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H. E. NUNAMAKER ET AL

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BRACKET MEANS FOR PERIMETER HEATING DUCTS AND THE LIKE

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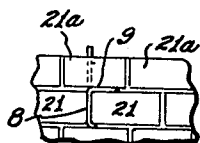
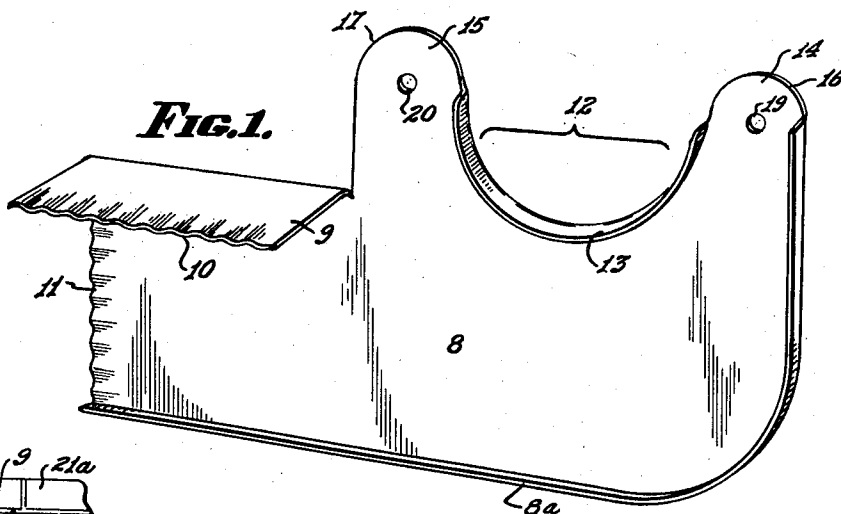


FIG. 5.

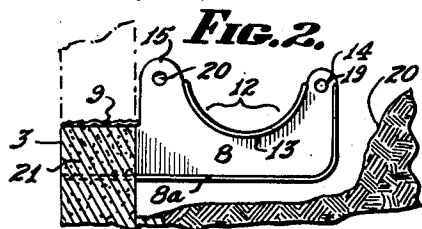


FIG. 2.

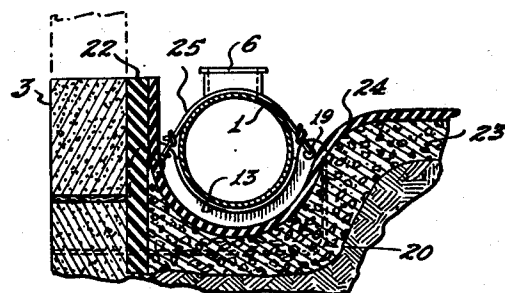


FIG. 3.

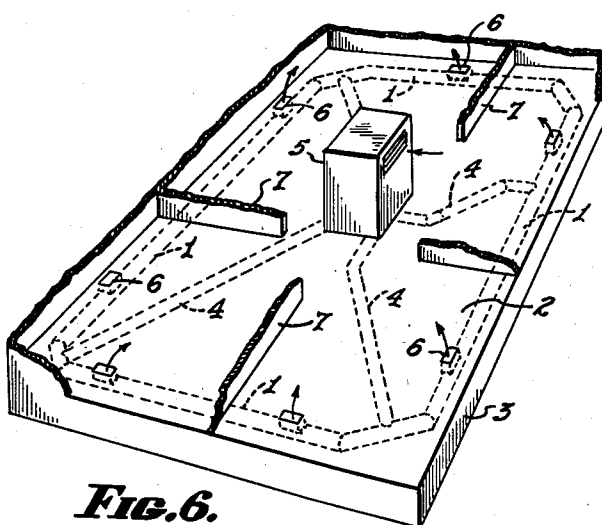


FIG. 6.

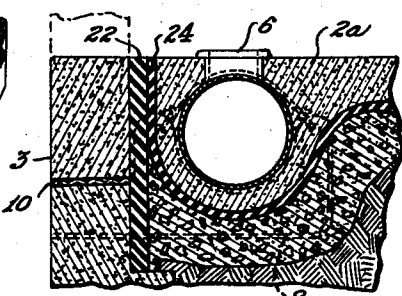


FIG. 4.

INVENTORS.
HARLIN E. NUNAMAKER,
AND JAMES A. NUNAMAKER,
BY
Allen & Allen
ATTORNEYS.

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BRACKET MEANS FOR PERIMETER HEATING DUCTS AND THE LIKE

Harlin E. Nunamaker, Middletown, and James A. Nunamaker, Butler County, Ohio

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1 Claim. (Cl. 72—5)

Our invention relates to perimeter heating ducts and more particularly to bracket means for mounting such ducts for incorporation in a slab floor.

During recent years more and more homes are being constructed utilizing concrete slab floors as opposed to the conventional practice of building up a foundation on which floor joists are laid and covered with wood flooring. Where concrete slab floors are employed, it is the practice to embed the heating ducts in the concrete, the duct work being generally arranged about the perimeter of the slab and provided with upwardly opening outlets arranged to conduct heated air to the various rooms in the house.

In the construction of slab floors, it is also a conventional practice to provide an outer wall formed of concrete blocks laid up in courses, the concrete block wall so provided in effect defining a form into which the concrete is poured to build up the desired slab.

To the best of our knowledge, no one heretofore provided means specifically designed to mount the perimeter duct work so that it may be quickly and accurately positioned in the concrete slab. Heretofore, the ducts have been supported either on posts driven into the ground or else on cement blocks or other loose blocks, lying about the building site. None of these expedients have been too satisfactory in that numerous difficulties are encountered in properly aligning the ducts relative to the upper surface of the concrete slab and in properly positioning them with respect to the cement block walls forming the perimeter of the slab.

It is, therefore, a principal object of our invention to provide an inexpensive and easy to install bracket means which will serve to effectively and accurately position the duct work both in relation to the upper surface of the slab and in relation to the surrounding perimeter walls.

A further object of our invention is the provision of bracket means which, in addition to initially aligning the duct work in proper relationship to the slab, will also serve to firmly secure the duct work as the slab is being poured, thereby assuring against accidental displacement and misalignment and possible disconnection of the duct section.

Still a further object of our invention is the provision of bracket means of the character described which additionally function to facilitate the installation of the vapor barrier and insulation materials which form a part of the slab construction.

The foregoing objects, together with further objects of our invention which will appear hereinafter or which will be apparent to the skilled worker in the art upon reading these specifications, we accomplish by that construction and arrangement of parts of which we shall now describe an exemplary embodiment.

Reference is now made to the accompanying drawings wherein:

Figure 1 is a perspective view of a bracket in accordance with our invention.

Figure 2 is a side elevational view with parts in section

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illustrating the manner in which the brackets are mounted.

Figure 3 is a vertical sectional view illustrating the mounting of the heating ducts to the brackets and the preparation of the site for the pouring of the slab.

Figure 4 is a vertical sectional view similar to Figure 3 illustrating the condition of the parts subsequent to the pouring of the slab.

Figure 5 is a fragmentary elevational view illustrating the manner in which the brackets are secured to the cement blocks.

Figure 6 is a diagrammatic perspective view illustrating a typical perimeter duct installation.

Referring first to Figure 6 of the drawings, we have therein illustrated a typical installation wherein the perimeter duct work 1 is embedded in a concrete floor slab 2, the floor slab being surrounded by a foundation wall 3 formed from concrete blocks. As will be apparent from the drawings, the perimeter ducts 1 are fed by feeder ducts 4 arranged to be connected to a heating unit 5. Suitably spaced upwardly opening outlets 6 are connected to the perimeter ducts at spaced apart intervals to supply heat to the various rooms of the house, such rooms being diagrammatically illustrated by the partial wall sections 7.

Our bracket means are intended to be fitted in the concrete foundation wall as an incident of its construction, and the brackets will serve to receive and properly position the perimeter ducts relative to the foundation walls and to the upper surface of the slab floor.

As best seen in Figure 1, our bracket means comprises a vertically disposed sheet metal body 8 having an integral narrow flange 8a extending along the bottom and front edges thereof, the flange serving as a reinforcement for the body. The rear portion of the bracket has an angularly related projection 9 of a size to seat against the upper surface of a concrete block with which the bracket is associated. In this connection it will be understood that the rear portion of the body 8 will abut against the end surface of the block, and to this end, it is preferable that the distance between the projection 9 and the flange 8a extending along the bottom edge of the body is substantially equal to the height of a conventional concrete block. Similarly, it is preferred that the length of the projection 9 be substantially equal to the width of the concrete block, although it is to be understood that these dimensions do not constitute limitations upon our invention since it will be readily apparent that the dimensions may be varied to suit the conditions of use. We have found it desirable to flute or corrugate the outer marginal edge of the projection 9, as indicated at 10, so that the mortar between the concrete blocks, will effectively prevent the bracket from being pulled loose in the direction of its length. Similarly, the rear edge of the body 7 may be fluted, as indicated at 11.

The bracket terminates upwardly in a semi-circular recess 12 into which the perimeter duct will be seated, the duct seating against a narrow flange 13 forming a supporting shoulder about the semi-circular recess. It will be understood that the dimensions of the recess will be such that it will conform to the contour of the duct, and it may be of angular or oval configuration depending upon the configuration of the duct. Similarly, the recesses may be formed in different sizes depending upon the sizes of the ducts used in any particular installation. Lying to each side of the recess 12 is an upstanding tongue, indicated at 14 and 15, the tongues preferably having rounded and relatively sharp upper edges 16 and 17 which, as will be explained more fully hereinafter, are useful during the installation of the vapor barrier and insulation. The tongues 14 and 15 are provided with the openings or perforations 19 and 20 through which

wires or the like may be inserted to secure the ducts in place.

Referring now to Figures 2 and 5 of the drawings, we have therein illustrated the manner in which our bracket means are set in the foundation wall. It will be noted that a suitable trough or ditch 21 will be provided immediately to the inside of the foundation wall 3, the arrangement being such that the brackets will extend into the trough. As the foundation wall is built up, the brackets will be inserted between adjacent blocks, the body portion 8 of the bracket being fitted between the abutting ends of blocks 21 in one course, with the angularly related projection 9 contacting and lying along the top of one of the blocks. Suitable mortar is then applied and the overlying course of blocks 21a fitted in place, preferably in the usual break-joint relationship. The dimensions of the tongue 15 will be such that the duct will be properly spaced from the foundation wall and, similarly, the location of recess 12 will be such that the course 21a lying above the projection 9 will serve to establish the surface level of the poured floor slab.

Subsequent to the building up of the foundation wall to the desired level and the installation of the brackets, preparations are then made for laying the slab. Referring to Figure 3, these preparations include the installation of a waterproof insulation material 22 extending along the inner surface of the foundation wall 3. In addition, a coarse gravel fill 23 will be laid along the bottom of the trough 20, partially embedding the bracket, and this fill will be covered by a moisture membrane 24 arranged in substantially the manner illustrated in Figure 3.

It may be pointed out that our bracket means serves a very useful purpose during the installation of the insulation 2 and the moisture membrane 24. Generally speaking these materials are in strip or sheet form and are intended to be applied in relatively long lengths. Since the brackets project inwardly from the foundation walls at relatively closely spaced apart intervals, it becomes necessary for the insulation material and the moisture membrane to be cut so as to fit about each of the brackets. However, with our bracket, such cutting becomes unnecessary. We have found that by rounding the upper edges of the tongues 14 and 15 and retaining them in relatively sharp condition (the end edges of sheet metal have been found to provide the necessary sharpness, although the edges may be additionally sharpened if desired) a strip of insulation material, for example, may be laid out lengthwise across a plurality of the brackets, whereupon the worker simply has to firmly press down upon the insulation immediately to each side of the brackets. The edges 16 and 17 will exert a cutting or severing action on the insulation sufficient to permit it to be pressed downwardly to each side of the bracket and hence juxtaposed to the inner surface of the foundation wall. In addition to the severing action, the bracket also acts as a locking means effective to hold the insulation in place against the foundation wall. The arrangement greatly speeds up the installation of the insulation and vapor membrane materials.

Subsequent to the installation of the insulation 22 and vapor barrier 24, the perimeter ducts 1 are installed, being fitted in the recesses 12 and seated against the supporting shoulders 13, whereupon the ducts may be readily tied in place by means of a wire tie 25 secured at its ends through the perforations 19 and 20. The ducts are thus securely anchored in place and positioned for the subsequent pouring of the concrete slab which, as seen

in Figure 4, will completely surround the duct, the poured slab being indicated at 2a in Figure 4.

The material from which our bracket is formed does not constitute a limitation upon our invention, although we have found galvanized iron to be the most practical. Its gauge may vary depending upon the strength characteristics desired and the diameter of the ducts to be supported. Generally speaking, 24, 26 and 28 gauge sheet stock is generally employed. In any event, it will be strengthened and rigidified by the flanges 8a and 13. It may be pointed out that the flange 13 extending about the perimeter of the recess opening 12 serves an additional function of preventing the otherwise relatively sharp edge of the body 8 from biting into the duct, particularly at the time the slab is poured and a considerable mass of concrete is discharged directly onto the ducts.

In actual practice, we have found that bracket means formed in accordance with our invention effect a considerable savings in time and labor which offsets many times the cost of the brackets. In addition, the brackets provide an accurate and positive means for properly aligning the ducts.

Modifications may be made in our invention without departing from the spirit of it. Having, however, described our invention in an exemplary embodiment, what we desire to secure and protect by Letters Patent is:

A bracket for mounting a perimeter duct, said bracket being adapted to be supported from a cement block wall and formed from a single piece of sheet metal cut and formed to define a single thickness vertically disposed body having a front portion adapted to project outwardly from the cement block wall and a rear portion adapted to be received between adjoining blocks forming a part of the wall, a flange extending along the entire length of the lower and front edges of said body and disposed at substantially right angles thereto, the front portion of said body terminating upwardly in a pair of upwardly projecting rounded tongues lying in spaced apart relation and defining a generally semi-circular recess therebetween, the recess so formed defining a seat for a duct to be supported thereby, said recess having a narrow peripheral flange defining a duct supporting shoulder and body rigidifying member, the rear portion of said body terminating upwardly in a horizontally disposed projection capable of being seated against the upper surface of a concrete block with which the bracket is associated, with said first named flange seated against the under-surface of said block, the outermost edge of the said horizontally disposed projection and the rear edge of said body being fluted, whereby when embedded in the mortar between adjacent concrete blocks the bracket will be effectively prevented from being pulled loose in the direction of its length.

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