

June 13, 1950

L. H. BAUER
AIR DIFFUSER

2,511,490

Filed April 2, 1947

3 Sheets-Sheet 1

Fig. 1

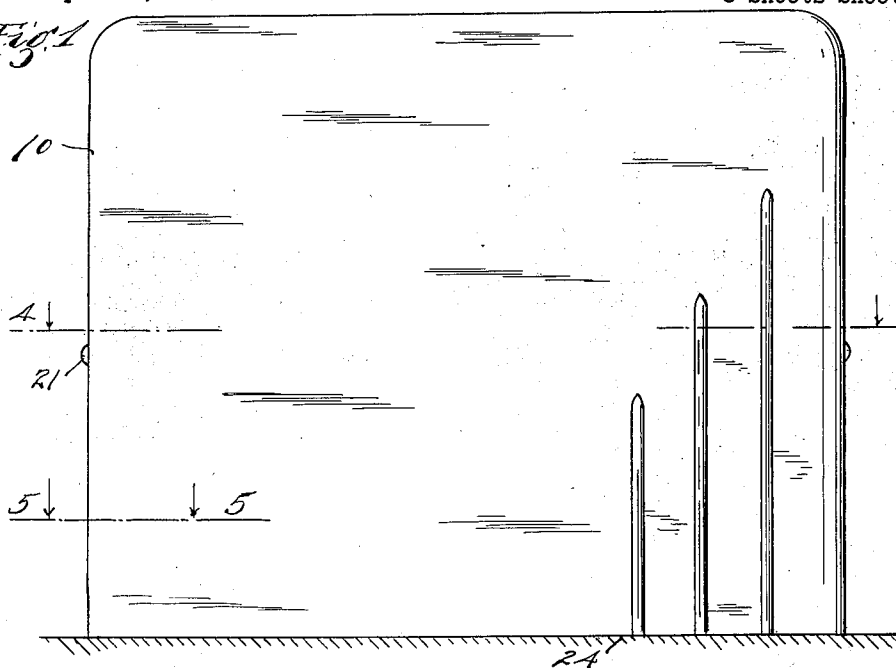
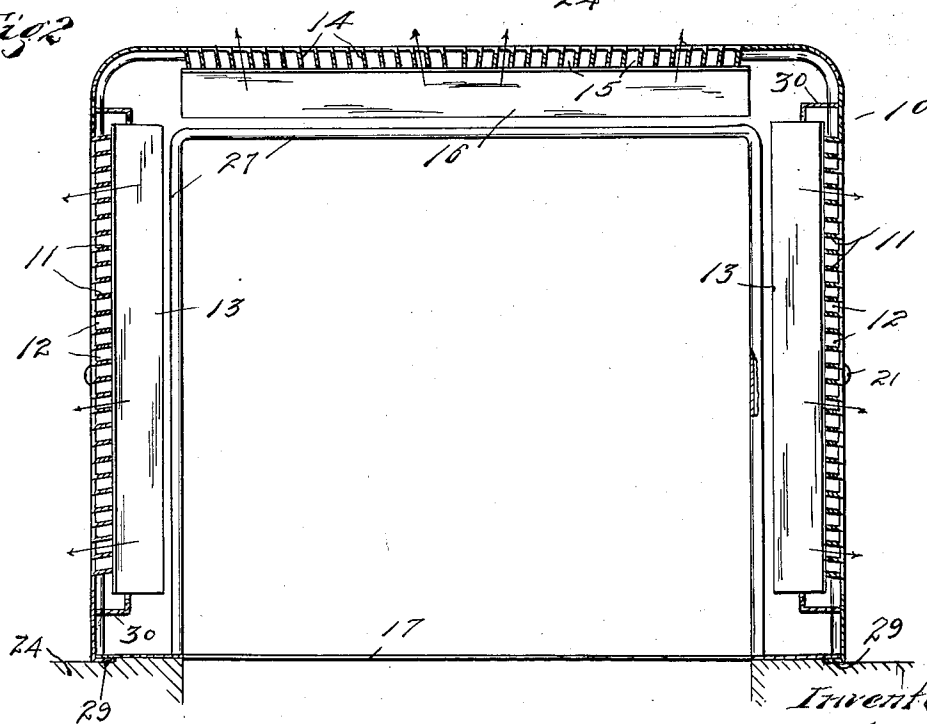


Fig. 2



Inventor
Lawrence H. Bauer
By *Harry W. Kilgore*
Attorney

June 13, 1950

L. H. BAUER

2,511,490

AIR DIFFUSER

Filed April 2, 1947

3 Sheets-Sheet 2

Fig. 3

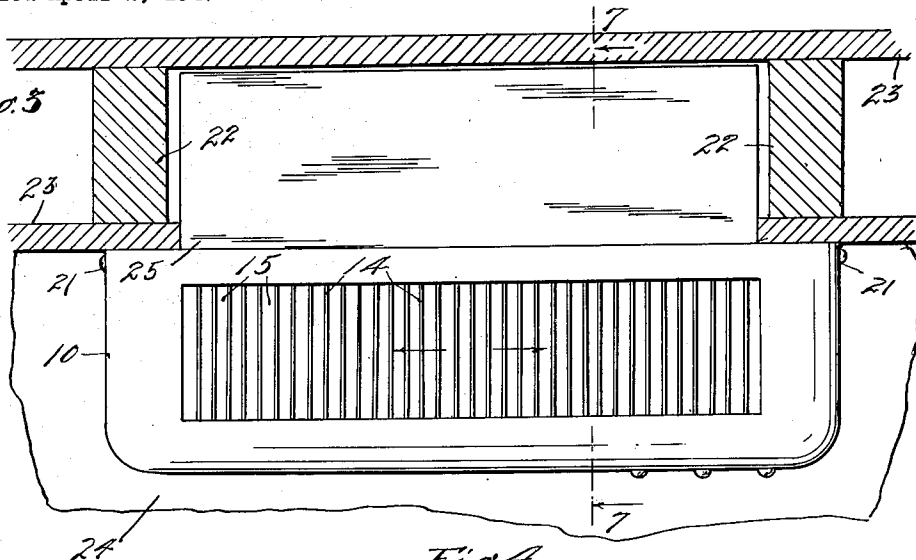


Fig. 4

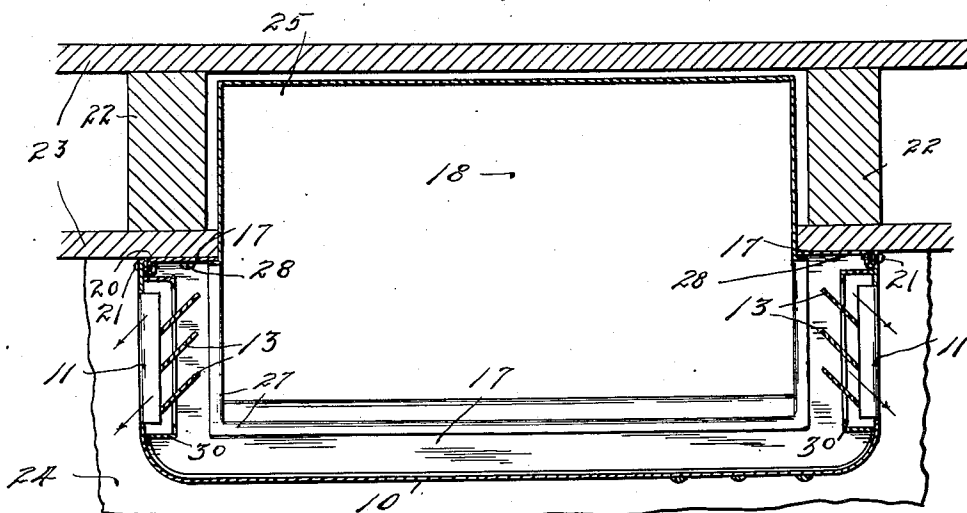


Fig. 5

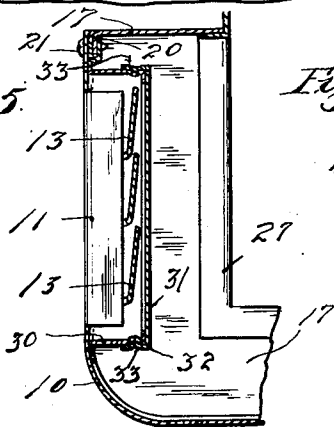
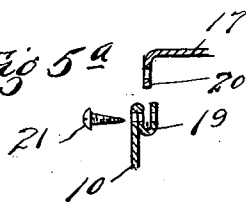


Fig. 5a



Inventor
Lawrence H. Bauer
Harry D. Kilgore
Attorney

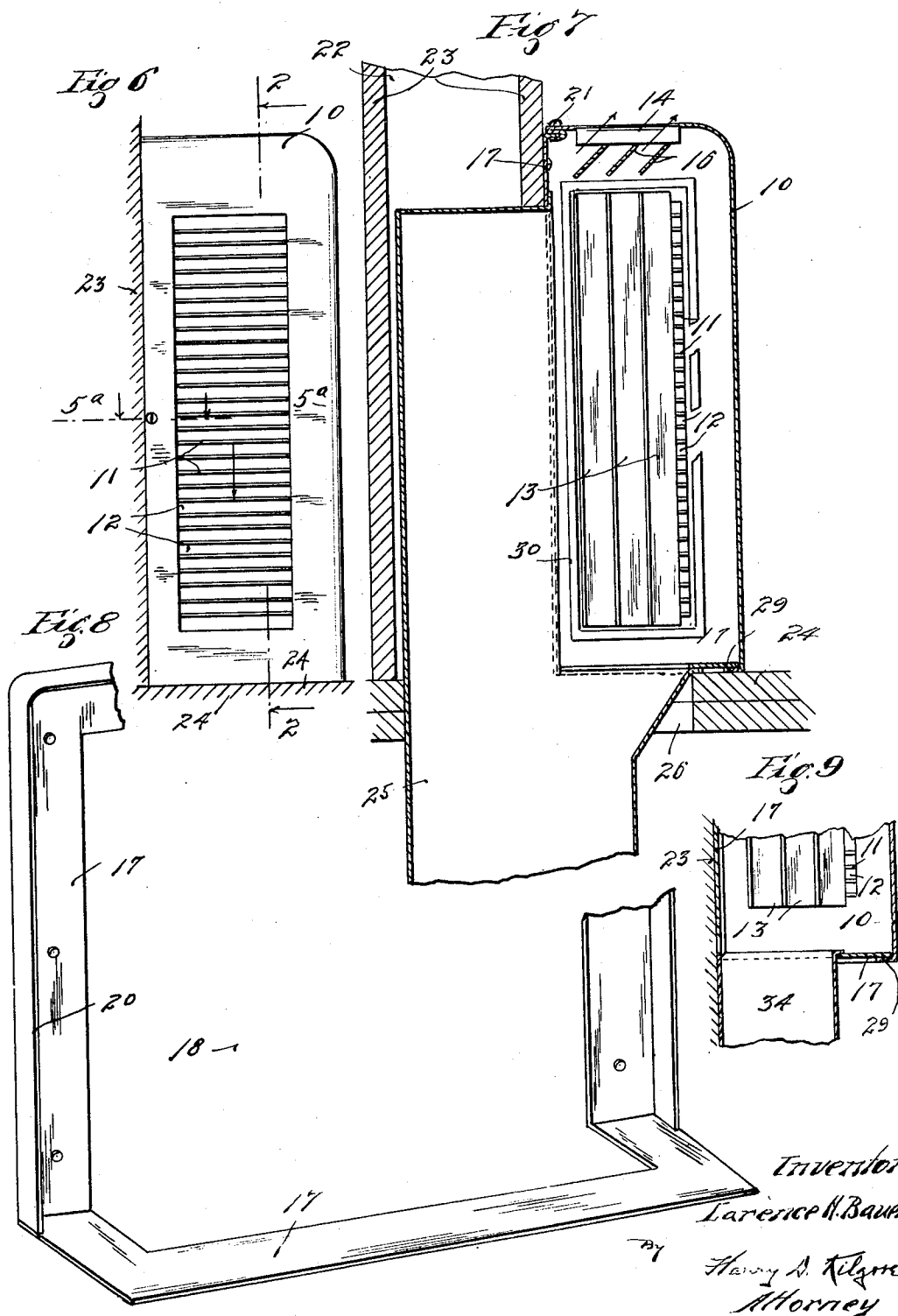
June 13, 1950

L. H. BAUER
AIR DIFFUSER

2,511,490

Filed April 2, 1947

3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,511,490

AIR DIFFUSER

Lawrence H. Bauer, St. Paul, Minn.

Application April 2, 1947, Serial No. 738,892

2 Claims. (Cl. 98-108)

1

My invention relates to improvements in air diffusers for use in connection with hot air heating systems for circulating hot air for heating purposes or for circulating conditioned air in warm weather.

This air diffuser, while intended for general use in new installations, is especially well adapted for use in remodeling to take the place of the conventional wall register for ducts that are concealed entirely within the walls or to take the place of registers for ducts partly within the walls and partly in the floor structure, or for use in prefabricated buildings where the walls are too thin for duct installations and hence the ducts must extend through the floor structure.

The object of my air diffuser is to direct air from a duct, leading from a hot air heating system, either forced or gravity type, in all directions, so that this air commingles with the air in the room without striking the occupant or occupants in the room, and it also directs the air away from the respective wall and the draperies and other objects thereon.

To the above end, generally stated, the invention consists of the novel construction and arrangement of parts hereinafter described and defined in the claims.

In the accompanying drawings, which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a front elevational view of the improved air diffuser;

Fig. 2 is a sectional view taken on the line 2-2 of Fig. 6;

Fig. 3 is a top plan view of the invention and a fragmentary sectional view of the wall structure to which the air diffuser is attached;

Fig. 4 is a sectional view taken on the line 4-4 of Fig. 1;

Fig. 5 is a fragmentary detail view in section taken on the line 5-5 of Fig. 1 and showing a closure for the respective air outlet;

Fig. 5a is a fragmentary detail view in section taken on the line 5a-5a of Fig. 6, on an enlarged scale, with the parts segregated;

Fig. 6 is a right side elevational view of the improved air diffuser;

Fig. 7 is a sectional view taken on the line 7-7 of Fig. 3;

Fig. 8 is a fragmentary view of the adapter plate removed from the air diffuser; and

Fig. 9 is a fragmentary sectional view showing a different arrangement of the air duct.

The numeral 10 indicates a stamped sheet

2

metal housing having an open back and bottom. This housing 10 is a rectangular structure having in each of its side members a multiplicity of horizontal directional fins 11 cut and pressed therefrom. These fins 11 extend into the housing 10 and leave long horizontal rectangular air outlet passageways 12 therebetween. By reference to Fig. 2, it will be noted that the fins 11 are downwardly inclined and direct air through the passageways 12 downwardly toward the floor.

Co-operating with each series of fins 11 is a plurality of upright directional blades 13 that are laterally spaced apart. These blades 13 extend transversely of the fins 11 and are secured thereto at their outer edges by welding. Said blades 13 are transversely inclined to the planes of the side members of the housing 10, and direct the air in the passageway 12 outwardly into the room and away from the wall to which the air diffuser is attached.

In the top member of the housing 10 is a plurality of directional fins 14, similar to the fins 11. These fins 14 are cut and pressed from the top member of the housing 10 and leave rectangular air passageways 15 therebetween. Said fins 14 extend into the housing 10 and are arranged in two series and the fins 14 of these two series are reversely inclined in diverging relation, see Fig. 2.

Co-operating with the fins 14 is a plurality of horizontal directional blades 16 that extend transversely of the fins 14. These blades 16, at the upper edges thereof, are secured to the fins 14 by welding. Said blades 16 extend transversely oblique to the fins 14 and are outwardly inclined to direct air in the passageways 15 outwardly into the room and toward opposite sides thereof.

An adapter plate 17 affords a back member and a bottom member for the housing 10 cut out on the job, as indicated at 18, to receive an air outlet duct leading from a hot air heating furnace, not shown, as will presently appear. The housing 10 and the back member of the adapter plate 17 are connected by folding the housing 10 at the inner side and top edge portions thereof to form a channel 19 and the corresponding edge portions of said back member are turned outwardly to afford a flange 20 that extends into said channel. The flange 20 is secured in the channel 19 by screws 21, see Fig. 5a.

For the purpose of showing the air diffuser in working position, there is shown in the drawings a fragment of a wall structure comprising studs

22 and inner and outer walls 23 and a floor structure, indicated by the numeral 24.

An air duct 25 extends in part upwardly within the wall structure and part thereof extends through an aperture 26 in the floor structure 24.

The discharge end portion of the duct 25 extends through the aperture 18 in the adapter plate 17 and is folded outwardly over the adjacent edge portions of the adapter plate 17, as indicated at 27, to form a tight joint therewith.

The inclination of the directional blades 13 and 16 may be varied, at will, by bending said blades at their attachment with the fins 11 and 14. These adjustments of the blades 13 and 16, will, of course, be made at the time the air diffuser is installed, to efficiently distribute the air in the room in which the air diffuser is installed.

The adapter plate 17 is attached to the wall against which it is placed by screws 28. Said adapter plate 17, at the edge portions of its bottom member, rests on an intumed flange 29 on the bottom of the housing 10.

The volume of air passing through the air diffuser may be controlled by a damper in the duct or dampers in the air diffuser, but for the purpose of this case it is not necessary to show the same.

On the inner side of each side member of the housing 10 is a rectangular frame 30 surrounding the respective air passageways 12. In case it is desirable to close the air passageways 12 in either side of the housing 10 for any reason, for instance, if one side of the housing 10 is close to a wall, I provide a closure 31 for the frame 30. This closure 31, as shown, is a plate having a capping flange 32 that fits over either one of the frames 30. The frame 30 and capping flange 32 are indented at 33 to frictionally hold the closure 31 on the frame 30, see Fig. 5.

In referring to the structure shown in Fig. 9, it will be noted that the duct 34 is on the outside of the face structure 23 and the adapter plate 17 completely closes the back of the housing 10.

The drawings illustrate a commercial form of the invention, but it will be understood that the same is capable of certain modifications, arrangement and combination of parts within the scope of the invention herein described and claimed.

What I claim is:

1. An air duct provided with an air diffuser including a main housing having side members, secondary housings on the inner faces of the side members, said side members and secondary housings having air passageways leading from the interior of the main housing, horizontal directional fins in the passageways in the side members, and directional blades in the secondary housings extending transversely of the fins, the inner longitudinal edge portions of the directional blades being free and extending into the main housing, said blades being bendable to place the same entirely within the secondary housings, and cover plates for the air passageways in the secondary housings when the directional blades are entirely therein.

2. The combination with a wall and floor having a single aperture, an air duct back of the wall and under the floor and extending into said aperture, said air duct having an opening corresponding to the aperture and an endless flange overlapping the wall and floor at the aperture, of an adapter forming an extension of the flange, a housing attached to the adapter, and having side and top members, said duct being in communication with the housing, air passageways in said top and side members, and directional fins in said air passageways.

LAWRENCE H. BAUER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
964,146	Clark	July 12, 1910
1,601,815	Feinberg et al.	Oct. 5, 1926
1,861,812	Modine	June 7, 1932
2,034,231	Fox	Mar. 17, 1936
2,160,883	Lundstrum	June 6, 1939
2,182,690	Cole	Dec. 5, 1939
2,191,224	Adair	Feb. 20, 1940
2,222,081	Leigh	Nov. 19, 1940
2,229,388	Postlewait	Jan. 21, 1941
2,282,572	Graham	May 12, 1942
2,285,984	Kietzmann	June 9, 1942