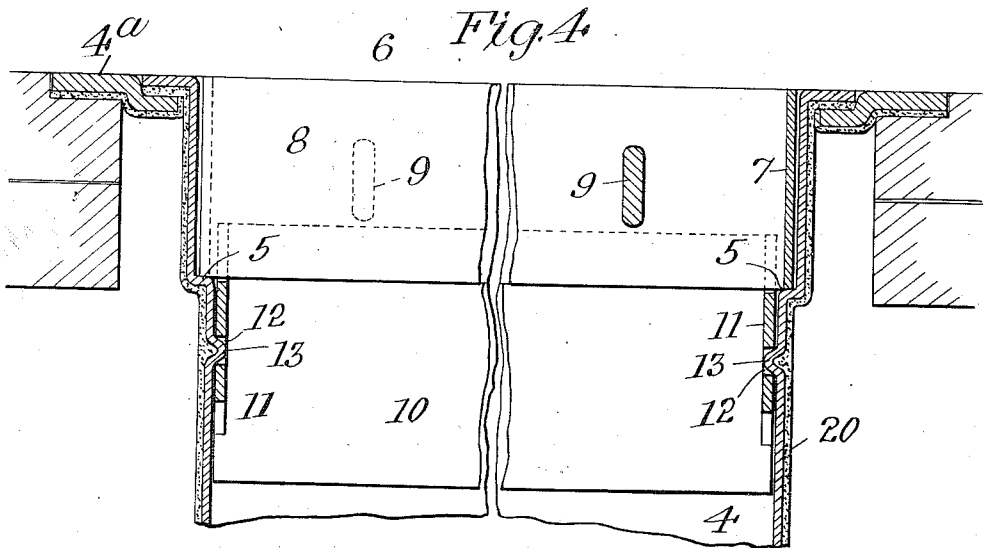
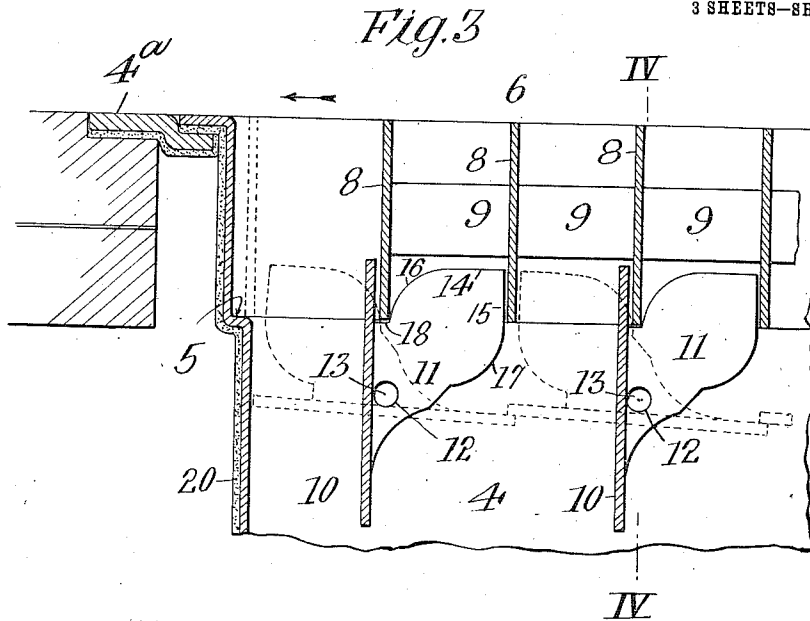
M. J. FARQUHAR.
REGISTER.

APPLICATION FILED MAY 14, 1909.

1,018,750.

Patented Feb. 27, 1912.

3 SHEETS—SHEET 2.



Witnesses
Joseph C. Stack.
Minette Leode.

Inventor
Milton J. Farquhar
By Julian C. Dowell & Son
his Attorneys.

UNITED STATES PATENT OFFICE.

MILTON J. FARQUHAR, OF WILMINGTON, OHIO.

REGISTER.

1,018,750.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed May 14, 1909. Serial No. 495,990.

To all whom it may concern:

Be it known that I, MILTON J. FARQUHAR, a citizen of the United States, residing at Wilmington, in the county of Clinton and State of Ohio, have invented certain new and useful Improvements in Registers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of my invention are to simplify and improve the construction of hot air registers; to provide a construction which can be manufactured from sheet metal; to provide an improved grille taking the place of the usual recticular plate and allowing for a freer circulation of air; to dispense with the usual segment-operating or lever means for operating the valve or slats of the register and otherwise to simplify and reduce the number of parts; to provide for ready removal of the parts for cleaning of the register and for removal of a sanitary appliance contained within the air pipe; and to avoid unsanitary accumulations.

The invention will hereinafter be fully described with reference to the accompanying drawings, which form a part of this specification, and then more particularly pointed out in the appended claims.

In said drawings: Figure 1 is a plan view of a register embodying the invention, the shutter-valve below the grille not being illustrated. Fig. 2 is a section on the line II—II of Fig. 1, Fig. 3 is a detail section, on an enlarged scale, on the line III—III of Figs. 1 and 2, the slats of the shutter-valve being shown open in full lines and closed in dotted lines. Fig. 4 is a section on the line IV—IV of Fig. 3. Fig. 5 is a plan view of a portion of a modified form of grille. Fig. 6 is a section on the line VI—VI of Fig. 5. Fig. 7 is a plan view of a portion of another form of grille. Fig. 8 is a view similar to Fig. 3 but showing a modified form of valve.

1 denotes a hot-air pipe having a branch or elbow 2 provided with a closed bottom 3 and with an open top which connects with the register-box or casing 4, made preferably of sheet metal and suitably supported by a register-frame 4^a which may be let into a rabbit in the flooring or other supporting surface. In the illustrated embodiment, the register box is rectangular in form at its outlet-end, and circular in form at its

inlet-end where it connects with the heat pipe, the surfaces merging on a downward slant so as to avoid horizontal or approximately horizontal ledges for accumulation of dust inside the register-box. In the rectangular portion the box 4 is formed with a shoulder 5 which provides a seat for the grille or grating 6. The grille is composed of strip metal folded back and forth to form an open-work structure of connected strips; and it is or may be simply placed upon the seat 5 without being secured in place.

The grille 6, shown in plan in Fig. 1, is formed by bending a continuous strip of metal to form a series of longitudinal strips or members 8 with connecting bends or end members 7, the longitudinal strips or members being returned to be substantially parallel with and spaced apart from each other by means of the end members 7. Of course I do not confine myself to a construction from a single strip, since the same may be made by joining several strips. Between the longitudinal strips 8 are inserted cross-members or braces 9, such as short metal rods or other plugs, which are united to the adjacent strips by suitable means and preferably by welding, thus bracing the strips or longitudinal members against displacement and forming the grille into a rigid, unitary structure. This method may also be employed to secure the first and last cross-members 7 to the adjacent longitudinal members.

The length of the grille in one direction is less than that of its seat 5 to enable the former to be movable on the latter to operate the valve that controls the outflow of heat (referring to Figs. 2, 3 and 4). This valve is positioned immediately below the grille, and is composed of a plurality of pivoted slats, each formed of a sheet-metal or other suitable plate 10 having ears or end-flanks 11 outstanding angularly therefrom and forming the medium through which the slats are both pivoted in the register box and operated by the movement of the grille. The slats are pivoted in the register-box at the flanks 11, by means of small teats or projections on one element forming pivots which enter corresponding sockets or openings in the other. In the drawings the sockets or openings 12 are shown in the ears or flanks 11, and the teats or pivot-projections 13 on opposite sides of the register-box being formed by indenting it inwardly.

In the disposition of the slats illustrated in detail in Fig. 3, they are shown positioned at every other longitudinal member 8 of the grille, with their pivots in approximate alinement with said members, the upper portion of the plates 10 and of the flanks 11 projecting above the bottom of the grille. The upper portion of each flank is defined by edges 14 and 15 diverging from a common edge at approximately a right angle. These edges merge into curves 16 and 17 respectively the former of which terminates a short distance from the plate 10 and is connected thereto by a portion 18. A space is thus formed between the plate 10 and curved edge 16, and in this space the lower edge of the corresponding member 8 of the grille is positioned when the valve is open, the next member 8 being contiguous to the opposite edge 15.

When the parts are in the position shown in full lines in Fig. 3, the valve is open admitting hot air to the room. If it be desired to close the valve, the grille is moved, in the direction of the arrow, to the position shown in dotted lines, and in moving to this position the member 8 contiguous to the edge 15—17 contacts with said edge and pressing thereagainst rocks the slats on their pivots into the position shown in dotted lines, in which position the slats overlap each other as shown to make a closure of the register-box. To re-open the valve the grille is returned to its first position, and in returning to said position the member 8, which had been adjacent the edge 14—16 in the closed position of the valve, contacts with said edge and pressing against it rocks the slats on their pivots to their open position.

It will be observed that the form of the grille leaves practically the entire outlet of the register free for the passage of air, the grille being formed by a sheet metal strip folded back and forth and set edgewise so as not to obstruct the circulation, and the form and arrangement of the sheet metal slats is also such as to offer very little or practically no obstruction to the air currents rising from the hot air pipe; in which respect the grille and slats are much superior to the ordinary reticulated register plate and valve mechanism of the usual form of registers, in which, particularly in connection with the valve, there are usually an abundance of ledges, surfaces and recesses or crevices in which dust can accumulate which the present invention avoids.

Within the branch 2 of the hot-air pipe and resting on the closed bottom of said branch is a removable receptacle 19 adapted to be filled with water for moistening the air and for catching dust. This receptacle may also be used to contain substances designed to aid in the sanitation of the room.

The register-box may be covered with asbestos as at 20; and the register-frame may be insulated from the flooring or other surface supporting it and also from the register-box by asbestos as shown.

Access may be had to the interior of the register by lifting out the grille, after which the slats can be removed by springing the sides of the register-box outward or by springing the slats inward. This withdraws the pivot projections 13 out of the openings in the flanks. The receptacle 19 can then be removed, and the register cleaned.

The grille may be made in various ways, several alternative constructions, among others, being shown in Figs. 5, 6 and 7. The grille 21 shown in Figs. 5 and 6 is formed by bending a strip of metal back and forth as described in reference to the grille 6. The grille 21 is braced and formed into a rigid structure by means of cross-members or tongues 22, which, in the type illustrated, are formed by being struck up from the metal strip before it is bent to form the grille, the tongues meeting midway between the adjacent strips or longitudinal members of the grille and being united preferably by welding.

In the heretofore described forms of grilles, the bracing pieces or cross-members 9 and 22 have been of less width than that of the metal strip from which said grille is formed. In these forms therefore the slats 10 could project above the bottom of the grille.

The grille shown in Fig. 7 is or may be of the same depth throughout. This grille is formed by bending a strip of metal longitudinally as at 23 then transversely as at 24, then zigzag into a series of angular cross-members 25, the alternate apexes of which abut the longitudinal member 23, and the intermediate apexes point in the opposite direction where they abut the next longitudinal member 26, which is formed by bending the metal strip back from the angular member 25 which completes the width of the grille. The desired width of grille is obtained by continuing the bending of the metal strip as described. The apexes of the angular bends 25 are welded to the abutting longitudinal members; and the beginning and end of the strip may be likewise secured to an adjacent part. In place of welding, the parts may be riveted or otherwise suitably connected, which statement applies to the preceding structures as well, though the welded connections are much superior and also cheaper and easier to form, and in the connections stated are claimed as a feature of my invention.

Fig. 8 shows another construction of the valve. In this figure the slats 27 are shown suspended from alternate strips or longitudinal-

nal members of the grille by means of semi-circular loops 28 which are free to move in both grille and slats and are retained in both by means of heads on the ends of the loops. The slats at each end are provided with angularly disposed outstanding ribs 29. These ribs are designed to contact with projections 30, which extend inwardly from opposite sides of the register-box, to effect the closing of the valve. The operation of this form of the device is as follows: With the slats in the position shown in full lines in Fig. 8, the valve is open, the slats hanging substantially in alinement with alternate longitudinal members of the grille. If it be desired to close the valve, the grille is moved in the direction of the arrow. This movement draws the ribs 29 into contact with the projections 30, and a further movement draws the slats up into the position shown in dotted lines which indicates the closed position of the valve.

The invention provides an efficient and sanitary register; and one which has comparatively but few parts, an evident advantage in the manufacture of the device, and also in that but few surfaces are presented for the unsanitary accumulation of dust.

Owing to the facility with which the grille and slats can be removed, the register can be readily cleaned and its sanitary receptacle emptied or refilled.

The structure of the grille affords a much greater amount of open space for the free passage of air than does the usual foraminous plate. And the operation of the valve, by the movement of the grille, enables the usual valve-operating means to be dispensed with, reducing the number of parts, and obviating the inconvenience which arises when the knob for operating the valve looses off, besides rendering the operation of the valve a very easy matter by the simple sliding of the grille.

While the invention has been described in reference to its use as a hot-air register, it may be also used as a ventilator, or as a device for returning air from a room.

I reserve the right to such modifications in details of construction and arrangement as may be made within the scope of my invention.

Having described my invention what I claim is:

1. A register-grille composed of strip metal folded back and forth to form a plurality of spaced longitudinal strips with connecting bends, and metal plugs interposed between adjacent strips and welded thereto.

2. A register comprising a register-box, a grille set therein composed of connected metal strips on edge, the grille being shorter than one interior dimension of the box and movable therein, and a shutter-valve below the grille the slats of which are operated by strips of the grille to close and open the valve as the grille is moved in opposite directions.

3. In a register, the combination of a slidable grille, and a register-valve operated to open and close by movement of the grille.

4. In a register, the combination of a slidable grille, and a shutter-valve the slats of which are in such operative connection with the lower side of the grille as to be shut and opened by opposite movements of the grille.

5. In a register, the combination with a register-box or casing, of a shutter-valve therein comprising pivoted slats having outstanding projections, a grille supported by the box and movable to and fro across the valve, the outstanding projections of the slats being in the paths of parts of the grille, whereby the to and fro movements of the grille rocks the slats to open and close the valve.

6. In a register, the combination with a member comprising a sheet metal register-box, of a shutter valve member having detachable pivotal connection with the register-box, one of said members having laterally projecting small teats formed as by punching the metal, the other member having sockets for such teats, the resiliency of the members permitting the slat to be sprung into and out of place.

In testimony whereof I affix my signature, in presence of two witnesses.

MILTON J. FARQUHAR.

Witnesses:

MELVILLE HAYES,
NATHAN M. LINTON.