July 8, 1930. C. A. NORTON ET AL 1,769,931

WARM AIR REGISTER

Filed Oct. 5, 1928 2 Sheets-Sheet 1

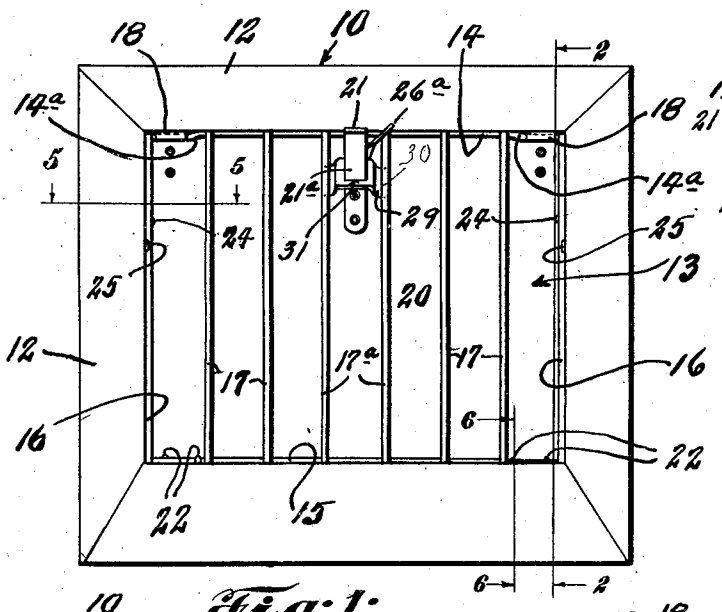


Fig. 1.

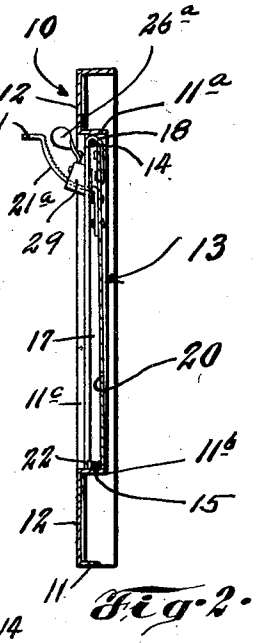


Fig. 2.

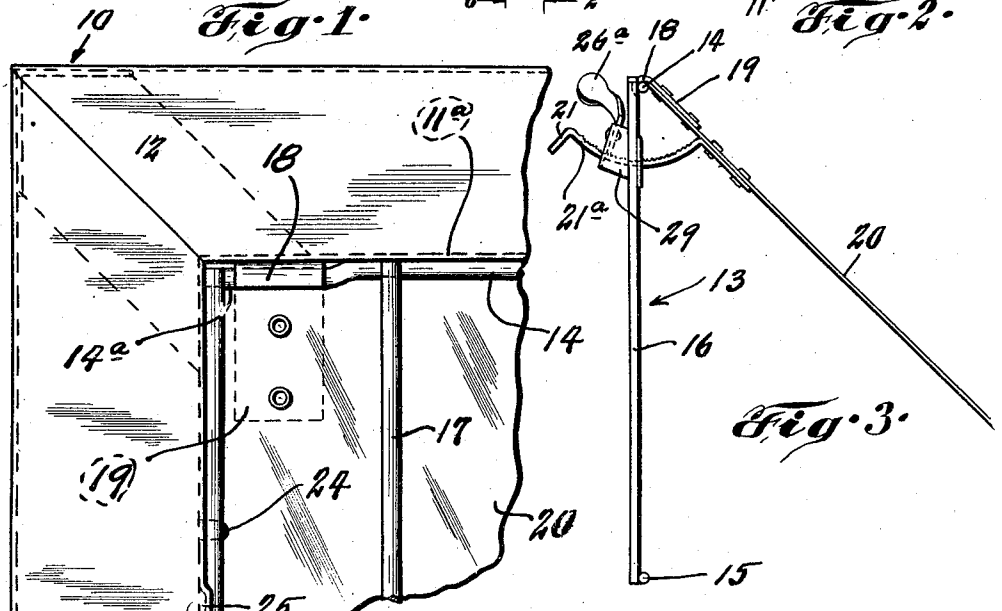


Fig. 3.

Fig. 4.

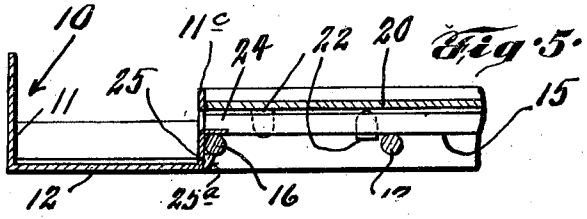


Fig. 5.

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WARM AIR REGISTER

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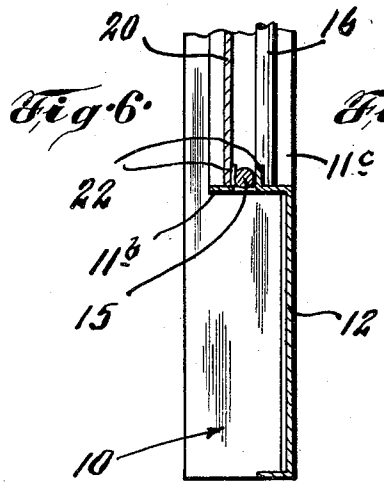


Fig. 6.

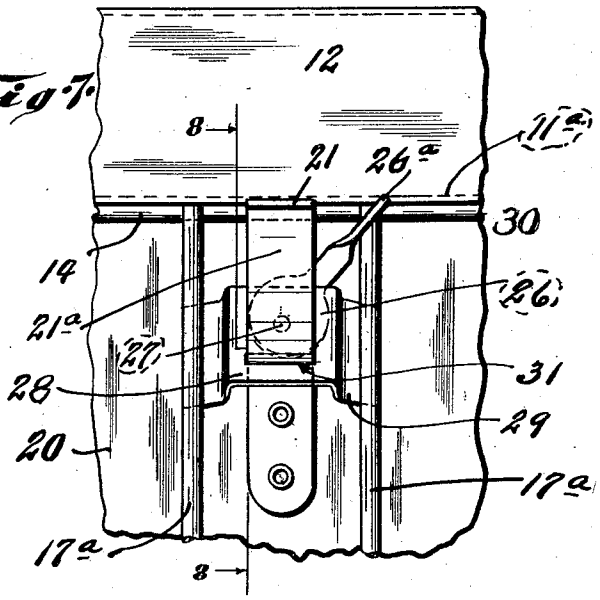


Fig. 7.

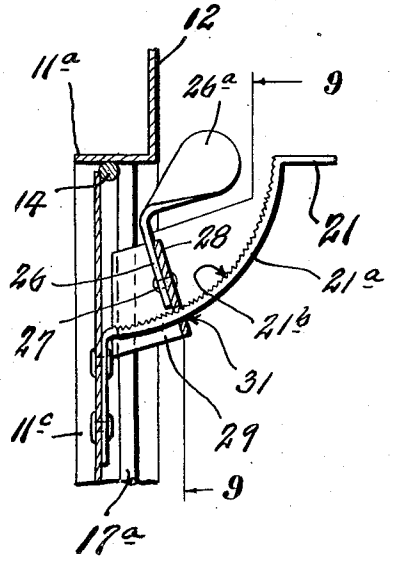


Fig. 8.

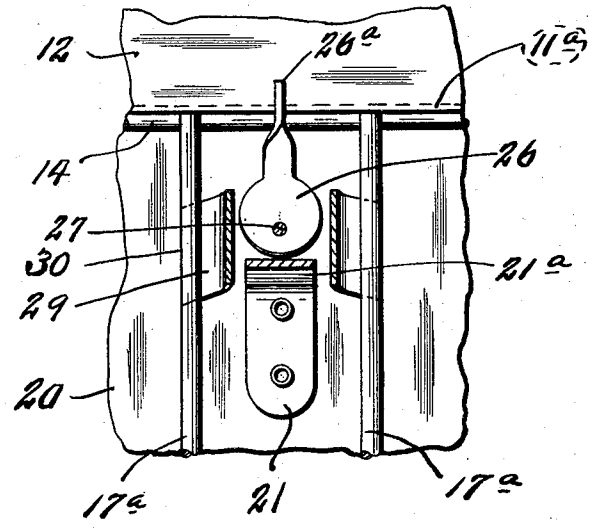


Fig. 9.

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UNITED STATES PATENT OFFICE

CLARENCE A. NORTON AND ALBERT KUNZ, OF ST. LOUIS, MISSOURI

WARM-AIR REGISTER

Application filed October 5, 1928. Serial No. 310,627.

This invention relates to new and useful improvements in registers for hot air heating systems.

The primary objects of the invention are the provision of a hot air register which is of simple but durable construction and is so constructed that all crevices and regular surfaces, which may provide lodgment for dirt and dust and are inexcessible for cleaning purposes, are eliminated, thereby providing a register which is easy to clean and is sanitary.

Other objects of the invention are to provide a hot air register which contains but few parts and can be economically manufactured and which can be readily attached to and detached from the hot air register frame and which has simple means for locking the closure member either in open or closed positions.

With these and other objects in view, our invention consists in certain novel features of construction and arrangement of parts, hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevational view of the hot air register placed in position in the frame.

Figure 2 is a transverse cross section taken on line 2—2 of Figure 1.

Figure 3 is an end elevational view of the register showing it detached from the frame with the closure member open.

Figure 4 is an enlarged detail view of one corner of the register and the register frame.

Figure 5 is an enlarged horizontal cross section taken on line 5—5 of Figure 1.

Figure 6 is an enlarged vertical cross section taken on line 6—6 of Figure 1.

Figure 7 is an enlarged front elevational view of the handle and the locking means and parts associated therewith.

Figure 8 is a vertical cross section taken on line 8—8 of Figure 7.

Figure 9 is a vertical cross section taken on line 9—9 of Figure 8.

Referring by numerals to the accompanying drawings, 10 indicates a register frame which is placed against the wall and forms the discharge opening for the hot air duct. This frame consists of an inwardly presented marginal flange 11 which forms the terminus for the hot air duct and a vertically disposed flange 12 which is arranged against the wall. A register or grille member 13 is detachably secured within the opening formed by flange 11.

This register consists of a pair of horizontally and longitudinally disposed members or rods 14 and 15, forming, respectively, top and bottom members of the grille and adapted to be placed against the horizontally disposed flange members 11^a and 11^b, respectively. Longitudinal members 14 and 15 are united by a series of transversely disposed members consisting of end members 16 and intermediate members 17. Members 14, 15, 16, and 17 are preferably formed from rods of suitable diameter cut to the desired lengths. Members 16 and 17 are secured at their ends to longitudinal members 14 and 15, preferably by welding. This not only results in a simple and durable construction but also provides smooth surfaces which can be readily cleaned and do not contain any pockets or recesses for catching dust.

The ends 14^a of top member 14 are slightly offset downwardly and receive tubular extensions or hinges 18 of members 19, which latter are secured to a closure plate 20. Thus said plate is hingedly mounted on said grille and can be operated to open and close or control the communication or passage of hot air through said grille. This closure is disposed rearwardly of the grille and opens rearwardly or inwardly thereof as shown in Figure 3. A handle 21 is fixed to said plate, preferably intermediate the ends thereof and near the upper end of same. This handle projects forwardly between the central pair 17^a of intermediate rods 17.

The bottom flange 11^b has pressed outwardly and upwardly therefrom a series of lugs or projections 22, preferably arranged in pairs near each end thereof. These ears or lugs are spaced from each other the thickness of the bottom rod 15 and when grille 13 is inserted in the frame 11, said bottom

member is received between said lugs and is held thereby in position in the frame.

The vertically disposed flange members 11c are provided, preferably near the upper ends thereof, with a pair of lugs or ears 24 which project laterally therefrom and form stops for the vertically disposed end members 16. A shoulder 25 is pressed inwardly and laterally from each flange member 11c near lug 24 and is spaced forwardly therefrom so as to receive between said lug 24 and said shoulder 25 the vertical rod 16. Each shoulder 25 projects outwardly from flange 11c only a short distance so that vertical rods 16 can be snapped in position past said shoulders. The forward face of each shoulder 25 is formed inclined or tapered as indicated at 25a to facilitate the positioning of the grille. As rods 16 are of comparatively small diameter and are of suitable lengths, they possess a certain degree of resiliency and can be readily snapped in position or detached from the frame by applying pressure to said members.

The handle 21 is adapted to be locked so as to hold the closure plate 20 in any adjusted position. This locking means consists of an eccentrically mounted disk 26, the edge of which is adapted to bear against the inner face of a curved portion 21a. This curved portion is preferably concentric with the hinges 18 and the inner face is roughened or serrated as indicated at 21b in order to provide a better hold for disk 26. The latter is eccentrically mounted by means of a pin 27 on the transverse portion 28 of a bracket 29. The ends of the bracket are secured to the intermediate bars or rods 17a as indicated at 30. The intermediate portion 28 is provided with an elongated horizontally disposed slot 31 through which the curved portion 21 operates. Disk 26 is formed with an upwardly projecting handle 26a by means of which said disk may be actuated. When said handle occupies upward central position shown in Figure 9, disk 26 is disengaged from curved portion 21a and handle 21 and closure plate 20 are free and occupy closed position as indicated in Figure 2.

To lock the plate in open or adjusted position, handle 26 is operated to either side of its central position, thereby bringing the eccentrically disposed portions of disk 26 into engagement with the roughened surfaces 21b so as to lock said handle against movement. This construction provides a simple and inexpensive lock which is easy to operate and will securely hold the plate in locked position.

In inserting the grille 13 in position in frame 10, closure plate 20 is so placed as to position the lower edge thereof behind the rear lugs 22, while the bottom rod 15 is placed between the front and rear lugs 22. This precaution is necessary as otherwise it would not be possible to open said member 20. Shoulders 25 are shaped as to allow ready attachment and detachment of the grille member to and from said frame.

As the constituent members of the grille are formed from sections of rods, no expensive dies and machinery is required in the manufacture and there is no wastage of material. The eccentricity of disk 26 provides a positive lock for handle 21, thereby insuring the retention of closure plate 20 in any adjusted positions under all circumstances.

Our improved register is of simple and inexpensive construction, and is sanitary, being easily cleaned and being devoid of all pockets or crevices in which dust and dirt might find lodgment.

It is obvious that our improved register is susceptible of various structural changes and modifications and we contemplate such changes and modifications as being within the spirit of our invention.

We claim:

1. A hot air register comprising in combination a frame of sheet metal having outer and inner marginal flanges; a grille member removably arranged therein and comprising a pair of horizontally and longitudinally disposed rods forming top and bottom members of said grille, a plurality of transversely and vertically disposed rods secured at their ends in spaced relation to said longitudinal members, and a plurality of protuberances pressed from the inner marginal flange of said frame and extending inwardly into the opening formed thereby for engaging the opposite sides of said top and bottom members and the end rods of said grille for retaining the latter in position within said frame.

2. A hot air register comprising in combination a frame having an outer and an inner marginal flange; a grille member removably arranged within said inner marginal flange and comprising a pair of horizontally and longitudinally disposed rods forming top and bottom members of said grille, and a plurality of transversely disposed rods secured at their ends in spaced relation to said longitudinal members; a closure plate hingedly mounted on the ends of said top rod and opening rearwardly of said grille for controlling the communication therethrough, and means comprising cooperating members, one of which is fixed to said closure plate and the other to certain of said transversely disposed rods for locking said closure plate in adjusted position.

3. A hot air register comprising in combination a frame of sheet metal having an outer marginal and an inner marginal flange, a grille member removably insertable within the opening formed by said inner marginal flange and consisting of a pair of longitudi-

nally disposed top and bottom rods and a series of transversely and vertically disposed spaced rods having their ends welded to said longitudinal rods, projections pressed out from said inner marginal flange and extending inwardly for detachably engaging opposite sides of said rods and retaining said grille in position therein, a closure plate hingedly mounted on the ends of said top rod and opening rearwardly of said grille for controlling the communication therethrough, a handle secured to and projecting outwardly from said plate between a pair of said transversely disposed rods, and a member carried by the last mentioned rods for engaging said handle and locking said closure plate in adjusted position.

4. In a hot air register, the combination of a frame having a laterally and rearwardly presented flange, a grille removably positionable within said flange and including longitudinal top and bottom rods and transverse end rods, a series of spaced lugs struck upwardly from the lower flange member for detachably engaging the longitudinal bottom rod, and lugs struck laterally and inwardly from the side flange members for detachably engaging said end rods.

5. In a hot air register, the combination with a frame having a rearwardly presented flange; of a grille member removably positionable therein, said grille member including longitudinal top and bottom rods and transverse end rods; a series of spaced lugs struck upwardly and inwardly from the lower flange member for detachably engaging the longitudinal bottom rod, lugs struck laterally and inwardly from the side flange members for limiting the inward movement of said end rods, and projections formed on said side flange members and spaced from the last mentioned lugs and provided with rearwardly presented shoulders adapted to be engaged by said transverse end rods for holding said grille in position in said frame, said end rods being resilient to enable the positioning thereof past said shouldered projections.

6. In a hot air register, the combination with a frame having a rearwardly presented flange; of a grille member removably positionable therein, said grille member including longitudinal top and bottom rods and transverse end rods; a series of spaced lugs struck upwardly and inwardly from the lower flange member for detachably engaging the longitudinal bottom rod, lugs struck laterally and inwardly from the side flange members for limiting the inward movement of said end rods, projections formed on said side flange members and spaced from the last-mentioned lugs and provided with rearwardly presented shoulders adapted to be engaged by said transverse end rods for holding said grille in position in said frame, said end rods being resilient to enable the positioning thereof past said shouldered projections, and a closure plate hingedly mounted on the top longitudinal rod for controlling the communication through said grille.

7. In a register construction, a grille member comprising a pair of longitudinally disposed metal rods spaced to form top and bottom members of said grille, a series of spaced transverse metal rods having their ends welded to said pair of longitudinal rods, a closure plate hingedly mounted on the ends of said top member for closing the communication through said grille, a handle secured to said closure plate and projecting forwardly and outwardly between certain of said transverse rods, said handle having a roughened face curved concentrically with the hinge mounting of said closure plate, a mount member carried by certain of said transverse rods in spaced relation with said roughened face, and means movably carried by said mount and adapted to engage said roughened face for locking said closure member in position.

In testimony whereof we hereunto affix our signatures this 27th day of September, 1928.

CLARENCE A. NORTON.
ALBERT KUNZ.