A. G. SCHERER.

COMBINED HOT AIR AND COLD AIR REGISTER.

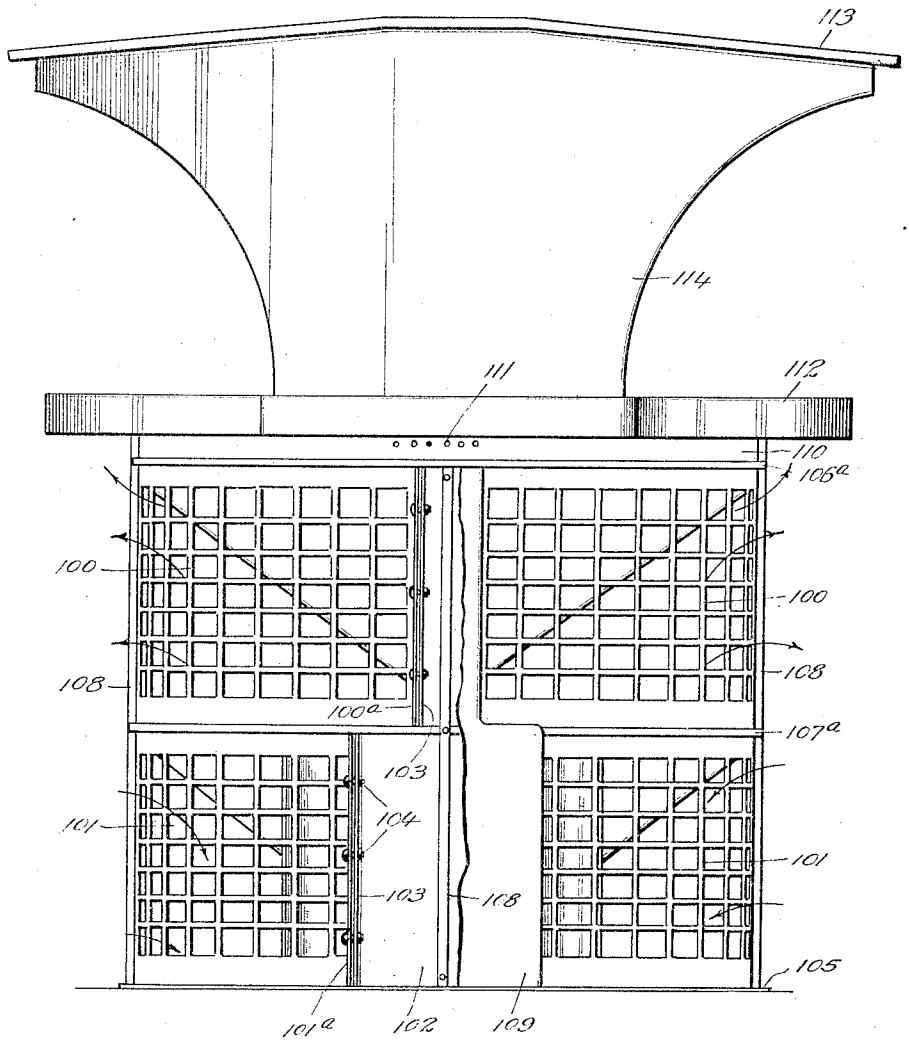
APPLICATION FILED MAY 19, 1919.

1,329,804.

Patented Feb. 3, 1920.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses:
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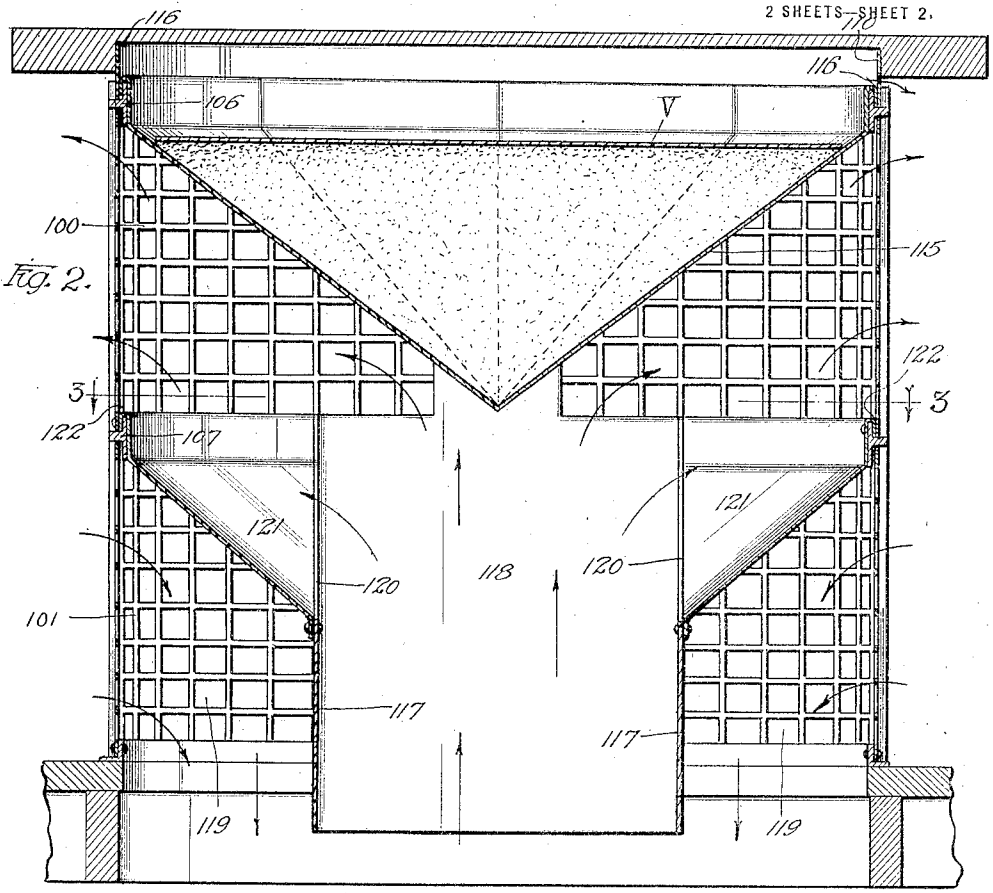


Fig. 2.

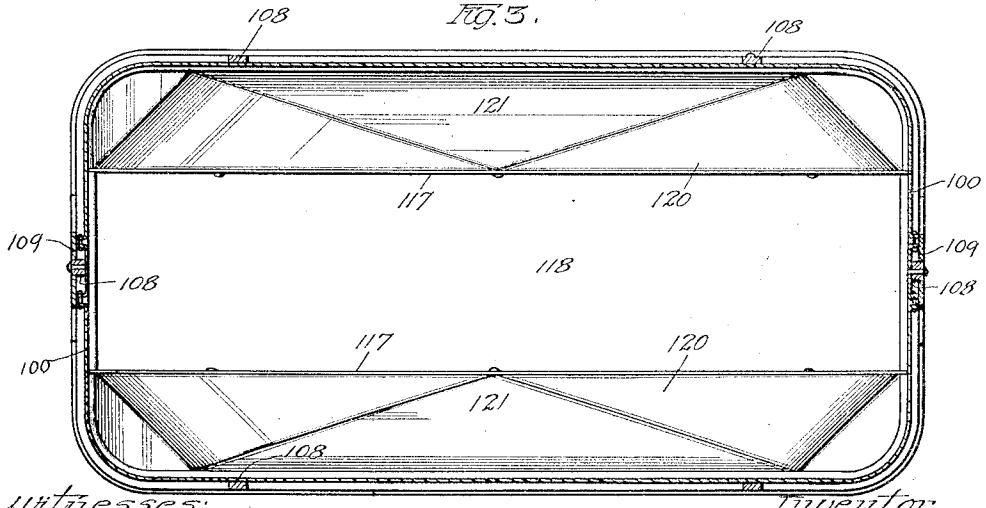


Fig. 3.

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UNITED STATES PATENT OFFICE.

ALBERT G. SCHERER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE EXCELSIOR STEEL FURNACE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

COMBINED HOT-AIR AND COLD-AIR REGISTER.

1,329,804. Specification of Letters Patent. **Patented Feb. 3, 1920.**

Continuation of application Serial No. 259,357, filed October 23, 1918. This application filed May 19, 1919. Serial No. 298,120.

To all whom it may concern:

Be it known that I, ALBERT G. SCHERER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Combined Hot-Air and Cold-Air Registers, of which the following is a full, clear, and exact specification.

Stated broadly, my invention has reference to a register having two sections through one of which hot-air is discharged from a conduit leading from the furnace, and through the other section whereof the cold-air is withdrawn from the room to the furnace or heater where it is reheated for circulation. The present application is a continuation of, and the subject-matter hereof is divided out of the co-pending application filed by me on October 23, 1918, Serial Number 259,357 for improvements in register structures.

The subject-matter of this application is especially applicable to the type of heaters known as "pipeless" furnaces or reheaters, and such furnaces are frequently installed in mercantile establishments, such as stores, banks, etc., where the economy of floor space is necessarily of vital importance. To this end I have designed a novel device, one of the objects whereof is the provision of a register structure that may be installed in any suitable place and the top thereof utilized as a display counter, or when in use in a bank may be in the form of a counting-house desk for the convenience of depositors and others. Arrangements are made in the structure to protect the cover or top from the heat of the air arising from the heater and thereby preventing the damaging of the cover. Another object of my invention is the provision of a register structure from which the hot-air will be discharged through all the exterior walls and in an upward radial direction, while the cold-air is taken in through another section of the register and through all the exterior walls thereof so that the two oppositely moving currents of air will not interfere with or retard each other.

Other objects of my invention are to provide a combined hot-air and cold-air register that is compact in construction, effective in its operation, economical to manufacture and install, and which when installed in a mercantile establishment will add to rather than detract from the appearance thereof. I prefer to accomplish the divers objects of my invention in substantially the manner and by the means hereinafter fully described and as more particularly pointed out in the claims, reference being now made to the accompanying drawings that form a part of this specification and which are in a sense merely diagrammatic for the purposes of convenient illustration.

In the drawings:

Figure 1 is a vertical end elevation of a register structure adapted for use in stores, banks, etc., as a display counter or as a counting-house desk.

Fig. 2 is a transverse vertical section of this structure, the desk portion being removed therefrom.

Fig. 3 is a horizontal section thereof, the view being taken on line 3—3, Fig. 2, and looking in the direction of the arrows.

This structure is substantially rectangular in shape, and the hot-air is adapted to be discharged through all the walls and a large portion of the ends of the upper grille, while the cold-air is drawn in through only the sides and a portion of the ends of the lower grilles, the hot-air passageway being disposed longitudinally through the central portion of the interior from end to end thereof with cold-air passageways on both sides. The upper and lower grilles 100 and 101, respectively, are each made of two pieces of reticulated sheet metal similar to the grilles in the other types of my register, shown in my co-pending applications, and are bent substantially U-shape to conform with the outline of the lower portion of the structure. End plates 102 of inverted T-shape, and provided with lateral flanges 103 along their vertical edges, are employed to secure the end edges of the grilles together. To do this, vertical flanges 100*

and 101ª are made along the adjacent edges of the grille plates so that the flanges may be drawn together by suitable clamp bolts 104 of any desired form, or in any other manner.

A lower strap or ring 105 of L-section receives the bottom edges of the lower grilles and upper and intermediate straps or rings 106 and 107, respectively, are employed to which the adjacent horizontal edges of the upper and lower grille plates are secured, each strap being provided with its respective outwardly projecting bead or rib 106ª and 107ª, against which the adjacent edges of the reticulated grille plates abut when in position. Suitable vertical struts or reinforcing rods 108 extend from the upper to the lower straps and are secured thereto, and to the intermediate strap, by bolts or otherwise to assist in strengthening the grilles and straps, while end boards 109 corresponding in shape with the end-plates 102 are secured upon the exterior of said plates to cover the flanges and end edges of the respective upper and lower grilles, as shown in Fig. 1.

Secured to and arising from the upper strap is an extension band 110 that is perforated for ventilating the sand-chamber, hereinafter described, and the top or cover 112 is adapted to rest upon the top edge of this band in the manner shown. In the event this type of register is used in a store this top or cover may be employed as a counter for the display of merchandise or the like, or in the event the structure is for use in the corridor of a bank, a removable counting-house desk 113 is added thereto and supported therefrom by suitable end supports or legs 114 that rest upon the ends of the top or cover 112.

The top deflector 115 is of a substantially pyramidal shape, inverted and slightly elongated, and is supported upon the upper strap in any suitable manner, preferably, by providing the upper edges of its walls with downwardly bent flanges 116 that extend over the top and down the outer surface of said strap. The interior of the register below the horizontal plate of the intermediate strap 107 is divided longitudinally by two parallel vertical walls 117 that extend from end to end of the register and divide the interior space into an inner or central hot-air passage-way 118 and two outer parallel cold-air passage-ways 119 upon opposite sides thereof. The central upper portions of these walls 117 are provided with relatively wide substantially V-shaped recesses 120 in which the lower edges of the cold-air deflectors 121 are positioned. These deflectors are substantially semi-pyramidal in shape with the vertical wall omitted, and their inclined walls extend upwardly from the recesses 120 in the vertical walls 117 toward and are secured to the intermediate strap 107 by providing downturned flanges 122 upon the upper outer edges of the deflector walls that fit over the top and down the outer side of the strap 107 in substantially the same manner as the deflector 115 is mounted upon its strap 106.

From the above it will be seen I have devised a structure wherein a combined hot-air and cold-air register is provided for use in stores, banks, etc.; and in which the hot-air from the furnace arises through a central passage-way that extends from end to end of the register and said hot-air is discharged through the upper grille extending substantially entirely around the upper portion of the structure. The cold air is received through the sides of the lower grille into two passage-ways upon each side of and parallel with the hot-air passage-way and which also extends from end to end of the register, but owing to their shallowness receive the cold air along the longitudinal sides of the register and only a very small proportion of the ends thereof.

The deflector 115 is, preferably, filled with sand or other heat retaining material for the purpose of storing a quantity of heat for use when the fire is let down, and in order to keep the sand clean, I place a suitably shaped plate V on the top thereof.

What I claim is:—

1. A register comprising a suitably shaped outer shell provided with reticulations, a top closing said shell, parallel walls dividing the interior lower portion of said shell into a central passage-way and outer passage-ways upon opposite sides thereof all extending longitudinally of said shell, the upper edges of said parallel walls being flared outwardly and engaging said shell intermediate the top and bottom thereof, a hot-air pipe communicating with said central passage-way through which hot-air is adapted to be discharged through the upper portions of said reticulated shell, and a cold-air pipe communicating with said outer passage-ways and adapted to receive cold air entering said register through the lower portions of said reticulated shell.

2. A register comprising a suitably shaped outer shell provided with reticulations, a top closing said shell, parallel walls dividing the interior lower portions of said shell into a central passage-way and outer passage-ways upon opposite sides thereof all extending longitudinally of said shell, the upper edges of said parallel walls being flared outwardly and engaging said shell intermediate the top and bottom thereof, a hot-air pipe communicating with said central passage-way through which hot-air is adapted to be discharged through the upper portions of

said reticulated shell, a cold-air pipe communicating with said outer passage-way and adapted to receive cold-air entering said register through the lower portions of said reticulated shell, and an elongated baffle in the upper portion of said register having its walls inclined downwardly from the upper edges of said shell.

3. A register comprising a suitably shaped outer shell provided with reticulations, a top closing said shell, two vertical walls extending longitudinally of the shell and dividing the lower portion thereof into an inner hot-air passage-way extending from end to end of said shell and two cold-air passage-ways parallel thereto and upon opposite sides thereof, V-shaped recesses in said walls, and a semi-pyramidal deflector positioned in each recess and extending upwardly and outwardly to the adjacent portion of the shell.

4. A register comprising a suitably shaped outer shell provided with reticulations, a top closing said shell, two vertical walls extending longitudinally of the shell and dividing the lower portion thereof into an inner hot-air passage-way extending from end to end of said shell and two cold-air passage-ways parallel thereto and upon opposite sides thereof, V-shaped recesses in said walls, a semi-pyramidal deflector positioned in each recess and extending upwardly and outwardly to the adjacent portion of the shell, and an inverted pyramidal deflector positioned above the central hot-air passage-way the walls whereof incline upwardly to the upper portion of the shell.

5. A register comprising suitably shaped plates forming portions of the ends thereof the vertical edges whereof are provided with lateral flanges, a plurality of horizontally disposed straps secured to and connecting said end plates, reticulated plates extending between said straps and having flanges on their vertical end edges adjacent the flanges on said plates, means adapted to connect said flanges, and means within the chamber formed by the aforesaid structure that divides the interior into hot-air and cold-air passage-ways and whereby the hot-air is discharged through the upper portions of said reticulated plates and the cold-air is admitted through the lower portions of said plates.

6. A register comprising suitably shaped plates forming portions of the ends thereof the vertical edges whereof are provided with lateral flanges, a plurality of horizontally disposed straps secured to and connecting said end plates, reticulated plates extending between said straps and having flanges on their vertical end edges adjacent the flanges on said plates, means adapted to connect said flanges, walls dividing the interior of the chamber formed by the aforesaid structure into a central passage-way and two outer passage-ways, and a pyramidal deflector above the central passageway.

7. A register comprising suitably shaped plates forming portions of the end walls thereof the vertical edges whereof are provided with lateral flanges, a plurality of horizontally disposed straps secured to and connecting said end plates, reticulated plates extending between said straps and having flanges on their vertical end edges adjacent the flanges on said plates, means adapted to connect said flanges, walls dividing the interior of the chamber formed by the aforesaid structure into a central passage-way and two outer passage-ways, said walls having V-shaped recesses in their upper portions, and outwardly inclined members extending upwardly from the upper edges of said recesses toward the central portions of said reticulated plates.

8. A register comprising suitably shaped plates forming portions of the end walls thereof the vertical edges whereof are provided with lateral flanges, a plurality of horizontally disposed straps secured to and connecting said end plates, reticulated plates extending between said straps and having flanges on their vertical end edges adjacent the flanges on said plates, means adapted to connect said flanges, walls dividing the interior of the chamber formed by the aforesaid structure into a central passage-way and two outer passage-ways, said walls having V-shaped recesses in their upper portions, outwardly inclined members extending upwardly from the upper edges of said recesses toward the central portions of said reticulated plates, and a pyramidal shaped deflector above the passage-way.

9. A register comprising suitably shaped plates forming portions of the end walls thereof the vertical edges whereof are provided with lateral flanges, a plurality of horizontally disposed straps secured to and connecting said end plates, reticulated plates extending between said straps and having flanges on their vertical end edges adjacent the flanges on said plates, means adapted to connect said flanges, walls dividing the interior of the chamber formed by the aforesaid structure into a central passage-way and two outer passage-ways, said walls having V-shaped recesses in their upper portions, outwardly inclined members extending upwardly from the upper edges of said recesses, a pyramidal shaped deflector above the central passage-way, and downwardly bent flanges on the outer edges of each inclined member and said deflector that rest upon the adjacent portions of the respective straps.

10. A register structure comprising end

plates, a reticulated shell the ends whereof are secured to said plates, a strap extending around the upper edge of said shell and plates, an extension band carried by said strap, a cover resting upon said band, partitions dividing the interior of said shell into hot-air passage-way portions of said partitions extending obliquely upwardly to said shell, and a pyramidal element in the upper portion of the interior of the shell above the hot-air passage-way.

Signed at Chicago, county of Cook and State of Illinois, this 12th day of May, 1919.

ALBERT G. SCHERER.

Witnesses:
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