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(54) **PREFABRICATED HOUSING COMPONENTS**

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(57) **ABSTRACT**

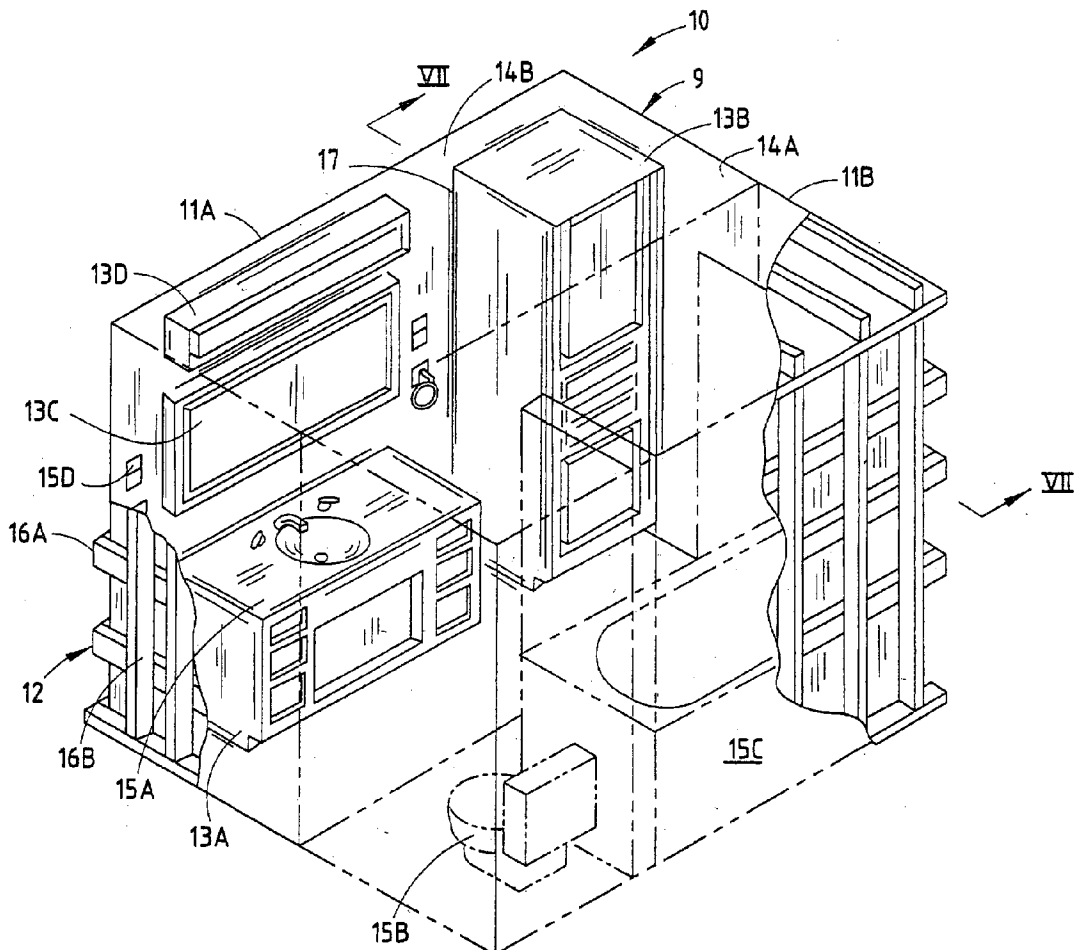
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(60) Provisional application No. 60/359,403, filed on Feb.
23, 2002.

A prefabricated housing component that includes at least one casting having a wall portion, a floor portion, a ceiling portion, wherein the wall portion, floor portion and ceiling portion cooperate to form an interior space, and a cabinet portion including a recessed portion within the interior space. The prefabricated housing component further includes a framework surrounding the casting, wherein the framework provides structural rigidity thereto.



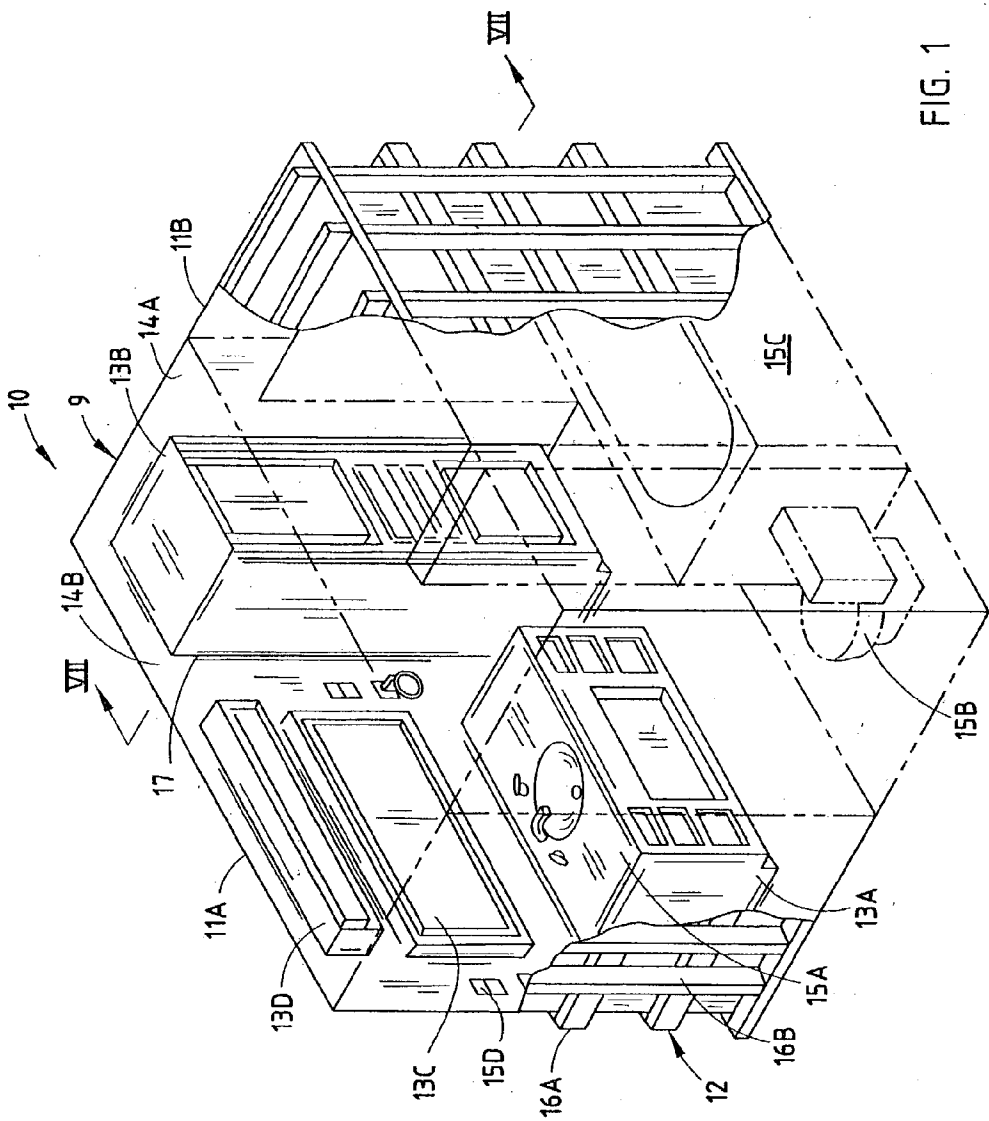


FIG. 1

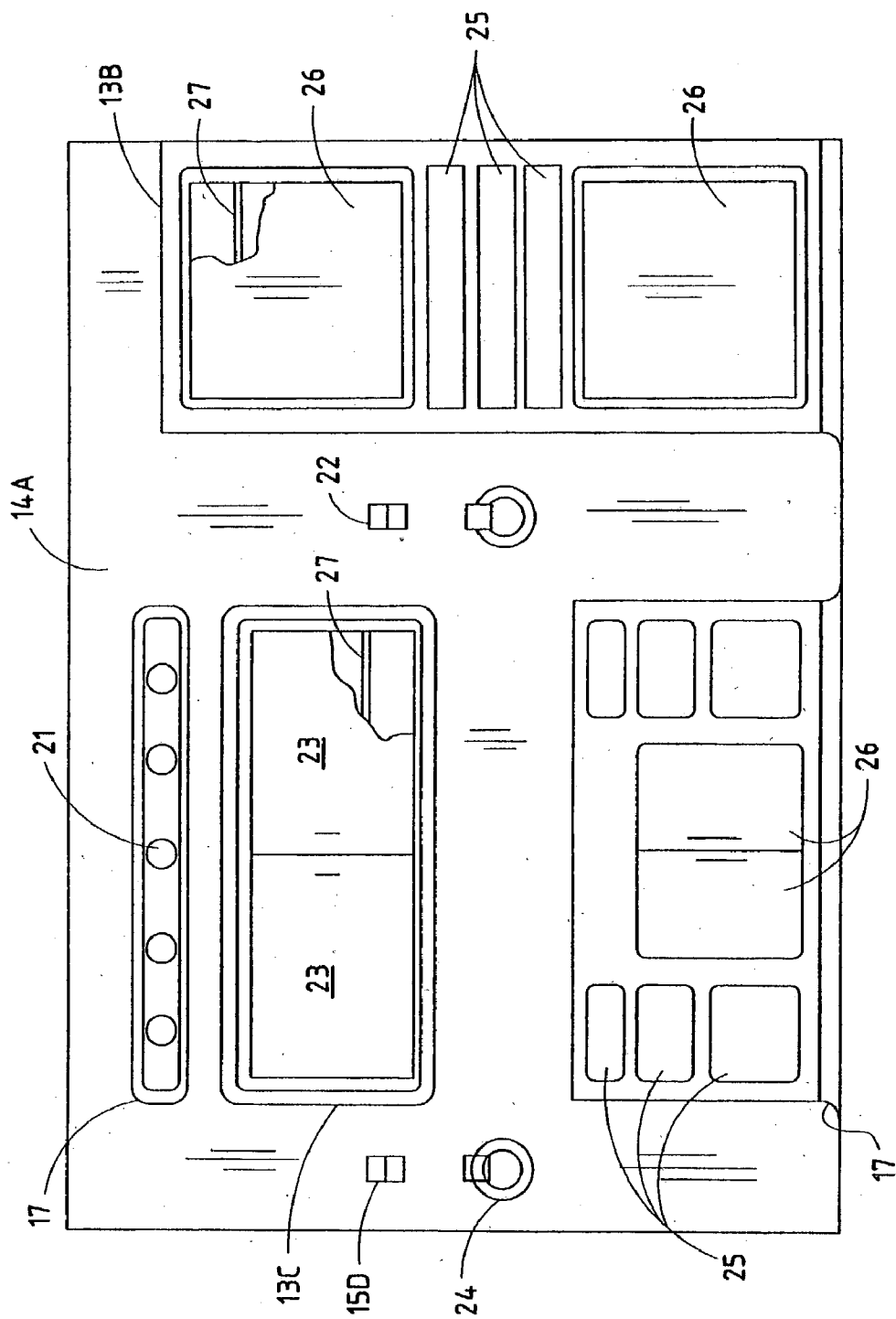


FIG. 2

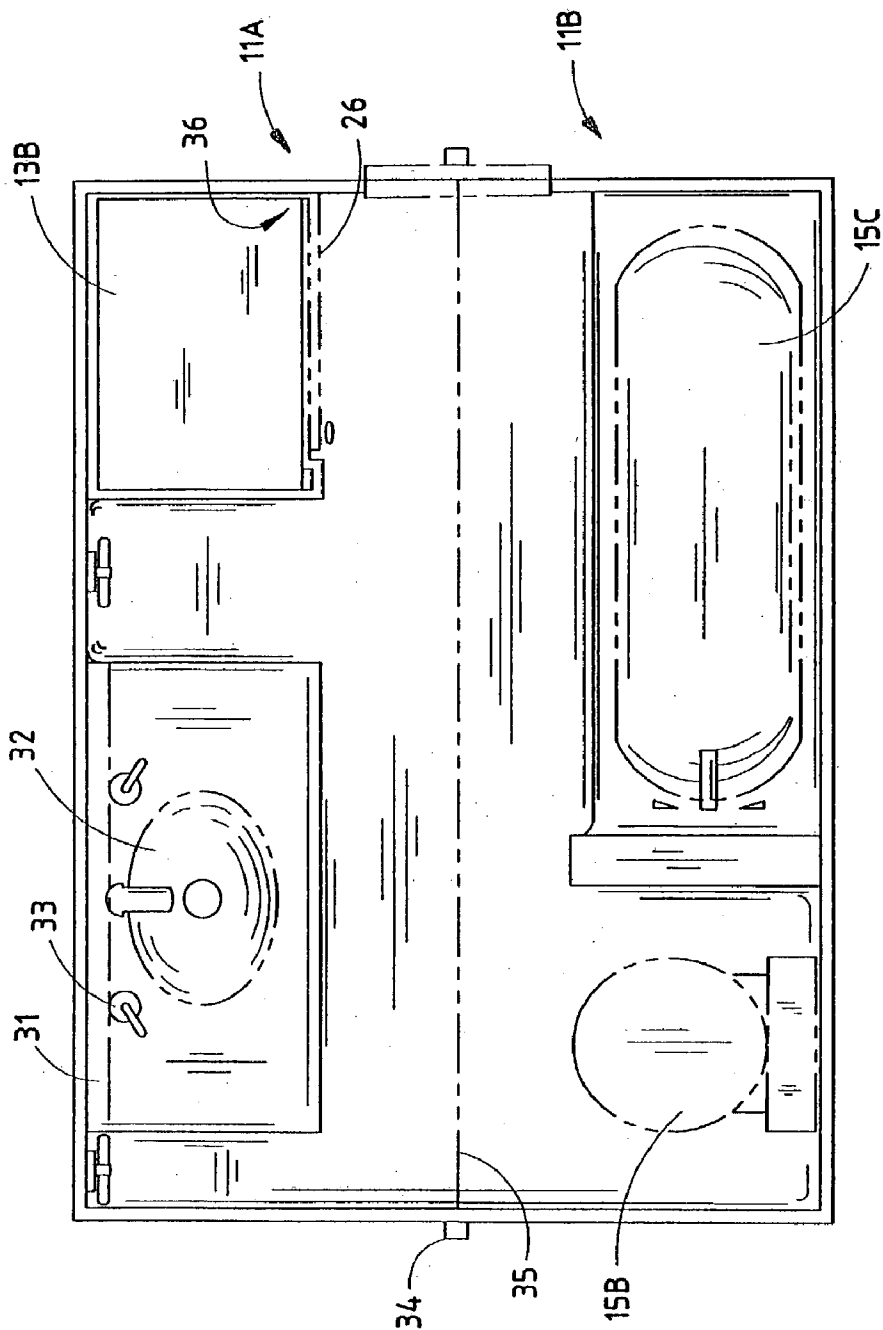


FIG. 3

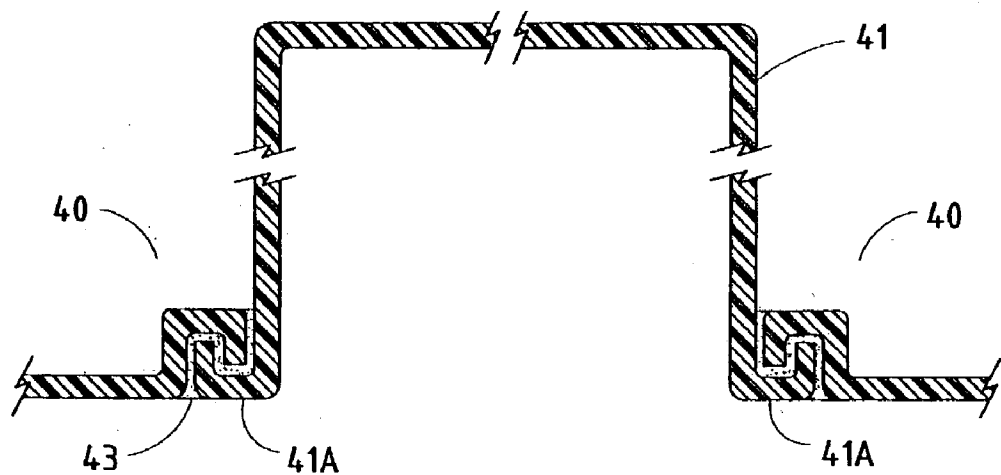


FIG. 4

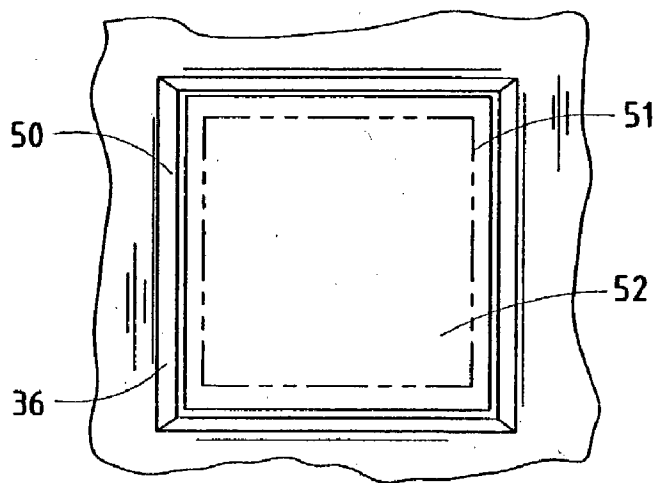
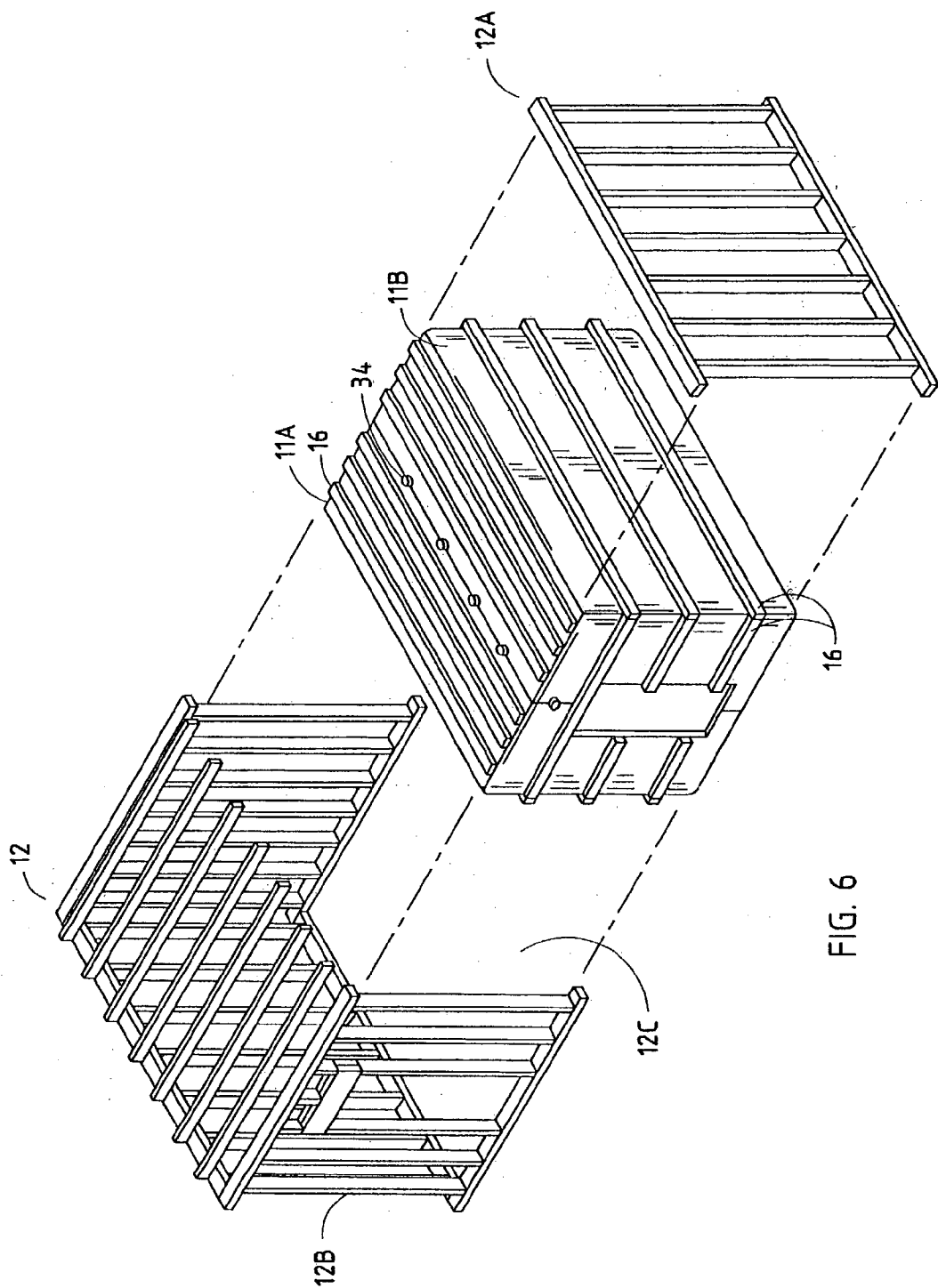
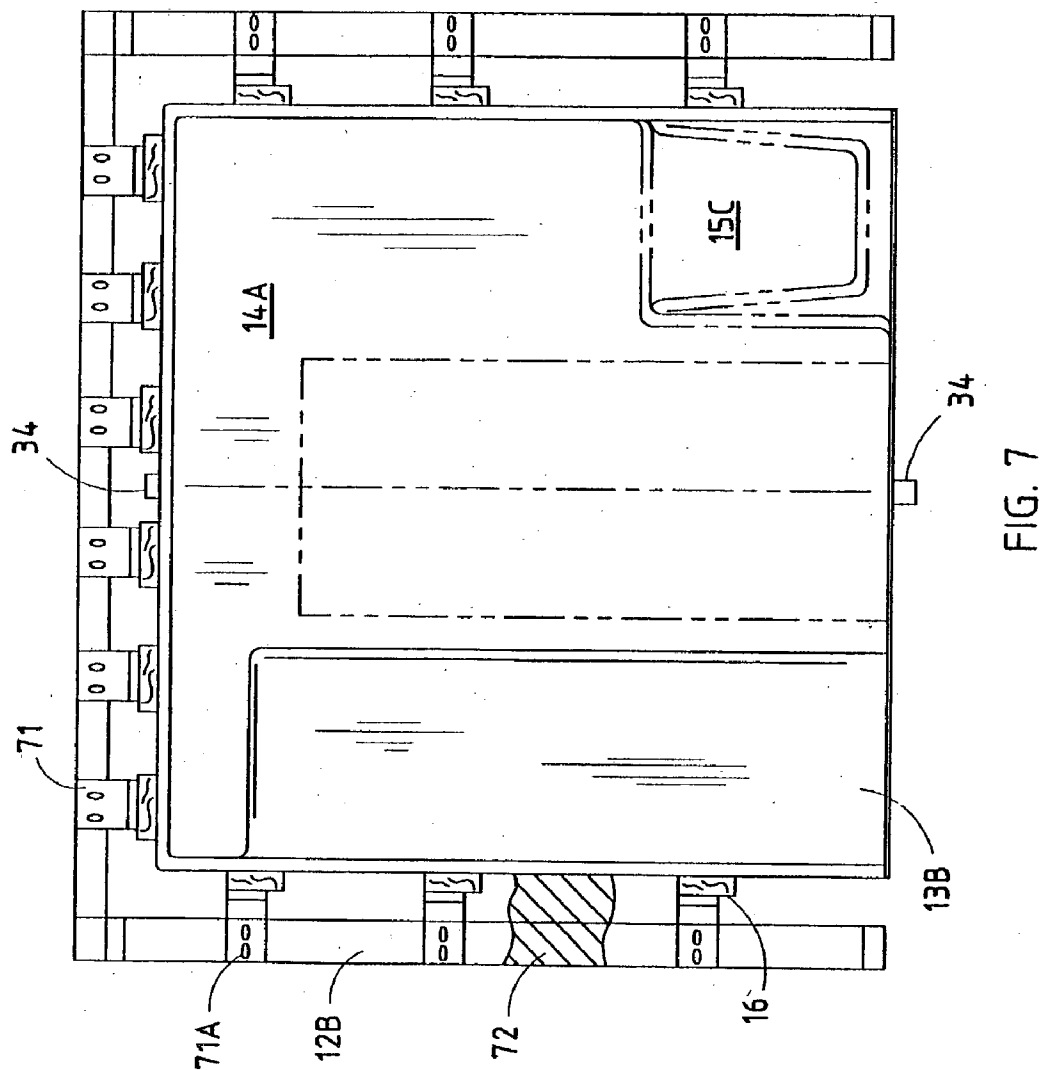


FIG. 5





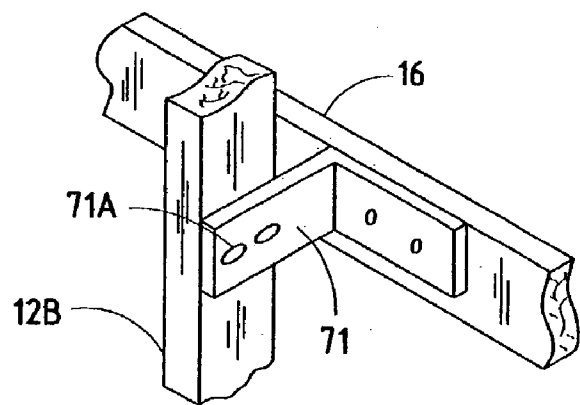


FIG. 8

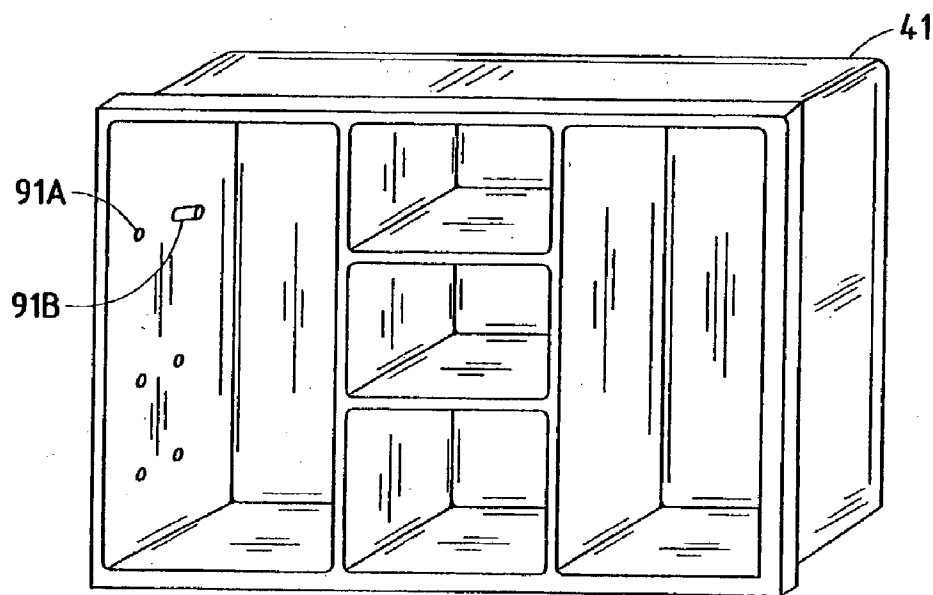
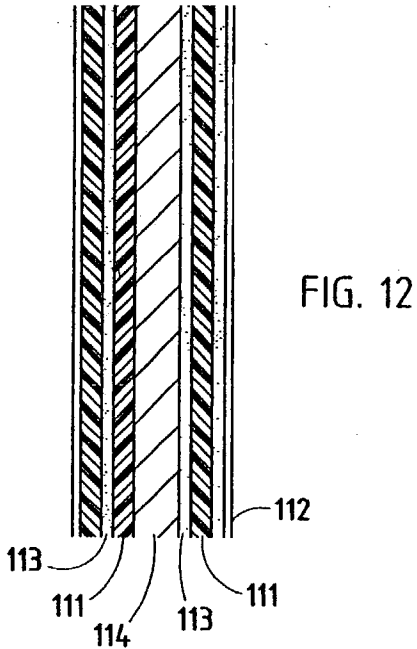
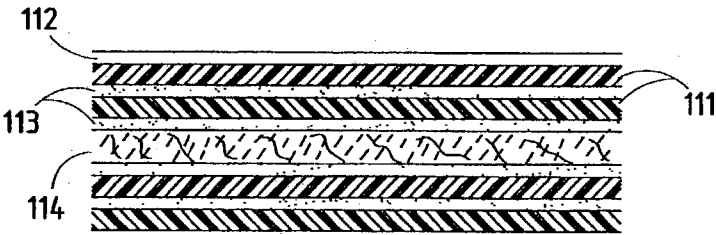
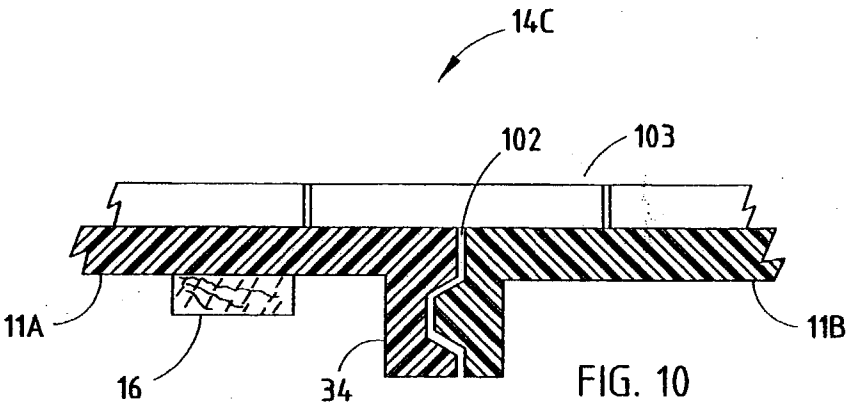


FIG. 9



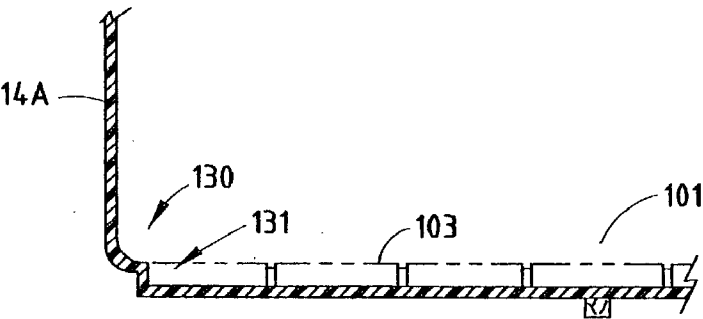


FIG. 13

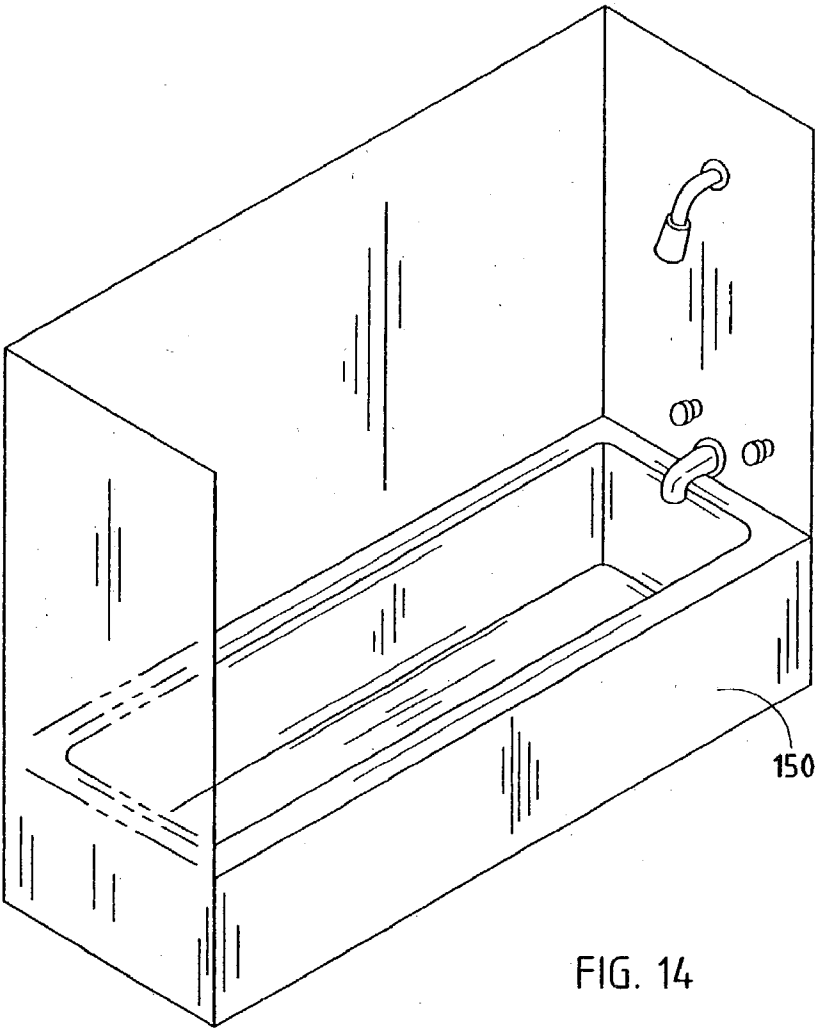
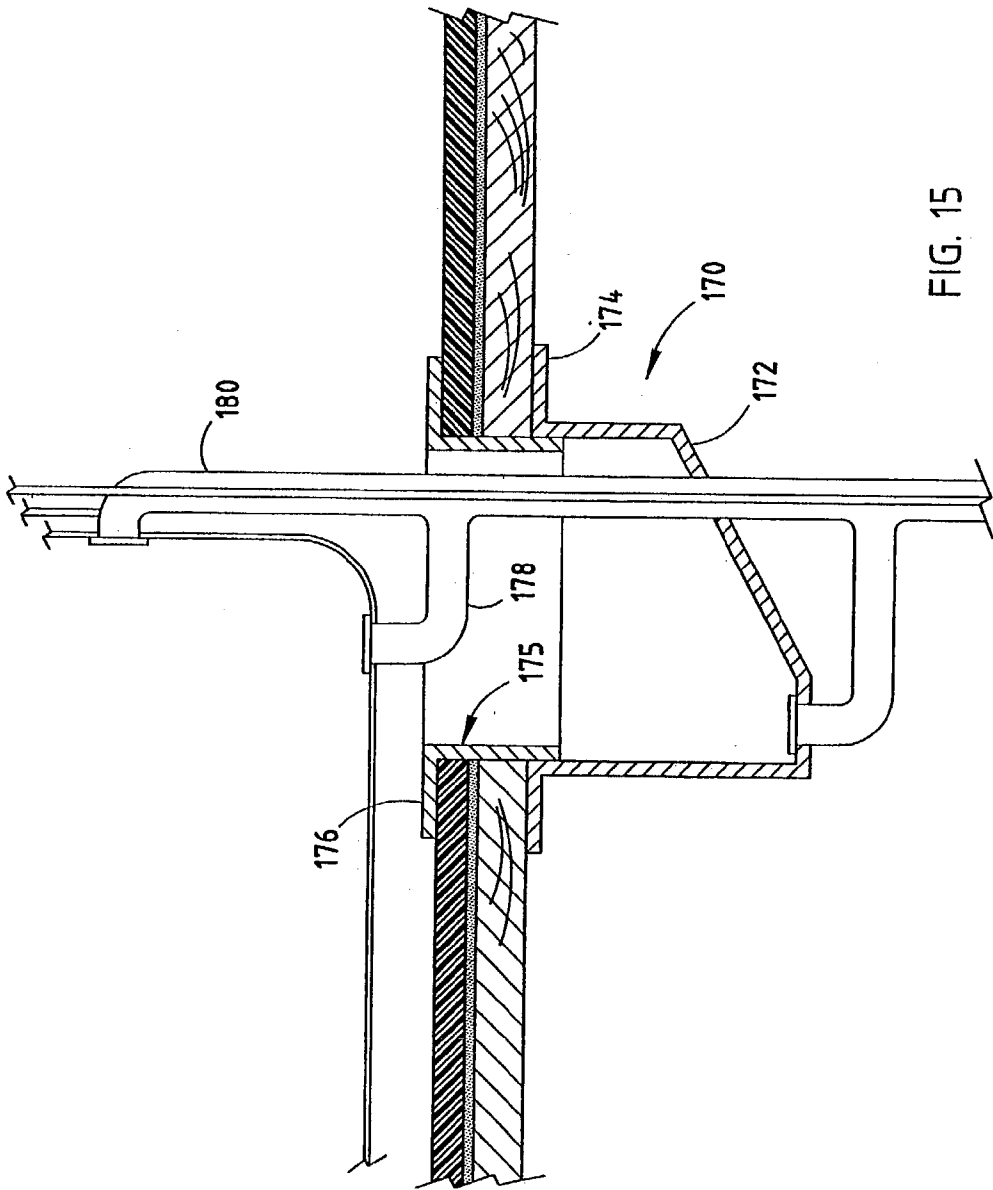


FIG. 14



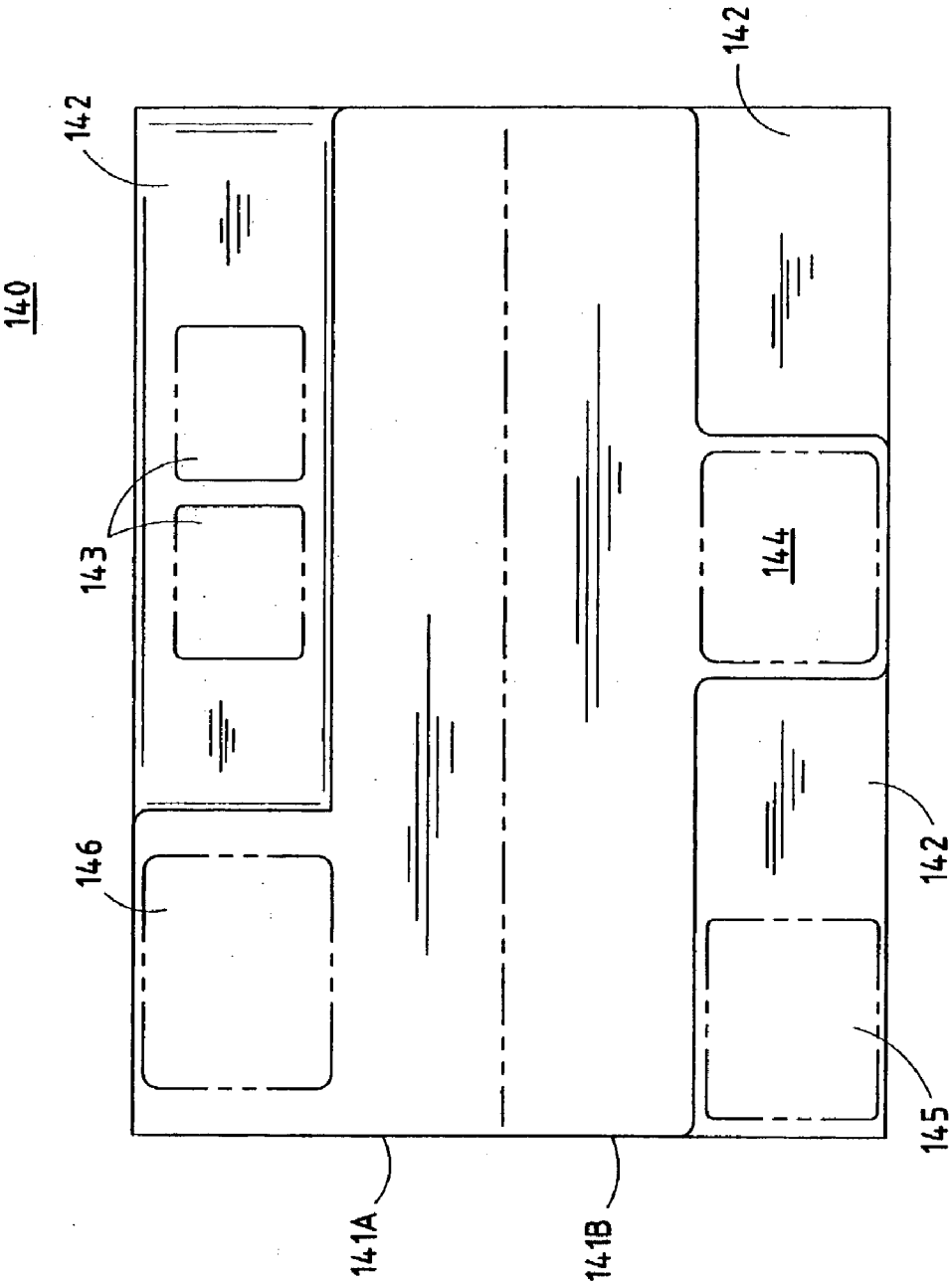
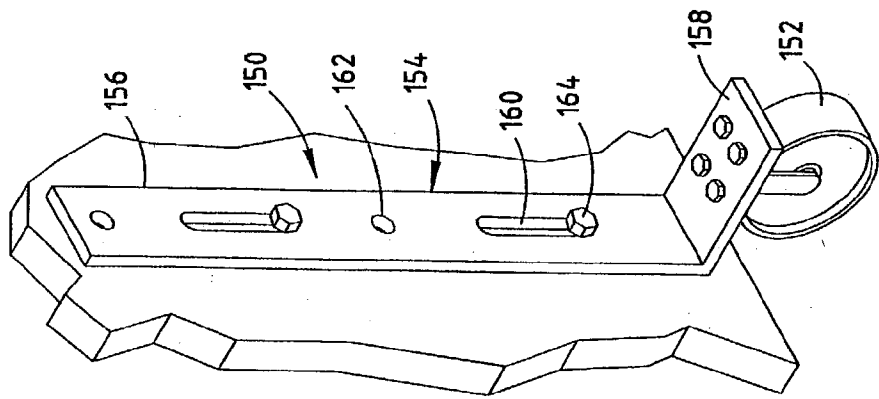
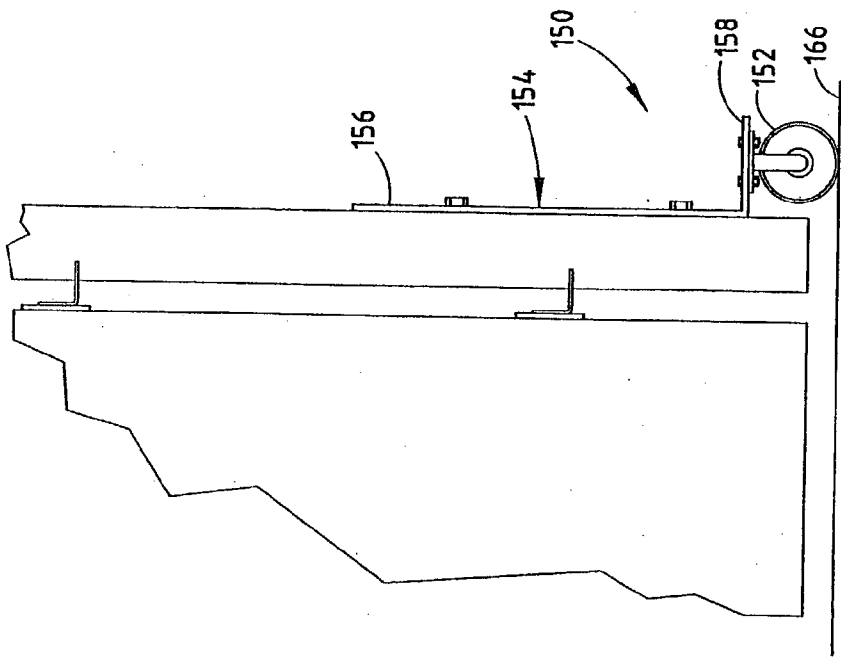


FIG. 16



PREFABRICATED HOUSING COMPONENTS

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority from U.S. Provisional Patent Application No. 60/359,403, filed on Feb. 23, 2002, entitled PREFABRICATED HOUSING COMPONENTS.

BACKGROUND OF THE INVENTION

[0002] The present invention relates to the housing industry and, in particular, to prefabricated components such as bathrooms and kitchens which are preferably built at a factory and shipped to a build site.

[0003] The housing construction industry is one of the largest sectors of the United States economy. In the construction industry there is considerable competition to continually produce an improved product, reduce costs, and speed construction. One way for a builder to reduce costs is to purchase less expensive materials. However, this approach often leads to an inferior product or building. Another approach to reducing costs is to reduce the amount of labor required to produce a house or building. This is accomplished by the use of continually improving tools such as nail guns, power tools, and the like. Labor is also reduced by the use of ready to install, standardized, or pre-ordered moldings, wall panels, trusses, floorings, trim, and the like. However, labor continues to be a significant cost of a house or building.

[0004] One aspect of the labor costs is associated with the electrical and plumbing work that must be done on site. The electricians and plumbers are skilled at their craft, but may cause a delay if they are not able to perform their work under a schedule desired by the builder. Further, government inspectors may be required to inspect the electrical and plumbing work before the drywall or other work can continue. Thus, delays or possible problems may delay construction and increase costs.

[0005] Another aspect of the construction industry is to increase the value and desirability of a building by including innovative, attractive, and more durable features. The continuing goal, therefore, is to find ways to reduce costs, increase durability and functionality, improve the aesthetic appeal, and improve efficiency.

SUMMARY OF THE INVENTION

[0006] To address the goals stated above and other goals, the inventive prefabricated housing components are manufactured using large-scale composite molding techniques to form wall, ceilings, floors, cabinets, and other features from a single casting. In the preferred embodiment, an entire room, such as a bathroom or a kitchen, is formed from only two such castings. The two castings are mated together and aligned with alignment pins to form a single unit. Support ribs are attached to the exterior of the casting. A framework, preferably made of wooden or metal studs, is constructed to enclose the casting. The casting is placed inside of the framework and the support ribs secure the casting to the framework while the casting continues to cure. The studs are then more securely attached to the casting by use of a composite material, mechanical fasteners and structural components, thereby increasing the structural resiliency and rigidity of the final structure.

[0007] Various portions of the casting are cutout to provide apertures for such things as medicine cabinets, towel cabinet drawers and doors, vanity doors and doors, plumbing access and electrical devices and switches. The component is then finished by connecting plumbing and electrical devices, adding doors, and drawers, installing flooring, sinks, counter tops, towel racks, and the like to complete the component.

[0008] The component is then shipped to the building site where the component is installed in place. The high strength of the component reduces the chance of damage during the shipping process. The plumbing and electrical work is done at the factory where it is also inspected. The work is completed indoors and can therefore be done efficiently regardless of outside weather conditions.

[0009] Finally, the unique construction technique of the invention permits aesthetically pleasing and useful shapes and designs that are not typically available using conventional construction techniques. For example, the molded construction technique permits the application of various curves and sculptured shapes. Rectangular cabinets and 90° corners may be replaced with smoothly sculptured cabinets and rounded comers. The possibility of designs is virtually limitless.

[0010] In some applications, an additional casting may be used when it is not practicable to use only two castings. For example, in a bathroom application, a tub/shower casting may be molded separately and installed into the component after the initial two halves are assembled.

[0011] One aspect of the present invention is to provide a prefabricated housing component that comprises at least one casting including a wall portion, a floor portion, a ceiling portion, wherein the wall portion, floor portion and ceiling portion cooperate to form an interior space, and a cabinet portion including a recessed portion located within the interior space. The prefabricated housing component further includes a framework surrounding the casting, wherein the framework provides structural rigidity thereto.

[0012] Another aspect of the present invention is to provide a method of manufacturing a prefabricated housing component that includes the steps of applying a composite material to a mold that includes a wall portion, a ceiling portion and a floor portion, allowing the composite material to at least partially cure, thereby resulting in a casting, and removing the casting from within the mold. The method further includes inserting the casting into a cavity as defined by a framework, and securing the casting to the framework.

[0013] It is clear that the invention is a significant improvement over the prior art systems. Additional features and advantages of the invention will be set forth in the detailed description which follows, and in part will be readily apparent to those skilled in the art from that description or recognized by practicing the invention as described in the detailed description which follows, the claims, as well as the appended drawings.

[0014] It is to be understood that the foregoing description is exemplary of the invention only and is intended to provide an overview for the understanding of the nature and character of the invention as it is defined by the claims. The accompanying drawings are included to provide a further understanding of the invention and are incorporated and

constitute part of this specification. The drawings illustrate various features and embodiments of the invention which, together with their description serve to explain the principals and operation of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is a cutaway top perspective view of a casting embodying the present invention, wherein the casting comprises a bathroom;

[0016] FIG. 2 is a front elevational view of a vanity, a medicine cabinet, and a towel cabinet of the bathroom of FIG. 1;

[0017] FIG. 3 is a top plan view of the bathroom of FIG. 1;

[0018] FIG. 4 is a top plan view of a recessed portion and an insert cut away to show an interlocking joint;

[0019] FIG. 5 is a front elevational view of the recessed portion of the casting;

[0020] FIG. 6 is an exploded perspective view of the castings and framework associated therewith;

[0021] FIG. 7 is a cross-sectional side elevational view along section VII-VII, FIG. 1;

[0022] FIG. 8 is a top perspective view of a stud, a support rib, and a bracket according to the invention;

[0023] FIG. 9 is a top perspective view of an insert according to the invention;

[0024] FIG. 10 is a cross-sectional side elevational view of an alignment pin and an associated flooring;

[0025] FIG. 11 is a cross-sectional top plan view of a wall of the casting;

[0026] FIG. 12 is a cross-sectional view of a strengthened portion of the casting;

[0027] FIG. 13 is a cross-sectional view of the floor and the wall of the casting;

[0028] FIG. 14 is a top plan view of an alternative casting of the present invention, wherein the alternative casting comprises a kitchen;

[0029] FIG. 15 is a cross-sectional side elevational view of a lower drain pan;

[0030] FIG. 16 is a top perspective view of a bath/shower casting;

[0031] FIG. 17 is a side elevational view of the housing component supported by a trolley assembly; and

[0032] FIG. 18 is a perspective view of the trolley assembly.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0033] Reference will now be made in detail to the present preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numerals will be used throughout the drawings to refer to the same or like parts.

[0034] An exemplary embodiment of a prefabricated housing component according to the present invention is shown in FIG. 1, and is designated generally throughout by reference numeral 10. Parts of the prefabricated housing component 10 of the present invention will first be briefly described and then described in detail. The most common use for the invention is as a bathroom or kitchen for a home, a duplex, an apartment, a hotel, and the like. However, those skilled in the art will appreciate that the invention may be adapted for other applications as well. The following discussion will describe the invention in relation to a bathroom application.

[0035] As illustrated in FIG. 1, prefabricated housing component 10 comprises a first casting 11A, a second casting 11B and an external framework 12. The castings 11A and 11B are formed into a vanity cabinet 13A, a towel cabinet 13B, a medicine cabinet 13C and a light bar 13D. Other parts of the construction comprise walls 14A, a ceiling 14B, and a floor 14C. The castings 11A and 11B are constructed out of fiberglass or composite type materials. The invention may also be practiced with other types of materials such as plastics which may be molded. The fiberglass construction comprises multiple layers of flame retardant resin and glass fibers with a colored gel layer as the finishing layer. A strengthening material, or core material, is included inside the layers of resin and glass fibers. Preferably, this material is a quarter inch layer of wood, and preferably balsa wood. Some portions of the construction include stronger strengthening layers such as ½ inch plywood. Such strengthened portions are used, for example, where drawers or cabinet doors are attached. The two castings 11A and 11B are aligned and attached together using an appropriate adhesive.

[0036] The interior of the component is finished by cutting openings in the casting 11A for the drawers, cabinetry doors, light bar assemblies, and plumbing and electrical connections. Conventional doors, drawers, countertops 15A, sinks, faucets, toilets 15B, bath tubs 15C, lights, and electrical outlets 15D are attached or installed in a conventional manner.

[0037] One aspect of the invention is that once a mold (not shown) is formed or constructed, castings may be made quickly and easily from such mold. The first step in constructing the mold is to construct a female plug (not shown) in the shape of the desired casting such as castings 11A and 11B. The plug is virtually identical in shape to the casting 11A but without the added hardware, faucets and sink. The plug is preferably made of wood and is primed and waxed to a smooth surface. A male mold (not shown) is made from the plug in a conventional manner and the female castings are then created by placing multiple layers of fiberglass surrounding a wood layer on the mold. The casting, such as casting 11A and 11B is removed from the mold and inserted inside of the framework 12. A plurality of support ribs 16A are secured to the casting 11A or 11B prior to placing the casting 11A or 11B into the framework 12. The ribs 16A are secured to a plurality of studs 16B of the framework 12.

[0038] The electrical and plumbing is completed on the component 10 in the factory and is inspected to meet the required building codes. The plumbing and electrical are of a conventional nature, however, a preferred embodiment includes utilizing electrical harnesses and systems that are configured to minimize the number of electrical and plumbing connections required to be made at the construction site.

[0039] Other aspects of the invention include curved or sculptured portions of the castings 11. Because of the manufacturing technique used, atypical shapes may be introduced into the castings. For example, rounded corners 17 may be used extensively. Other portions may also be curved or contoured surfaces, including cabinetry, walls, floors, and ceilings to provide an appealing, innovative and upscale appearance. The atypical shapes may also be used to provide improved utility such as improved ergonomics, more usable storage and safety features.

[0040] FIG. 2 is a front view of the finished cabinetry of FIG. 1. Shown in FIG. 2 are the lights 21, electrical outlets 15D, electrical switches 22, medicine cabinet mirror doors 23, towel holders 24, drawers 25 and cabinet doors 26. The medicine cabinet 13C and the towel cabinet 13B are typically each provided with shelves 27. To provide shelves 27 and to provide an aesthetically pleasing and useful interior, an insert is provided which is secured into the interior of the medicine cabinet 13C and the towel cabinet 13B.

[0041] FIG. 3 illustrates a cutaway top view of the castings 11A and 11B. Shown in the figure is the vanity top 31, sink 32 and faucets 33. A pair of alignment pins 34 are shown along a seam 35 located between the castings 11A and 11B. Alignment pins 34, or other alignment devices, are utilized to keep the edges of the castings 11A and 11B aligned with one another while the castings 11A and 11B are bonded together. The alignment pins 34 save time and reduce the risk of misalignment or imperfections in alignment.

[0042] As illustrated in FIG. 3, the lips 36 of the cabinetry 13B and 13C where a drawer 25 or door 26 are attached are preferably reinforced with a rigid reinforcement material, such as $\frac{1}{2}$ inch plywood and the like. As mentioned above, the castings 11A and 11B are preferably reinforced with $\frac{1}{4}$ inch balsa wood bonded inside at least two layers of fiberglass.

[0043] The apertures for the drawers 25, the towel cabinet 13B and the medicine cabinet 13C are cut from the original casting 11A. The mold is formed to create recessed portions in the casting 11A so that it is readily apparent where the cuts are to be made. FIGS. 4 and 5 illustrate a cutout line 51 and a preferred water resistant joint 40 for use with an insert 41, such as the drawers 25 and the cabinets 13B and 13C. The casting 11A is first cut along the edge of the recessed portion 50 as illustrated by the cutout line 51. The lip 36 of the recessed portion is preferably reinforced with $\frac{1}{2}$ inch plywood, or other suitably functioning reinforcing material as discussed above, for securing and mounting the drawers 25 and doors 23 and 26. The inserts 41 are sized to fit within the aperture 52 created by cutting along the cutout line 51. The edges of the insert 41 and the edge of the aperture 52 form the interlocking water resistant joint 40 to securely hold the insert 41 within the aperture 52. Adhesive is applied to the joint 40 for added strength and water resistance. Inserts 41 are preferably utilized to create the towel cabinet 13B and the medicine cabinet 13C.

[0044] Another aspect of the housing component 10 according to the invention is the framework 12 into which the castings 11A and 11B are inserted. The framework 12 is constructed according to approved building standards and is preferably constructed of a plurality of studs 12B, such as 2x4's and the like. Because the framework 12 is assembled at the factory, it reduces the framing required to be done at the construction site and saves time and money. In a preferred embodiment, the housing component 10 is shipped on

a plurality of castors (not shown), thereby allowing the builder to merely lower the completed component to the correct floor within the building, roll the component 10 to the desired location, and secure the component 10 to the associated sub-floor.

[0045] In assembly, the castings 11A and 11B are aligned with the alignment pins 34 and secured within the support ribs 16. The support ribs 16 are bonded to the exterior of the castings 11A and 11B and are preferably made of furring strips (e.g., wood strips) of approximately 1 inch by 3 inches.

[0046] The framework 12 is constructed such that a sidewall 12C is separated from the framework 12 until the castings 11A and 11B are inserted into a framework aperture 12C. Once the castings 11A and 11B are in place, the sidewall 12A is attached to the balance of the framework 12.

[0047] The castings 11A and 11B are then secured to the framework 12 via a plurality of metal brackets 71 (FIG. 8), as shown in FIG. 7. The brackets 71 are L-shaped brackets with oval apertures 71A extending therethrough to provide for adjustment as the nail or screws secure the brackets 71 to the studs 12B. Each bracket 71 attaches to both the rib 16 and the stud 12B. The oval apertures 71A in the bracket 71 provide adjustment as needed. By using the technique of adjustably securing the castings 11A and 11B to the framework 12, the castings 11A and 11B are able to be assembled to the framework 12 while the castings 11A and 11B complete the curing process. This design allows for higher throughput by reducing the cycle time required to create each casting 11A and 11B. Preferably, using the adjustable technique, permits the castings 11A and 11B to be removed from the mold in approximately $\frac{1}{2}$ the time required to attain a fully cured casting. In other words, the productivity of each mold is doubled.

[0048] In assembly, alignment pins 34 are located about the circumference of the castings 11A and 11B. However, once the castings 11A and 11B are adhesively bonded, the alignment pins 34 located near the floor 14C are ground off or cut off to provide a level floor surface.

[0049] For greater strength, the studs 12B of framework 12 are then "glassed" i.e., bonded with the composite material 72, to the exterior of the castings 11A and 11B. The bond 72 extends along the entire length of studs 12B. This construction makes the overall component 10 very strong. The strength of the completed component 10 is contemplated to make it the strongest room of a construction. Therefore, it may also provide improved safety from storms, earthquakes, or similar dangerous conditions. It is also unlikely to be damaged or cracked during shipment to the construction site.

[0050] As illustrated in FIG. 9, the insert 41 of the medicine cabinet 13 includes adjustable shelving as provided by holes 91A that support pins 91B for supporting shelves in a conventional manner. Of course, other types of medicine cabinet units may also be used with the invention. Similar type shelving construction may also be utilized within the vanity cabinet 13A and the towel cabinet 13B.

[0051] The floor 14C of the castings 11A and 11B is illustrated in FIG. 10. The alignment pin 34 is no longer needed after the castings 11A and 11B have bonded together via an adhesive 102 and the alignment pin 34 is typically removed. Those of ordinary skill in the art recognize that various configurations of alignment pins, grooves or ridges may be utilized with the invention. The floor 14C of the

castings 11A and 11B is preferably covered with a flooring material 103 that provides the desired color or texture of the builder, and comprise linoleum, tile and the like. The flooring material 103 also covers and hides the seam between the castings 11A and 11B.

[0052] Preferably, castings 11A and 11B are each constructed of multiple layers of fiber glass 111 and epoxy 113 with a colored layer 112 that provides the finished surface visible to the user. The colored layer 112 is preferably a gel coating. Sandwiched between the layers of the fiber glass 111 and the epoxy 113 is a layer of support material 114. The support material 114 may be cardboard, corrugated cardboard, wood, or other material that can provide adequate support. It is also desirable if the material provides some stress reduction such that the composite materials can move slightly if stress builds sufficiently. The most preferred support materials are ¼ inch bolsa wood for most surfaces, and ½ inch plywood for high stress areas such as the lips 36 of the apertures 52, where drawers or doors attach. An alternative embodiment utilized a layer of gas trapped between the multiple layers. FIG. 12 is another illustration of the composite construction where the support material is wood.

[0053] An example of the contoured surfaces and the curves that are readily implemented by the use of the invention is illustrated in FIG. 13, showing a curve 130 from the wall 14A down to the floor 14C. The invention can also accommodate formation of a recessed portion 131 appropriate for receiving the flooring material 103.

[0054] Those skilled in the art understand that there are some limitations to the shapes that can be reasonably fabricated using molds. Accordingly, it is understood that some shapes, such as a bathtub 150 (FIG. 14) are more easily formed as a separate casting and then mounted into the appropriate location in the castings 11A and 11B. In the alternative, various other tub/shower units may be purchased and installed in the unit in a conventional manner.

[0055] Another aspect of the present invention is to provide a lower drain pan 170 (FIG. 15) located proximate the bathtub 150, and adapted to prevent water from leaking pipes associated with the bathtub 150. It should be noted that while the drain pan 170 is described in relation to bathtub 150, the drain pan 170 may be utilized with a multitude of plumbing fixtures and applications. In the illustrated example, the drain pan 170 includes a housing member 172 having a peripherally extending attachment flange 174, and a collar member 175 having a peripherally extending attachment flange 176. In assembly, the housing member 172 is placed below the floor of the housing component 10 proximate a location of water pipes associated with the bathtub 150, such as a drain pipe 178, an over-flow pipe 180, and the like. The housing member 172 is connected to the floor of the housing component 10 via a plurality of mechanical fasteners and caulk. The collar member 175 is aligned with the housing member 172, and the flange 176 of the collar member 175 is attached to an upper surface of the floor of the housing component 10 via a plurality of mechanical fasteners and caulk.

[0056] In another aspect of the invention, a kitchen room 140 (FIG. 16) may be implemented with similar advantages as discussed for the bathroom. Similar to the casting 11A and 11B of the bathroom component 9, castings 141 of the kitchen room 140 are formed and bonded together. Inserts such as cabinets and counters 142 are formed in a similar manner as described above. Locations for accessories such

as sinks 143, ovens 144, dishwashers 145 and a refrigerator 146 are also provided. The advantages of pre-plumbing and electrical wiring provide savings similar to the bathroom component 9 described above.

[0057] As illustrated in FIGS. 17 and 18, a plurality of trolley assemblies 150 utilized to support the housing component 10 during the installation process. Each trolley assembly 150 includes castor wheel 152 connected to an associated stud 16B via a support bracket 154 and mounting hardware. Each support bracket includes a mounting portion 156 adapted to connect to the stud 16B, and a wheel support portion 158 integral with and extending substantially orthogonal to mounting portion 156. The mounting portion 156 includes a plurality of elongated, longitudinally extending slots 160, and a plurality of apertures 162, all of which are adapted to receive mounting hardware such as lugs 164 therein. In assembly, the trolleys 150 are located with respect to the housing component 10 so as to provide clearance between a sub-floor 166 and the housing component 10, thereby allowing the housing component to be rolled along the sub-floor 166. The lugs 164 are tightened within the slots 160 to maintain this clearance. Additionally, the lugs 164 may be placed within apertures 162, thereby preventing the possibility of the lugs 164 sliding within the slots 160 and the housing component 10 touching the sub-floor 166. Once the housing component 10 is delivered to the proper location within the building, the lugs 164 are removed from within the apertures 162 and the slots 160, thereby allowing the housing component 10 to rest on the sub-floor 166.

[0058] It will become apparent to those skilled in the art that various modifications to the preferred embodiment of the invention as described herein can be made without departing from the spirit or scope of the invention as defined by the appended claims.

The invention claimed is:

1. A prefabricated housing component, comprising:
 - at least one casting, comprising:
 - a wall portion;
 - a floor portion;
 - a ceiling portion, wherein the wall portion, floor portion and ceiling portion cooperate to form an interior space; and
 - a cabinet portion including a recessed portion located within the interior space; and
 - a framework surrounding the casting, wherein the framework provides structural rigidity thereto.
2. The prefabricated housing component of claim 1, wherein the casting comprises fiberglass.
3. The prefabricated housing component of claim 2, wherein the casting comprises a resin.
4. The prefabricated housing component of claim 3, wherein the resin is fire retardant.
5. The prefabricated housing component of claim 1, wherein the casting comprises plastic.
6. The prefabricated housing component of claim 1, wherein the at least one casting includes a first casting and a second casting matable theretogether; and further comprising:
 - an alignment portion including an alignment pin and an alignment aperture.
7. The prefabricated housing component of claim 1, wherein the framework is fixedly attached to the casting.

8. The prefabricated housing component of claim 6, wherein the framework includes at least one stud fixedly attached to the casting via resin and fiberglass.

9. The prefabricated housing component of claim 7, further comprising:

at least one support rib attached to the exterior of the casting.

10. The prefabricated housing component of claim 9, further comprising:

at least one bracket securing the at least one support rib to a stud of the framework.

11. The prefabricated housing component of claim 10, wherein the at least one bracket is adjustable.

12. The prefabricated housing component of claim 1 further comprising:

at least one support rib attached to the exterior of the casting.

13. The prefabricated housing component of claim 1, wherein the castings comprise a stress relieving material encased in layers of resin and fiber material.

14. The prefabricated housing component of claim 12, wherein the stress relieving material includes cardboard.

15. The prefabricated housing component of claim 14, wherein the stress relieving material includes wood.

16. The prefabricated housing component of claim 1, wherein the floor portion of the casting comprises a rigid core material surrounded by layers of resin and fiber material.

17. The prefabricated housing component of claim 18, wherein the core material is wood.

18. The prefabricated housing component of claim 1, wherein a lip portion of the casting surrounding the recessed portion includes a layer of wood material.

19. The prefabricated housing component of claim 1, further comprising:

a cabinet insert, wherein the recessed portion of the cabinet portion is cutout to receive the cabinet insert.

20. The prefabricated housing component of claim 22, wherein a lip portion of the casting surrounding the recessed portion is hook shaped, and wherein an edge of an insert received within the recessed portion is hook shaped, such that the lip portion of the casting and the edge of the insert interlock.

21. The prefabricated housing component of claim 1, wherein the floor portion is recessed for receiving a flooring material.

22. The prefabricated housing component of claim 1, wherein the composite casting further comprises a feature selected from a group consisting of a light mount recess, a sculpted edge, a sculpted joint and a sculpted corner.

23. The prefabricated housing component of claim 22, wherein the sculpted edges, sculpted joints and sculpted corners comprise rounded edges, rounded joints and rounded corners.

24. The prefabricated housing component of claim 1, further including:

a trolley assembly detachably connected to the housing component and adapted to rollably support the housing component.

25. The prefabricated housing component of claim 1, further including:

a drain pan attached to the floor portion and adapted to collect water that leaks through the floor proximate the drain pan.

26. A method of manufacturing a prefabricated housing component comprising the steps of:

applying a composite material to a mold that includes a wall portion, a ceiling portion and a floor portion;

allowing the composite material to at least partially cure, thereby resulting in a casting;

removing the casting from within the mold;

inserting the casting into a cavity as defined by a framework; and

securing the casting to the framework.

27. The method of manufacturing a prefabricated housing component of claim 24, further comprising:

securing a support rib to an exterior of the casting prior to inserting the casting.

28. The method of manufacturing a prefabricated housing component of claim 27, further comprising:

securing the rib to the framework.

29. The method of manufacturing a prefabricated housing component of claim 28, wherein the step of securing the rib to the framework includes securing the rib to the framework with an L-shaped bracket.

30. The method of manufacturing a prefabricated housing component of claim 29, wherein the step of securing the rib to the framework is accomplished prior to the composite material fully curing.

31. The method of manufacturing of a prefabricated housing component claim 26, wherein the step of applying a composite material comprises applying corrugated cardboard to the mold.

32. The method of manufacturing a prefabricated housing component of claim 26, wherein the step of applying a composite material comprises applying balsa wood to the mold.

33. The method of manufacturing a prefabricated housing component of claim 26, wherein the mold defines a recessed portion within an interior of the casting.

34. The method of manufacturing a prefabricated housing component of claim 33, further including:

cutting out a portion of the recessed portion, thereby forming an aperture within the recessed portion;

providing an insert portion; and

inserting the insert portion into the aperture within the recessed portion.

35. The method of manufacturing a prefabricated housing component of claim 26, wherein the step of securing the casting to the framework comprises bonding the framework to the casting with a composite material.

36. The method of manufacturing a prefabricated housing component of claim 26, further including:

supporting the framework by at least one trolley assembly, thereby providing clearance below the housing component.

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