

May 17, 1938.

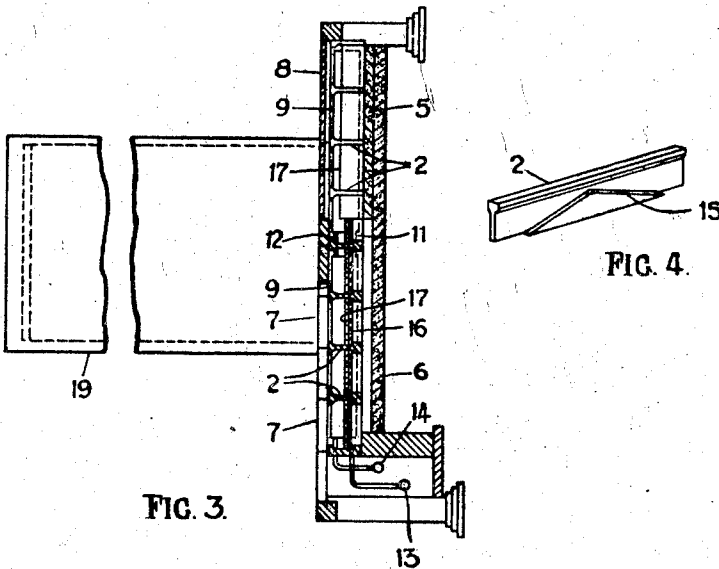
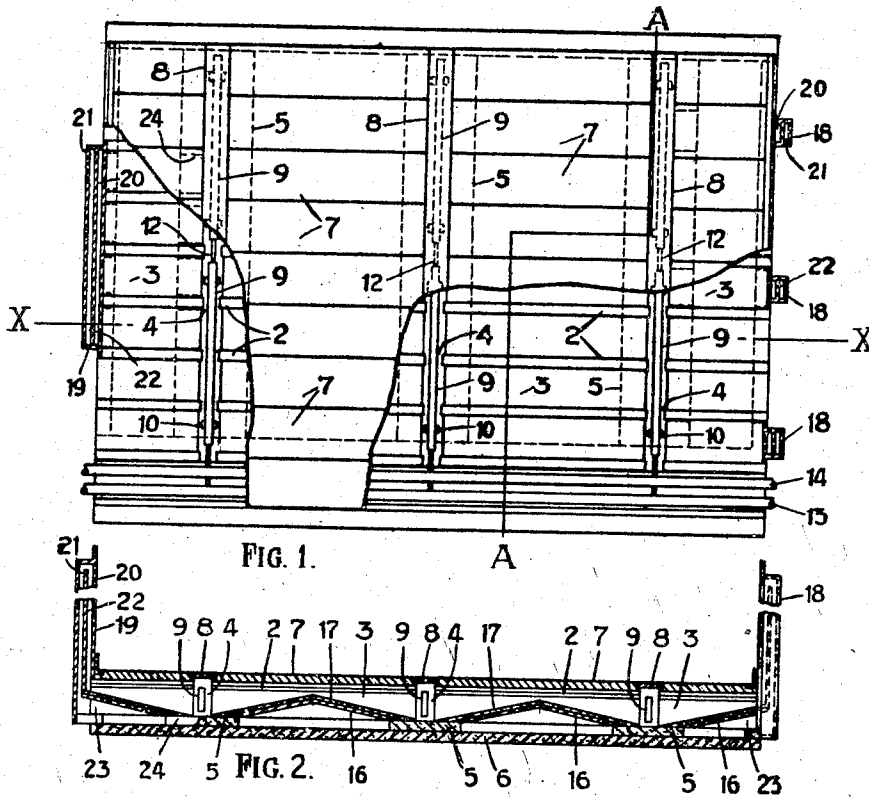
L. P. EVANS

2,117,712

HEATING BUILDING

Filed April 10, 1935

2 Sheets-Sheet 1



WITNESSES
T. E. Walker
a m Walker.

INVENTOR
L. P. Evans.

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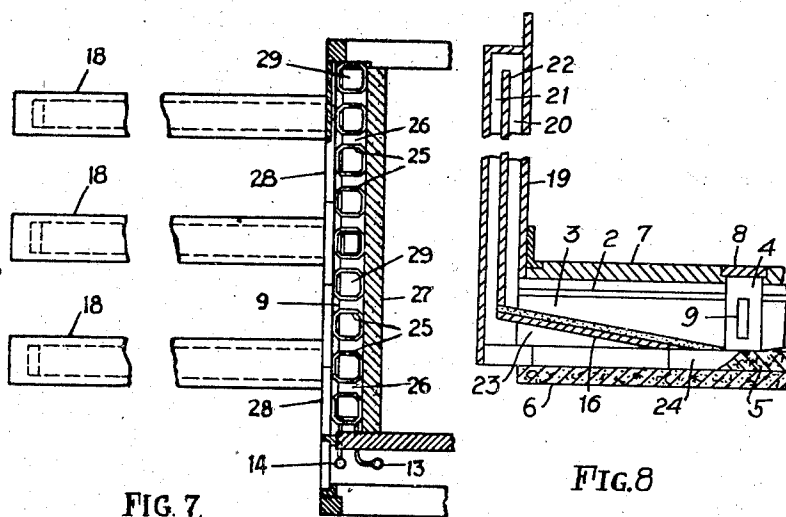
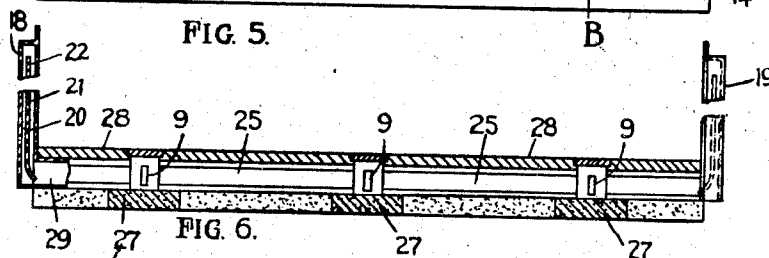
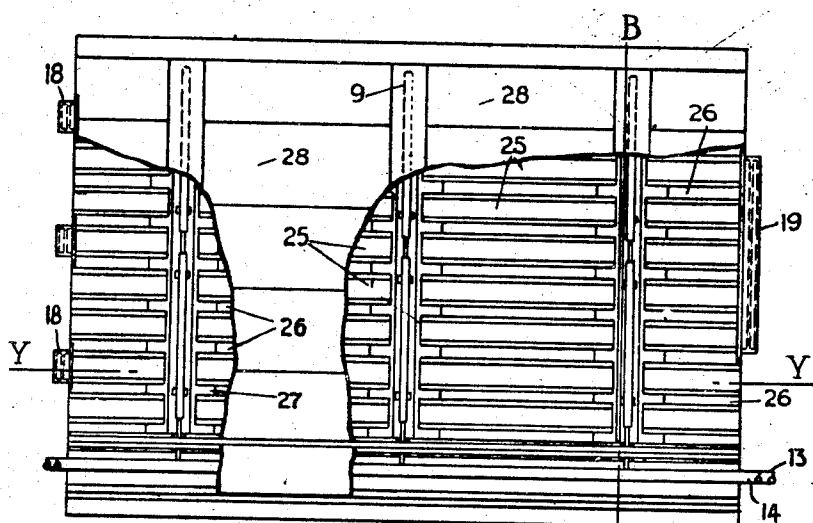
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2 Sheets-Sheet 2



WITNESSES

T. Walker
A. M. Walker.

INVENTOR

Luke Perry Evans.

UNITED STATES PATENT OFFICE

2,117,712

HEATING BUILDING

Luke Percy Evans, Swanwick, near Alfreton,
England

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In Great Britain April 18, 1934

3 Claims. (Cl. 237—69)

This invention relates to the heating of buildings.

The object of this invention is to provide improvements which will result in a satisfactory heating of the floors and in some cases the walls of buildings.

The method of heating a floor according to this invention consists in providing one or more heating units extending beneath the surface of the said floor, each of said units having in association a plurality of transversely disposed partitions defining a plurality of transversely disposed passages through which hot air from the heating unit circulates.

The spaces within which the air circulates may be formed by arranging members which support the floor substantially parallel to each other and at an angle to said heating elements, said spaces being either the spaces between adjacent supporting members or the interior of hollow supporting members.

Preferably, but not necessarily, the said spaces have a greater cross-sectional area at points in the vicinity of the said heating elements than at points remote therefrom.

Where it is desired to heat the walls in addition to the floor the wall may be made hollow throughout its length or hollow at intervals only in its length, and the floor passages made to communicate therewith, the cavity or cavities of the wall being provided with a vertical partition to form an uptake and a downtake, the uptake passage communicating at the bottom with the adjacent floor passage at a high level therein and the downtake passage communicating with the floor passage at a lower level.

Referring to the drawings filed herewith, which illustrate, by way of example only, two embodiments of my invention:—

Fig. 1 is a plan of one form of floor constructed in accordance with this invention and shown with the floor surface broken in places;

Fig. 2 is a sectional elevation taken on the line X—X in parallel with the floor passages; and

Fig. 3 is also a sectional elevation but taken on the line A—A laterally of the floor passages.

Fig. 4 is a perspective view of a floor beam;

Fig. 5 is a similar plan to Fig. 1 of an alternative form of floor;

Fig. 6 is a sectional elevation thereof on the line Y—Y in parallel with the floor passages;

Fig. 7 is a similar view but taken on the line B—B laterally of the floor passages.

Fig. 8 is a sectional detail view showing, to an

enlarged scale, the left hand portion of Fig. 2 depicting the junction of the floor with a wall.

In Figs. 1 to 4, a plurality of longitudinally aligned floor beams 2, 2 are placed at distances apart to form longitudinal passages 3, 3 between them and openings 4, 4 at their ends, the beams being supported at their ends on raised surfaces 5, 5 of a foundation 6 and themselves supporting a floor surface of longitudinal slabs 7, 7 provided one to each of the passages 3, 3 with their ends spaced apart and adapted to support laterally disposed removable slabs 8, 8.

Disposed laterally of the passages 3, 3 at the ends thereof and between the ends of the beams 2, 2 are placed longitudinally aligned heating elements 9, 9 through which steam or hot water is passed and which are supported on small stands or feet 10, 10, adjacent heating elements being connected by flow and return pipes 11 and 12, respectively, conveying the heating medium from flow and return conduits 13 and 14, respectively.

The beams 2, 2 are provided with side webs 15 of the requisite form to support inclined sub-floor members 16, 16 and insulation 17, 17 in each passage so as to give each of such passages 3, 3 a form having the least depth at their centres and increasing gradually to the greatest depth at their ends. The adjacent lower ends of the sub-floor members 16, 16 are spaced apart and rest upon the supports 5, the insulation 17, 17 being similarly arranged so that the openings 4 are left free and open.

The removable slabs 8, 8 serve as inspection covers giving access to the heating elements 9, 9 and the said heating elements are of greater height than width in cross section and are so arranged with respect to the passages 3 that the said passages are confronted by the major surfaces of the heating elements whereby heat is radiated into the passages from the major surfaces of the said heating elements.

Where it is desired to heat a wall in addition to the floor, the passages 3, 3 adjacent the wall (not shown) are provided with the sub-floor members 16, 16 terminating at the wall at or about their highest point. In the wall is provided, in some cases, one to each of several passages 3, 3 or, in other cases, one to a plurality of adjacent passages 3, 3 an upright box-like casing as shown at 18 and 19, respectively. This casing is provided with an uptake 20 at the front and a downtake 21 at the rear formed by a partition 22, the lower end of the uptake 20 communicating with an adjacent passage 3 at the upper part thereof and the downtake communi-

cating at the lower end into the space 23 underneath the passage 3. Lateral recesses or slots 24 are provided in the supports 5 at the side thereof adjacent the space 23 so that the said space 23 communicates with the opening 4.

In this way the hot air generated by the heating elements 9, 9 circulates in the passages 3, 3 or passes out from the outer ends thereof to rise through the uptake 20 and returns as colder air through the downtake 21, spaces 23 and slots 24 to the inner ends of the passages 3, in each case returning to the heating elements 9, 9 to become heated again, whereby a continuous circulation is obtained, so that heat is conveyed to the underside of the floor over a large area, viz:—over substantially the whole area thereof except at the places occupied by the floor supporting members, or both to the floor and to the wall.

Figs. 5, 6 and 7 show an alternative construction of heated floor which is similar in some respects to that of Figs. 1 to 4, but in this case floor supporting beams 25, 25 consisting of tubular blocks are provided and placed side by side except for a small space 26 between them for the reception of grouting material for joining them together.

The blocks are supported on the foundation 27 and themselves support slabs 28 forming the floor surfaces. The blocks are spaced apart at their ends to provide the spaces for the heating elements 9, and the hollows of the blocks form longitudinal passages 29, 29 heated by the said elements. Where a wall is also to be heated in this construction of floor, the box-like casings 18 or 19 shown in Figs. 1 to 3 may be again employed the uptakes 20 of which communicate at their lower ends at a high level in the passages and the downtakes 21 returning to communicate also in the passages but at a lower level whereby a

continuous circulation of heated air takes place from the floor and through the casing 18 or 19.

The heating elements are supported and connected up similar to those in Figs. 1 to 3.

What I claim and desire to secure by Letters Patent is:

1. A floor having in association heating means and comprising a plurality of supporting members for said floor defining a plurality of passages, at least one heating unit arranged transversely with respect to said supporting members and adapted to cause hot air to traverse said passages longitudinally thereof, said passages having a greater cross sectional area in the vicinity of said heating unit and a less cross sectional area at a point remote from said heating unit.

2. A floor having in association heating means and comprising a plurality of supporting members for said floor defining a plurality of passages, a heating unit having a greater height than width in cross section arranged transversely with respect to said supporting members, said passages being confronted by the major heating surfaces of said heating unit, said major surfaces being defined by the said greater height of said unit.

3. A floor and a wall thereto having in association heating means and comprising a plurality of supporting members for the floor defining a plurality of passages thereunder, uptake and downtake passages in the wall communicating with at least one of said passages under the floor, a heating unit having a greater height than width in cross section arranged transversely with respect to the floor supporting members, said floor passages being confronted by major surfaces of said heating units, said major surfaces being defined by the said greater height of said units.

LUKE PERCY EVANS.