

[54] MULTI-STOREY BUILDINGS

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[51] Int. Cl. **E04h 6/00**
[58] Field of Search 52/175, 176, 237; D13/1 B

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[57] **ABSTRACT**

There is described a variant of the building of U.S. Pat. No. 3,290,837, comprising a carriageway for exit and entry of vehicles with a margin at one or both sides for parking; the outline plan of the building is octagonal with opposite sides of equal length but with adjacent sides of unequal length; and the building is supported on columns with those at each apex at the shorter sides of the building arranged on radii from a centre which lies on the axis passing between the apex at the complementary opposite one and in vicinity of the arc which on the helical floorway defines the centreline of the carriageway at the apex, whereby at each apex on the usable part of carriageway vehicles can be parked.

36 Claims, 15 Drawing Figures

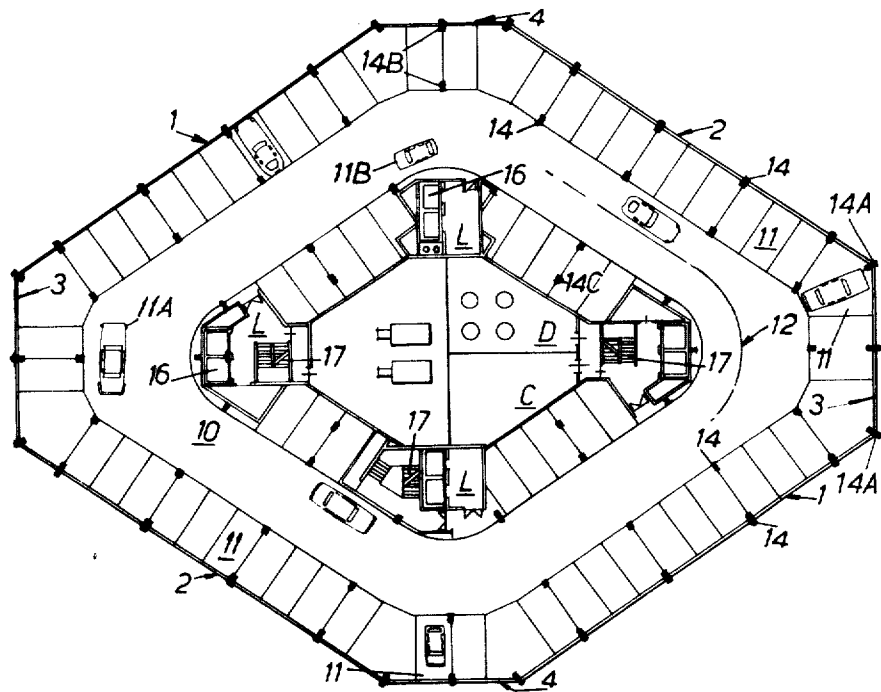
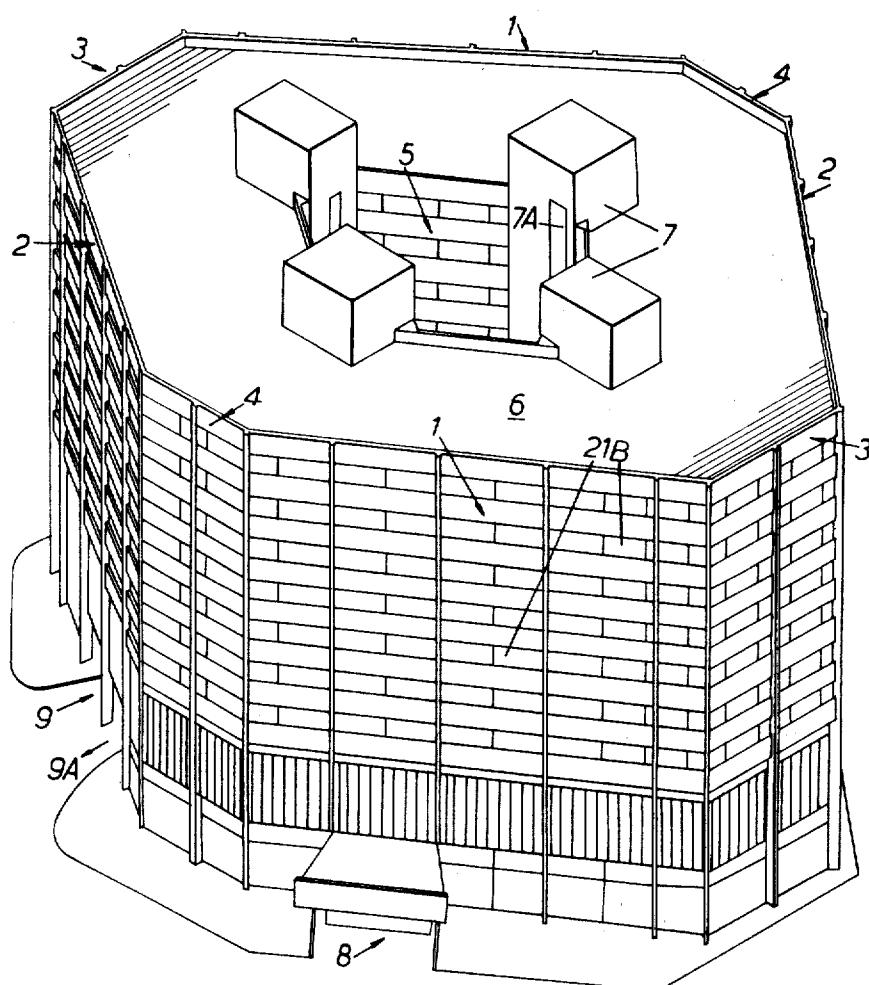
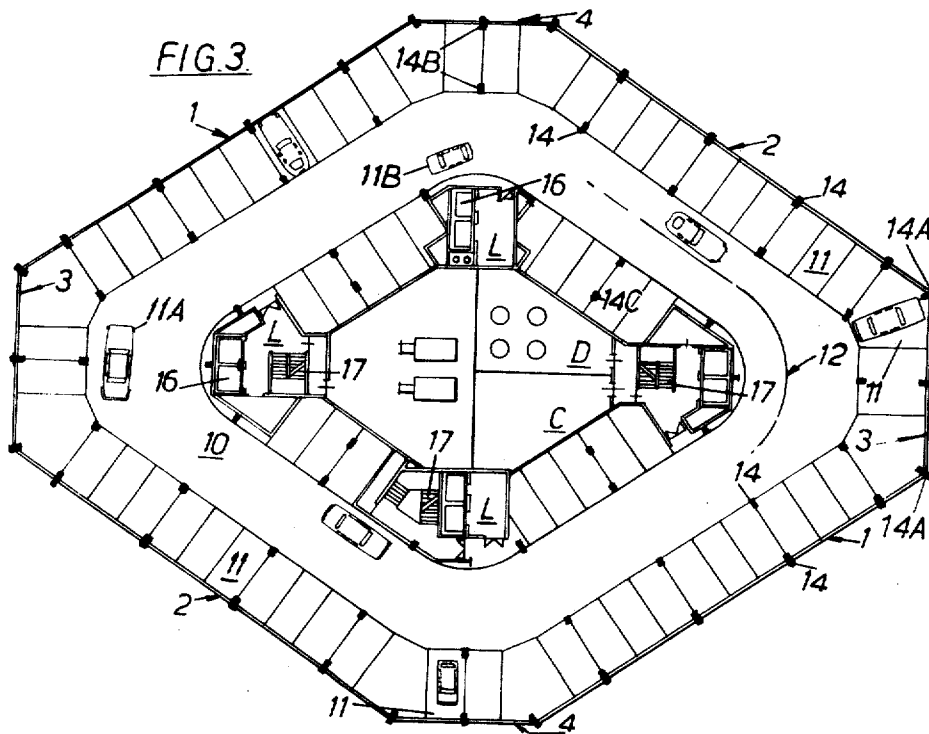
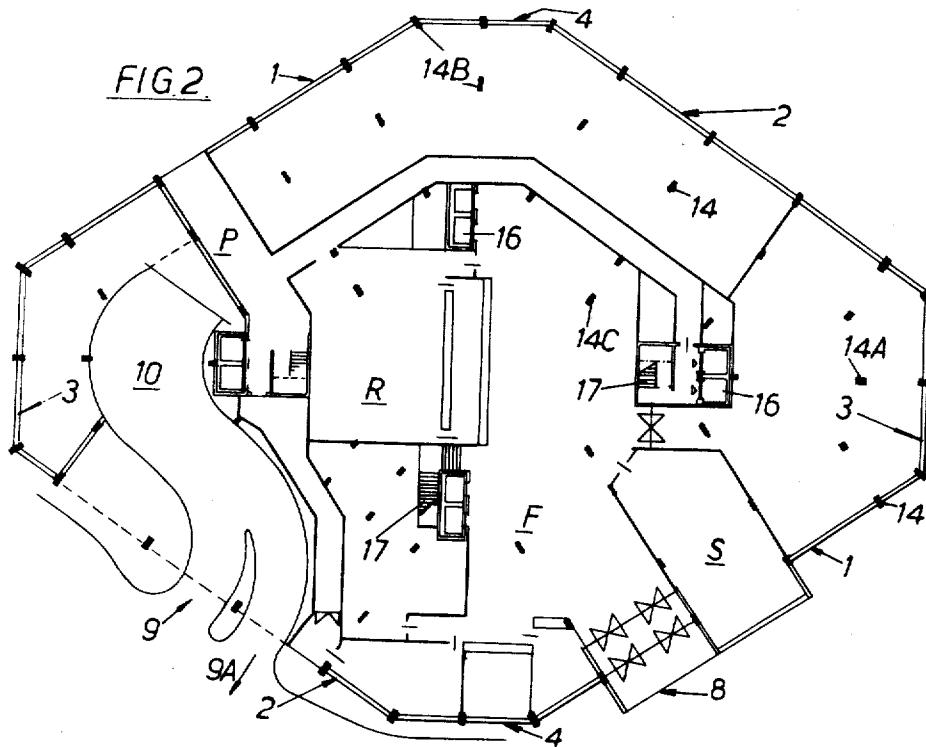


FIG. 1





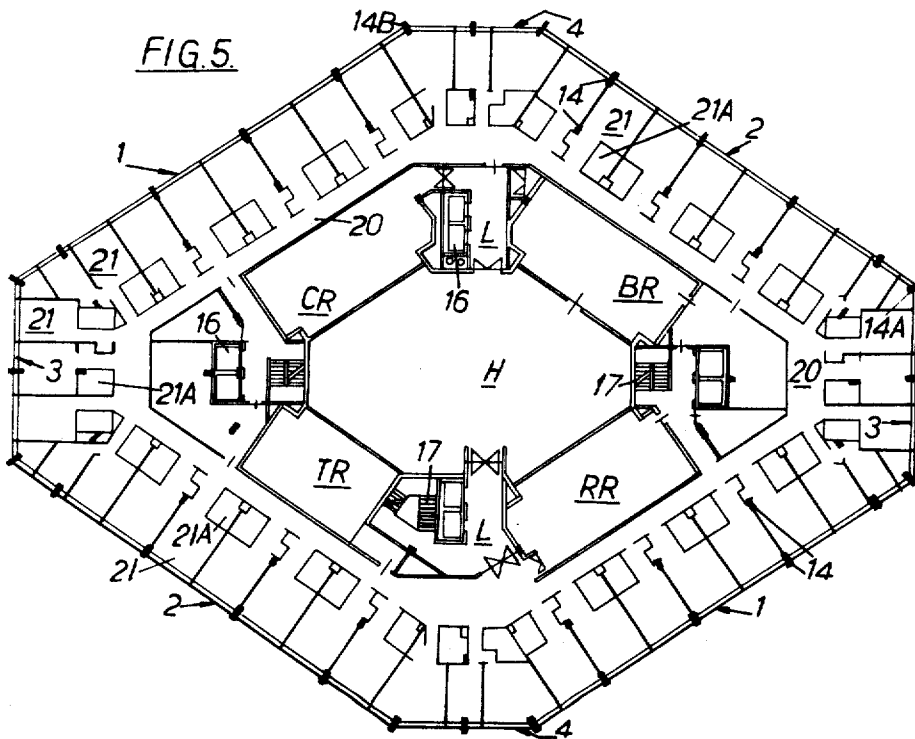
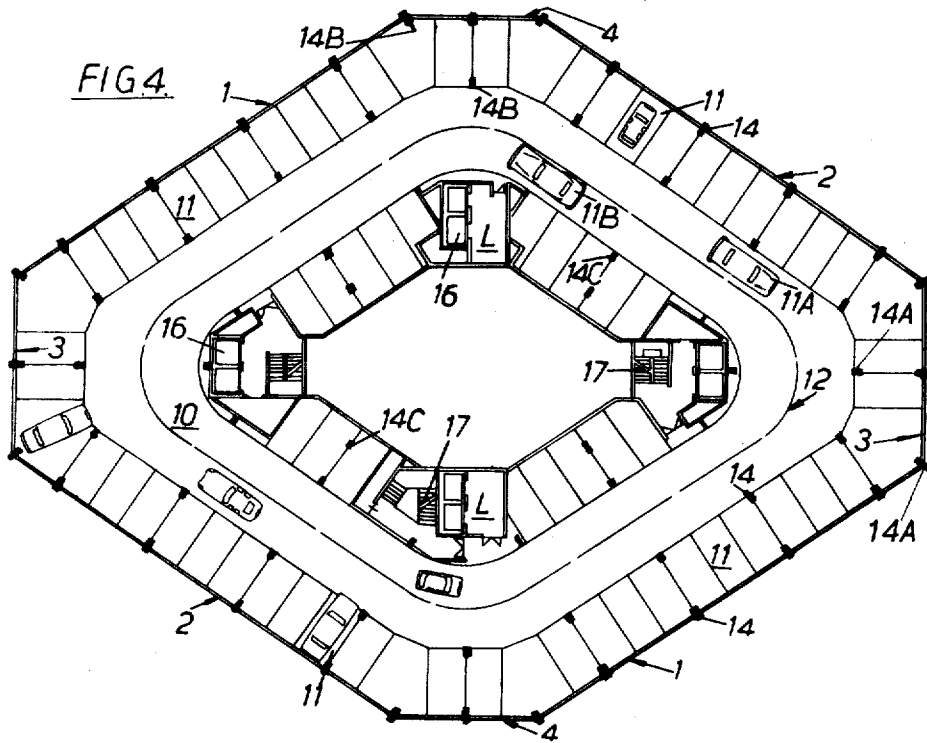


FIG. 6.

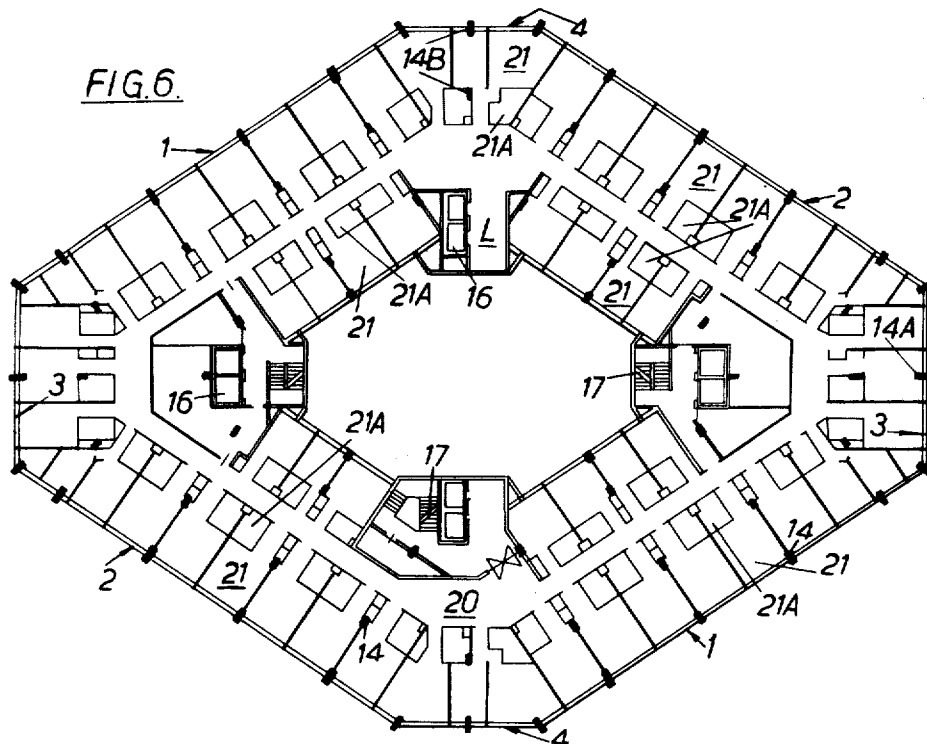


FIG. 7.

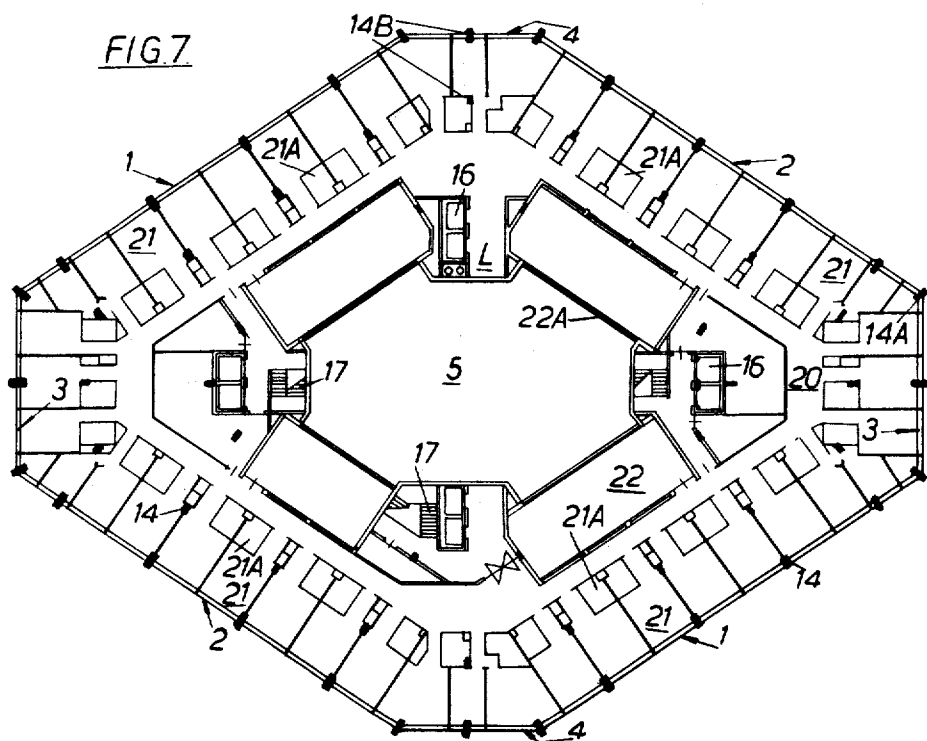
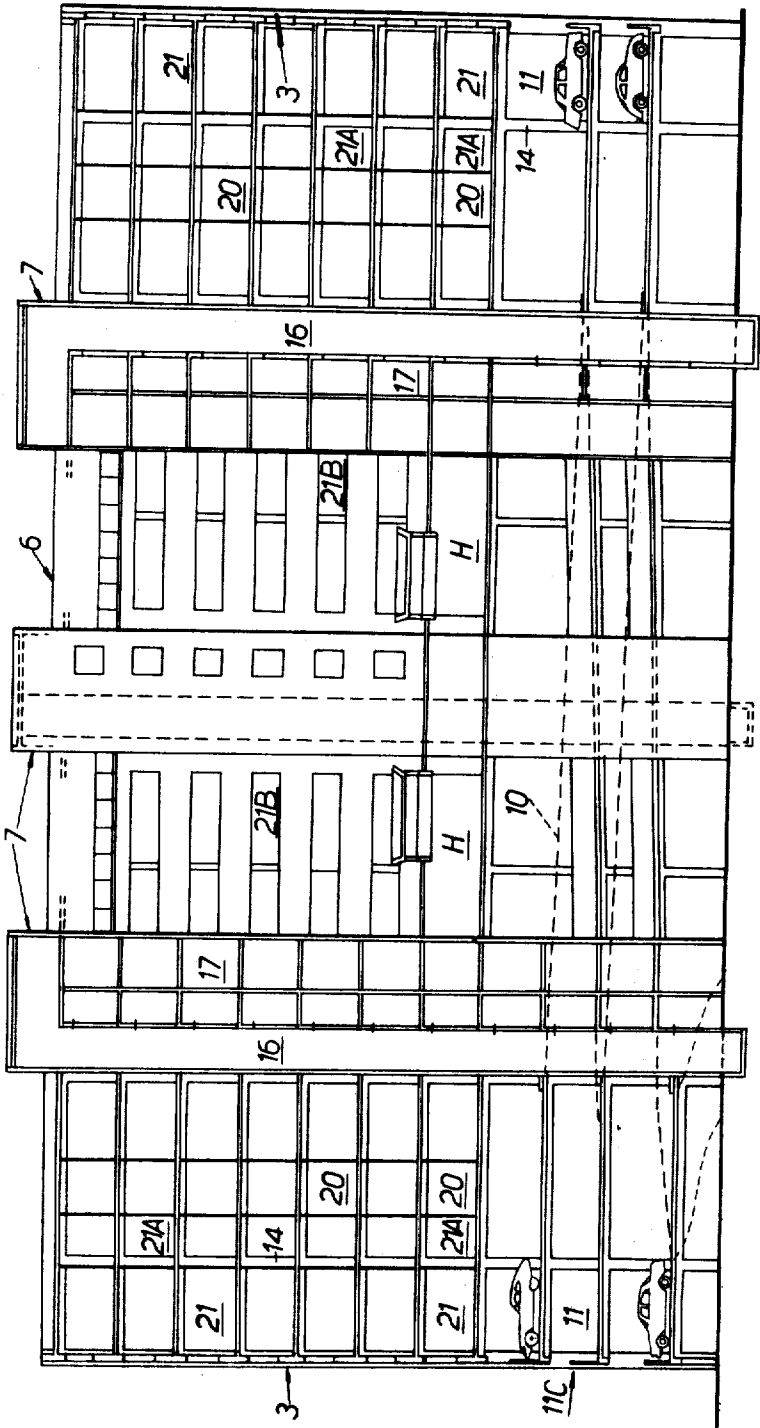
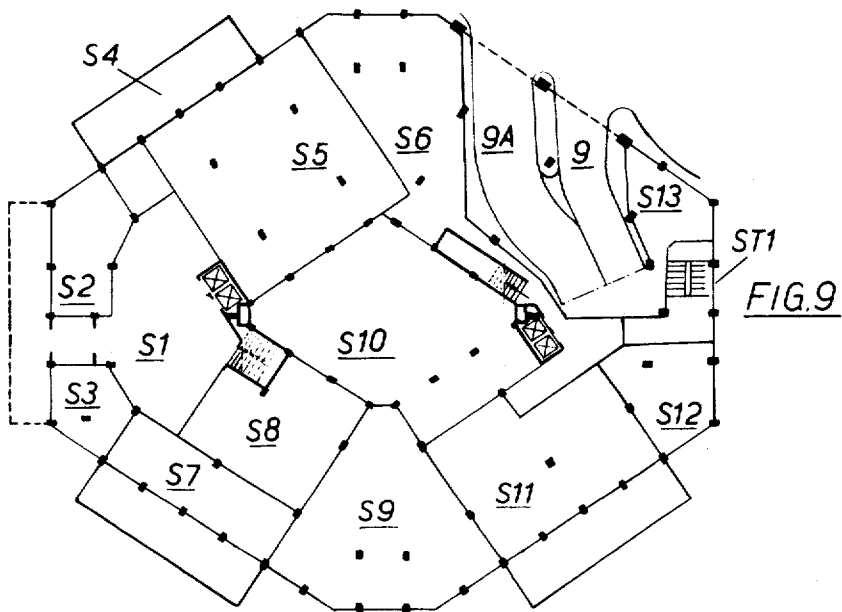


FIG. 8





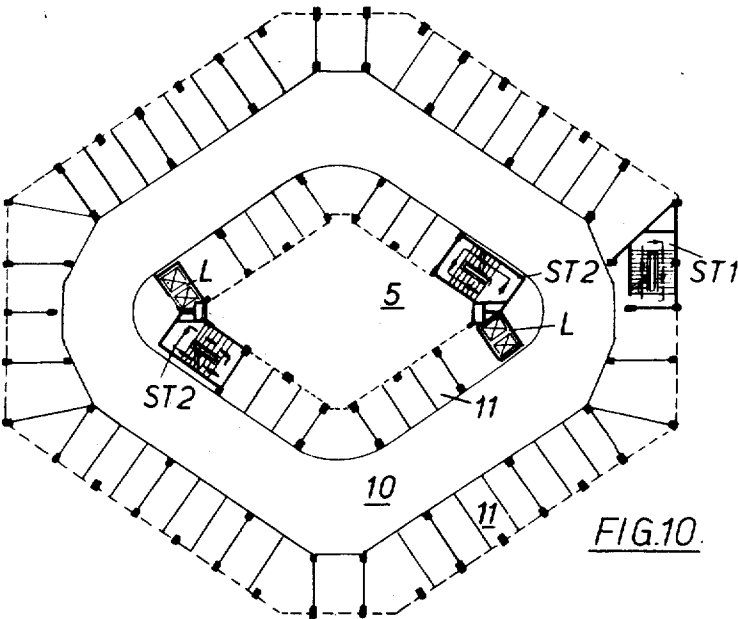
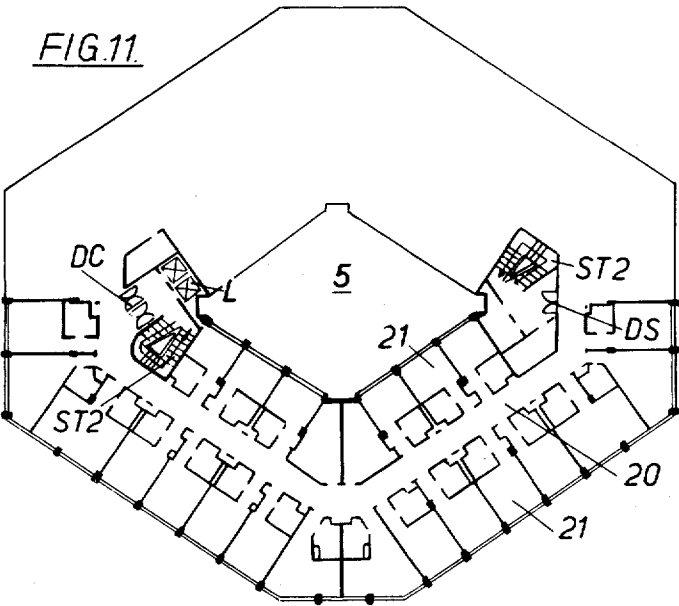
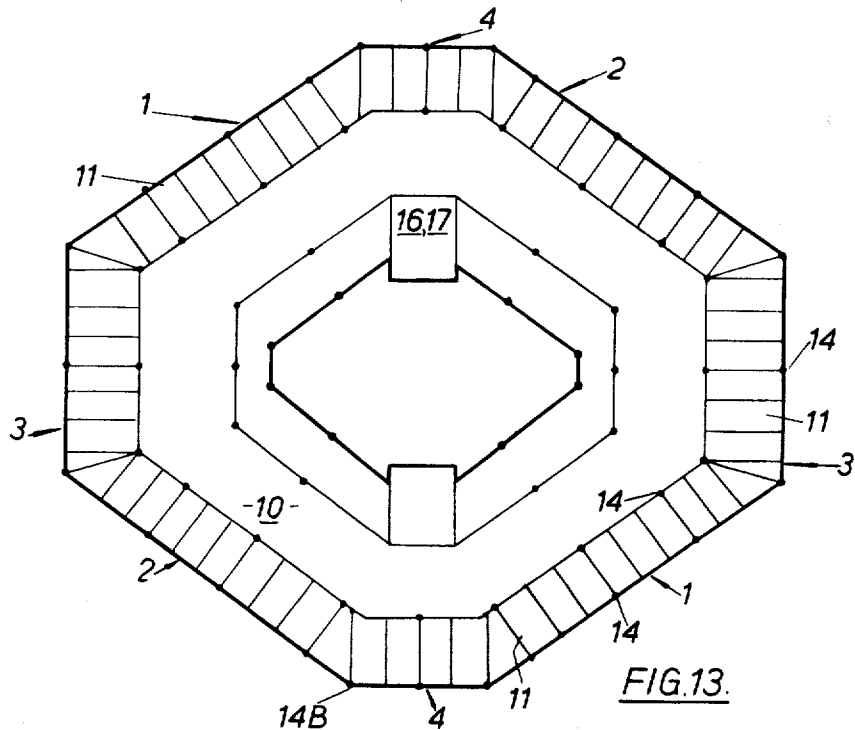
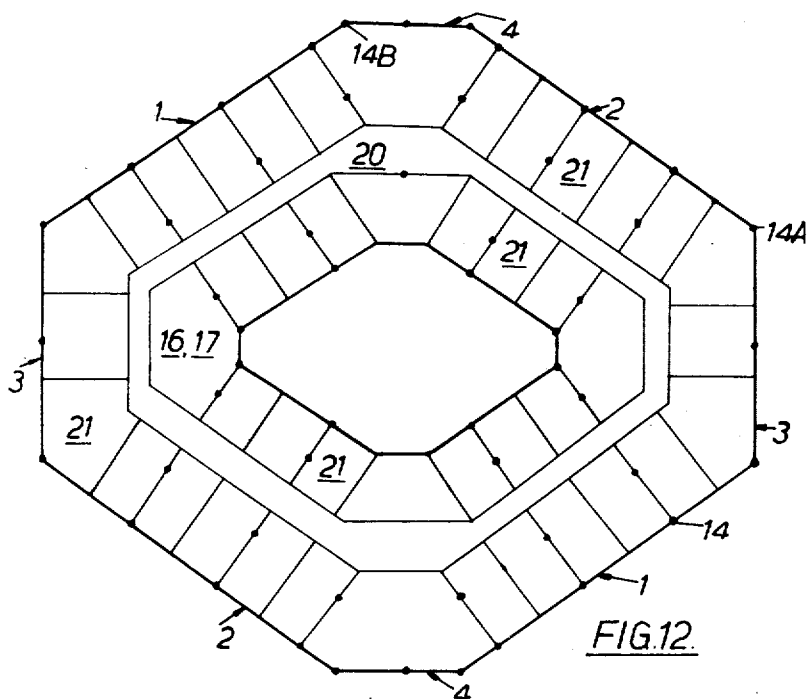
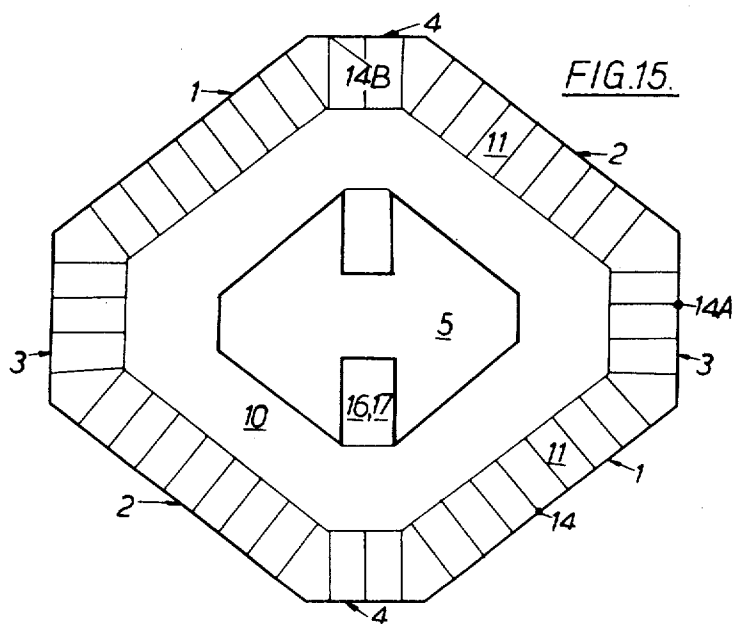
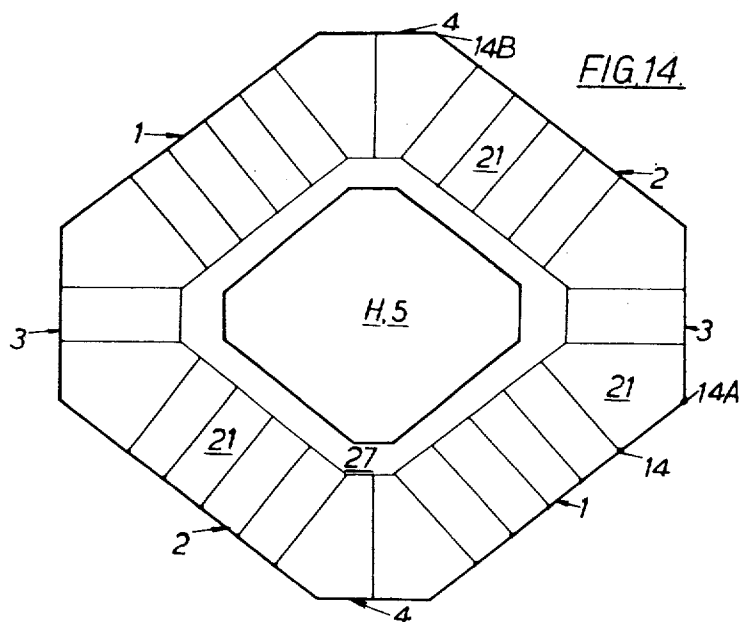


FIG. 11







MULTI-STOREY BUILDINGS

This invention relates to multi-storey buildings of the same general kind as that which is described in the Specification of my United Kingdom Patent No. 1,057,889. In that specification is described a construction of building in which basically there are combined car parking facilities and hotel facilities whilst there may be ancillary services provided such as reception room, restaurant, lifts and other service provisions. For the purpose of convenience in the following description "habitable space" will mean spaces e.g. rooms passages and open areas intended primarily for occupancy by people; "parking space" will mean space intended primarily for the accommodation and movement of vehicles; and "industrial space" will mean space intended for such purposes as show rooms, storage, public gatherings and the services connected with the uses of the building, such as lifts, heating and air conditioning plant, stores and the like being not usually habitable space. A building according to the present invention makes highly efficient use of site area, is adaptable as to the actual location of its entrance and exit facilities and above all can be shown to be outstandingly economic in constructional cost in terms of, for example, the cost per room of bedrooms with their bathroom, of an adequate size together with car parking facilities. There are many secondary advantages in a building constructed according to the invention; for instance passenger and goods lifts can be arranged so that no part of the building is more than a relatively few paces from a lift; the construction of the building is very flexible in the sense that it makes allowance for large and small conference, bar or restaurant areas; there are no long runs of heating pipes or similar services and the building as a whole can be so sited as to take advantage of local amenities such as pleasing outlook, good sun exposure, etc. In my earlier specification above referred to, the building described was an almost circular structure with a large number of flat facets as seen in plan, but nevertheless that building of which a number of examples are now in existence, has been proved to have considerable economic structural advantages. The present invention may be found to offer even great advantages.

In any such building as that which is now in consideration it is of extreme economic importance to proportion and arrange the vehicle accommodation so that it conforms with one highly important parameter; that is to say the minimum steering radius of the type of vehicle (generally speaking average sized private automobiles) for which accommodation is required. The parking space which will be referred to herein requires that there be a single two-lane carriageway arranged in a generally speaking helical manner to turn around and up (or down) within the structure whilst actual parking is provided for by parking bays to which the carriageway gives individual access. In order to afford least obstruction to the vehicles the number of columns is to be reduced to a minimum and these must of course positionally correspond with the requirements of load-bearing for the upper parts of the building and therefore must also correspond with the provision of clear areas for the habitable space and the industrial space as defined above.

It is observed that an optimal shape for a building affording the required attributes is one in which there are

relatively long and flat boundary walls arranged in opposite pairs, a like number of relatively short flat walls between the ends of the longer ones, a repeat of this pattern constituting inner walls defining a well and a structure which comprises basically an arrangement of vertical columns in lines which are arranged radially from imaginary centres contained within the angles made by adjacent walls which centres also prescribe imaginary centres of the carriageway such as to afford at least the minimum turning circle radius for the intended vehicles. This arrangement of columns as will be seen from the description below of a particular example can be made to correspond also with the structural requirements for defining the habitable and industrial space.

Accordingly the invention resides in a multi-storey building comprising a central hollow core defining a well open at the top and extending vertically within the building, a plurality of rows of columns spaced outwardly of and surrounding the central core, a helical floorway supported by the columns and extending upwardly from near the base of the building and winding round the central core for a plurality of convolutions, the helical floorway being of sufficient width to provide a two-lane carriageway for the exit and entry of vehicles and space for parking vehicles at least at the side of the carriageway facing the outside of the building, and an enclosed structure providing a plurality of storeys of habitable space above the uppermost convolution of the helical floorway and surrounding the well, the well being unobstructed for a sufficient distance from its open top to provide light and air to the storeys of the enclosed structure; wherein the building is circumscribed by an outline in plan which involves four pairs of sides forming an eight sided figure in which the sides of each pair are of equal dimension and in which each side of the figure is flanked by two sides of longer or shorter dimension, and the columns at the apex of the building formed at each short side thereof are arranged on radii from a centre which lies on the axis passing between that apex and the complimentary opposite one and in the vicinity of the arc which prescribes the centreline of the carriageway at the apex so that spaces are provided at each apex on each convolution of the helical floorway or part thereof used for the parking of vehicles. The plan form of the central core is preferably geometrically similar throughout its height but it may be stepped as to be least at the bottom of the well and greatest at the top. This last provision may provide that accommodation facing inwardly into the well receives fair shares of light. It is also preferably the same as the outline in plan of the building. A building constructed as described above may have considerable internal variation particularly in regard to the habitable space or industrial space. For example at the bottom end of the well there may be one or two storeys extending over the whole well plan area providing large space for conference or restaurant use. Surrounding the lower part of the well and either at the same level or at more than the same level as the conference space there may be lesser but still adequately large rooms for such purposes as residents' lounge, bar, smaller conference room, television room, etc. These can almost be made as completely rectangular rooms and they extend parallel with the long outside sides of the building. At the apices of the quadrangular figure which is basic to the building, are arranged elevators and their lobbies,

emergency stairs, and such other auxiliary requirements as linen rooms, pantries, or the like.

Above the accommodation below described and according to the height of the building, bedrooms together with their bathrooms are provided to each side of corridors which run from apex to apex of the quadrangular figure most of these having an external window exposure but some of which face inwards into the well. Particularly in the case of taller buildings and in order to ensure plenty of light to the inwardly facing bedrooms, bedrooms are only provided on the outer sides so that at a point, say the sixth or seventh floor in height, the effective plan area of the well is greatly increased and the light to the lower inward rooms not substantially affected.

The invention will be easier to understand from the following description aided by the accompanying drawings in which like reference numerals indicate like parts and in which:

FIG. 1 is a general isometric view of a proposed building;

FIG. 2 is a ground floor plan which incidentally shows the parking space entry and exit;

FIG. 3 is a plan taken at the level of the first parking circuit showing how parking bays can be provided both towards the outside of the building and towards the well, with the industrial layout in the centre core;

FIG. 4 is a plan view of the next (upwards) level of parking space;

FIG. 5 is a plan view of the first bedroom floor showing how other habitable accommodation is provided;

FIG. 6 is a typical bedroom plan;

FIG. 7 shows the intended arrangement of the top floor in plan; and

FIG. 8 is a diagrammatic longitudinal elevation section;

FIG. 9 is a ground floor plan of a modification of the embodiment of FIGS. 1 to 8, for a smaller building;

FIG. 10 is similar to FIG. 3 and shows a plan taken at the first parking circuit of the building of FIG. 9;

FIG. 11 is a plan view of a bedroom floor of the modified building; and

FIGS. 12 to 15 illustrate further embodiments of the invention for still smaller buildings with FIGS. 12 and 14 showing typical bedroom plans of the buildings and FIGS. 13 and 15 showing a typical circuit of car parking space.

In contemplating the example of the invention now to be described it has to be borne in mind that the plan figure referred to is not necessarily quadrilateral, but is more strictly octagonal, though it may in a broad sense be considered as four-sided.

Now referring to the Figures, FIG. 1 hardly requires explanation. It will be seen that the building illustrated comprises four relatively long sides in two parallel pairs 1, 1 and 2, 2. These form a virtually lozenge-shaped pattern, the apices, where the sides 1 and 2 would otherwise converge together, being constituted by relatively short flat sides 3, 3, 4, 4. The structure through most of its height surrounds a well generally indicated at 5 which is of geometrically similar pattern though, of course, of very much less plan area than the Figure constituted by walls 1, 2, 3, and 4. The roof 6 of the building which, of course, could be used as a sun roof or for like purposes, conveniently can have a parapet wall as illustrated and from it there projects the superstructures such as 7 which house lift winding gear or

other service equipment, the superstructures constituting the tops of the shafts with which they are associated, which shafts accommodate stairways for the lighting of which windows as at 7A may run through the height of the well. A main hotel entrance is indicated at 8 and vehicle entrance is seen at 9 with vehicle exit 9A. It should be noted that the hotel and vehicle access may be located in any one of a variety of positions.

Turning to the remaining Figures and in particular to FIG. 2, the sides 1 and 2 are seen to be conjoined at the apices of the quadrilateral outline by the short sides 3 and 4. In one of the sides 1 is seen the hotel entrance 8 and in one of the sides 2 the parking space entry 9 and exit 9A. These afford access to an inclined ramp generally indicated at 10 which is in fact a two-lane carriageway which extends around and upwardly within the building to the maximum car parking level which is for example indicated at 11 in FIG. 8. The ramp may be continuously inclined as indicated in FIG. 8. Towards the sides of the building are directed parking spaces best indicated in FIGS. 3 and 4 at such position as 11. These Figures also indicate cars going up the ramp e.g. 11A and down the ramp e.g. 11B. The ramps are straight where they are substantially parallel with the longer sides 1 and 2 and curved corresponding to the positions of the shorter sides 3 and 4. The two sharper curves of the ramp which correspond to the position of the short sides 3 are prescribed by the radius of the centre line of the ramp as shown for example at 12 this radius being selected to correspond with the expected turning circle of the class of vehicle which the hotel will readily accommodate. This turning circle also determines that the vehicles can turn into and out of the parking spaces 11.

This is perhaps a convenient point to refer to one of the main features of the invention, namely the fact that the building depends upon an arrangement of vertical columns generally shown by the reference 14 (see for example FIG. 3); in the regions of the apices of the Figure it will be seen that certain of the columns 14, indicated in fact at 14A, are arranged on radii from a centre which lies on an axis of the building (that is to say a radius from its central axis and diagonal to the quadrangle) and in the vicinity of the arc which prescribes the centreline of the carriageway. Likewise at the less acute bend of the carriageway the columns 14B are arranged on radii from the corresponding shorter axis. This arrangement whilst affording the requisite support for the building at the apices also provides that each parking bay 11 is radially accessible to a vehicle. The columns 14 extend throughout the height of the building except in so far as there may be inner columns (see in FIG. 3 at 14C) which only extend up to the inwardly extending lower level of the well if the well is not of uniform plan area.

It can be said, then, that the main structure of the building is supported by three rings of columns 14, an outer ring being that which constitutes the sides 1, 2, 3, and 4, a median ring which corresponds to the inner ends of the parking bays and an inner ring which corresponds to the larger perimeter of the well and the inner margin of the carriageway and at least up to a certain level an innermost ring characterised by 14C. It will also be observed e.g. by reference to FIG. 5 that substantially the same arrangement of columns defines the bedroom accommodation and further, forms part of

the vertical structure of the four shafts which house lifts, stairs, etc.

Turning back now to FIG. 2, that is to say ground floor level, an example is shown of how the area may be divided up there being an administration and reception area at R, and goods and service entrance and passageway at P (connecting to the street) public space at S (which obviously may be used for shop space or the like) and a large foyer area F. Clearly the remainder of the space where it is not interfered with by the ramp 10 can be made use of in a variety of ways and may be regarded either as habitable or industrial space according to the requirement. It is intended that up to the maximum parking space level (11 in FIG. 8) the walls constituting the sides of the building shall be made virtually open to the atmosphere though, of course, they may be decoratively finished as illustrated visually in FIG. 1 as at 15. The exact nature of this will be determined by aesthetic considerations, need for preferred ventilation, and like factors. It may here be remarked that in FIG. 1 is also indicated how the columns 14 may be brought into a general decorative style where they are at the sides of the building.

It can be seen from drawings that the building has a well 5 (the general arrangement of which is to be understood from FIG. 1). Beneath this well at ground level are such areas as R and F; one floor up e.g. FIG. 3, the floor of the well is occupied by service apparatus (classed as industrial space) such as boilers in the compartment B, mechanical plant in C and for example hot water supply tanks in D. The well is basically defined by the location of four shafts headed as shown in FIG. 3. These shafts are indicated generally by L and they house pairs of lifts such as 16 with their necessary access lobbies and three of the shafts also house emergency stairs indicated by 17. The stairs may in fact continue up to the roof, access doors being provided in the top structures 7. Access to the parking bays may be afforded by appropriate lift stops and lobbies. FIG. 4 indicates a level of the building above that at which the bottom of the well clearly is i.e. immediately above the plan of FIG. 3 and at this (FIG. 4) level there is nothing to be particularly noted except the fact that the whole of the useful plan area is taken up by parking bays and the elevator shafts, and the central core (which corresponds to the well in the upper floors) could be used as additional storage space or to house e.g. air conditioning plant. The bedroom hotel part of the building is indicated in FIG. 5 and it will here be seen that the whole area (subject to lift shafts etc.) is taken up for human accommodation. In the bottom portion of the well is formed a large room which can be regarded as a conference room or a restaurant indicated at H; and adjacent the conference room are formed a medium sized conference room CR, a barroom BR, a residents' lounge RR, and a further lounge for example for television viewers TR. The roof of the room H forms the floor of the open part of the well. The accommodation rooms above mentioned are surrounded by a passage 20 giving access to a complete ring of bedrooms 21 each of which has its own bathroom partitioned off, for example, at 21A and each of which may have what is termed a "picture" window as indicated at for example 21B in FIG. 1. It will be noted that the dimensions and arrangement of the bedrooms 21 are determined in effect by columns 14 and it follows (though it is not of first importance) by comparison of say FIG. 3 and FIG.

5 that in plan and in general two bedrooms correspond to three bays. This relationship does in fact change to a minor degree towards apex of the plan figure.

FIG. 6 is intended to illustrate a plan of a typical bedroom floor; the number of such floors will, of course, be dictated by the requirements of the building and FIG. 7 represents an accompanying arrangement for the top floor which as can now be seen only has outer facing bedrooms 21. The area taken up on lower floors by inner facing bedrooms now represented at 22 may either be useful accommodation e.g. for recreation, storage, or other purposes or may actually be open to form verandah-like accommodation with windows 22A, open to the well 5. This particular feature of construction may of course afford more light to the inwardly facing bedrooms perhaps at the sacrifice of area of the roof 6.

The general comment which may apply to the whole of the parking bays is that although the carriageway is inclined, at least around the apices, the bays may still have horizontal floors there being only a very small discrepancy to be served by a smoothed-off ledge between the roadbed and each individual bay floor.

It may here be mentioned that a service shaft, for instance, incorporating a stairway, may be provided at an outer apex of the building to serve the floors of the helical parking space.

FIG. 8 is provided mainly to enable the previous Figures to be more easily understood and would appear to require no particular description.

In a modification of the above embodiment for a smaller building, as shown in FIGS. 9 to 11, the general arrangement is substantially the same but the ground floor area is divided up somewhat differently, the inner core except at ground floor level is left vacant, a service shaft incorporating a stairway is formed at an outer apex of the building to serve the floors of the parking space, and lift shafts and stairwells are provided at only two of the inner apices of the building and are arranged somewhat differently from their arrangement in the first embodiment described above.

Referring now to FIG. 9, it may be seen that the ground floor provides an entrance 9 and exit 9A for vehicles R to the helical floorway 10 as in the above described embodiment but otherwise is divided up to form a plurality of rooms S1 to S13 which may be used for a variety of purposes, for instance, as follows:

S1 as an entrance hall; S2 as a reception space; S3 as a porter's room; S4 is a room built on to the main building and may serve as a dining annex; S5 as a dining room; S6 as an entrance hall to the dining room, which may incorporate toilets and cloakroom; S7, which is built to extend outwardly of the general plan of the building, as a lounge or bar; S8 as a cafe; S9 as a restaurant; S10 as a kitchen; S11 as a shop; S12 as staff room and S13 as a plant room for electrical and other gear.

At the right hand outer apex of the building (as viewed in the Figures) a service shaft is formed incorporating a stairway ST1 (FIGS. 9 and 10) to serve the floors of the parking space, one of which is seen in FIG. 10. The building also comprises at each of the right and left hand apices (as viewed in the Figures) a service shaft incorporating a lift shaft L for two lifts and a stairway ST2, with the lift shaft and the stairway being set with a space between them at the respective apex as is most evident in FIG. 10. It may be noted that the stair-

way ST2 in each shaft differs in plan in passing from the parking space to the floors of the habitable space of the building. This is done to enable extra bedrooms to be incorporated in the floors of the habitable space. The plan of the two stairways in the habitable space at the respective inner apices also differ from one another in order to provide a wider access to the shaft at the left hand side through doors DC than to the shaft at the right hand side through door DS since the former is intended for use by guests of the hotel whereas the latter is for use by staff servicing the habitable space.

As in the first embodiment described above, a row of parking spaces 11 (FIG. 10) is provided at each side of the helical carriageway 10.

The central well 5 of the building is roofed over at ground floor level to provide the room S10 but otherwise is left vacant.

The bedrooms 21 of the floors of habitable space are arranged in substantially the same way as in the first embodiment described above as indicated in FIG. 11 with rooms either side of a corridor 21. The Figure shows only part of the floor area to avoid unnecessary drawing but it will be understood that the room arrangement shown is used throughout the entire floor area in each floor of the habitable space.

Where relevant the same references have been used. FIG. 12 is a simple plan view showing the essentials of a bedroom floor for a still smaller building. FIG. 13 is a corresponding plan of the smaller car parking space in which the bays are only outward from the carriageway. FIG. 14 shows a typical bedroom floor plan of an even smaller building and FIG. 15 is, again in somewhat rudimentary form, an illustration of the carriageway and parking area corresponding to FIG. 14. Where they are applicable similar references are applied in FIGS. 12 - 15 as to the other Figures. It will be noted by comparison of FIGS. 12 and 13 or FIGS. 14 and 15 that the well may be arranged in somewhat modified manner. For example in FIG. 15 the carriageway extends further inwards towards the vertical axis of the building and it is partially roofed by a passageway 27 which serves the bedrooms (see FIG. 14) but is still large enough to afford useful and airy well area. As has been previously mentioned and can now be related at least to the plans associated with the FIG. 1 example of the building, there may be buildings of sufficient rise to make it desirable to have a "break" in the area of the well so that there may for example be several storeys with internal bedrooms, above which are, say, two or three storeys of only external bedrooms so that the well has a considerably bigger area at roof level than it has at its lower levels. Indeed, FIG. 7 is suggestive of this feature.

It may here be pointed out that a building according to the invention may be formed with curved sides, at least at the apices of the building, rather than with flat sides as illustrated in the accompanying drawings.

I claim:

1. A multi-storey building comprising a central hollow core defining a well open at the top and extending vertically within the building, a plurality of rows of columns spaced outwardly of and surrounding the central core, a helical floorway supported by the columns and extending upwardly from near the base of the building and winding round the central core for a plurality of convolutions, the helical floorway being of sufficient width to provide a two-lane carriageway for the exit and entry of vehicles and space for parking vehicles at

least at the side of the carriageway facing the outside of the building, and an enclosed structure providing a plurality of storeys of habitable space above the uppermost convolution of the helical floorway and surrounding the well, the well being unobstructed for a sufficient distance from its open top to provide light and air to the storeys of the enclosed structure; wherein the building is circumscribed by an outline in plan which involves four pairs of sides forming an eight sided figure in which the sides of each pair are of equal dimension and in which each side of the figure is flanked by two sides of longer or shorter dimension, and the columns at the apex of the building formed at each short side thereof are arranged on radii from a centre which lies on the axis passing between that apex and the complementary opposite one and in the vicinity of the arc which prescribes the centreline of the carriageway at the apex so that spaces are provided at each apex on each convolution of the helical floorway or part thereof used for the parking of vehicles.

2. A building according to claim 1, wherein the columns extend throughout the height of the building.

3. A building according to claim 2, wherein the columns consist of three rings of columns, an outer ring in the planes of the exterior walls of the building, a median ring corresponding to the inner end of the parking space at the outer side of the carriageway and an inner ring corresponding to the inner margin of the carriageway.

4. A building according to claim 3, wherein a further set of columns is provided inwardly of said third ring of columns, which terminate at the roof level of the uppermost convolution of the helical floorway.

5. A building according to claim 1, wherein the helical floorway is of sufficient width to provide parking space also at the inner side of the carriageway.

6. A building according to claim 1 wherein the central core of the building defines an outline in plan of the same geometric shape as the outline in plan of the building.

7. A building according to claim 6, wherein a service shaft is erected at each of at least two opposed apices of the central core of the building.

8. A building according to claim 7, wherein a service shaft is erected at each of the four apices of the central core of the building.

9. A building according to claim 7 wherein any service shaft provided passes throughout the height of the building.

10. A building according to claim 7, wherein each service shaft is formed with a stairway.

11. A building according to claim 10 wherein each service shaft accommodates a shaft for one or more lifts.

12. A building according to claim 7, wherein each service shaft has access thereto at each storey through which it passes.

13. A building according to claim 1, wherein the central core of the building is positioned horizontally at the first storey above ground level whereby the space above and below the partition can be separately utilised.

14. A building according to claim 13, wherein the space below the partition is open to space underlying the first convolution of the helical floorway.

15. A building according to claim 14, wherein the space underlying the horizontal partition is open to the

inner margin of the space underlying the first convolution of the helical floorway but is divided off from the remainder of that space by a vertical partition.

16. A building according to claim 15, wherein the space below the horizontal partition is divided vertically into a plurality of rooms which are connected to the remainder of the space underlying the first convolution of the helical floorway through said vertical partition.

17. A building according to claim 16, wherein the outer margin of the space underlying the first convolution of the helical floorway is vertically divided into a plurality of rooms one of which connects directly with the space below said horizontal partition, and another of which is completely partitioned from that space.

18. A building according to claim 17, wherein vehicular access from the exterior of the building is provided to the other room formed in the outer margin of the space underlying the first convolution of the helical floorway.

19. A building according to claim 13, wherein the space above the horizontal partition is vertically divided into a plurality of rooms.

20. A building according to claim 1, wherein the central core of the building is horizontally divided at the first floor level of the enclosed structure, and the space above the division roofed off the roof level of that storey to form a central room.

21. A building according to claim 13, wherein the space underlying the horizontal division of the central core of the building is at ground floor level is divided off from space underlying the first convolution of the helical floorway, to form a room at the centre of the ground floor area.

22. A building according to claim 21, wherein the space underlying the first convolution of the helical floorway is divided vertically into a plurality of rooms.

23. A building according to claim 22, wherein at least one of said rooms is formed with an extension outwardly of the general outline in plan of the building.

24. A building according to claim 23, wherein at least one of the other of said plurality of rooms connects with a room built outwardly of the general outline in plan of the building.

25. A building according to claim 1, wherein a ser-

vice shaft is formed at an outer apex of the building to service the floors of the parking space.

26. A building according to claim 25, wherein said service shaft incorporates a stairway.

27. A building according to claim 1, wherein access from the exterior of the building is provided at the ground level of the building.

28. A building according to claim 27, wherein the access for persons is provided at ground level and directly provides access to the space at the central core of the building.

29. A building according to claim 27, wherein a ramp is provided from ground level giving access for vehicles from the exterior of the building to helical floorway.

30. A building according to claim 1, wherein the storeys of the enclosed structure are vertically divided to form rectangular shaped rooms.

31. A building according to claim 30, wherein the storeys of the enclosed structure comprise an outer ring of rooms and an inner corridor giving access to the rooms.

32. A building according to claim 30, wherein in a plurality of the storeys of the enclosed structure from the first storey thereof upwards, the rooms comprise an outer ring of rooms and an inner ring of rooms separated by a corridor giving access to the rooms of both the outer ring and the inner ring.

33. A building according to claim 32, wherein the enclosed structure comprises more than six storeys and said plurality of storeys consist of at least the first six storeys.

34. A building according to claim 33, wherein the inner ring of rooms of at least one of said plurality of storeys from the uppermost one thereof downwards are formed with an open side to the well to serve as balconies.

35. A building according to claim 33, wherein said plurality of storeys are surmounted by at least one upper storey formed to comprise only an outer ring of rooms and an inner corridor giving access to the rooms.

36. A building according to claim 35, wherein the uppermost storey or storeys are set back from the inner or outer edge of the storey below.

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