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(54) **Collapsible construction industry pod**

(57) A kit for constructing a washroom pod. The kit comprises a floor section, a roof section and a plurality of wall sections, at least one of said wall sections carrying at least one item of sanitary ware and/or at least one

electrical apparatus. The sections are releasably inter-connectable to allow the pod to be assembled and dis-assembled. Each wall section is shaped and dimensioned to fit through one or both of a standard doorway and a standard window.

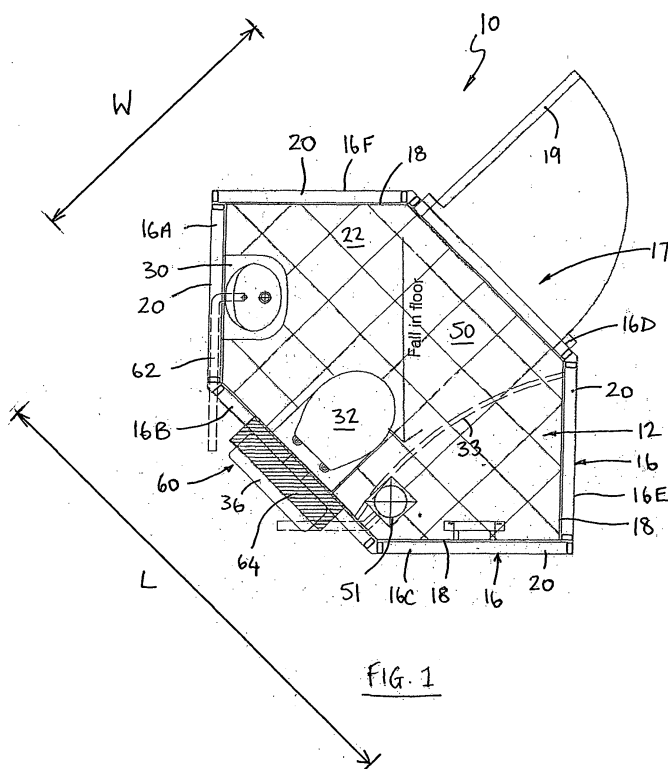


FIG. 1

Description

Field of the Invention

[0001] The present invention relates to construction industry pods.

Background to the Invention

[0002] Pods for use in the construction industry are well known. Conventionally, such pods are pre-fabricated off site, transported to a construction site and installed in a fully erected state. Typically, pods are used in the construction of new buildings, where they can be lowered, e.g. by crane, into a partially finished building structure at a suitable time.

[0003] A problem with conventional pods is that they are not well suited for use during refurbishments of existing structures. This is because the pods are usually too big to fit into existing buildings, mainly because they do not fit through standard doorways or windows. Moreover, the size of conventional pods can cause transport and storage difficulties.

[0004] It would be desirable to provide a pod that mitigates the problems outlined above.

Summary of the Invention

[0005] Accordingly, one aspect of the invention provides a kit for constructing a washroom pod, or a kitchen pod, the kit comprising a floor section, a roof section and a plurality of wall sections, at least one of said wall sections carrying at least one item of sanitary ware and/or at least one electrical apparatus, the sections being releasably inter-connectable to allow the pod to be assembled and disassembled.

[0006] Preferably, each wall section is shaped and dimensioned to fit through one or both of a standard doorway and a standard window. Preferably, the width of each wall section is between 300mm and 1200mm.

[0007] Typically, one or both of the length and width of the pod, when assembled, comprises two or more releasably inter-connectable wall sections. One of the wall sections is typically adapted to provide a doorway.

[0008] Advantageously, the pod is shaped to define, when assembled and located in a corner of a room or against a wall of a room, a service area between the pod and said corner or said wall.

[0009] Preferably, one or more of said wall sections are adapted to create, when assembled, a cut out portion in the plan cross section of the pod, the cut out portion being located at a corner or in a side of the pod, said service area being located at the in use outer face of said wall sections.

[0010] Optionally, said cut out portion is defined by one or more wall sections extending between two other wall sections, said two other wall sections being substantially perpendicular with one another, and wherein at least one

of said one or more wall sections extends obliquely with respect to said two other wall sections.

[0011] Optionally, said cut out portion is defined by two or more non-coplanar wall sections extending between two other wall sections, said two other wall sections being substantially perpendicular with one another.

[0012] Conveniently, a cistern is located in said service area, mounted on the in use outer face of one of said wall sections.

[0013] Typically, said at least one item of sanitary ware and/or said at least one electrical apparatus is connectable respectively to one or more plumbing conduits or one or more electrical cables, the conduits and cables being routed to said service area.

[0014] Conveniently, at least some of said conduits and cables extend through one or more apertures formed in said wall sections or floor sections and along the in use outer face of said wall sections and/or said floor section to said service area.

[0015] Said wall sections are advantageously shaped to define a recess at their in use outer face for receiving one or more plumbing conduits or one or more electrical cables.

[0016] Advantageously, an aperture is formed in at least one of said wall sections to allow access to said service area, and wherein a removable storage unit is removably seated in said aperture. Said removable storage unit is preferably shaped and dimensioned to substantially fill said aperture and, preferably, extends into said service area when fitted.

[0017] Typically, at least some, and optionally all, adjacent wall sections are obliquely disposed with respect to one another.

[0018] In some embodiments, the plan cross-section of the pod, when assembled, takes the shape of a six-sided polygon, each side advantageously comprising a single respective wall section. Said transverse cross-section may be generally hexagonal in shape, or may substantially take the shape of an elongate hexagon.

[0019] Typically, a lip is provided around at least part of the periphery of the floor section. The lip may extend from a portion of the floor section which, in use, serves as the floor of the pod and, preferably, the interface between the lip and the floor is substantially water-tight.

[0020] Preferably, when the pod is assembled, the floor of the pod, or at least part of it, is obliquely disposed with respect to the wall sections. Typically said floor, or at least said part of the floor, slopes in use downwardly towards a drainage hole provided in the floor. For example, said floor, or at least said part of the floor, may slope in use downwardly a direction generally away from a doorway provided in the pod.

[0021] In the preferred embodiment, the floor section comprises a substantially flat plate mounted to a frame which runs around the periphery of the plate. Conveniently, one end of the plate is located substantially level with the in use upper face of the frame, the opposite end of the plate being substantially level with the in use lower

face of the frame. This creates a slope in the floor as well as facilitating the provision of said lip.

[0022] In some embodiments, the pod, when assembled, is shaped to define a recess for receiving a bath, one or more supports being provided for the bath on the inner faces of the wall sections that define the recess, said one or more supports being arranged such that the bath, when carried by said one or more supports, is suspended above the floor section.

[0023] A second aspect of the invention provides a washroom pod, or a kitchen pod, comprising a floor section, a roof section and a plurality of wall sections, at least one of said wall sections carrying at least one item of sanitary ware and/or at least one electrical apparatus, the sections being releasably inter-connectable to allow the pod to be assembled and disassembled.

[0024] The pods are typically intended for use as a washroom or similar room and so may include one or more items of sanitary ware, and/or one or more electrical apparatus, and associated accessories and utilities, e.g. a toilet, wash basin, shower unit, bath, lights and/or electrical power points, with associated plumbing and electrical connections. It is preferred that such items are mounted on, preferably suspended from, one or other of the wall sections. Alternatively, the pods may be adapted for use as other types of room, e.g. a kitchen.

[0025] It will be apparent that some of the features described hereinafter may be used independently of one another and/or in other pods that are not necessarily collapsible, e.g. the shape and configurations to define the service area, the routing of plumbing and electrical utilities, the removable storage unit, the sloping floor, and the bath recess and bath support. Each of these features may be regarded as respective independent aspects of the invention.

Brief Description of the Drawings

[0026] Further advantageous aspects of the invention will be apparent to those skilled in the art upon review of the following description of specific embodiments of the invention and with reference to the accompanying drawings in which like numerals are used to indicate like parts and in which:

Figure 1 is a plan view of a washroom pod embodying the invention;

Figure 2 is a sectioned side view of the pod of Figure 1;

Figure 3 is an enlarged plan view of part of the pod of Figure 1;

Figure 4 is a plan view of a first alternative washroom pod embodying the invention;

Figure 5 is a plan view of a second alternative wash-

room pod embodying the invention;

Figure 6 is a plan view of a third alternative washroom pod embodying the invention; and

Figure 7A is an end view of part of a bath-receiving recess provided in the pod of Figure 6; and

Figure 7B is a sectioned end view of part of a bath-receiving recess provided in the pos of Figure 6.

Detailed Description of the Drawings

[0027] Referring now to Figures 1 to 3 of the drawings, there is shown, generally indicated as 10, a washroom pod embodying the invention. The pod 10 comprises a floor section 12, a roof section 14 and a plurality of wall sections 16. The wall sections 16 are usually substantially vertically disposed in use (or at least substantially perpendicular with the surface on which the pod rests). In the illustrated embodiment, the pod 10 is substantially hexagonal in plan. As a result, the floor section 12 and roof section 14 are substantially hexagonal in shape, and there are six wall sections 16. Each wall section 16 is preferably substantially rectangular in shape. As is described in further detail below, at least one of the wall sections (indicated as 16D in the drawings) provides a doorway 17 in which a door 19 may be provided.

[0028] The wall sections 16 may comprise a panel 18 of suitable material, e.g. metal or plasterboard, carried by a frame 20. The frame 20 is typically formed from metal and is preferably located at, or substantially at, the periphery of the respective wall section 16. In the drawings, one of the wall sections 16D is configured to define the doorway 17, in which case the panel 18 is not necessarily required and the section 16D may simply be a frame. It is nonetheless preferred, although not essential, to include a wall section for defining the doorway 17 (as opposed to defining the doorway by the absence of a wall section), to help keep the pod 10 rigid in use.

[0029] One or both of the floor section 12 and roof section 14 may comprise a respective plate, or panel, 22, 24 of suitable material, e.g. metal or plasterboard, carried by a respective frame 26, 28. Preferably, the frames 26, 28 are located at, or substantially at, the periphery of the respective section 12, 14. In the illustrated embodiment, the frames 20, 26, 28 are made from box section metal.

[0030] In the illustrated embodiment, the pod 10 is intended for use as a bathroom, shower room, washroom and/or lavatory, or other sanitary facility. As such, the pod 10 typically includes one or more of the following items: shower, bath, toilet and wash basin, accessories and/or utilities for the aforesaid, and/or other item of sanitary ware. The pod 10 typically also includes other electrical and/or plumbed facilities such as radiators, electric lights, electrical power outlets and so on. In preferred embodiments, at least some of, and preferably all of, said items and/or facilities are carried by the wall sections 16,

and are advantageously wall mounted such that they are not connected to or supported by the floor or roof sections 12, 14. For example, in the illustrated embodiment, a wash basin 30 is mounted on the in use inner face of wall section 16A, a toilet 32 is mounted on the in use inner face of wall section 16B and a shower head 34 is mounted on the in use inner face of wall section 16C. A cistern 36 for toilet 32 is also mounted on wall section 16B, although for space-saving reasons, it is mounted on the in use outer face of wall section 16B. To define a showering area, a rail or track 33 may be provided in the roof and/or floor to allow a shower curtain or door installation to be fitted. It is preferred that items such as the basin, shower head/unit and/or toilet are provided on their own respective wall section(s).

[0031] Any necessary electrical or plumbing connections (e.g. pipes, wires, sockets etc.) are presented at the in use outer side of the pod 10 (via, for example, suitable apertures formed in the wall sections 16) for connection to the building utilities when the pod 10 is installed. Typically, all or part of the in use inner face of one or more of the wall sections 16, floor section 12 and roof section 14 are tiled.

[0032] Preferably, the pod 10 is shaped to define a service area 60 at the outer face of one or more wall sections 16. The service area 60 may be defined by providing one or more wall sections between two other wall sections than run substantially perpendicular with one another, or substantially co-linear with one another, to create a cut-out portion when viewed in plan. The cut out portion is typically formed by providing one or more wall sections extending obliquely between two perpendicular wall sections (as illustrated in Figure 1), or by providing a stepped wall section from two or more wall sections running substantially perpendicular and/or obliquely with said other wall sections (see Figure 5). Conveniently, the service area 60 is formed at a corner of the pod 10, the cut out portion being created where a right angled corner would otherwise have been. For example, in the embodiment of Figure 1, the service area 60 is formed by wall section 16B extending obliquely between perpendicular sections 16A and 16C. Hence, the pod 10 may be installed in a right angled corner of a room (not shown) such that the wall sections 16A and 16C are located against the walls of the room adjacent the corner. In this position, the service area 60 provides a recess behind the pod 10 in which items such as the cistern 36, plumbing and/or electrical connection points may be located. It is further preferred, therefore, to route electrical and/or plumbing cables/pipe work from the respective appliance/installation in the pod 10 to the service area 60, preferably along the outer face of the wall sections 16. For example pipe 62 from basin 30 runs along the outer face of wall section 16A, while the drainage pipe 64 from drain 51 is also fed to the service area 60. Conduits (not shown) may be provided at the outer face of the wall sections 16 for this purpose. In the illustrated embodiment, the construction of the wall sections 16, namely

with the panel 18 on the inward face of the frame 20, creates a recess on the outer face of the wall sections 16 for routing cables or pipe work.

[0033] Advantageously, a removable unit 64 is provided in at least one of the wall sections 16, preferably the, or one of the, wall sections 16B that defines the service area 60. When removed, the unit 64 allows access to the service area 60 from within the pod 10. In preferred embodiments, the removable unit 64 takes the form of a shelving unit or other storage unit. Moreover, when the service area 60 is behind the unit 64, the unit may be recessed with respect to the inner face of the wall section 16B so that it does not reduce the inner space of the pod 10.

[0034] Each of the sections 12, 14, 16 is releasably connectable to one or more other sections 12, 14, 16 in order that the pod 10 may adopt either an assembled, or use, state (as shown in Figures 1 and 2) or a disassembled state. In the assembled state, the sections 12, 14, 16 are connected together to define a room or enclosure that is ready for installation into a building structure. In the disassembled state, the sections 12, 14, 16 of pod 10 are separable from, or not connected to, one another and so are amenable to transport and storage, e.g. in a flat-packed manner.

[0035] The sections 12, 14, 16 may be inter-connectable in any convenient manner. For example, adjacent sections may be connected to one another by means of screws, bolts or other releasable fixings. To this end, the respective frames 20, 26, 28 may be provided with one or more apertures (not shown) for receiving bolts or other fixings. In some cases, one or more brackets 38 may be provided along one or both sides of the section 12, 14, 16, the bracket 38 having an aperture 39 formed therein for receiving a bolt or other fixing. Advantageously, the bracket 38 has a surface 40 that is non-parallel with the surface of the frame from which it extends. The brackets 38 are particularly useful for connected adjacent sections that are not collinear or perpendicular with one another, e.g. adjacent wall sections 16 in the present embodiment.

[0036] Adjacent sections may be sealed together in any suitable manner, for example a conventional compressible trim or joint may be used.

[0037] In preferred embodiments, each of the sections 12, 14, 16 is shaped and dimensioned to fit through a conventional doorway or window, and preferably also to be amenable to carrying through buildings, e.g. when negotiating stairs, lifts, corners etc. By way of example, with reference to Figure 1, the perpendicular distance between sections 16E and 16A, and the perpendicular distance between sections 16C and 16F may each be approximately 1625mm. The length L may be approximately 2132mm. The width of the sections 16B and 16D may be approximately 1000mm. The width of the sections 16A, 16C, 16E and 16F may be approximately 850mm. In general, it is preferred that the width of the sections 16 is between approximately 300mm and 1250mm. Typical section widths are between 650mm and

1000mm. The wall sections are typically between 2000mm and 2500mm in height.

[0038] As a result, the width of the wall sections 16 in particular is relatively small when compared to the width of a wall in a conventional pod. Accordingly, in preferred embodiments, to ensure that the space within the pod 10 is large enough to be practical, at least one of, and preferably both of, the overall length L and width W of the pod 10 are each made up of more than one respective wall section 16. The drawings show a preferred embodiment in which the pod 10 takes the shape of a six-sided polygon in plan view. The shape in plan may be substantially hexagonal, although the widths of each wall section 16 need not necessarily be equal. This shape is found to provide adequate space for a washroom type pod while consisting of a relatively small number of sections, so aiding transport, storage, construction and cost. In alternative embodiments (not illustrated), the pod may take other shapes in plan view and/or cross-section. For example, the pod shape may be substantially rectangular, triangular, or other polygonal shape, especially those having five or more sides. It is particularly preferred that at least some, and optionally all, of the wall sections are obliquely disposed with respect to at least one adjacent wall section.

[0039] Advantageously, the floor section 12 comprises a floor 50 (provided by plate 22) having a lip portion 52 extending at least partially, and optionally wholly, around it and projecting, in use, substantially upwardly. The lip portion 52 may be integrally formed with the floor, or may at least be fixed to the floor in a substantially water-tight manner. Hence, the floor section 12 is tray-like and has a substantially water-tight seal at least partially around the intersection between the floor 50 and the in-use vertical walls. The seal between the floor 50 and the lip 52 may be formed by welding and/or the provision of a conventional water-tight sealant.

[0040] It is also preferred that the floor 50, or at least part of it, is sloped during use with respect to a horizontal level, or with respect to the surface on which the pod rests during use. In particular, it is preferred that the floor 50, or at least part of it, slopes in use downwardly in a direction generally away from the doorway 17, e.g. towards the rear of the pod 10 (section 16B) and/or towards one or both of the sides of the pod (e.g. sections 16A and 16C). A drainage hole 51 is provided in the floor section 12 at or substantially at the in use lowermost part of the floor 50. Preferably, the floor 50 is substantially flat and so that entire floor 50 is obliquely disposed with respect to the walls of the pod 10. Optionally, however, one or more drainage channels or troughs may be provided in the floor 50.

[0041] Referring in particular to Figure 2, the floor 50 comprises a substantially flat and relatively thin (e.g. in the region of 2-10 mm) plate which is fixed to the frame 26, the frame 26 being comprised of one or more bars extending around the periphery of the floor 50. The arrangement is such that a first end 54 of the floor 50 is

substantially at the level of the in use upper side of the frame 26, while a second, opposite end 56 of the floor 50 is substantially at the level of the in use lower side of the frame 26. Not only does this create the desired fall in the level of the floor 50, but it also creates the desired lip portion 52 around part of the floor 50 (the frame 26 providing the lip 52 or at least a support for other item(s), e.g. tiles, which in turn provide the lip 52).

[0042] The illustrated arrangement is such that said first and second ends 54, 56 of the floor 50 are located on opposite sides of the pod 10 so that the floor 50 slopes across the doorway 17. Alternatively, the first end 54 may be located at the doorway 17 so that the floor slopes away from the doorway 17.

[0043] Figures 4 to 6 show respective alternative embodiments of the washroom pod, indicated respectively as 110, 210 and 310. The pods 110, 210, 310 may be constructed and configured in substantially the same or similar manner to the pod 10 and so similar descriptions apply as would be apparent to a skilled person.

[0044] With reference to Figure 4, the pod 110 has a shower cubicle 170 connected between two wall sections 116A, 116B. The shower cubicle 170 has a wall section 172 that serves as part of the wall of the pod 110. Advantageously, the shower cubicle 170 is located at the corner of the pod 110. To this end, the shower cubicle 170 is preferably shaped to have two adjacent sides, when viewed in plan, that are substantially perpendicular with one another to provide a corner for the pod 110. The cubicle 170 is releasably connectable to the adjacent wall sections 116A, 116B in any suitable manner, e.g. by means of bolts and brackets. Sealant is preferably applied along the interface between the wall sections 116 and the cubicle 170 on the inside of the pod 110. The cubicle 170 is preferably generally triangular or three sided in plan. Advantageously, the boundary 174 of the cubicle 170 (as typically defined by the shower tray and/or curtain rail and/or door section of the cubicle) is arranged to embrace part of an adjacent wall section 116B. This allows the shower head 176 and other shower accessories to be mounted on the wall section 116B. To this end, it is preferred that the shower cubicle 170 is located adjacent the service area 160.

[0045] Referring now to Figure 5, the pod 210 is particularly suited for use by less-abled people. The floor 250 is divided into two sections 250A, 250B (as indicated by dashed line 251), the section 250A nearest the doorway 217 being substantially perpendicular with respect to the walls 216 so as not to be sloped when installed. The distal section 250B is sloped, for example in the same manner described above in relation to the pod 10, downwardly in a direction generally away from the door 217, or across the door 217. The pod 210 is typically larger than the pods 10, 110 and may have its floor based on two or more adjacent frames 226 (not visible). This facilitates the provision of differently sloping floor sections 250A, 250B since each frame may carry its own respective floor plate.

[0046] The pod 210 is shaped to define a service area 260 that is substantially rectangular in shape. This is achieved by providing a stepped section 216B between the wall sections 216A and 216C to create a substantially rectangular cut out portion in an otherwise substantially rectangular pod 210.

[0047] Referring now to Figure 6, the pod 310 is shaped to define a recess 380 that is shaped and dimensioned to receive a bath 382. The recess 380 is preferably substantially the same length as the bath 382, and the depth of the recess 380 is substantially the same width as the bath 382. One or more supports 384 are provided on the inner faces of the wall sections 316C, 316D, 316E and 316F that define the recess 380. The supports 384 preferably take the form of one or more rails extending wholly or partially around the periphery of the recess 380 at a substantially constant distance above the floor 350. Preferably, said distance is such that the bath 380, when fitted, is suspended above the floor 350 by the supports 384. This allows the bath to be slide-fitted into the recess 380 along the supports 384.

[0048] Figure 7B shows a cross section of a suitable support 384 suspending an end 386 of the bath 382. The support 384 projects substantially perpendicularly from the wall section 316 to provide a support surface that is substantially horizontal in use. Wall tiles 388 may be provided between the bath 382 and the wall section 316. Preferably, at the mouth of the recess 380, one or more further supports 390 are provided extending wholly or partially between the supports 384 and the floor 350. The supports 390 provide means to which a front panel 392 for the bath 382 may be fixed.

[0049] The pod 310 is shaped to define a service area 360 by means of wall sections 316B and 316C, each of which is oblique or perpendicular with its adjacent wall section 316A, 316D. As for the other pods, the utility connections, e.g. plumbing conduits, from the bath 381, toilet 332 and other items in the pod are routed to the service area 360. In typical installation, the service area 360 is position adjacent the utilities connection point, e.g. service riser, of a building.

[0050] The invention is not limited to the embodiments described herein which may be modified or varied without departing from the scope of the invention.

Claims

1. A kit for constructing a washroom or kitchen pod, the kit comprising a floor section, a roof section and a plurality of wall sections, at least one of said wall sections carrying at least one item of sanitary ware and/or at least one electrical apparatus, the sections being releasably inter-connectable to allow the pod to be assembled and disassembled.
2. A kit as claimed in claim 1, wherein each wall section is shaped and dimensioned to fit through one or both

of a standard doorway and a standard window, and wherein, preferably, the width of each wall section is between 300mm and 1200mm.

3. A kit as claimed in any preceding claim, wherein one or both of the length and width of the pod, when assembled, comprises two or more releasably inter-connectable wall sections, and wherein, preferably, at least some, and optionally all, adjacent wall sections are obliquely disposed with respect to one another.
4. A kit as claimed in any preceding claim, wherein the pod is shaped to define, when assembled and located in a corner of a room or against a wall of a room, a service area between the pod and said corner or said wall, and wherein, preferably, one or more of said wall sections are adapted to create, when assembled, a cut out portion in the plan cross section of the pod, the cut out portion being located at a corner or in a side of the pod, said service area being defined by said cut out portion and located at the in use outer face of said wall sections.
5. A kit as claimed in claim 4, wherein said cut out portion is defined by one or more wall sections extending between two other wall sections, said two other wall sections being substantially perpendicular with one another, and wherein at least one of said one or more wall sections extends obliquely with respect to said two other wall sections, or is non-coplanar with an adjacent one of said other two wall sections.
6. A kit as claimed in claim 4 or 5, wherein a cistern is located in said service area, mounted on the in use outer face of one of said wall sections.
7. A kit as claimed in any one of claims 4 to 6, wherein said at least one item of sanitary ware and/or said at least one electrical apparatus is connectable respectively to one or more plumbing conduits or one or more electrical cables, the conduits and cables being routed to said service area.
8. A kit as claimed in any one of claims 4 to 7, wherein an aperture is formed in at least one of said wall sections to allow access to said service area, and wherein a removable storage unit is removably seated in said aperture, and wherein, preferably, said removable storage unit is shaped and dimensioned to substantially fill said aperture and, preferably, extends into said service area when fitted.
9. A kit as claimed in any preceding claim, wherein a lip is provided around at least part of the periphery of the floor section.
10. A kit as claimed in any preceding claim, wherein

when the pod is assembled, the floor of the pod, or at least part of it, is obliquely disposed with respect to the wall sections, and wherein, preferably, said floor, or at least said part of the floor, slopes in use downwardly towards a drainage hole provided in the floor. 5

11. A kit as claimed in any preceding claim, wherein the floor section comprises a substantially flat plate mounted to a frame which runs around the periphery of the plate, one end of the plate being located substantially level with, or adjacent to, the in use upper face of the frame, the opposite end of the plate being substantially level with, or adjacent to, the in use lower face of the frame. 10 15

12. A kit as claimed in any preceding claim, wherein the pod, when assembled, is shaped to define a recess for receiving a bath, one or more supports being provided for the bath on the inner faces of the wall sections that define the recess, said one or more supports being arranged such that the bath, when carried by said one or more supports, is suspended above the floor section. 20 25

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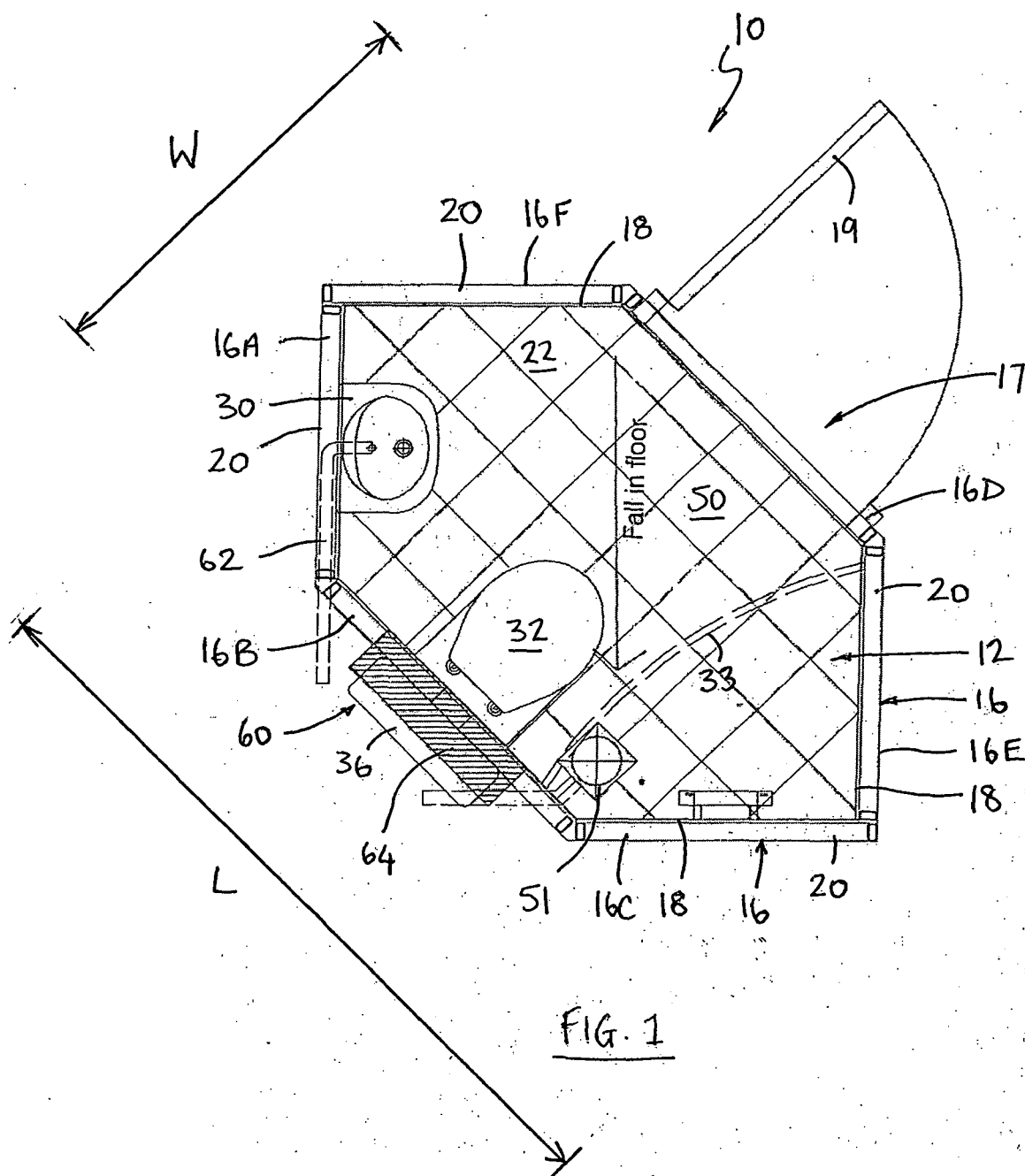
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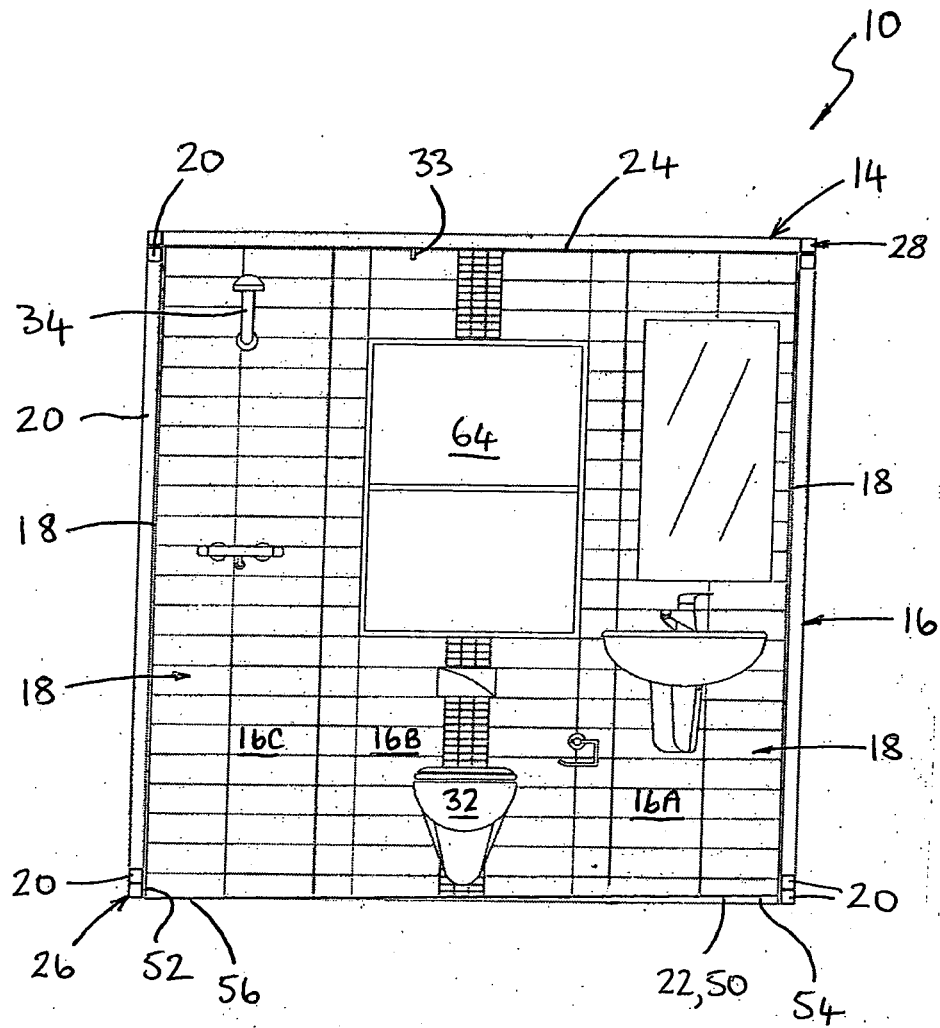
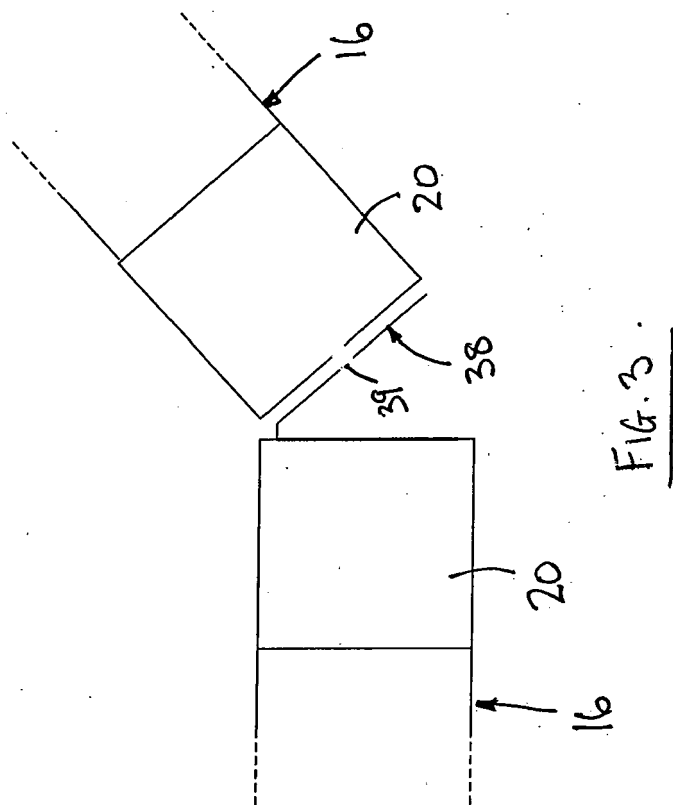


FIG. 2



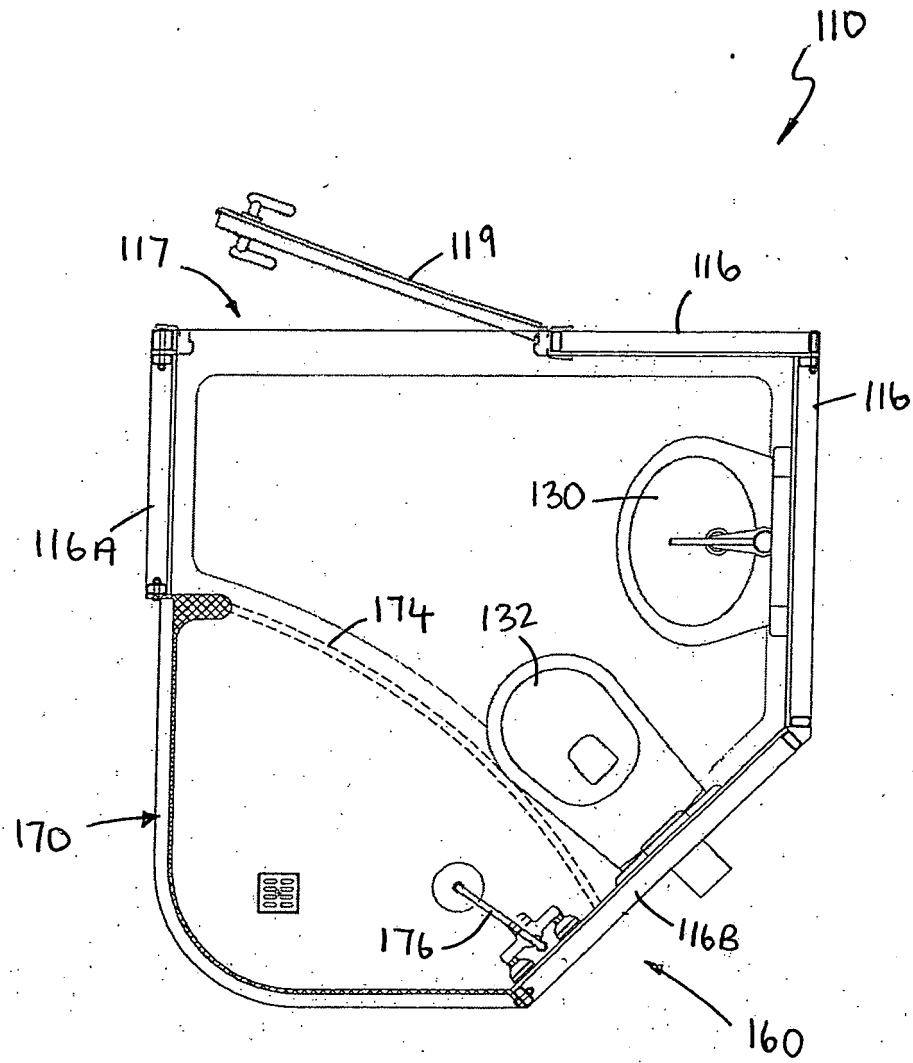


FIG. 4

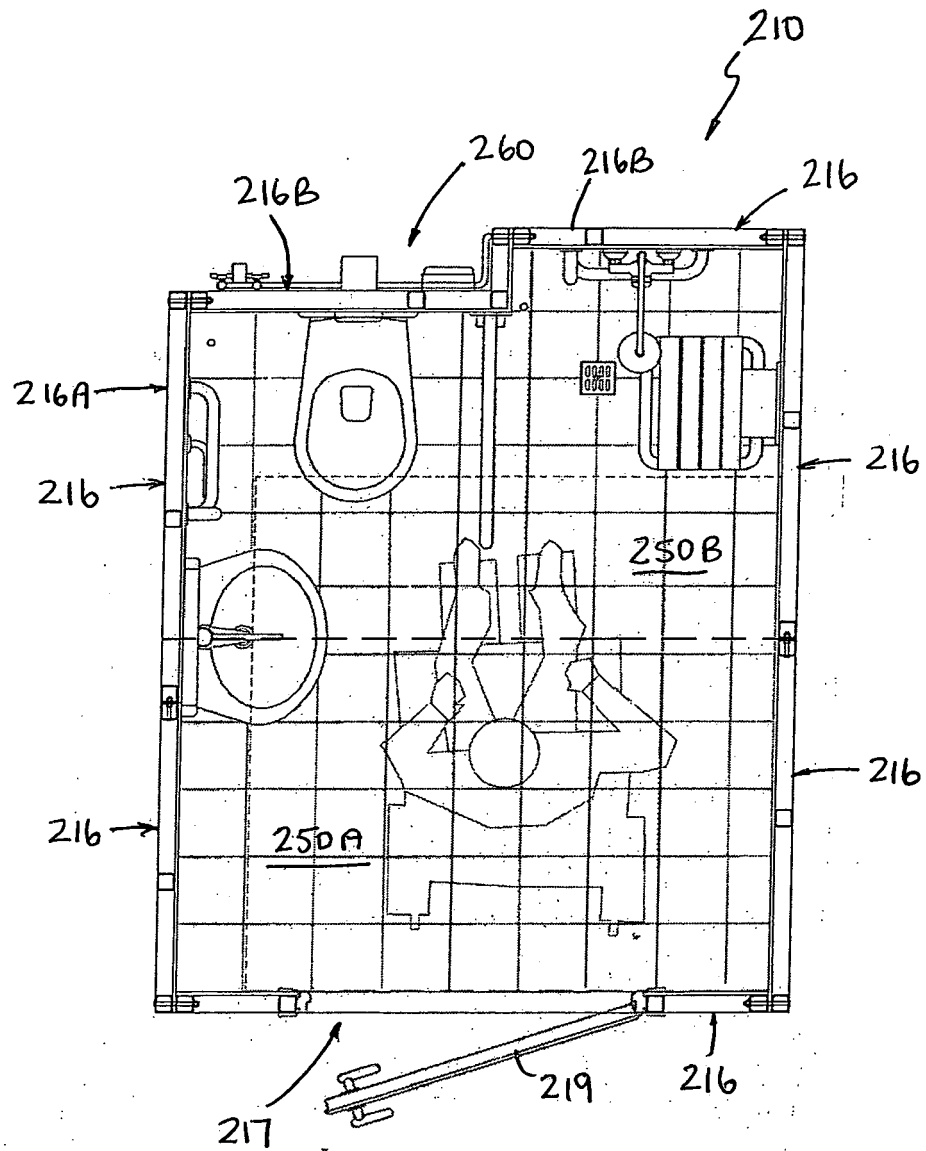


FIG. 5

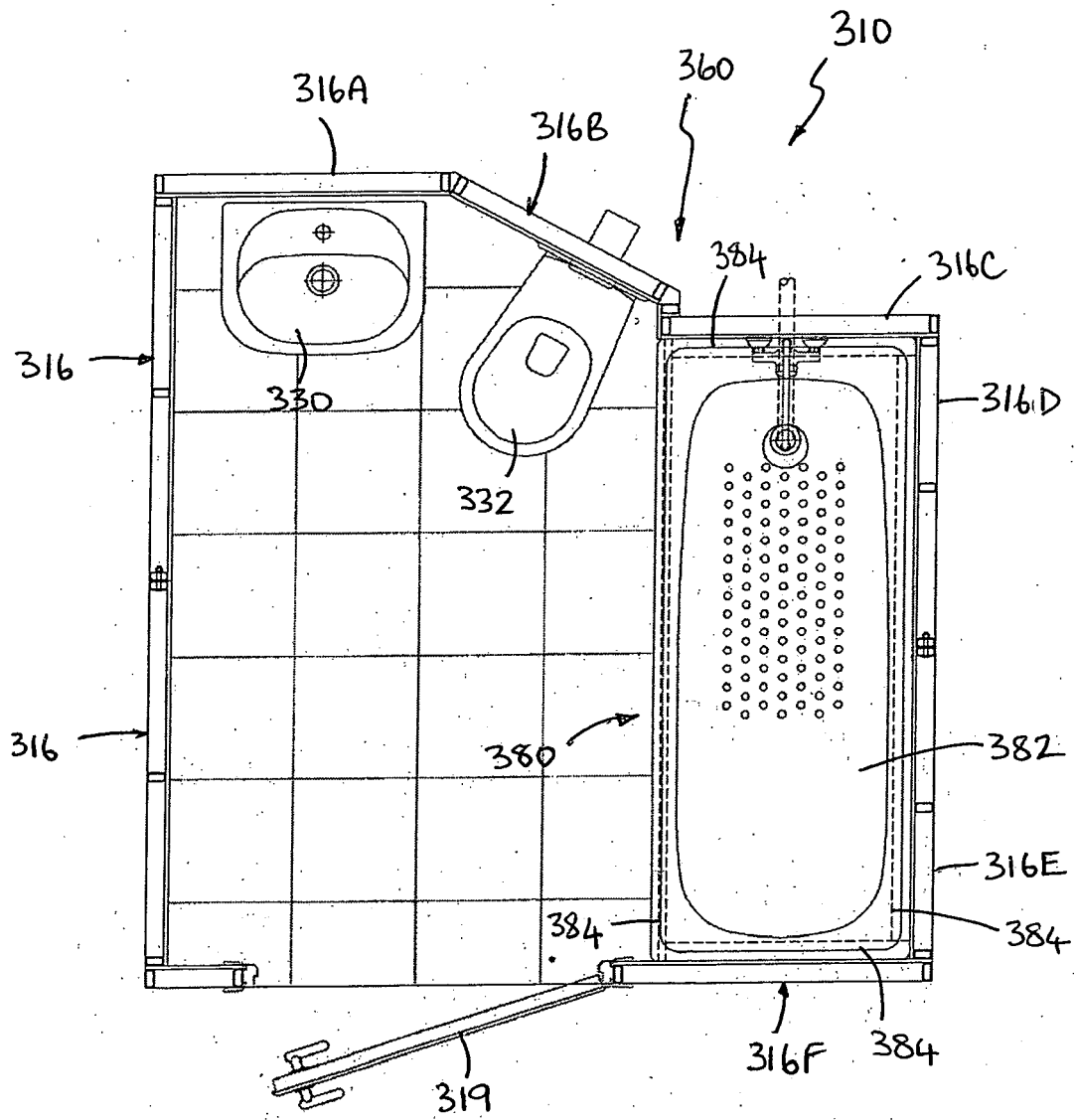


FIG. 6

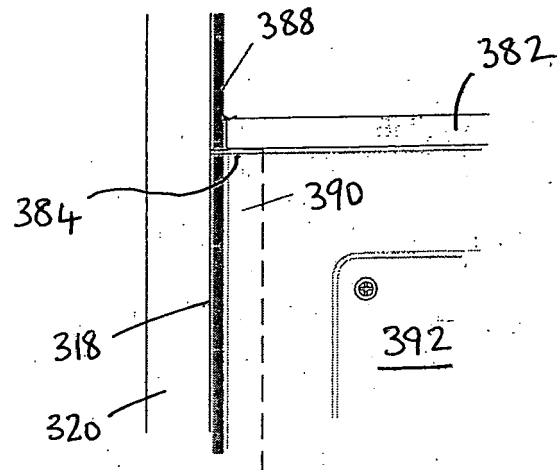


FIG. 7A

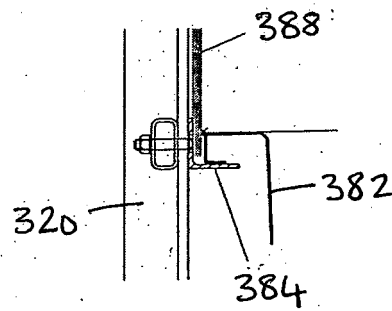


FIG. 7B