Sept. 4, 1951 W. C. DE ROO 2,566,558

FURNACE REGISTER FRAME

Filed Jan. 2, 1948

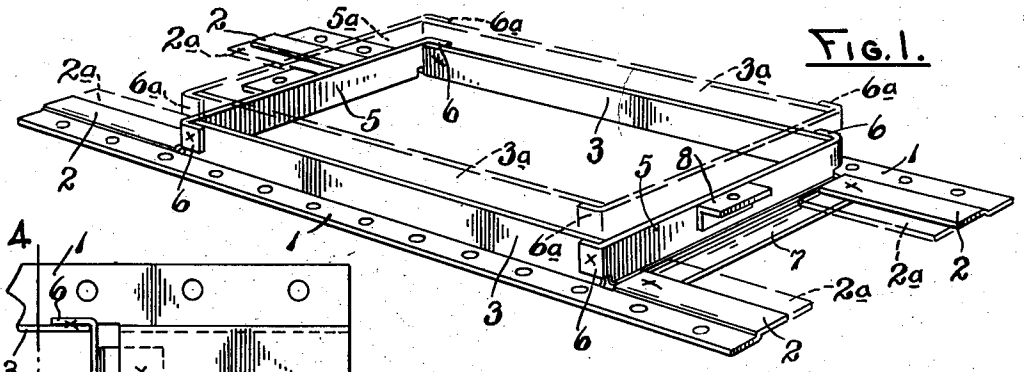


FIG. 1.

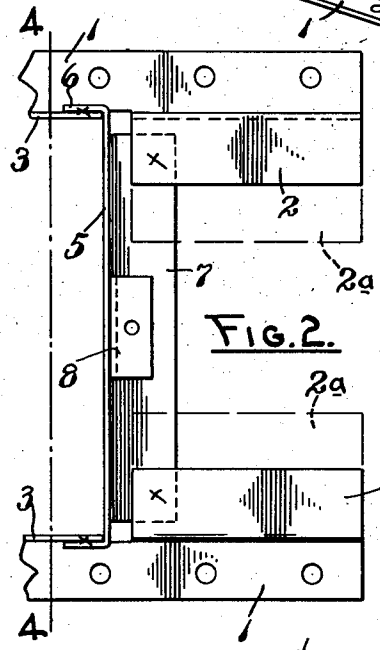


FIG. 2.

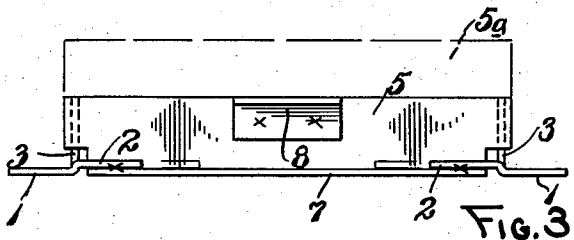


FIG. 3.

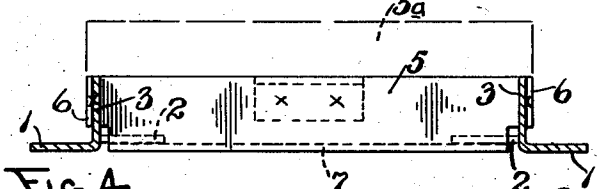


FIG. 4.

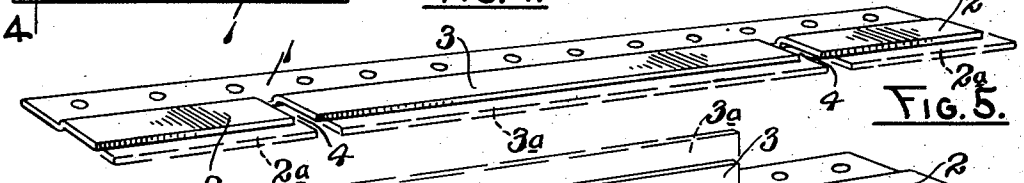


FIG. 5.

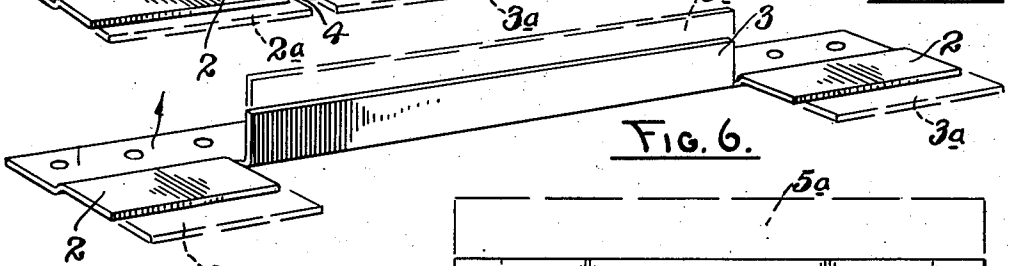


FIG. 6.

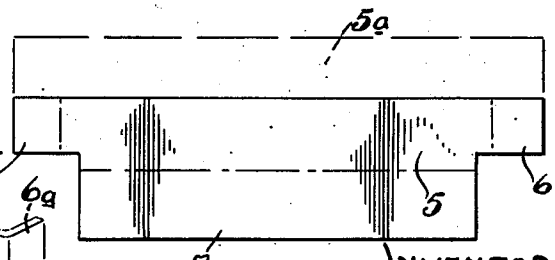


FIG. 7.

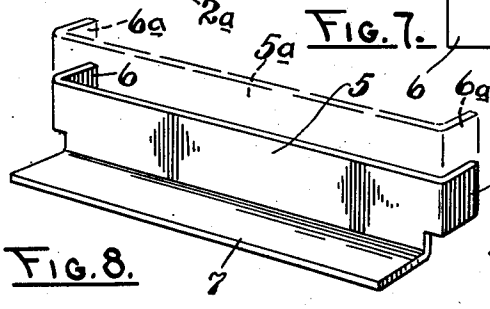


FIG. 8.

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FURNACE REGISTER FRAME

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Application January 2, 1948, Serial No. 214

6 Claims. (Cl. 98—114)

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This invention relates to a frame structure which in practice has been used for registers of the type used at furnace warm air outlets for controlling the volume of the air passed.

It is an object and purpose of the present invention to provide a frame made of flat metal of exceptionally simple structure, with an elimination of multiple pieces used in making the frame as heretofore, and at the same time providing a maximum of strength, using all of the steel from which the respective sides and ends of the frame are produced, with substantially no waste of any portions of the steel material used, which in former frames and methods of making them have occurred, with a weakening of the frame. A further object of the invention is to provide a frame structure of novel design which may be produced in a wide range of sizes both as to length and width and as to the other dimensions of the parts, one set of tools only being required to produce all of the wide range of frames wanted. A still further object is to provide a structure of frame which is particularly applicable to walls of houses or buildings, in which rock lath is used without interference and allowing the lath to be laid close to the box portion of the frame.

With my invention a particularly simple, economically constructed and sturdy and durable register frame is provided in any of the sizes which may be needed, utilizing one set of tools only and thus greatly economizing commercial production.

An understanding of the invention may be had from the following description, taken in connection with the accompanying drawing, in which,

Fig. 1 is a perspective view of the completed frame made in accordance with my invention, indicating in dash lines variation in dimension of the width of the material used for different frames,

Fig. 2 is a fragmentary plan view, somewhat enlarged, at one end of the frame,

Fig. 3 is an end elevation thereof,

Fig. 4 is a transverse vertical section substantially on the plane of line 4—4 of Fig. 2,

Fig. 5 is a perspective view of one of the side member blanks, two of which are used in the construction of the frame,

Fig. 6 is a perspective view of the side member in Fig. 5, after it has been formed by turning outwardly a box side at right angles to a side of the frame,

Fig. 7 is a plan view of the metal blank for an end of the frame, and

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Fig. 8 is a perspective view of one of said ends after it has been shaped to completed form from the blank in Fig. 7.

Like reference characters refer to like parts in the different figures of the drawing.

In the construction of the frame, the side members are of sheet metal, each as shown in Fig. 5 having an elongated base strip 1 from which a second integral strip 2 is offset a short distance to lie in a plane parallel to but to one side of the plane of the strip 1. The intermediate portions of the offset portion 2 provide a flange 3 which is adapted to be turned outwardly at right angles, being separated from the end portions by slots 4. Thus when the flange 3 is turned at right angles to the strip 1, as in Fig. 6, it forms a side of the register box, end portions of the flat metal from which the sides are made extending beyond the box structure, as shown in Fig. 1.

It will be noted that the width of the strip 2 of the substantially flat side member material may be varied, or as indicated at 2*a*, in which case the side 3*a* of the box turned at right angles will extend farther vertical from the plane of the strip 1. This requires only that the punches which cut the slots 4 shall in the beginning be sufficiently wide that they will produce the slots 4 irrespective of the width of the parts 2 or 2*a*. It is of course also to be understood that the length of the sides of a frame is subject to wide variation, and that the punches for cutting the slots 4 are adjustable toward or away from each other in accordance with the varying lengths of the box sides wanted.

The ends are also made from flat metal plates (Fig. 7), which will include a vertical flange 5 with an ear turned at right angles at each end, and a horizontal flange or leg 7 integral with and at the lower edge of the vertical flange 5. Likewise, the width of the flange 5 and of the ears 6 associated therewith, may be increased as indicated at 5*a* and 6*a*. There are two ends of the frame and each is connected with the side members by inserting the flanges 7 through the slots 4 underneath the flat portions 2 extending beyond each end of the box sides, and spot welding thereto, as shown in Fig. 1. The vertical flange 5 will have the ears 6 at the ends thereof come against the outer sides of the side flanges 3 of the frame box and overlap the same at their ends, being connected thereto by spot welding, riveting or other equivalent permanent connection. The frame is completed by attaching to the flange 5 of each end thereof, an angle bracket 8 which is used in attaching a grille to the frame.

The ends of the members 1 are attached to the studs of a wall and plaster is applied to the wall around the frame leaving an opening through which the frame extends.

With the structure of frame described and the method used in producing it, frames of any desired dimensions within the range of dimensions which are used, may be provided, using one set of tools only for the piercing or cutting of the slots 4, for offsetting or bending the side box flange 3 at right angles to the base strip 1, and for shaping the end blanks into their completed form ready for attachment. The vertical dimension of the sides and ends of the box portion of the frame, as in Fig. 1, may be varied for anything that is needed and also the width of the offset portion 2 increased or diminished as may be wanted. Economy in manufacture is attained to a greater extent than heretofore in the manufacturing of register frames. The frames made in accordance with my invention, and in accordance with the method or process which is followed, may be produced in large quantities at low cost. Such frame is amply sturdy and durable.

Having thus described my invention, what I desire to claim and secure by Letters Patent, is as follows:

1. In a register frame construction, two parallel spaced apart side members of flat metal each having a main body and an intermediate portion, at a side thereof for a portion of the width of the member, separated therefrom at its ends and extended outwardly at right angles from the main body, with portions of each of said side members at each end thereof and in full width extending outwardly beyond said intermediate portion, end members each having two integrally joined portions located at right angles to each other, one of said portions at each end thereof having an ear at right angles thereto, said last mentioned portions of said end members extending between the ends of said intermediate portions of the spaced side members with said ears overlapping adjacent ends of said intermediate portions of the side members, the other portions of said end members extending under the parts of the side members extending beyond the intermediate portions thereof, means permanently connecting said ears to said outwardly extending intermediate portions of the side members, and means permanently connecting said last mentioned portions of the end members to the outwardly extending portions of the side members beyond their intermediate portions.

2. A structure as defined in claim 1, said side members each comprising two longitudinal sections, the inner of which from which the intermediate outwardly extending section is taken, being offset a short distance from the plane of the outer longitudinal section thereof.

3. A structure as defined in claim 2, wherein said inner longitudinal offset section is offset an amount substantially equal to the thickness of the material from which the end members of the frame are produced.

4. In a structure as described, a frame comprising, two spaced apart parallel side members of flat metal, each of said side members at a preselected distance from each end thereof having a transverse slot cut therein from the inner edge of the side member partly through but short of the outer edge thereof providing an intermediate portion, said intermediate portion extending outwardly at right angles to the plane of its associated side member, two end members completing the frame, each having two portions located at right angles to each other, one of said portions being of a length not exceeding the distance between the bottoms of said slots in the side members and having end portions thereof located at a side of and against the end portions of said side members beyond said intermediate portions thereof, the other of said portions extending between the adjacent ends of said right angle intermediate portions of said side members and across the ends thereof and having ears at the ends of said other portions extending at right angles therefrom and lying against the outer sides of the adjacent end portions of said right angle intermediate parts of the side members, said end members being located at opposite ends of said side member right angle intermediate portions, and means for permanently connecting said ears to the right angle intermediate side member portions, and means connecting the first mentioned portions of each of said end members to said end extensions of the side members where in contact engagement therewith.

5. A register frame comprising, two side members of sheet metal in parallel spaced relation, each of said side members comprising two longitudinal sections offset from each other, the inner offset section of each member having two slots spaced from the ends of the member and the metal between said slots being bent at right angles to the plane of the offset portions, and two end members of sheet metal each comprising two longitudinal integral portions at right angles to each other, one of said right angle portions of each end member being attached at its respective ends to the inner unbent offset section of each side member and the other right angle portion of each end member being attached at its respective ends to ends of said right angle bent portions of the side members.

6. A register frame comprising two side members of sheet metal in parallel spaced relation, each of said side members having a main body and each main body having two slots spaced from its ends and extending transversely therein from its inner edge and the metal of the body at the inner side thereof and between said slots being bent at right angles to the plane of the main body, and two end members of sheet metal each comprising two longitudinal integral portions at right angles to each other, one of said right angle portions of each end member being attached at its respective ends to the unbent portion of the main body of each side member, and the other right angle portion of each end member being attached at its respective ends to ends of said right angle bent portions of the respective opposite side members.

WILLIAM C. DE ROO.

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