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WALL CONSTRUCTION EMBODYING HEATING SYSTEM

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Fig. 1.

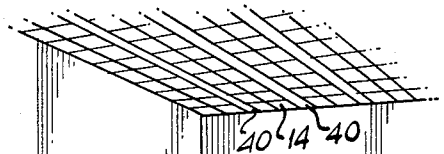


Fig. 2.

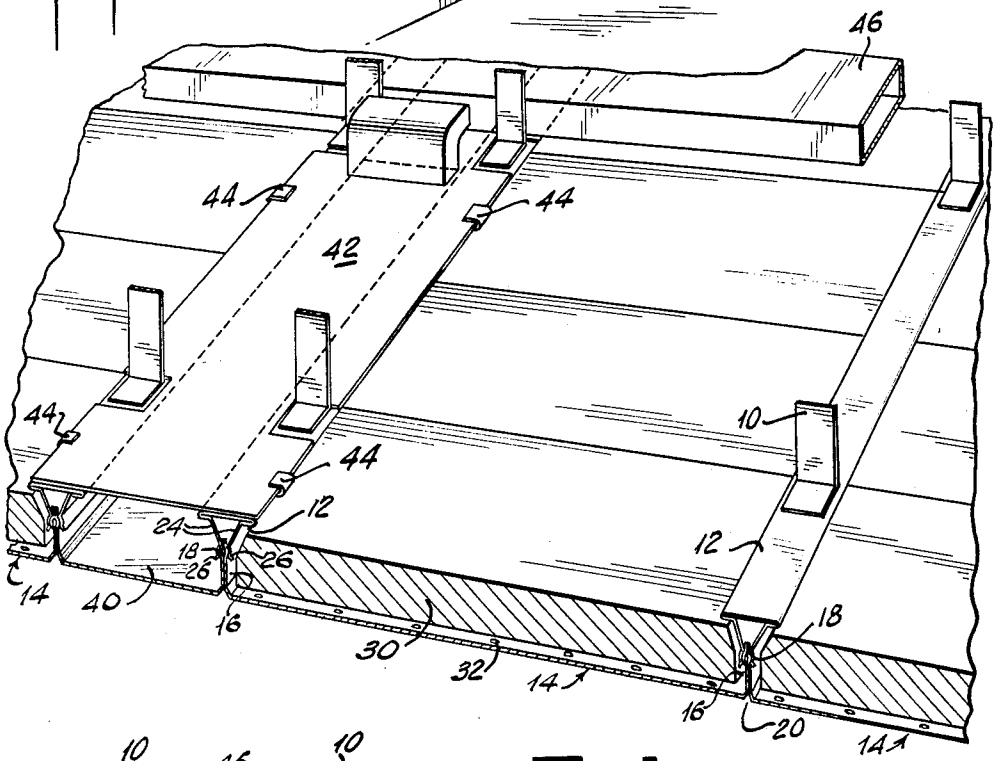
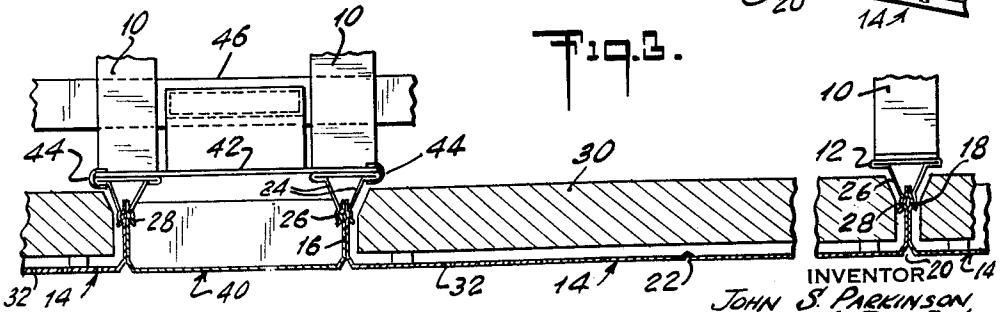


Fig. 3.



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WALL CONSTRUCTION EMBODYING HEATING SYSTEM

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4 Claims. (Cl. 257—124)

This application is a division of our copending application S.N. 701,578, filed October 5, 1946, now abandoned, and relates to a wall or ceiling treatment and more particularly to a treatment adapted to serve as a source of radiant heat. Radiant heating is a recognized type of heating, readily distinguishable from the more customary types involving convection and conduction, such as conventional hot air, water or steam systems. In the latter the air is initially heated and, by convection, heats the walls and objects within a room while in the former, a surface such as the room wall is initially heated, the heat leaving the surface in the form of radiant energy which impinges upon, and is absorbed by, objects and persons within the room.

In prior proposals for radiant heating, a room wall, often the ceiling, has been raised to the required temperature to serve as a source of radiant heat by embedding hot water or steam lines in the plaster or in the concrete making up the ceiling slab. Such systems operate satisfactorily where the radiant surface is exposed, but are inefficient if the surface is covered as in the case where conventional acoustical treatments are employed. In our copending application, S.N. 690,230, filed August 13, 1946, now Patent No. 2,800,308 granted July 23, 1957, a system is proposed for employing the facing elements of a popular type of acoustical treatment as the radiant surface. This type of acoustical treatment is disclosed in patent to Norris, #1,726,500, issued August 27, 1929, and consists of a perforated facing usually in the form of a plurality of individual metal pans containing pads of sound-absorbing material. The walls or flanges of the pans are engaged in runners suspended from the base wall or ceiling, the runners extending usually from wall to wall of the room. In our prior proposal heating means such as conduits conducting hot water or steam are extended along, or are incorporated in, the runners which support the pans, whereby the runners are heated and heat passes by conduction from the runners to the pans and is radiated to objects within the room. The instant invention has for its principal object the provision of a modified construction adapted for a pan type ceiling such as the acoustical system referred to and including separate, preferably elongated pans, which themselves form the conduits.

Our invention will be more fully understood and further objects and advantages will become apparent when reference is made to the following detailed description of a preferred embodiment of the invention and to the accompanying drawings in which:

Fig. 1 is a view illustrating the appearance of a room interior with a ceiling of the construction of Figs. 2 and 3;

Fig. 2 is a perspective of the construction of the present invention as seen from above; and,

Fig. 3 is a sectional view, on an enlarged scale, of the construction of Fig. 2.

Referring now to the drawings and particularly to Figs. 2 and 3, a basically conventional acoustical ceiling treatment is shown including the features of the construction covered in the previously referred to patent to Norris, #1,726,500. As shown in Fig. 2, the treatment is supported from the ceiling slab or wall by hangers **10** carrying longitudinal runners **12**, the latter being conventionally referred to in the art as "T-bars." The runners or T-bars, which are formed of any suitable strong, light gauge material, preferably steel, support a plurality of shallow metal pans **14**, each having upstanding walls or flanges **16** provided with integral beads **18** for engagement with the runners. Conventionally the pans are made 12 x 24" and are supported by their end flanges, the runners being spaced 24" O.C. However, pans of other dimensions may be used and the runners spaced accordingly. To give a tiled appearance to the ceiling, as illustrated in Fig. 1, the pans are beveled at their edges to define V-grooves **20** between adjacent pans and, where 12 x 24" pans are used, a centrally located groove or indentation **22** may be provided to simulate the division of the pan into two square panels.

The runners or T-bars include converging side flanges **24** having opposed, locking lips **26**. The latter have longitudinal grooves or recesses **28**. In the assembly of the pans the flanges **16** of the pans at the ends adjacent the T-bars are forced into place between the lips **26** of the runners until beads **18** snap into grooves **28**, the flanges being firmly but detachably engaged between the lips.

The pans **14** contain pads or bodies **30** of sound-adsorbing material, preferably pads of felted mineral wool or the like. At least the lower faces of the pans containing the saund-absorbing pads are perforated, as indicated at **32**, to permit the transmission of sound through the pans to the pads. The pads are suitably spaced from the front forward walls of the pans as required by good construction practice.

The instant invention resides in a construction which is particularly adapted for radiantly heating a space through the use of a heated fluid, such as hot air, although it is also adapted for use with heated vapors or steam. The construction provides narrow, preferably elongated, imperforate pans **40** mounted at suitable intervals between the conventional pans **14**, the T-bars being specially located for their support. A cover plate **42** is mounted on the bases of the T-bars and is secured thereto by suitable means, such as clips **44**. The elongated pans **40** and cover plates **42**, together with the side flanges **24** of the T-bars, define a conduit. This conduit is in communication with a main **46** which supplies the hot air, steam or vapor, and is suitably also in communication with a return main (not shown) whereby the hot air, steam or vapor may be circulated through the duct. Alternatively a continuous run of the conduits may be provided by connecting the conduits in series. The conduit is directly heated by the hot air or other fluid and its forward panel serves as a heat-radiating surface. In addition, due to the contiguous relationship of the side walls of the conduit and the flanges of adjacent pans, such adjacent pans will also be heated to some extent to increase the total radiating surface. From the interior of the room a ceiling of this construction will have the appearance shown in Fig. 1, the special pans providing uninterrupted stripes extending across the ceiling.

In operation, heat is conducted from the heat source, such as steam, hot water, hot air, or other medium, directly to the metal pans inserted at the required intervals between the conventional pans. The forward faces of the pans thus form a heat-radiating surface overlying the room to provide for the transmission of heat to objects within the room. The construction combines readily with the known acoustical system without serious modi-

fication of the latter and without substantial reduction of its acoustical efficiency.

Having thus described our invention in rather full detail, it will be understood that these details need not be strictly adhered to and that various changes and modifications may suggest themselves to one skilled in the art, all falling within the scope of the invention as defined by the subjoined claims.

What we claim is:

1. In a wall or ceiling construction, spaced parallel bars, plate means attached to said bars at one side thereof and bridging the space therebetween, opposed resilient lips fixed on each of said bars and extending away from said plate means, and elongated pan means having side flanges extending between said opposed lips.

2. A construction comprising spaced parallel bars suspended from a ceiling, plate means attached to said bars at the upper sides thereof and bridging the space therebetween, opposed resilient lips depending from each of said bars, and pan means having upstanding flanges supported by said opposed lips.

3. A construction comprising spaced parallel bars suspended from a ceiling, plate means attached to said bars at the upper sides thereof and bridging the space therebetween, opposed resilient lips depending from said bars, first pan means having upstanding flanges positioned between said resilient lips to support said pan means beneath said plate means, said first pan means being imperforate, and second pan means having upstanding flanges positioned between said resilient lips to support said second pan means laterally of said plate means, said second pan means being foraminous.

4. The construction of claim 3, wherein said plate means and said first pan means form a conduit, and fluid supply means connected to said conduit.

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