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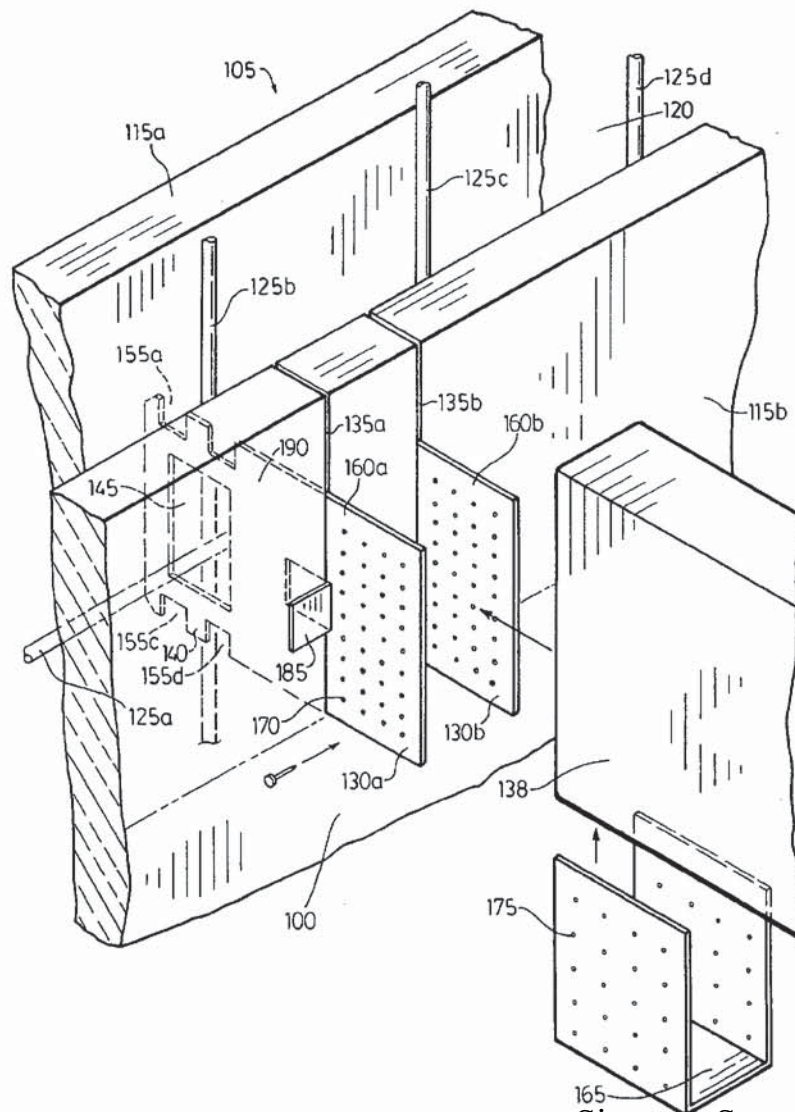
(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2005/0155307 A1**
Timony (43) **Pub. Date: Jul. 21, 2005**(54) **HANGER FOR INSULATED CONCRETE
SYSTEM AND METHOD OF INSTALLATION
THEREOF AND METHOD OF INSTALLING
A RETROFIT HANGER IN AN INSULATED
CONCRETE****Publication Classification**(51) **Int. Cl.⁷** **E04B 2/00**(52) **U.S. Cl.** **52/506.01**(76) **Inventor: Patrick Timony, Barrie (CA)**(57) **ABSTRACT**

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TORONTO, ON M5L 1J3 (CA)**(21) **Appl. No.: 11/037,354**(22) **Filed: Jan. 19, 2005**(30) **Foreign Application Priority Data**

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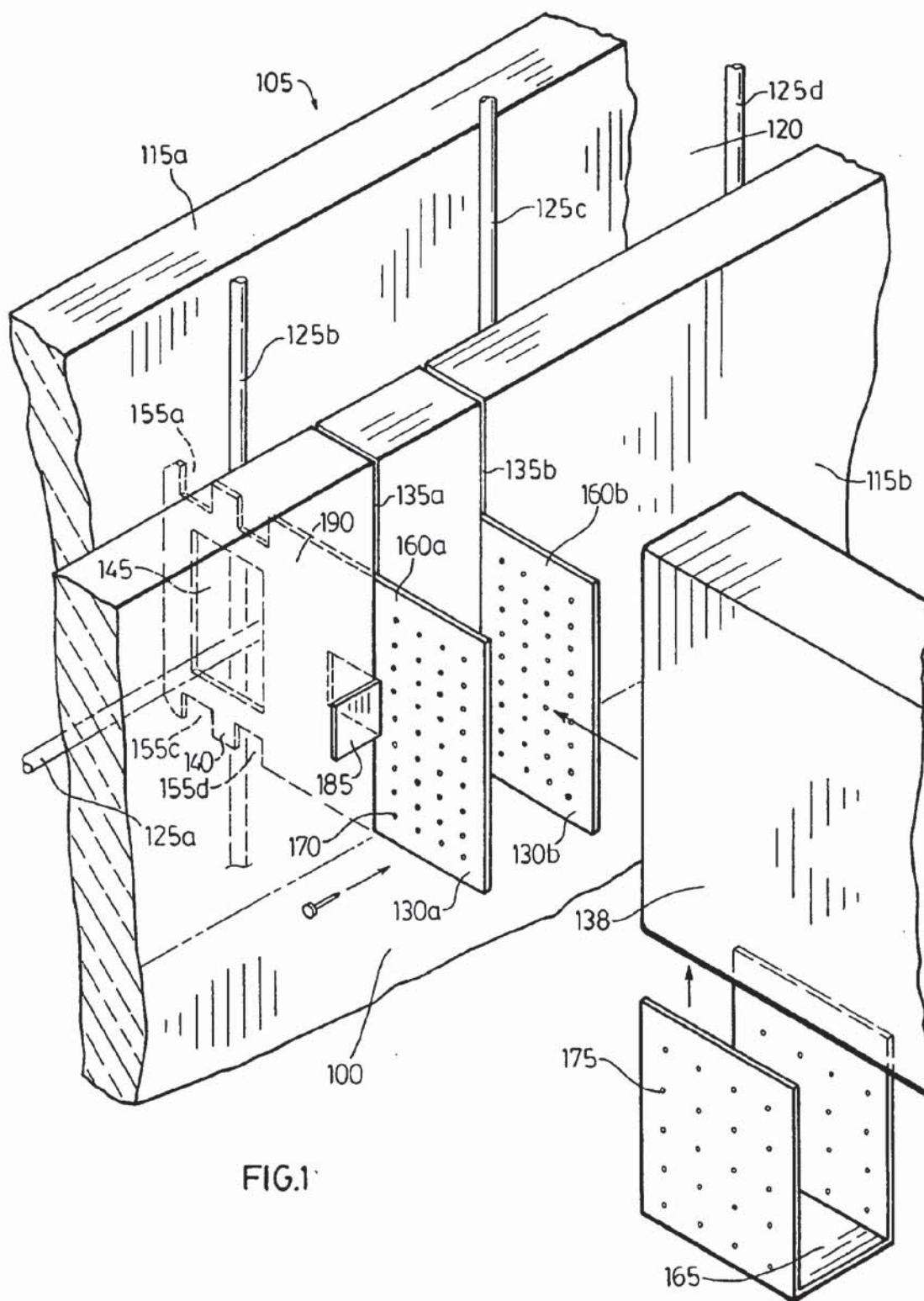
There is described a hanger for hanging an object from a composite wall. The composite wall has a concrete core, a foam outer wall and a second outer wall. The hanger comprises: a first plate having an embedded portion for retention within the concrete core and a hanging portion extending from the foam outer wall for connection to the object. The embedded portion having an edge in addition to its distal edge, the edge being substantially transverse to the longitudinal axis of the first plate. A method for installing the hanger is also described. The hanger is particularly well suited for hang a joist.

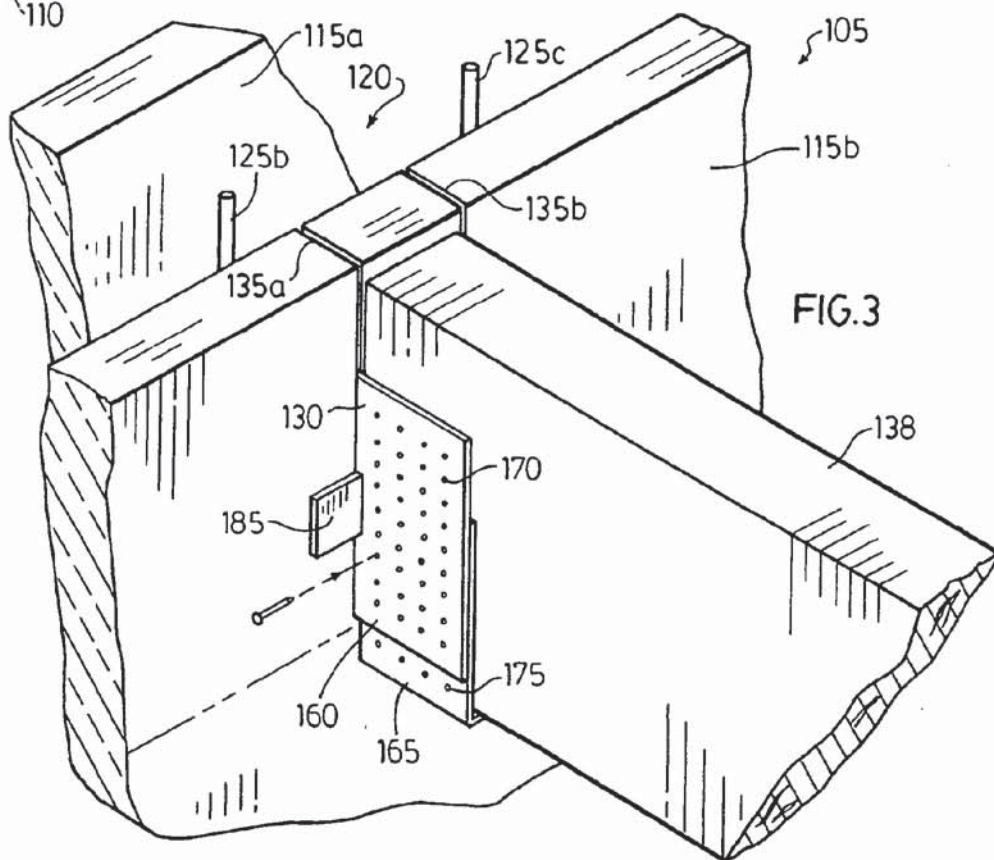
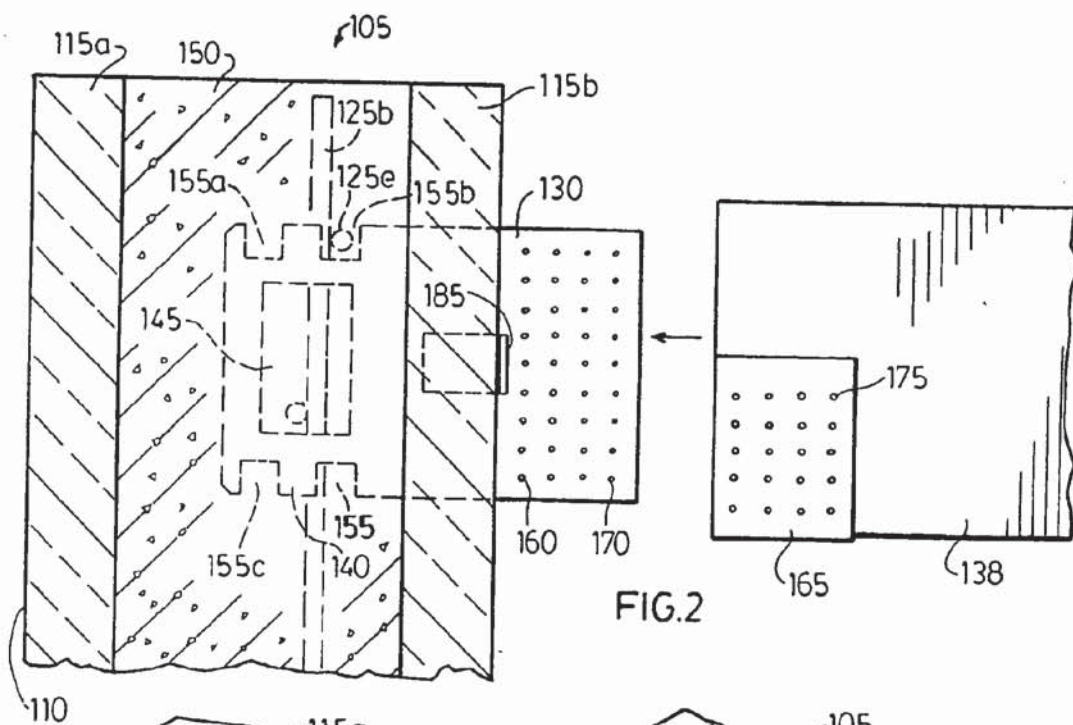


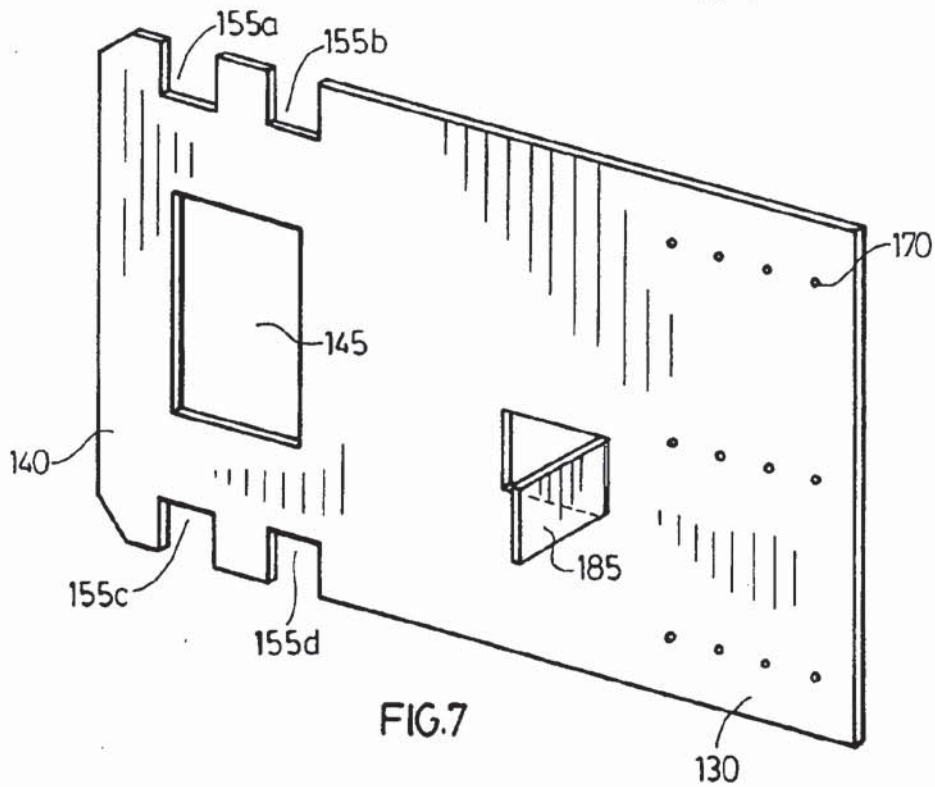
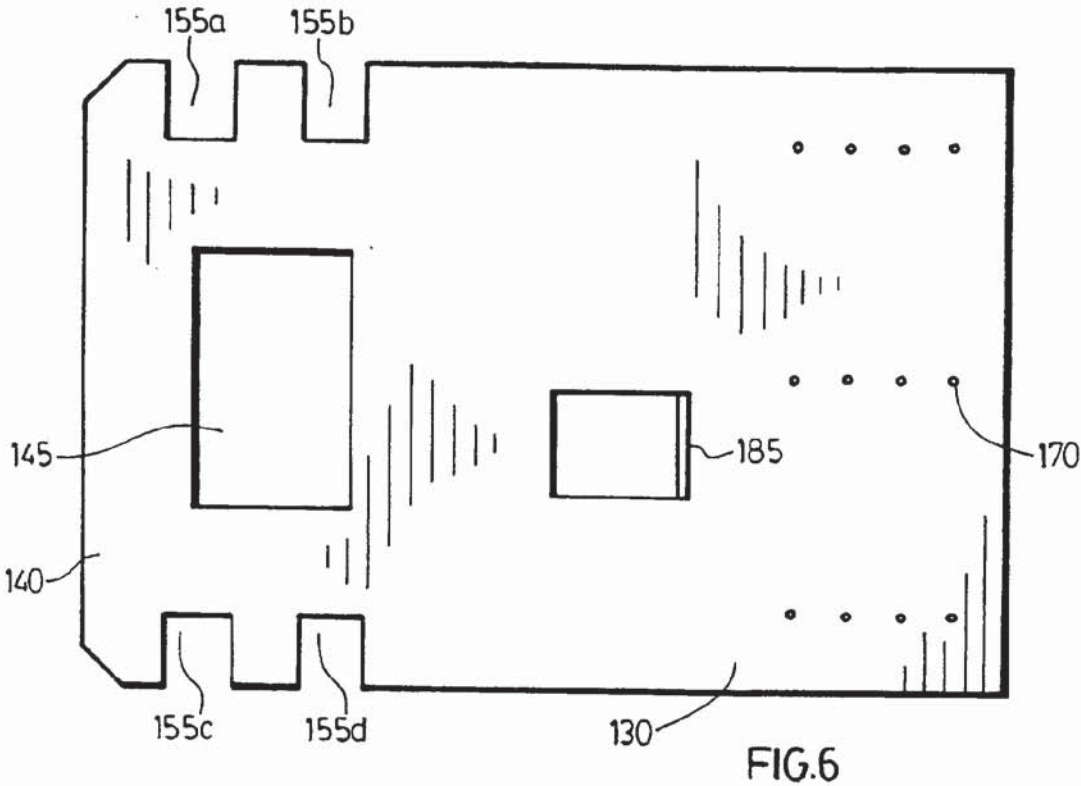
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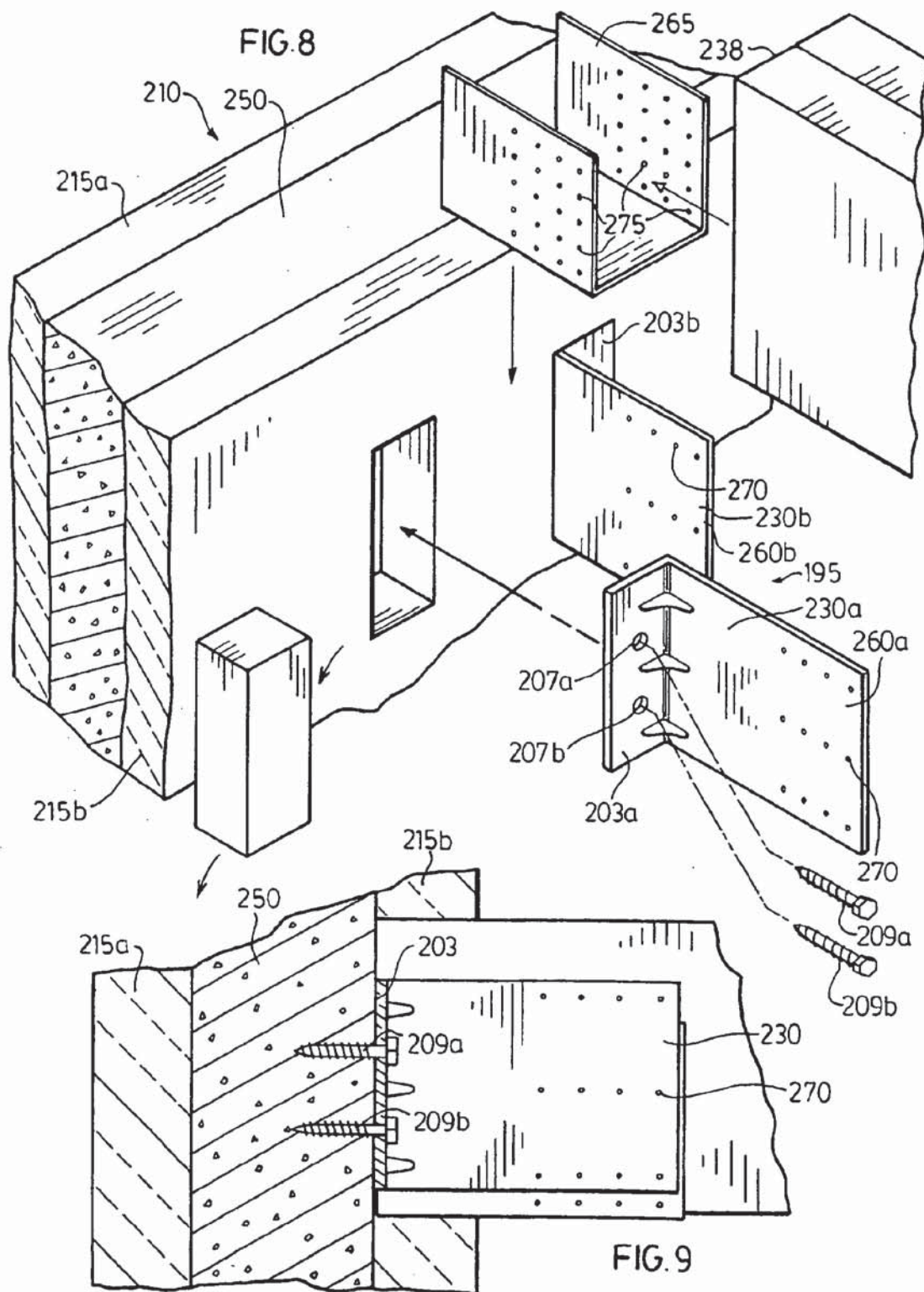
0001Simpson Strong-Tie Co. v. Columbia Insurance Co.

U.S. Patent No. 11,649,626









HANGER FOR INSULATED CONCRETE SYSTEM AND METHOD OF INSTALLATION THEREOF AND METHOD OF INSTALLING A RETROFIT HANGER IN AN INSULATED CONCRETE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] In one of its aspects, the present invention relates to a hanger for an insulated concrete system. In another of its aspect, the present invention relates to a method of installing a hanger in an insulated concrete system. In yet another of its aspects, the present invention relates to a method of installing a retrofit hanger in an insulated concrete system.

[0003] 2. Description of the Prior Art

[0004] Hangers are known for insulated concrete systems formed of composite walls having exterior foam panels and an interior cement core.

[0005] For example, U.S. Pat. No. 5,228,261 [Watkins] teaches a joist hanger having a U-shaped body. A plurality of nailing apertures are formed in the forward end of this U-shaped joist hanger for receiving nails to secure a joist thereto. A pair of support apertures are formed in the rearward end of the U-shaped joist hanger through which conventional reinforcing bars are journaled in horizontal orientation. A slot extending forwardly from the rearward edge of the base of the U-shaped hanger receives a vertical reinforcing bar.

[0006] The joist hanger taught in Watkins is installed by cutting a U-shaped slot into an exterior foam panel at a pre-determined position. Rods are loosely installed through locating apertures between the front and rearward edge of the U-shaped bracket; these rods limit the extent of insertion of the bracket into the U-shaped slot. Reinforcing bars are then positioned between the foam panel walls and journaled through support apertures. Concrete is then poured between the foam panel walls and allowed to cure, thereby fixing the reinforcing bars and the rearward end of the hanger in position within the wall. The rods are then removed from the locating apertures. The joist is then rested within the projecting forward end of the bracket and nails or other fasteners are installed through the nailing apertures.

[0007] Disadvantages exist with regard to the above-described system. The U-shape of the bracket requires that, for proper installation, U-shaped slots of a pre-determined size must be cut in the foam wall at predetermined positions. In addition, retaining the U-shaped bracket requires that reinforcing bars be journaled through apertures in the rear end of the bracket, which thereby constrains the arrangement of reinforcing bars.

[0008] U.S. Pat. No. 4,889,310 issued to Boeshart ("Boeshart") teaches ties for a concrete form system having opposed polystyrene panels that form a pair of parallel, spaced apart walls. At least one of the polystyrene walls has a smooth inner face to allow the panel to be removed after formation of the concrete wall. The ties are used to interlock the two vertical panels in order to form the concrete wall. Each tie has a pair of spaced apart paddle members which retain the thickness of the panel therebetween. Once the concrete wall has been formed, the outer paddle is removed

by applying a blow thereto. In one embodiment, the tie uses an enlarged outer paddle disposed outwardly of the outward face of the panels. This enlarged paddle may have fastener apertures and may be connected to vertical whalers. The tie taught by Boeshart is designed for holding two polystyrene panels together to permit forming and does not provide sufficient support to hang objects from a face of the wall once formed.

[0009] Accordingly, it would be desirable to have a hanger system which overcomes the above-mentioned disadvantages of the prior art. It would be further desirable to have a retrofit hanger system useful in an insulated concrete system.

SUMMARY OF THE INVENTION

[0010] It is an object of the present invention to provide a novel hanger system, particularly for hanging a joist) that obviates or mitigates at least one of the above-mentioned disadvantages of the prior art.

[0011] Accordingly, in one of its aspects, the present invention provides a hanger for hanging an object from a composite wall, the composite wall having a concrete core, a foam outer wall and a second outer wall, the hanger comprising:

[0012] a first plate having an embedded portion for retention within the concrete core and a hanging portion extending from the foam outer wall for connection to the object;

[0013] the embedded portion having an edge in addition to its distal edge, the edge being substantially transverse to the longitudinal axis of the first plate.

[0014] Accordingly, in another of its aspects, the present invention provides a method for installing a hanger on a composite wall formed from a foam wall and a second wall defining a cavity fillable with concrete, the hanger including a first plate having an embedded portion and a hanging portion, wherein the embedded portion comprises an edge in addition to its distal edge, the edge being substantially transverse to the longitudinal axis of the first plate, the method comprising the steps of:

[0015] (a) cutting a slit through the foam wall so that the slit extends to a hanging position;

[0016] (b) sliding the first plate in the slit to the hanging position, wherein the embedded portion of the first plate extends into the cavity and the hanging portion extends from the composite wall;

[0017] (c) pouring concrete into the cavity and allowing it to cure to form the composite wall.

[0018] In yet another of its aspects, the present invention provides a method of hanging a hanger from a foam wall of a composite wall having a cured concrete core and at least one foam outer wall, the hanger comprising a substantially L-shaped bracket having a retaining portion and a hanging portion for connection to an object to be hung, the hanging portion disposed at substantially a 90 degree angle to the retaining portion, the method comprising the steps of:

[0019] (a) forming a cavity at a hanging position in the foam wall to accommodate the retaining portion;

[0020] (b) securing the retaining portion to the concrete core.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] Embodiments of the present invention will be described with reference to the accompanying drawings, wherein like reference numerals denote like parts, and in which:

[0022] FIG. 1 illustrates a perspective view of a partially assembled embodiment of the present hanger.

[0023] FIG. 2 illustrates a side cross-section view of a partially assembled embodiment of the present hanger.

[0024] FIG. 3 illustrates a perspective view of a partially assembled embodiment of the present hanger.

[0025] FIG. 4 illustrates a perspective view of an assembled embodiment of the present hanger.

[0026] FIG. 5 illustrates a side cross-section view of an embodiment of the present hanger.

[0027] FIG. 6 illustrates a side view of an embodiment of a plate of the present hanger.

[0028] FIG. 7 illustrates a perspective view of an embodiment of a plate of the present hanger.

[0029] FIG. 8 illustrates a perspective view of an embodiment of a partially assembled retrofit bracket of the present invention.

[0030] FIG. 9 illustrates a side cross-section view of an installed plate of an embodiment of a retrofit bracket of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0031] With reference to FIGS. 1 through 5, there is illustrated a hanger 100 of an embodiment of the present invention for use in an insulated concrete form system 105. Insulated concrete form system 105 includes a composite wall 110. Composite wall 110 is formed using a pair of outer walls 115a and 115b, at least one of which, and preferably both of which, are formed of rigid foam. The type of foam is not particularly restricted and is within the purview of a person skilled in the art. The rigid foam may be a polyurethane foam, a phenolic foam, or a polyethylene foam. Preferably, the rigid foam is polystyrene foam. Foam wall 115 may be an integral structure or may be formed from foam panels.

[0032] Prior to forming of composite wall 110, outer walls 115a and 115b form a cavity 120 fillable with concrete. Composite wall 110 may also comprise reinforcing bars 125a, 125b, 125c, 125d and 125e. The reinforcing bars may be vertical or horizontal and are installed in cavity 120 prior to pouring of the concrete. Preferably, reinforcing bars 125a, 125b, 125c, 125d and 125e are formed from steel. The number and arrangement of reinforcing bars is not particularly restricted and is within the purview of a person skilled in the art. It should be clearly noted that, in the illustrated arrangement, reinforcing bar 125a is optional.

[0033] Hanger 100 consists of a plate 130. In a preferred embodiment, hanger 100 consists of a pair of plates 130a and 130b. Plates 130a and 130b may be attached by one or more members (not shown). Plates 130a and 130b are preferably formed of metal and, more preferably, are formed of stamped metal sheet. Preferably, the metal is steel such as

galvanized steel (preferably 22 gauge) or another cold rolled metal. Plates 130a and 130b are inserted into slits 135a and 135b cut into an outer wall 115b. Slits 135a and 135b are cut to approximately the height at which the installer wishes to hang an object 138.

[0034] The objects for which hanger 100 is suitable are not particularly restricted and are within the purview of a person skilled in the art. Hanger 100 is particularly suitable for the hanging of joists and, in particular, floor joists for an interior floor. Hanger 100 is also suitable for other purposes including hurricane truss tie down anchorage, anchorage or fastening an exterior or interior applied framed partition wall to a composite wall, hanging an exterior or interior applied roof truss to a composite wall, and mounting exterior floor joists for, for example, an exterior deck application. The uses of hanger 100 are not particularly restricted and are within the purview of a person skilled in the art. Hanger 100 is particularly suitable for hanging weight bearing structural members.

[0035] Preferably, the ultimate load capacity of a single concrete insert plate (130a or 130b) is at least about 2000 lbs, more preferably at least about 3000 lbs, even more preferably at least about 4000 lbs. The most preferred ultimate load capacity is about 5,000 lbs. When combined in pairs and applying anticipated shear load to the assembly with the bearing bracket attached as described below, the entire assembly is expected to attain a factored rated load capacity (in total) substantially same, respectively, as the ultimate load capacity referred to above. This specification will vary for each required bearing condition, depending on the load anticipated and may be readily determined.

[0036] With reference to FIGS. 1 through 7, plates 130a and 130b have an embedded portion 140, which extends into the cavity 120 for retention therein upon pouring and curing of concrete core 150. Plate 130 further has a hanging portion 160 for connection to object 138. Hanging portion 160 extends out from composite wall 110. The plate axis extending from embedded portion 140 to hanging portion 160 will be referred to herein as the longitudinal axis, although this label is not intended to limit the size or shape of plate 130. Embedded portion 140 has an edge transverse to the longitudinal axis. This edge is in addition to the distal (or most embedded) edge of embedded portion 140. This edge helps retain embedded portion 140 in concrete core 150. The edge may form part of slots or cut-outs, such as slots 155a, 155b, 155c and 155d about the periphery of plate 130. In a preferred embodiment, embedded portion 140 forms part of an aperture 145 therein which improves retention of embedded portion 140 within concrete core 150.

[0037] In a preferred embodiment, slots 155a, 155b, 155c, and 155d are shaped and sized to accommodate horizontal reinforcing bars, such as reinforcing bar 125e. The number of slots 155a, 155b, 155c, and 155d is not particularly restricted and is within the purview of a person skilled in the art.

[0038] Hanger 100 further comprises a support 165. Support 165 is preferably a U-shaped bracket. Preferably, support 165 is formed of metal. More preferably, support 165 is formed of stamped metal sheet. Preferably, the metal is steel such as galvanized steel (preferably 22 gauge) or another cold rolled metal. Support 165 is sized to hold at least a part of object 138, such as an end portion of a joist. The size of

support 165 is not particularly restricted and is within the purview of a person skilled in the art. Support 165 is securable to hanging portion 160 of plate 130. Preferably support 165 is inserted between and secured to hanging portions 160a and 160b of plates 130a and 130b.

[0039] In a preferred embodiment, hanging portion 160 comprises a plurality of apertures 170 and support 165 comprises a plurality of corresponding apertures 175. Securing means 180 are inserted through apertures 170 and corresponding apertures 175 once support 165 is in position between hanging portions 160a and 160b. The plurality of apertures 170 and corresponding apertures 175 permit the hanging height of object 138 to be adjusted post-insertion of plates 130a and 130b and the pouring and curing of concrete core 150. Further, apertures 170 and corresponding apertures 175 permit the installer to accommodate moderate discrepancies in the heights of plates 130a and 130b after setting of concrete core 150. The specific number and arrangement of apertures 170 and corresponding apertures 175 is not particularly restricted and is within the purview of a person skilled in the art. The arrangement of apertures 170 and corresponding apertures 175 may be such that support 165 may be secured so as to hang object 138 on an angle.

[0040] In a preferred embodiment, plate 130 further comprises an outer projection 185. Outer projection 185 extends at substantially a 90 degree angle from plate 130 and when plate 130 is in a hanging position, abuts an exterior surface of outer wall 115a. Outer projection 185 may project from either face of plate 130. In another embodiment, plate 130 may comprise a plurality of similarly structured outer projections. In another embodiment, in addition or in the alternative to outer projection 185, plate 130 may contain one or more inner projections 190. Inner projection 190 extends at substantially a 90 degree angle from plate 130 and when plate 130 is inserted in a hanging position, abuts an interior surface of outer wall 115a, and concrete core 150. As will be evident to a person skilled in the art, inner projection 190 comprises an edge transverse to the longitudinal axis and present in addition to the distal edge of the embedded portion. Inner projection 190 may project from either face of plate 130. The number of outer projections 185 and inner projections 190 is not particularly restricted and is within the purview of a worker skilled in the art. In a preferred embodiment, outer projections 185 and inner projections 190 are formed by punching out portions of plate 130. Preferably, plate 130 comprises an outer projection. Preferably, when a pair of plates 130a are used they include outer projections offset relative to each other.

[0041] In a preferred embodiment, hanger 100 is installed by first cutting slits 135a and 135b through foam wall 115b to a desired hanging position, prior to pouring of concrete core 150. Plates 130a and 130b are then slid into slits 135a and 135b to a desired hanging position. Reinforcing bars 125 may then be positioned between outer walls 115a and 115b. Concrete core 150 is then poured and allowed to cure.

[0042] Object 138 is then positioned within support 165. Support 165 is positioned between hanging portions 160a and 160b of plates 130a and 130b so that one or more of apertures 170 align with one or more corresponding apertures 175. Securing means 180 are inserted through these aligned apertures to secure plate 130 to support 165. Preferably, securing means 180 are further forced into object 138

thereby securing plate 130, support 165 and object 138 to each other. The number and type of securing means 180 used is not particularly restricted and is within the purview of a person skilled in the art, though, in some applications, suitable securing means should include screws only to provide adequate compression of the elements together, thereby effectively reducing the shear forces on parts 180.

[0043] With reference to FIG. 5, it should be noted that object 138 can be translated such that the bottom thereof is below the bottom edge of securing plate 130 (i.e., this can be seen, for example in FIG. 4).

[0044] When hanger 100 is used in a hurricane tie application, plates 130a and 130b are wet set into concrete core 150 at the top of a finished poured composite wall 110 parallel to truss or rafter placement. Once concrete core 150 is cured, the truss or rafter is secured in position between plates 130a and 130b. Support 165 may then be used as a tie down element by being slid downward upside down over the top of the truss or rafter member. Securing means 180 may then be used to secure plate 130 to support 165 and the truss or rafter.

[0045] When hanger 100 is used in a partition anchorage application, one or more of plates 130 can be used. The number of plates necessary for a partition anchorage application is within the purview of a person skilled in the art. Generally, a series of two or three plates 130 or pairs of plates 130a and 130b are required for a standard 8 or 9 foot high partition. Prior to pouring of concrete core 150, slits are made into foam wall 115b on one or both sides of where the partition will be installed. Plates 130 are then inserted through these slits. Once the concrete is poured and cured, partition members, such as wood and steel partition members, can be secured to the hanging portion(s) 160 of insert plate(s) 130 through apertures 170. If a single series of plates 130 are used, the partition can be pre-assembled and tilted up into place against plates 130. Drywall finishes can then be installed as per normal installation practices directly over the insert plates. Preferably, a series of opposing pairs of plates 130a and 130b are used in a partition anchorage application.

[0046] With reference to FIGS. 8 and 9, there is illustrated a retrofit bracket 195 of another embodiment of the present invention for use in insulated concrete form system 205. In this embodiment, parts identified in the first embodiment are here numbered in the two-hundreds, however, when the same numbers appear as second and third digits, they denote a part corresponding to the part having the same digits in the first embodiment.

[0047] Retrofit bracket 195 comprises a retrofit plate 230. In a preferred embodiment, retrofit bracket 195 comprises two retrofit plates 230a and 230b. Retrofit plate 230 has a retaining portion 203, which comprises one or more retaining apertures 207a and 207b to accommodate concrete securing means 209a and 209b. Preferably these securing means are concrete fasteners. In a preferred embodiment, concrete fasteners 209a and 209b are expansion (e.g., lag-type) anchors. Suitable screws are Tap-Con™ screws. Retrofit bracket 195 further comprises hanging portion 260. Hanging portion 260 comprises a plurality of apertures 270.

[0048] Retrofit bracket 195 further comprises a support 265. Support 265 is preferably a U-shaped bracket. Support

265 is sized to accommodate an object 238. Support 265 has a plurality of corresponding apertures 275. Support 265 is securable to hanging portion 260 of retrofit plate 230. Preferably, support 265 is inserted between and secured to both hanging portions 260a and 260b. Apertures 270 and corresponding apertures 275 permit the height of object 238 to be adjusted post fastening of retrofit plates 230a and 230b to composite wall 210. Further, apertures 270 and corresponding apertures 275 permit an installer to accommodate moderate discrepancies in the heights of retrofit plates 230a and 230b after they are fastened to composite wall 210.

[0049] To install retrofit bracket 195, a portion of foam wall 215b sized and shaped to accommodate retaining portion 203 is cut away at a desired hanging position. Retaining portion 203 is then fastened to concrete core 250. Generally, fastening of retaining portion 203 to concrete core 250 will require that holes be drilled in concrete core 250 corresponding to retaining apertures 207a and 207b. Retaining portion 203 is then positioned adjacent concrete core 250 so that retaining apertures 207a and 207b align with the drilled holes. Concrete securing means 209a and 209b are then forced through retaining apertures 207a and 207b to secure retaining portion 203 to concrete core 250.

[0050] Support 265 is positioned between hanging ends 260a and 260b of retrofit plates 230a and 230b so that one or more of apertures 270 align with one or more of corresponding apertures 275. Object 238 is positioned within support 265. Either before or after it is positioned between retrofit plates 230a and 230b. In an alternate embodiment, support 265 may be secured to a single plate 230. Securing means 280 are inserted through these aligned apertures to secure retrofit plate 230 to support 265. Preferably, securing means 280 are further forced into object 238 thereby securing retrofit plate 230, support 265 and object 238 to each other. The number and type of securing means 280 used is not particularly restricted and is within the purview of a person skilled in the art. Suitable securing means 280 include screws and nails.

[0051] While supports 165, 265 and the objects 138, 238 to be hung have been shown as separate elements, those skilled in the art will recognize that the support could be inherent or integral with the object to be hung.

[0052] While hanging portions 160, 260 connect to objects 138, 238 the form of connection is not particularly restricted, and is within the purview of a person skilled in the art. For example, the connection may be by way of securing means such as screws, by friction fit or by gravity.

[0053] The manufacture of various elements of the present system will now be discussed.

[0054] Concrete Form Insert Plate (130): Preferably, this component is fed, stamped and bent in a two-stage operation which involves galvanized steel plate being supplied in a coil at the precise cut width of the component. The component is first fed forward into the manufacturing from when it is stamped to create the holes and outer notches and is cut from the coil. The second stage of the process involves another part of the die fitting to the component to break press the protruding tab to its final position about 90° to the plane of the plate. The component is then ejected from the die to start the next component.

[0055] Bearing Bracket (or support 165): Preferably, this component can vary in width to suit a variety of different

objects, as described in the specification. The manufacturing process is similar to above in two stages. Preferably, galvanized steel coil is supplied in the width of the component. It is first fed from the coil and is stamped to the required size from galvanized steel coil sheet. At the same time as being stamped, the material is also slightly perforated in a designated grid pattern that is designed to line up with the pre-stamped holes of the concrete form insert plate. The perforations are such that, rather than being stamped as clear holes, the material is in fact only deformed to a point of piercing and left in place within the part (similar to a cheese grater)—this facilitates creation of a friction fit with the joist or other member being hung. The stamped component is then break-formed to a U shape with opposing 90° bends such that the side to which the perforations are pointing towards are now facing each other ready to contact the object they are designed to be fastened to. This forming is all completed within another component of the same forming die. The component is then ejected from the machine ready to form the next component.

[0056] Retrofit Bracket or plate 230: Contrary to the other two components, it is preferred to manufacture this component from heavier gauge galvanized steel sheet which is stamped and break formed to required shape in a single step. The includes not only the 90° angle of the component but also the reinforcing “crimps” down the axis of the angle in three locations with arrow shaped indentations to providing the required increased resistance to loading.

[0057] While this invention has been described with reference to illustrative embodiments, the description is not intended to be construed in a limiting sense. Thus, various modifications of the illustrative embodiments, as well as other embodiments of the invention, will be apparent to persons skilled in the art upon reference to this description. It is therefore contemplated that the appended claims will cover any such modifications or embodiments.

What is claimed is:

1. A hanger for hanging an object from a composite wall, the composite wall having a concrete core, a foam outer wall and a second outer wall, the hanger comprising:

a first plate having an embedded portion for retention within the concrete core and a hanging portion extending from the foam outer wall for connection to the object;

the embedded portion having an edge in addition to its distal edge, the edge being substantially transverse to the longitudinal axis of the first plate.

2. The hanger defined in claim 1, further comprising securing means for securing the hanging portion to the object.

3. The hanger defined in claim 1, further comprising a support configured to receive the object, the support being securable to the hanging portion.

4. The hanger defined in claim 3, further comprising securing means for securing the hanging portion to the support.

5. The hanger defined in claim 4, wherein the support has an aperture formed therein for receiving the securing means.

6. The hanger defined in claim 3, wherein the support is a U-shaped bracket.

7. The hanger defined in claim 2, wherein the hanging portion has an aperture for receiving the securing means.

8. The hanger defined in claim 3, wherein the securing means secures the hanging portion, the support and the object together.

9. The hanger defined in claim 3, wherein the support and the hanging portion each have a plurality of apertures therein for receiving the securing means, the apertures arranged such that the support can be secured at a number of angles.

10. The hanger defined in claim 1, wherein the embedded portion has an aperture therein for improved retention in the concrete core.

11. The hanger defined in claim 1, wherein the embedded portion has slots about its periphery.

12. The hanger defined in claim 11, wherein the slots are sized to fit reinforcing bars.

13. The hanger defined in claim 1, wherein the first plate has a projection extending therefrom substantially parallel to the composite wall.

14. The hanger defined in claim 13, wherein the projection is adjacent the exterior of the foam wall.

15. The hanger defined in claim 13, wherein the projection is adjacent the concrete core.

16. The hanger defined in claim 1, wherein the hanger is formed of metal.

17. The hanger defined in any one of claims 1-16, wherein the hanger further comprises a second plate having an embedded portion for retention within the concrete core and a hanging portion extending from the composite wall, the object being connectable to both plates.

18. The hanger defined in claim 17 wherein the first plate and second plate are the same.

19. The hanger defined in claim 17 wherein the first plate and second plate are different.

20. The hanger defined in claim 17, further comprising a member connecting the first plate and second plate.

21. A method for installing a hanger on a composite wall formed from a foam wall and a second wall defining a cavity fillable with concrete, the hanger including a first plate having an embedded portion and a hanging portion, wherein the embedded portion comprises an edge in addition to its distal edge, the edge being substantially transverse to the longitudinal axis of the first plate, the method comprising the steps of:

(a) cutting a slit through the foam wall so that the slit extends to a hanging position;

(b) sliding the first plate in the slit to the hanging position, wherein the embedded portion of the first plate extends into the cavity and the hanging portion extends from the composite wall;

(c) pouring concrete into the cavity and allowing it to cure to form the composite wall.

22. The method defined in claim 21, further comprising the step of securing a support for receiving an object to be hung to the hanging portion.

23. The method defined in claim 21, further comprising the step of (d) sliding a second plate into a second slit before step (c) and positioning it substantially opposite the first plate, wherein an embedded portion of the second plate extends into the cavity and a hanging portion of the second plate extends from the composite wall.

24. The method defined in claim 23, further comprising the step of (e) positioning the support between the hanging portions of the first and second plates and securing the support to the hanging portions of the first and second plates.

25. A method of hanging a hanger from a foam wall of a composite wall having a cured concrete core and at least one foam outer wall, the hanger comprising a substantially L-shaped bracket having a retaining portion and a hanging portion for connection to an object to be hung, the hanging portion disposed at substantially a 90 degree angle to the retaining portion, the method comprising the steps of:

(a) forming a cavity at a hanging position in the foam wall to accommodate the retaining portion;

(b) securing the retaining portion to the concrete core.

26. The method defined in claim 25 further comprising the step of securing a support for receiving the object to the hanging portion.

* * * * *