

[54] **INDUSTRIALIZED BUILDING
CONSTRUCTION**

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[52] U.S. Cl. **52/79, 52/236**

[51] Int. Cl. **E04h 1/04**

[58] Field of Search **52/79, 236, 237, 185**

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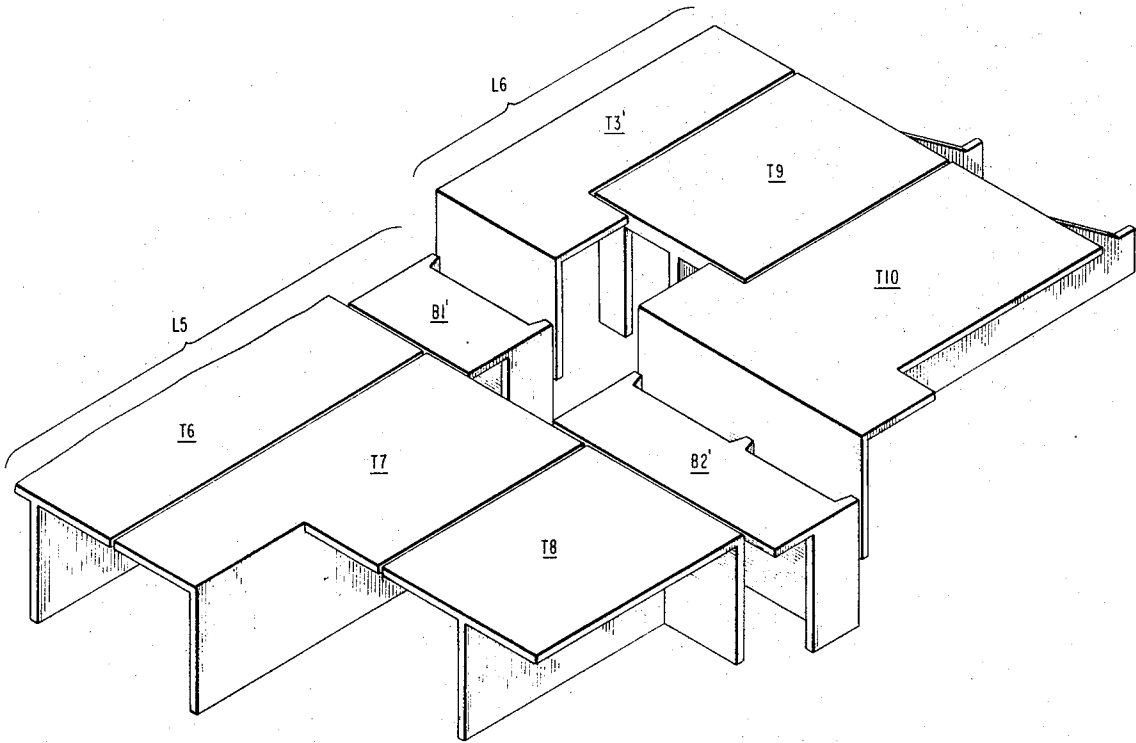
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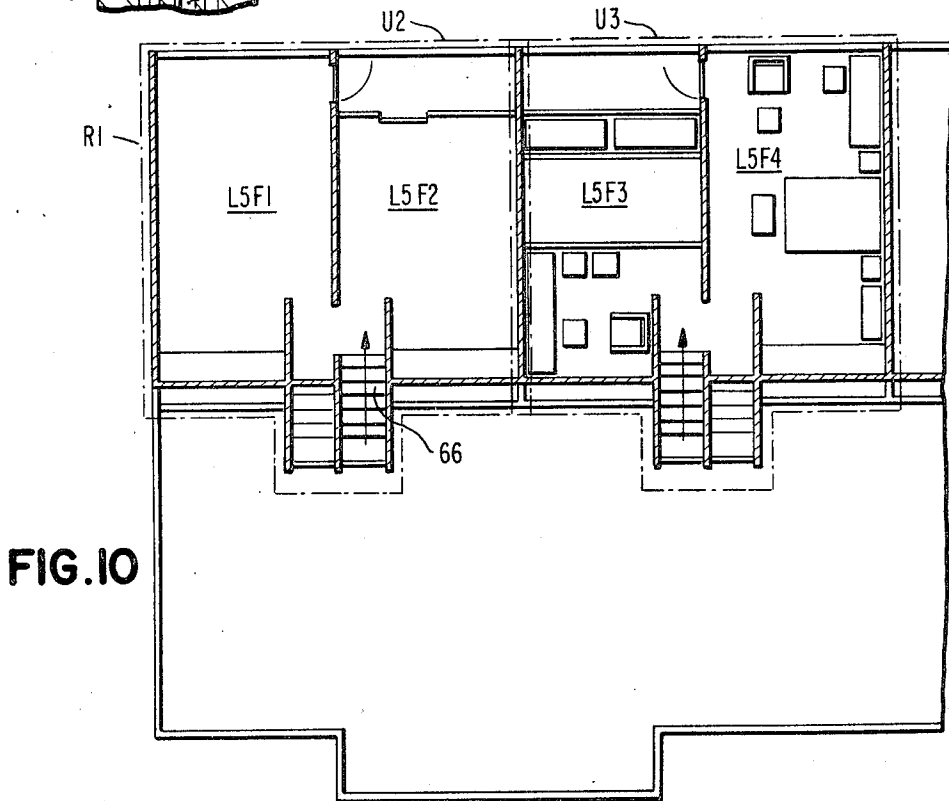
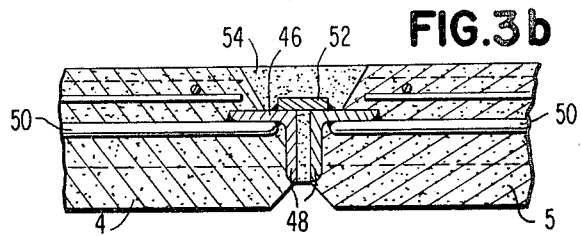
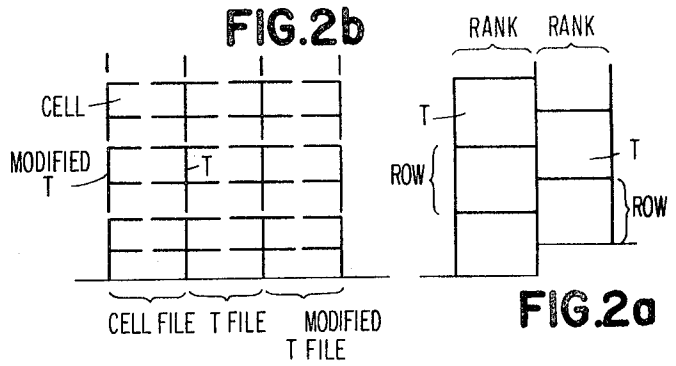
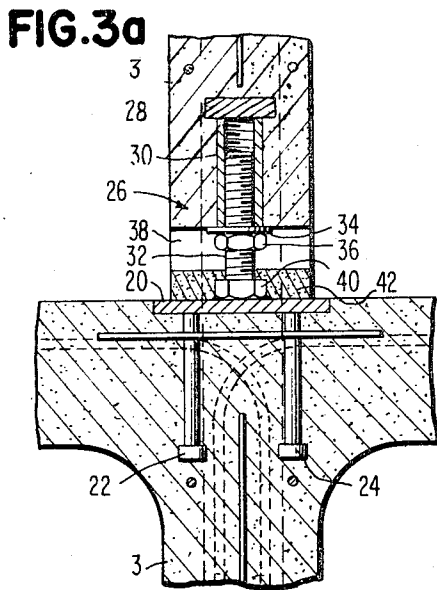
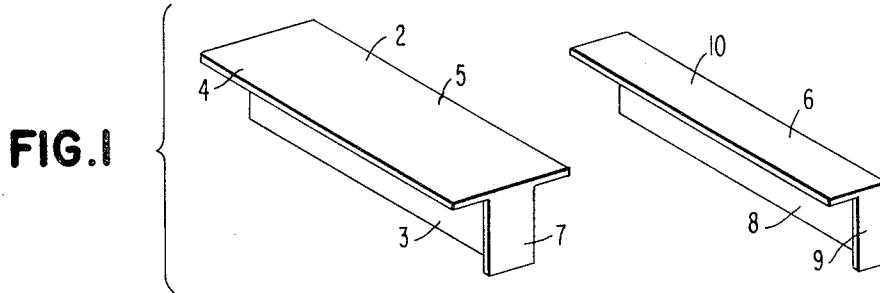
Primary Examiner—John E. Murtagh
Attorney—Robert E. Le Blanc et al.

[57] **ABSTRACT**

The building construction employs precast elongated T-shaped elements (T's) or T's and modified T's, i.e., half T's or inverted L-shaped elements. The T's are superposed one over the other in lateral and endwise juxtaposition to form a pair of adjacent ranks of T's and a plurality of endwise extending files of T's. The stems of the T's in side-by-side relation form opposite side walls of internal cells. The flanges of the T's form common floors and ceilings between superposed cells. One rank of T's is elevated with respect to the other rank to define splitlevel units. The splitlevel construction provides both vertically and horizontally inter-leaved units.

17 Claims, 42 Drawing Figures





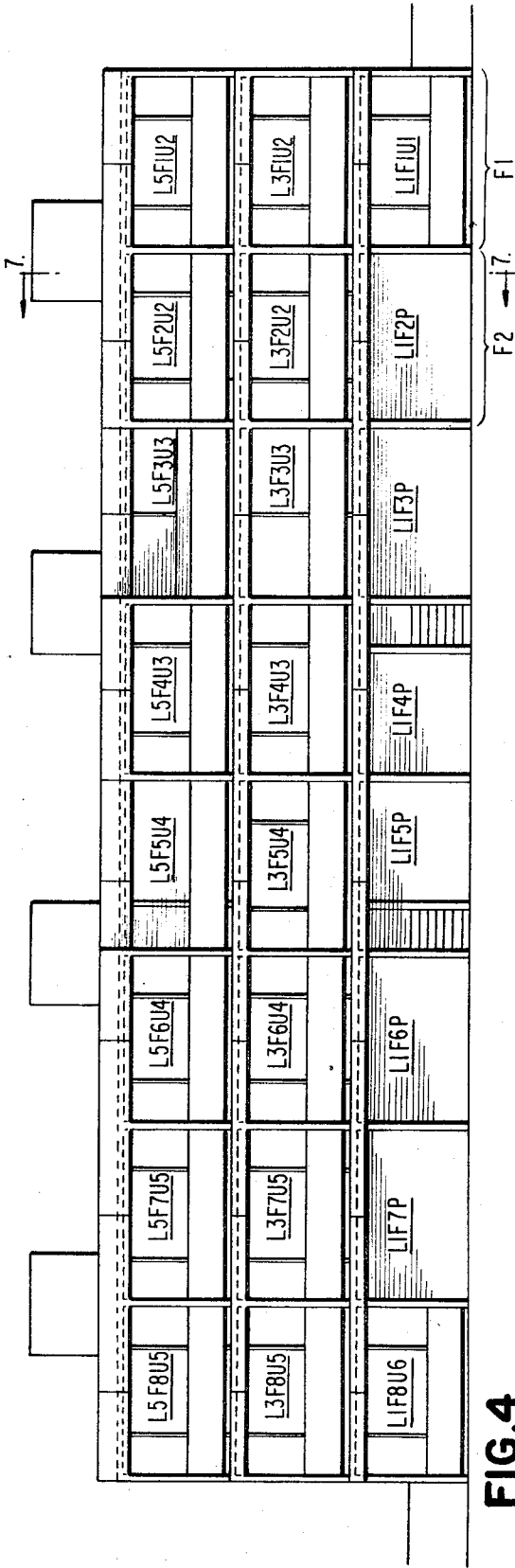


FIG. 5

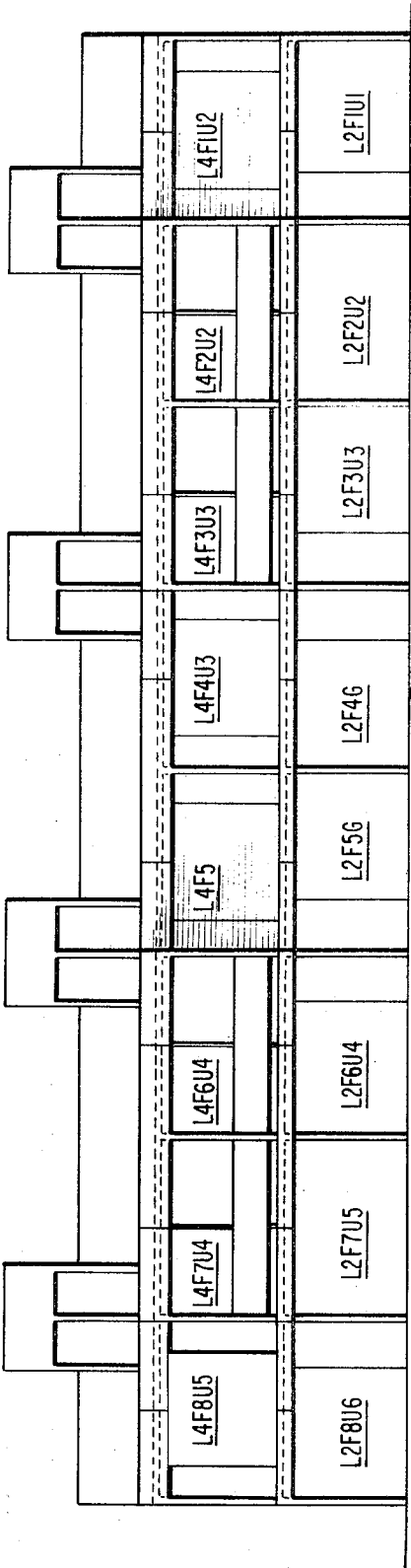


FIG.6

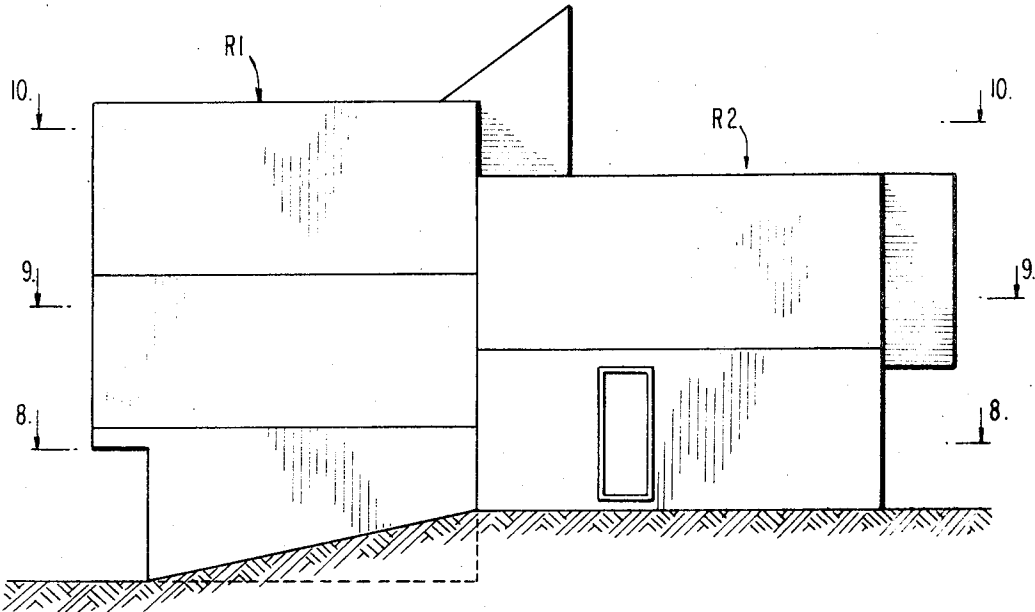


FIG.7

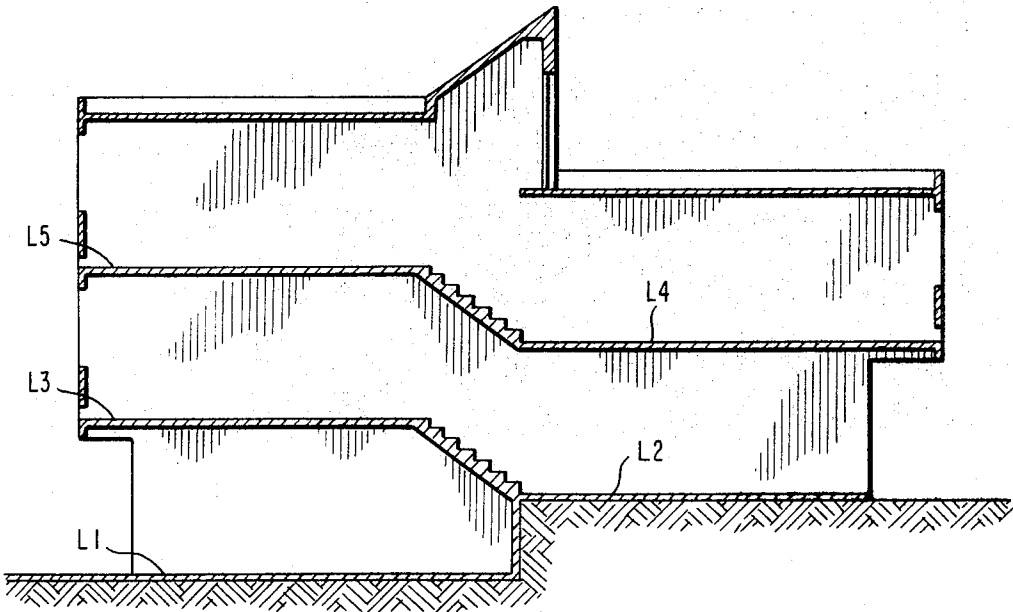


FIG.8

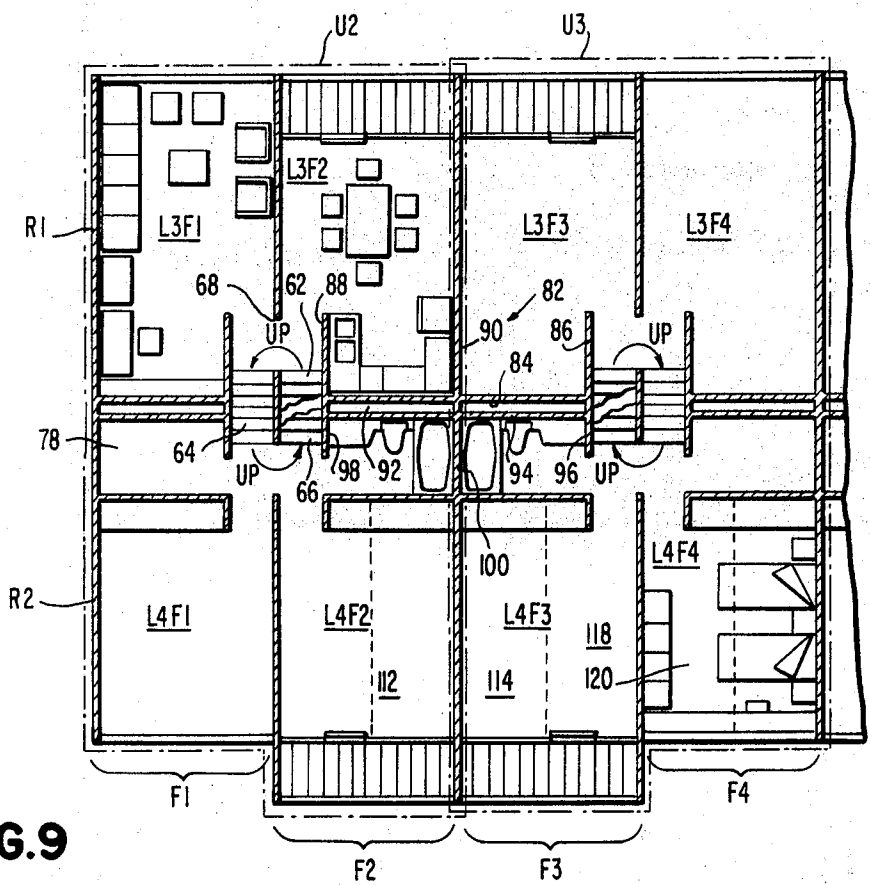
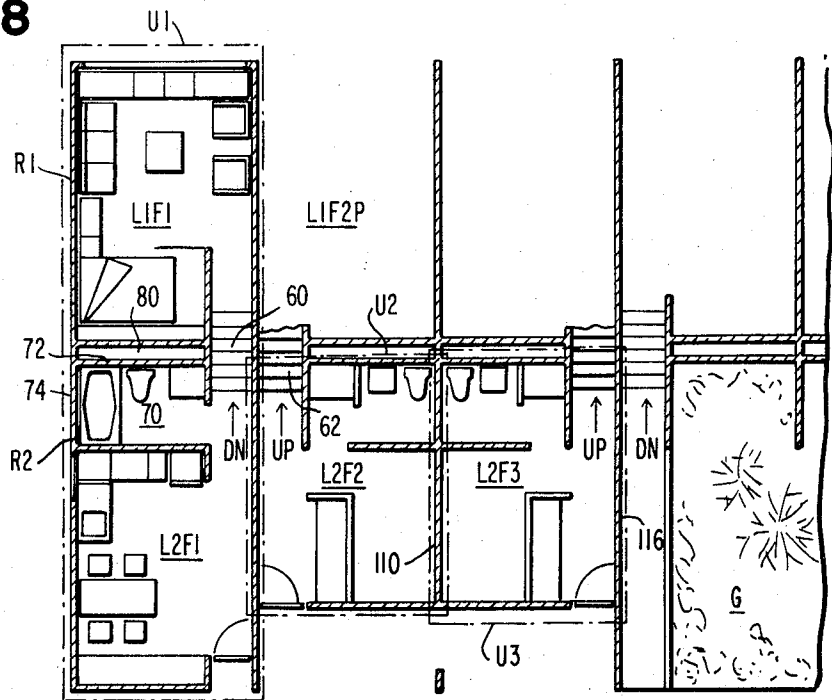


FIG. 11a

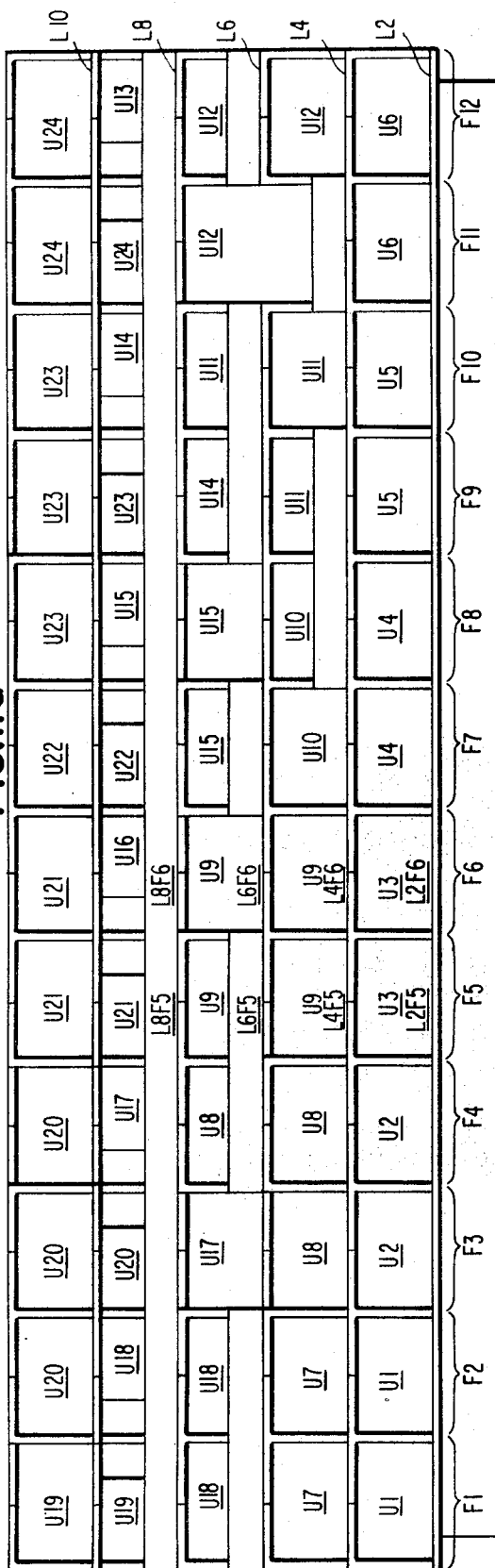
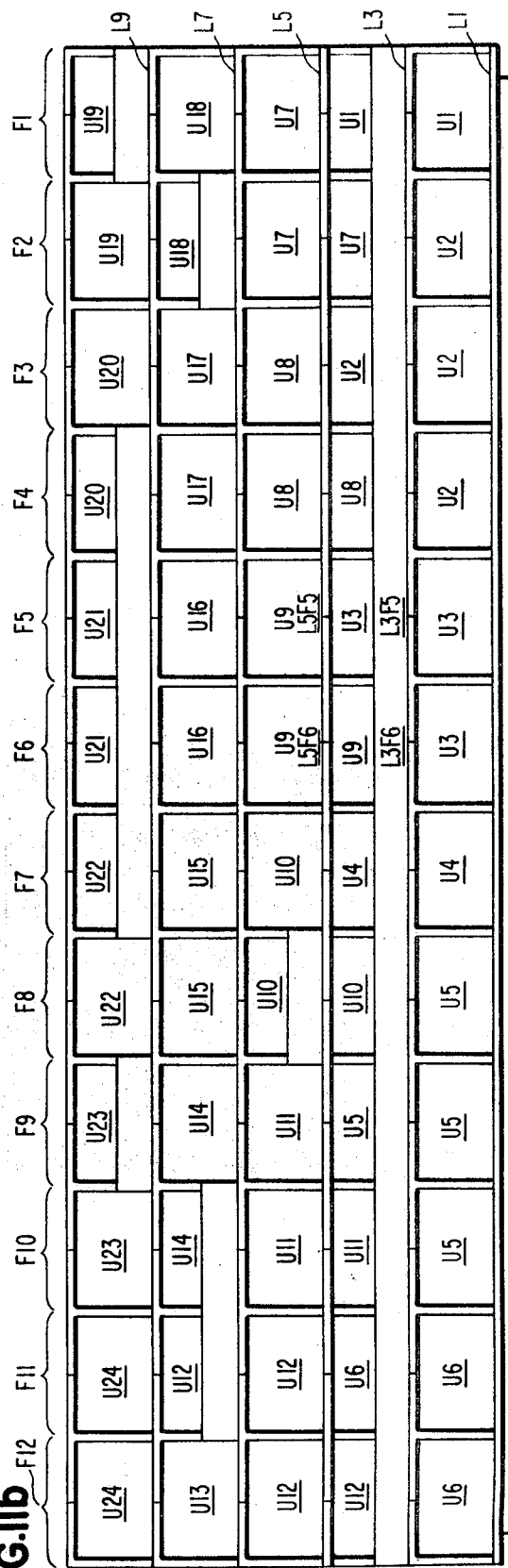


FIG. 11b



APT No.	BEDROOMS	ELEVATION A		ELEVATION B	
		ROOM PROJECTIONS	BALCONY PROJECTIONS	ROOM PROJECTIONS	BALCONY PROJECTIONS
1	1	0	0	0	0
2	3	1	0	0	0
3	2	0	0	0	0
4	1	1	0	0	0
5	3	0	0	0	0
6	2	1	0	0	0
7	2	2	0	1	0
8	3	1	1	0	0
9	4	0	1	1	0
10	2	1	1	0	1
11	3	1	2	2	0
12	4	1	2	0	1
13	EF	0	0	1	0
14	1	0	1	1	1
15	2	0	1	0	0
16	1	0	0	2	0
17	1	0	0	1	0
18	2	0	2	1	1
19	1	0	0	0	1
20	3	2	0	1	1
21	2	1	0	0	2
22	1	1	0	1	1
23	3	1	0	0	1
24	2	2	0	2	0

FIG.13

FIG.12

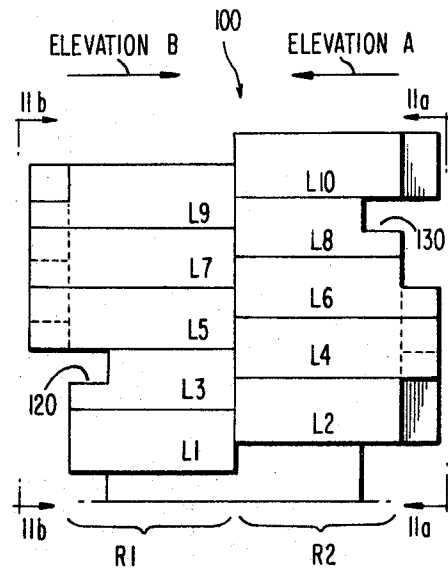


FIG.14a

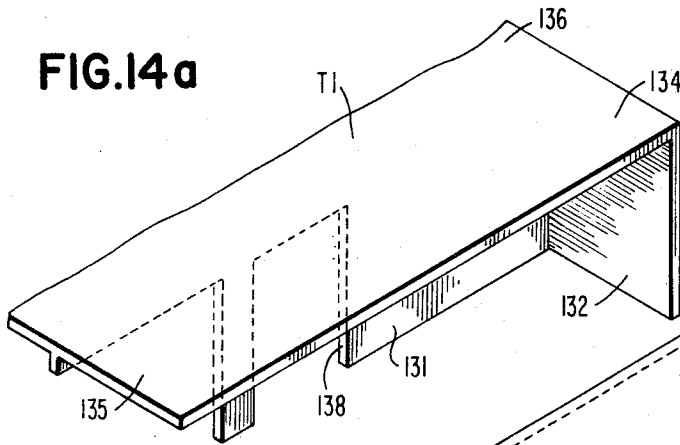


FIG.14b

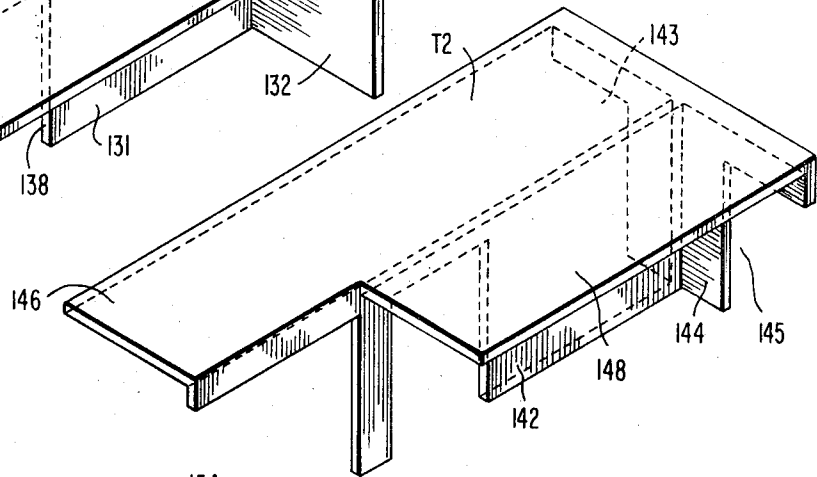


FIG.14c

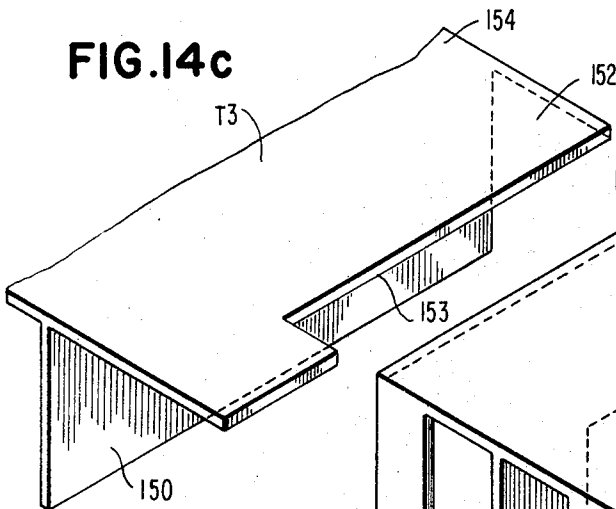


FIG.14d

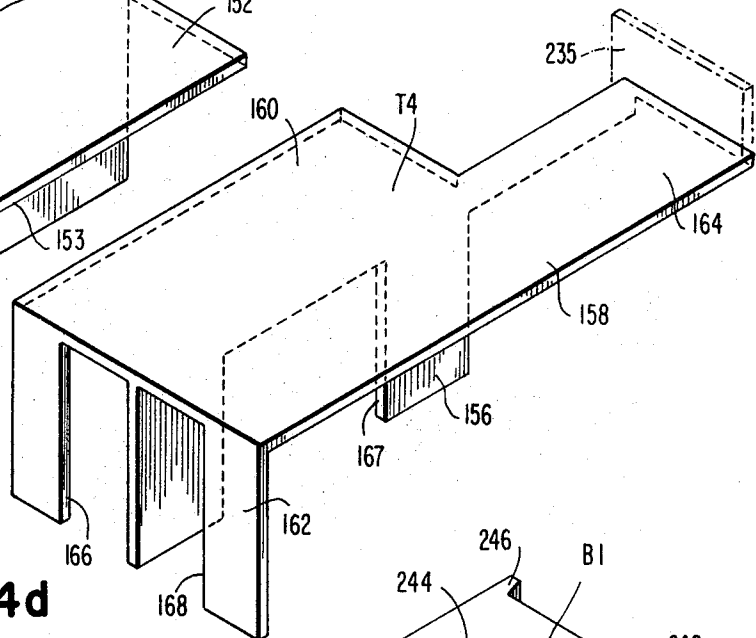


FIG.14e

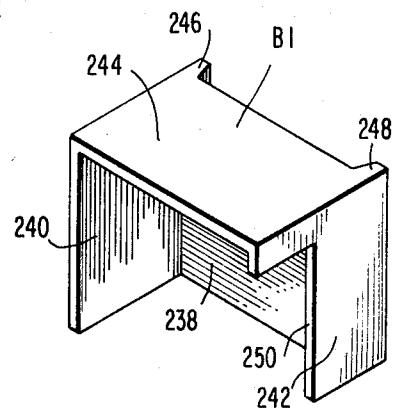


FIG.14f

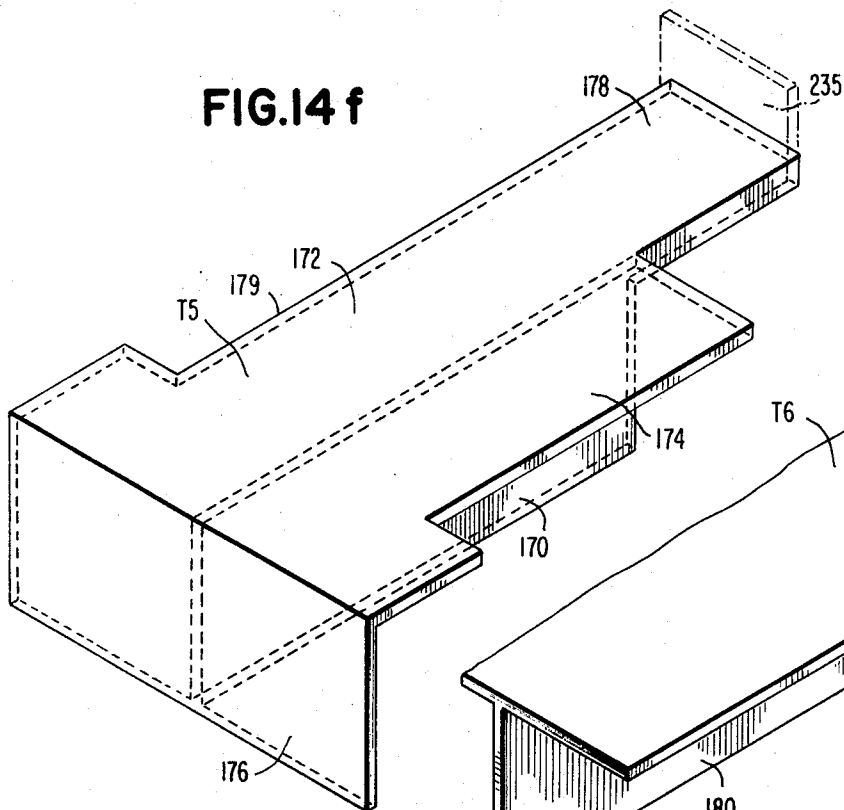


FIG.14g

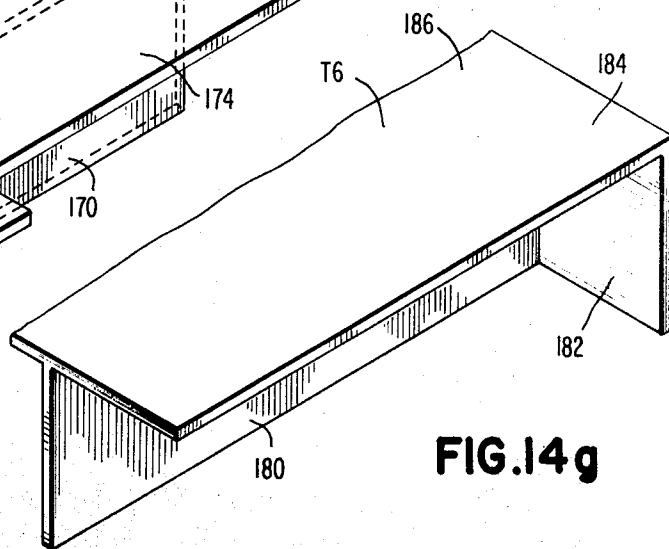


FIG.14h

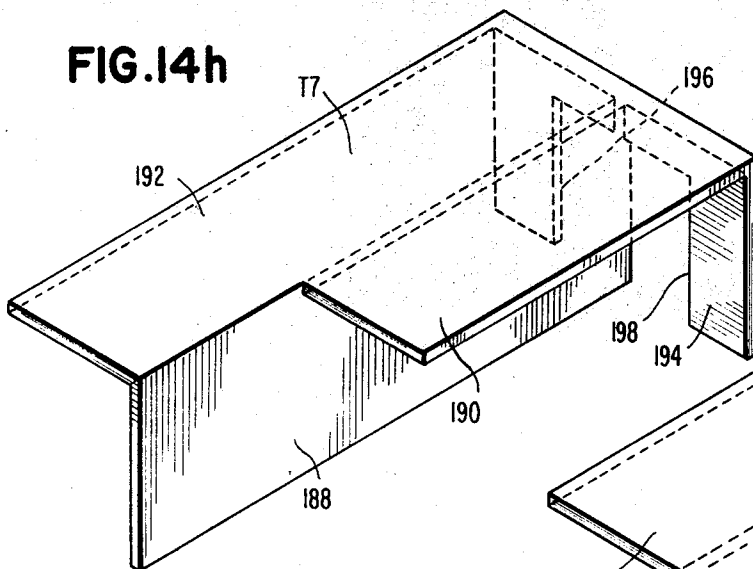


FIG.14i

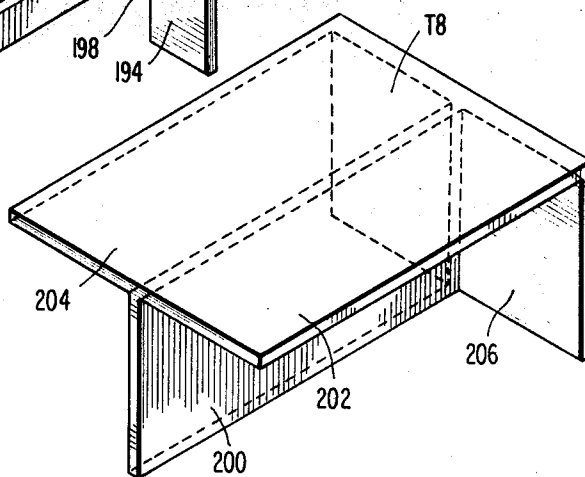


FIG.14j

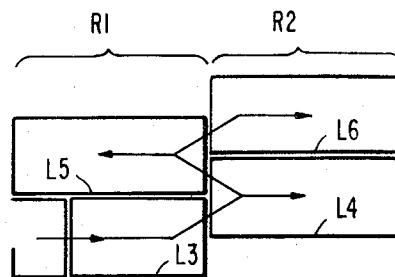
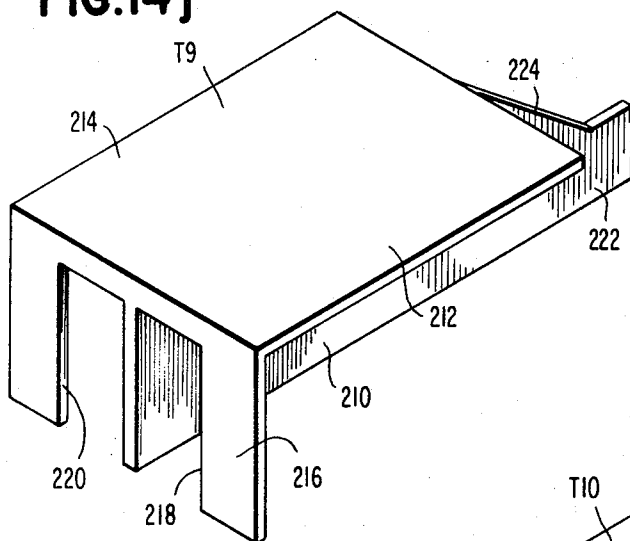


FIG.15

FIG.14k

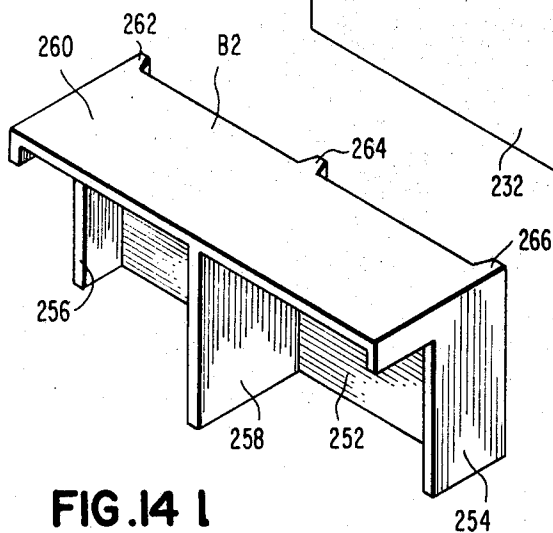
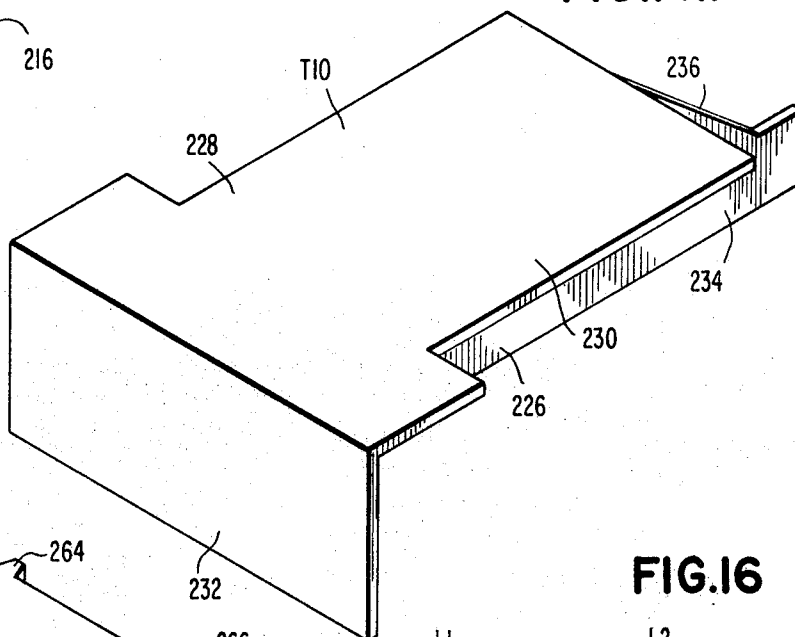


FIG.14 l

FIG.16

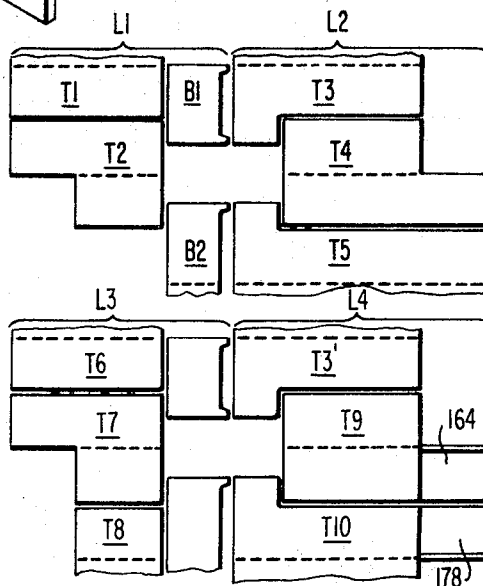


FIG.17

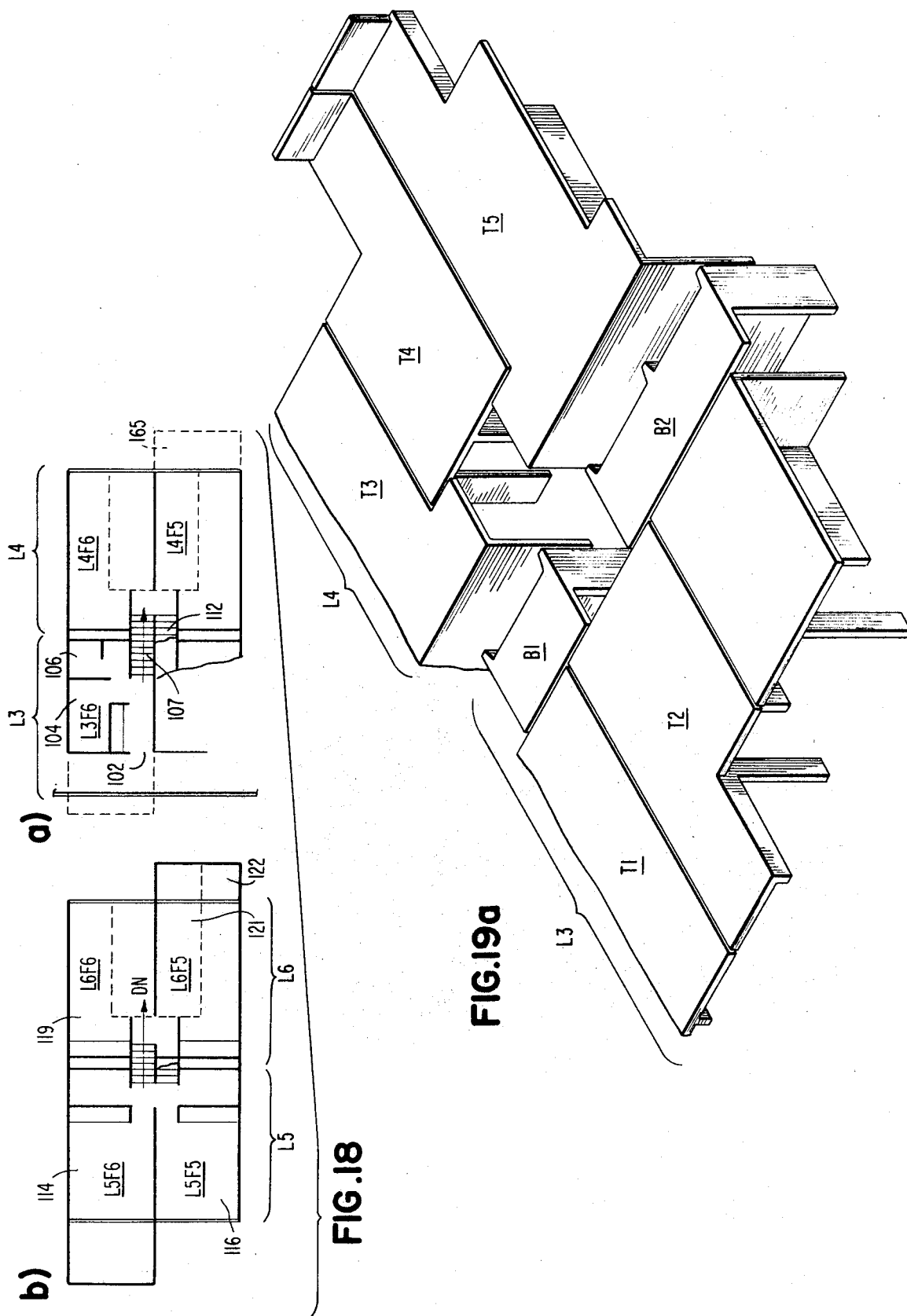
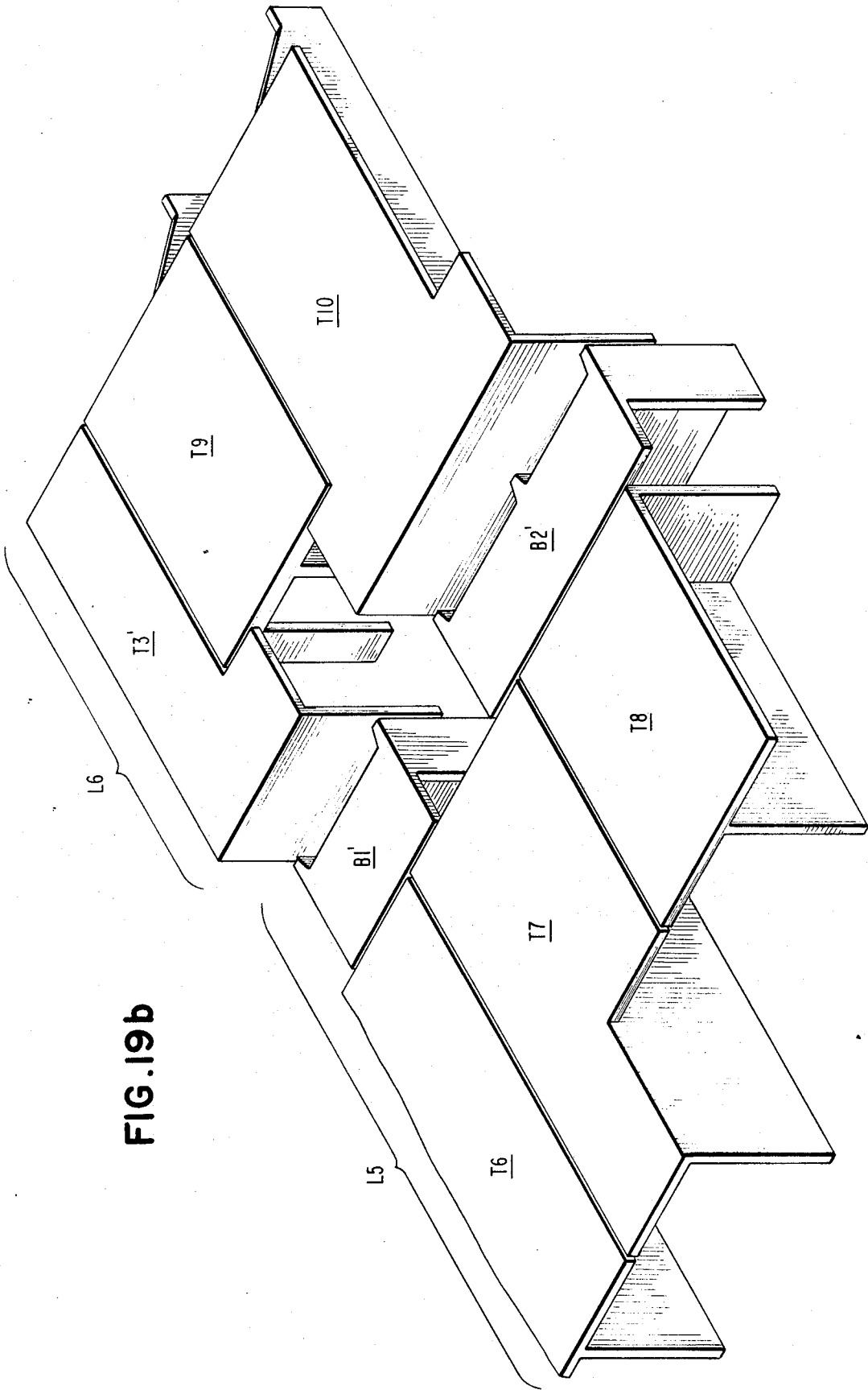
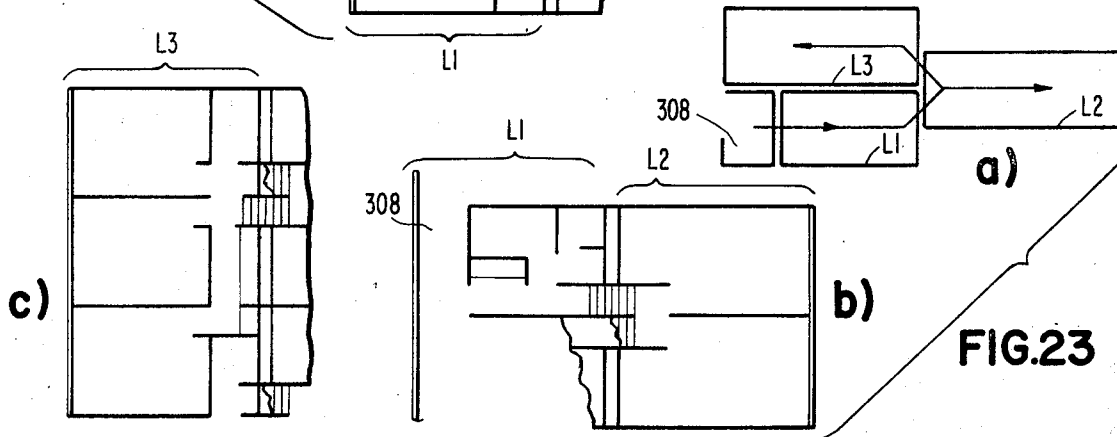
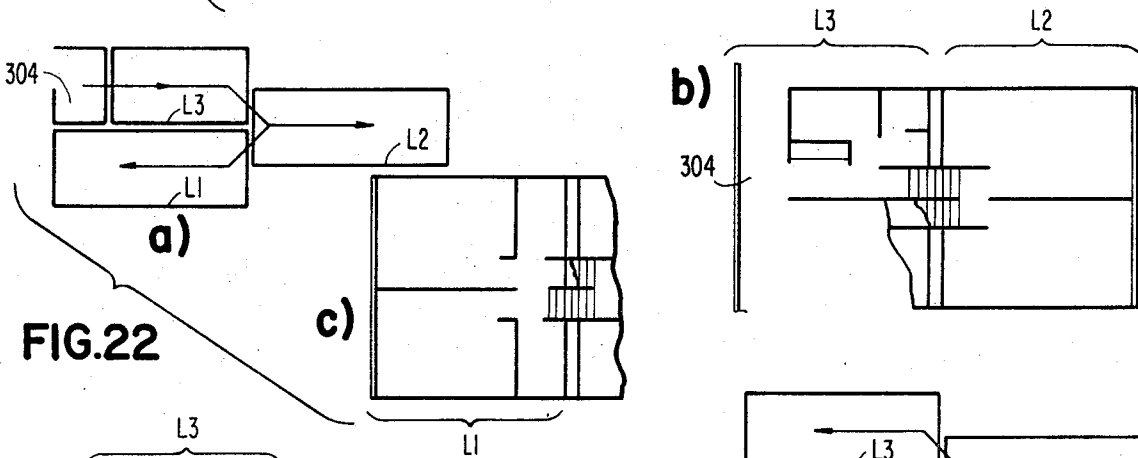
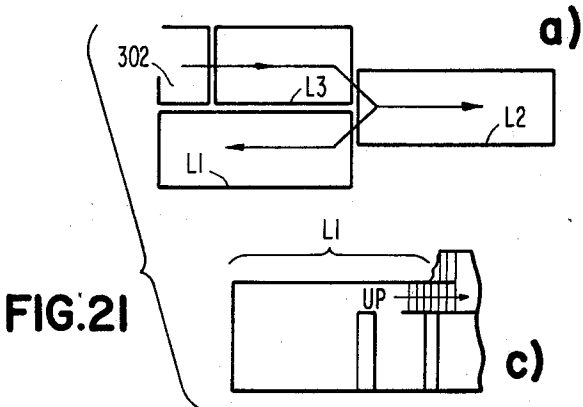
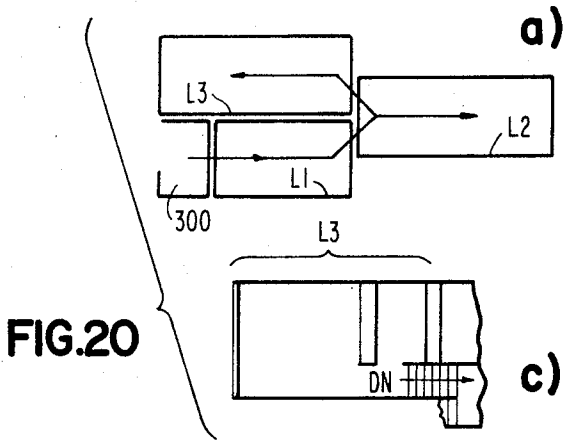


FIG. 18

FIG. 19a





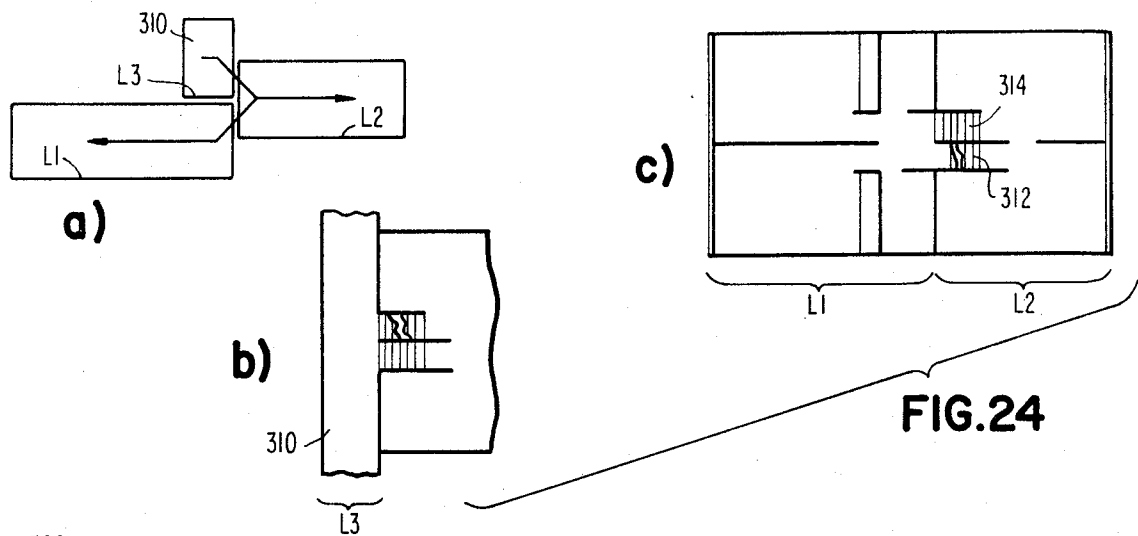


FIG. 24

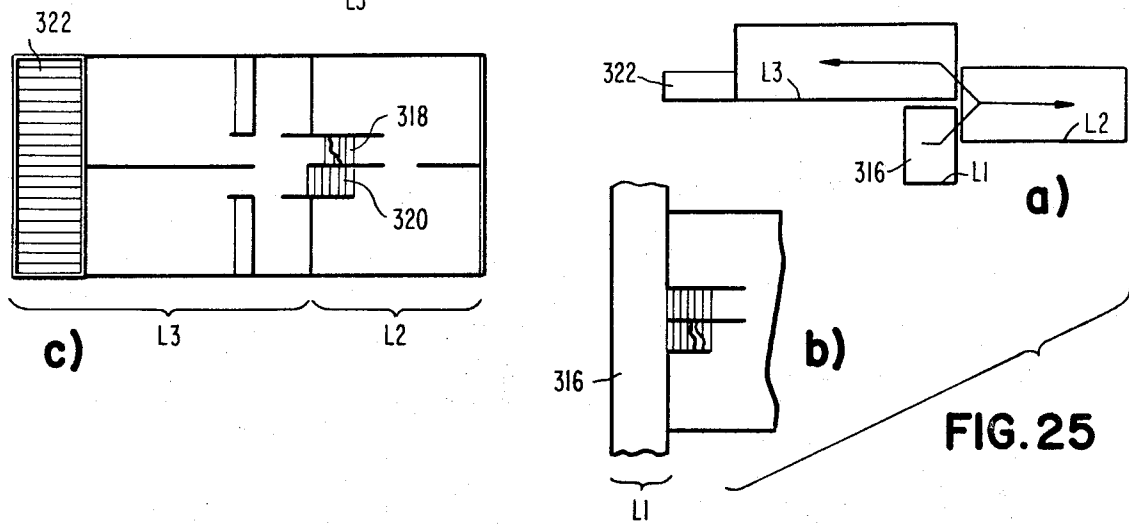


FIG. 25

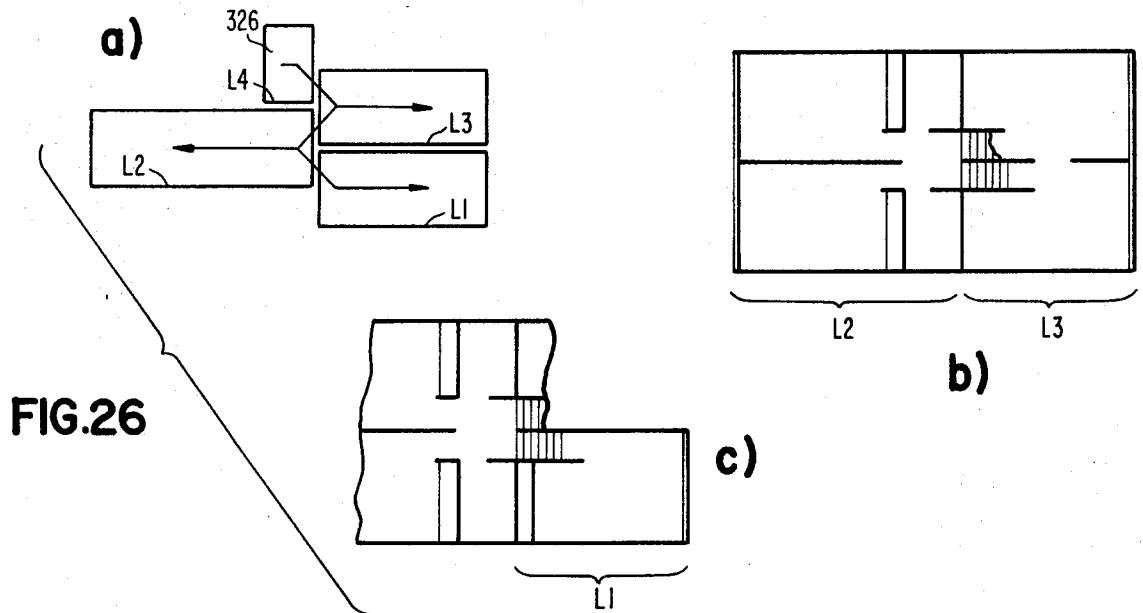


FIG. 26

INDUSTRIALIZED BUILDING CONSTRUCTION

The present invention relates to an industrialized building system and particularly relates to a construction system employing generally T-shaped elements (hereinafter called T's) and modified T's, i.e., half T's or inverted L-shaped elements (hereinafter called modified T's), which are uniquely configured and assembled to provide a novel building construction. The system is adaptable to those buildings, such as business or office buildings, residential buildings, such as apartments, dormitories, townhouses, etc., institutional buildings, such as schools, hospitals or the like, or any construction calling for a plurality of separate internal units and wherein it is particularly desirable to provide one or more of a plurality of discrete units within the building with areas or rooms at different elevations. That is, with the novel configuration and arrangement of the T's or T's and modified T's as set forth herein, a building having multiple, vertically interleaved, split-level units is provided.

In prior applications Ser. Nos. 807,217 and 80,540 of common assignee herewith, there are disclosed industrialized building systems employing building elements in the form of T and Channel shaped elements and T elements, respectively. Those systems provide substantially improved industrialized construction with a degree of structural and architectural flexibility vastly beyond that obtainable with theretofore known techniques. The construction system disclosed in the present application is a variation of the systems disclosed in the aforementioned applications.

It has long been desirable to provide various types of buildings, for example, high or low rise apartment houses, townhouses, garden type apartments, office and institutional buildings, etc., with discrete units having areas or rooms at different elevations, i.e., a split-level construction. While it has long been the practice to horizontally divide each discrete unit of a multiple unit building by partition walls to thereby segregate the functional areas of the particular unit one from the other, it is also functionally and aesthetically desirable to segregate such areas one from the other in a vertical direction, i.e., to provide a multiple level unit. Further, splitlevel construction offers a flexibility in design which is highly desirable. Various buildings have been proposed and constructed in the past having splitlevel functional units. However, and to applicant's knowledge, those constructions utilize conventional building techniques and materials such as steel or poured-in-place concrete, but such conventional construction is expensive for multi-unit splitlevel buildings, particularly where optimum use of space by inclusion of room and balcony projections in the form of substantial cantilevered overhangs is contemplated.

Industrialized building systems have been proposed and utilized in the past. However, great difficulties attend the application of known industrialized building systems, other than those disclosed in the aforementioned applications, to the construction of splitlevel buildings. Due to the large number and variety of the functional areas required, the different elevations and space requirements of such areas, etc., in a splitlevel construction structural integrity and stability utilizing prefabricated modules typical of known industrialized building systems appear obtainable only at a cost in excess of the building costs utilizing conventional

techniques and materials. For example, the prefabricated modules of known industrialized building systems, other than those of the aforementioned applications, lack the functional versatility and flexibility necessary for adaptation to splitlevel construction, and the greater variety of modules required would not justify the substantial capital investment in equipment, etc., necessary. In short, savings in time, labor and expense resulting from application of known industrialized building systems to splitlevel construction (and which savings are the primary justification for use of such systems) appear to be non-existent.

In contrast to the foregoing, the present invention constitutes an industrialized building system for split-level construction and to which system accrues the savings in time, labor and expense characteristic of known industrialized building systems. The present splitlevel construction system uniquely provides two primary building blocks which can be readily and easily modified and adapted whereby functional versatility and flexibility in the design of the building is available. More particularly, the present invention constitutes a novel and improved configuration and arrangement of T's and modified T's as described and illustrated in the aforementioned prior applications particularly adapted to splitlevel construction. In accordance with the disclosures of those applications, there are provided a plurality of T's or T's and modified T's. These elements comprise the primary structural elements of a splitlevel building according to the present invention. The basic T comprises an elongated stem having flanges extending laterally from the stem and from an elongated edge thereof. The T may also include a facade adjacent its end and which facade lies in a plane normal to planes containing the stem and flanges. The basic modified T comprises a half T or inverted L-shaped element having an elongated stem and a flange extending laterally from one side of the stem and from an elongated edge thereof. The modified T may also include a facade arranged similarly as in the case of the T. In utilizing the T's, the basic spacial area formed is the cell. To form a cell, T's are placed in side-by-side relation with the stems of the T's forming the oppositely disposed side walls of the cell. The butting flanges of the laterally adjacent T's form common ceilings and floors for superposed cells. Thus, by superposition of T's in columns laterally adjacent one another, a plurality of laterally and vertically spaced cells are provided. Interior partition walls are then added later to further define the rooms or areas within the cells as required.

The T's and modified T's are precast of concrete in forms provided at the construction site similarly as disclosed in the aforementioned applications and are lifted directly from the forms to erect the building structure. The forms are identical one with the other and are used to cast both T's and modified T's and which elements form internal cells of the building as well as the hallways, elevator towers and lobby construction where applicable. For example, to form a modified T, one of the flanges of the form is blocked off. Also, the forms are adjustable to provide variations in length, width and height for the T's and modified T's in accordance with the particular design. Specifically, various areas of the forms forming the flanges, stems, and facades of the T's can be blocked out. For exam-

ple, the area of the form for casting the end of a stem and its facade can be blocked out whereby the end of the stem can be inset from the end of the T. In this manner, the cantilevered flange or flanges may serve as a balcony, overhang or the like. The ends of the flanges may also be inset from the end of the stem and along various lines in accordance with a particular building design. Other variations of the T and modified T will become apparent from the ensuing description.

Electrical wiring, outlets and switches are integrally cast with the T's and modified T's, thus eliminating the need for later costly and time consuming installation. Piping or ducting for heating, ventilating, air conditioning or the like are also integrally cast in the stems and/or flanges of the T's.

The present invention primarily comprises variously configured T's or T's and modified T's particularly arranged to provide a building construction containing a plurality of splitlevel units, many or all of which units have cells at two or more levels and in communication one with the other thereby providing vertically interleaved units. The splitlevel building construction hereof more particularly provides discrete units vertically interleaved or both vertically and horizontally interleaved one with the other in accordance with a particular building design.

In the simplest form of vertically interleaved units in accordance with the present invention, a plurality of T's are arranged in side-by-side relation to form a row or rank of T's (the ends of the ranks being preferably closed by modified T's), the T's, as previously noted, defining a plurality of horizontally spaced cells. A second rank of T's comprising columns of two T's each arranged in side-by-side relation one with the other (the opposite ends of the second rank being closed by columns of two modified T's each) to form two superposed rows of horizontally spaced cells are disposed in endwise relation to the first rank of T's. The endwise related T's of the first and second ranks define a plurality of laterally spaced files of T's, two T's deep. The endwise related cells of the first and second ranks define a plurality of laterally spaced files of cells, two cells deep. The first and second ranks are vertically displaced a half-story or a full level relative to one another with the first rank lying intermediate the height of the second rank. Thus, the cells of the like files lie at different elevations. Stairways interconnect selected ones of the lower row of cells of the second rank with the endwise aligned cells of the first rank. Likewise, stairways interconnect selected ones of the cells of the first rank with the endwise aligned upper row of cells of the second rank. Selected laterally adjacent cells may also lie in communication one with the other through openings or doors provided through the T stems. Access to the cells can be provided along either or both sides of the building. Internal communication between laterally and/or endwise related cells is, of course, selective depending upon the particular building design including the location and size of the various units within the building. The foregoing structure can be described in a shorthand manner as a two rank, three level, structure having n T files (where n represents the number of T's and modified T's in a specified row) with $n-1$ cells in each row and a total of three x ($n-1$) cells.

Additional rows of T's and modified T's can be superposed over each of the foregoing described rows to provide first and second ranks of T's and modified T's, each having a plurality of superposed rows of T's and modified T's. By providing communication between selected cells of one rank with the endwise aligned cells of the other rank in like files of one or both of the adjacent levels, it will be apparent that superposed units, each having two or more levels, can be provided, the units thus described being vertically interleaved.

For splitlevel multi-story or high rise construction, it will be appreciated that the rank on one building side is displaced vertically a half-story or full level relative to the other rank for the full building height. Access to the various splitlevel units can be provided by corridors along opposite sides of the building or by central corridors, the corridors communicating with elevator towers or stairways at one or both ends of the building or centrally of the building depending upon the particular building design. It will be appreciated that the central or outside corridors need not be located at each building level but may be located, for example, at every four levels. More particularly, where outside corridors are utilized, the corridors may be spaced up to eight levels one from the other on each of the opposite sides of the building with each corridor vertically displaced relative to any other corridor. Various other access arrangements can be provided in accordance with a particular building design as will be apparent from the ensuing description.

In the simplest form of horizontal interleaved units, a unit extends from one side of the building to the other and has a room or cell which extends laterally behind a like room or cell forming a part of a laterally adjacent unit. More particularly, horizontal interleaving is provided where a unit extends from one side of the building to the other, i.e., extends for a full two ranks, and has a cell which lies in the same file as a cell which forms a part of a laterally adjacent unit. It will be appreciated that both vertical and horizontal interleaving of the various units forming the building construction can be accomplished utilizing the T's or T's and modified T's depending upon the particular design desired.

Accordingly, it is a primary object of the present invention to provide an adaptation of the industrialized building system of the above identified patent application particularly useful in splitlevel construction.

It is another object of the present invention to provide a novel industrialized building system providing for larger rooms and balconies projecting substantially beyond the vertical face of the building.

It is still another object of the present invention to provide a novel and improved industrialized building system utilizing T and modified T shaped elements uniquely juxtaposed to form a splitlevel building.

It is still another object of the present invention to provide a novel industrialized building system particularly useful for splitlevel construction wherein the functional units within the building are vertically interleaved or vertically and horizontally interleaved in accordance with a particular building design.

It is a further object of the present invention to provide a novel splitlevel building construction wherein the advantages and savings in time, labor and cost of industrialized building systems are obtained.

These and further objects and advantages of the present invention will become more apparent upon reference to the following specification, claims and appended drawings wherein:

FIG. 1 is a schematic perspective view of a T and a modified T utilized as the basic building elements for the building construction herein;

FIGS. 2a and 2b are schematic side and end elevational view of a building illustrating the relative arrangement of the T's and modified T's and the terminology used in describing the present invention;

FIGS. 3a and 3b are fragmentary enlarged cross sectional views illustrating the connections between superposed T's and the flanges of laterally adjacent T's respectively;

FIGS. 4 and 5 are respective rear and front elevational view of a building constructed in accordance with the present invention;

FIG. 6 is an end elevation of the building illustrated in FIGS. 4 and 5;

FIG. 7 is a cross sectional view thereof taken generally about on line 7—7 in FIG. 4;

FIGS. 8, 9 and 10 are cross sectional views thereof taken generally about on lines 8—8, 9—9, and 10—10, respectively, in FIG. 6;

FIGS. 11a and 11b are respective elevational views of a splitlevel building schematically illustrated in FIG. 12 and taken about on lines 11a—11a and 11b—11b in FIG. 12;

FIG. 12 is a schematic end elevational view of a split-level building constructed in accordance with the present invention;

FIG. 13 is a chart keyed to FIGS. 11a and 11b disclosing the various types and features of the various units comprising the building illustrated in FIG. 12;

FIGS. 14a—14f are perspective views of the T's forming a four bedroom apartment unit in the building depicted in FIG. 12;

FIG. 15 is a schematic side elevational view of the four bedroom apartment illustrated in FIG. 19 illustrating its circulation pattern;

FIGS. 16 and 17 are plan views of the various levels comprising the four bedroom apartment and illustrating the disposition of the T's illustrated in FIGS. 14a—14f in assembled relation;

FIGS. 18a and 18b are floor plans of the various levels of the four bedroom apartment illustrated in FIG. 19;

FIGS. 19a and 19b are perspective views of the various T's comprising the four bedroom apartment and arranged at levels L1, L2 and L3, 14 respectively; and

FIGS. 20—26 are schematic representations of the circulation patterns of the apartment and plan views as applicable of a particular floor plan, the Figure at (a) in each of FIGS. 20—26 indicating the circulation pattern and the Figure at (b) and (c) in FIGS. 20—26 illustrating the floor plans.

To facilitate description of the various embodiments of the present invention, the following terminology is used throughout this specification:

LIST OF DEFINITIONS

T — denotes the basic building element in the present industrialized building construction and generally comprises an elongated element having a vertically extending stem and a pair of flanges ex-

tending along opposite sides of the stem and along an elongated edge thereof. T also designates this basic building element wherein its stem and/or one or both of its flanges are modified as necessary in accordance with a particular building design and wherein the stem and flanges are provided with a facade;

Modified T — denotes a half-T having a stem and a flange extending along an elongated edge and to one side. Modified T also designates this basic building element wherein its stem and/or flange is modified as necessary in accordance with a particular building design and wherein the stem and flange are provided with a facade;

Facade — denotes a wall panel selectively integrally formed with the T and/or modified T and located adjacent an end portion of these elements in a plane generally normal to the planes containing the stem and flange or flanges;

Cell — constitutes the space defined (a) horizontally between the stems of laterally adjacent T's or between the stems of a T and a laterally adjacent modified T, and (b) vertically between the opposed flanges of the T's or a T and a modified T and a floor for the cell defined by the flanges of underlying laterally adjacent T's or a T and modified T or other suitable horizontal structure serving as a floor; (See FIGS. 2a and 2b)

Unit — denotes the one or more spaces defined within a building which serve a particular functional purpose and which space may comprise one or more cells. For example, in a high-rise, low-rise, garden or other type apartment building, unit denotes each apartment without reference to the number of cells or rooms contained within the apartment;

Room — denotes a discrete space within a unit and which may be (a) coincident with a cell, or (b) consist of a space larger or smaller than a cell. A room may be defined (a) in part or in whole by partition walls not part of the walls formed by the basic T and modified T elements, or (b) solely by T's and/or modified T's, or (c) by combinations of T's, modified T's and/or partition walls;

Level — denotes generally the elevation of the various cells relative to one another. In the following description, level signifies the level of a floor of a specified cell relative to the floor level of a cell at a different elevation with adjacent levels being spaced a vertical distance equal to one-half the height of a T or a half-story; (See FIGS. 2a and 2b)

Story — denotes the vertical distance from one floor to the next vertically superposed floor and herein corresponds to the height of the T's and/or modified T's;

Row — denotes a plurality of T's or T's and modified T's disposed in side-by-side relation with their stems lying in different planes.

Column — denotes a vertical superposition of two or more T's or modified T's with their stems lying in a generally common plane;

File — denotes one or more columns viewed endwise along the long axes of the T's or modified T's and includes as a single file two columns of T's arranged in end-to-end relation with their stems

lying generally in a common plane. File also denotes the endwise related cells defined between two adjacent files of T's, two T's deep; (See FIG. 2a)

Rank — denotes two or more rows of superposed T's or T's and modified T's. Rank also denotes a single row of T's where that side of the building constitutes a single story; (See FIG. 2a)

Bath Module — denotes a preformed structural unit containing bathroom fixtures and defining walls forming a part of the bathroom;

Stairway Module — denotes a preformed structural unit containing one or more stairways for providing access between cells at different levels.

As noted above, the systemized industrialized building construction system of the present invention employs a basic element, the T, and a modified T, where applicable. In various arrangements and configurations as hereinafter amplified, the T's and modified T's are utilized in each of the building constructions according to this invention as the primary structural support. As noted hereinafter, one or more special purpose preformed modules, such as bathroom modules, in conjunction with certain wall partitions are utilized to complete the building. Several different building designs in accordance with the basic principles of the present invention are shown and described herein, these being illustrative of only a few variations of the many possible building designs utilizing essentially the T and modified T construction and arrangement disclosed herein.

These basic elements are illustrated in perspective in FIG. 1 and comprise an elongated T designated 2 having a vertical stem 3 and a pair of flanges 4 and 5 extending substantially normal to the stem 3 along opposite sides of the latter. The T may also optionally include a facade 7 normal to the planes containing the stem 3 and flanges 4 and 5. The modified T is designated 6 and comprises a half-T or inverted L having a stem 8 and a flange 10 to one side of the stem. The modified T may also include a facade 9 similarly as in the T. The modified T's are utilized to form the ends of the buildings, hallways and elevator towers where applicable in a particular building design. The basic and modified T's in their various assemblages provide structural support for the building as well as exterior facades and interior partition walls in accordance with a particular building design. Of special significance is the fact that the T's and modified T's constituting the building blocks of the present system are of such dimensions that these elements per se form full sized side and end walls, floors and ceilings of the cells. In other words, the T's and modified T's are of minimum height, width and length sufficient to comprise the structural walls dividing the building into separate units together with connecting hallways and the like as necessary whereby the T and modified T assemblage per se define walls, ceilings and floors forming cells suitable for human occupancy and/or movement. Particularly, the stems 3 and 8 of the T's and modified T's respectively extend substantially the entire distance between the floor and ceiling of the cells defined thereby sufficiently to at least accommodate a human being in an erect position standing on the floor, or at least a vertical distance of 7 feet.

Referring to FIGS. 2a, the opposed stems 3 of side-by-side juxtaposed T's and the stems 8 of the modified T's define the side walls of the cells while the flanges 2 and 4 of laterally adjacent superposed T's and the flanges 10 of the superposed modified T's form the common ceilings and floors form vertically superposed cells. The stems preferably extend vertically about 8 feet and the flanges may extend laterally selected distances from the stems to form cells of various widths, for example, to provide a room width of about 12 feet as desired. The T's and modified T's are formed of concrete.

To secure the stem of a superposed T to the stem of an underlying T, reference is made to FIG. 3a wherein a plurality of longitudinally spaced plates 20 are integrally cast in the top of the T medially between the opposite lateral edges thereof, and in vertical alignment with the stem 3. Preferably, plates 20 lie flush with the upper face of the T. As illustrated, a plurality of rods 22 having heads 24 may be welded or otherwise secured to plates 20 to anchor them to the T. Supports, generally indicated 26, are spaced along the lower edge of each T stem 3, each support comprising a plate 28 welded or otherwise secured to the upper end of a vertically extending cylindrical coupler 30. Coupler 30 is internally threaded to receive a bolt 32 about which is threaded a lock washer 34 and lock nut 36 whereby bolt 32 can be threaded into and locked in selected axial positions relative to coupler 30. Each bolt 32 extends from coupler 30 within a recess 38 formed through the lower edge of the T stem 3 whereby access to bolt 32, lock nut 36 and the bolt head 40 is obtained from either side of stem 3 during construction of the building. When the T's are superposed, the bolts 32 are threaded to extend from the lower edge of stem 3 and are tack welded to plate 20 on the underlying T. Grouting indicated at 42 is applied between the stem edge and the upper face of the underlying T and the bolt is then relieved such that the weight of the superposed T is distributed along the grout to the underlying T.

To join the flanges of the laterally adjacent T's one to the other, a plurality of connectors may be integrally cast with the T's. For example, a plurality of angle brackets illustrated in FIG. 3b at 46 are disposed intermediate the vertical extent or thickness of flanges 4, 5 and 10. Preferably, brackets 46 are disposed intermediate the vertical extent or thickness of the T or modified T flanges with the flange 48 of each bracket 46 lying flush along the lateral edges of the T flanges. Reinforcing rods 50 in the flanges of the T are joined with the brackets as by welding to maintain the brackets in proper position. When the T's are aligned in side-by-side relation, a plate 52 is welded to the laterally aligned brackets and the recessed area is filled with grout indicated at 54. Similar connections may be provided between the butting stems of T's in a common file as are provided between the flanges of the T's in a row. Other and different connections between the stems of the T's and the flanges of the T's may be provided, the foregoing being descriptive of but one of a plurality of different types of connections which may be utilized.

Referring now to FIGS. 4-8, there is disclosed a split-level building construction formed principally of T's, modified T's and certain other building modules to be

described. This particular building design comprises a six unit apartment structure including two efficiency units, two three bedroom units and two four bedroom units. These units are designated by the dashed lines and identified as units U1-U8. In accordance with the foregoing definitions, this building can be described in shorthand as a two rank, five level, structure having both vertical and horizontally interleaved units with nine files and eight cells per row of T and modified T elements. As illustrated in FIGS. 4, 6 and 7, columns of three superposed T's each are disposed in side-by-side relation one to the other to form three superposed rows of T's which, in turn, define a longitudinally extending rank of T's, R1. As will be appreciated, the T's at each elevation define cells with the stems of the adjacent T's, the butting flanges of the adjacent T's forming common ceilings and floors for the superposed cells. Each end of rank R1 is closed in by a column of modified T's. The superposed and laterally adjacent T's are connected one to the other in the manner previously described.

Turning now to FIGS. 3, 5, 6 and 7, T's are superposed one over the other and arranged in side-by-side relation to form two superposed rows of T's which, in turn, define a rank of T's. The ends of the rank R2 are closed by columns of modified T's. The T's forming rank R2 are disposed in endwise alignment with corresponding T's forming the rank R1 whereby nine files of T's and modified T's and eight files of cells as illustrated in FIGS. 4 and 5 are formed. To provide a split-level construction, the T's forming rank R2 are elevated with respect to the T's forming rank R1 such that the distance between the flanges of the T's in rank R2 and the next adjacent flanges of the T's in rank R1 is one full level, i.e., one-half story or half the height of a T. Rank R2 is arranged to lie intermediate the full height of rank R1. The cells of rank R1 selectively communicate with the endwise aligned cells of rank R2 at the next adjacent level as will become apparent and in accordance with the particular building design.

In the design illustrated, five cells C1-C5 are defined between each of the adjacent files of T's and modified T's. Each unit is comprised of two or more cells. In FIG. 4, the cell files are labelled F1-F8 from right to left. The cells in each file are in numerical order from the bottom level L1 to the top level L5 with the cells bearing odd numbered level designations lying in the first rank R1 while even numbered level designations lie in the second rank R2. Thus any cell can be identified and located in the building by a combination of level, file and unit designations. For example, the cell at the rear of the building in cell file 1 and level 1 and which cell forms a part of unit U1 as identified as L1F1U1. The following table thus identifies the cells of each unit with the number following the letter L indicating both the rank and level of the cell and the file number indicating its position from an end of the building.

U1	U2	U3
Efficiency Apt.	4-Bedroom	3-bedroom W/Study
L1F1	L2F2	L2F3
L2F1	L3F1	L3F3
	L3F2	L3F4
	L4F1	L4F3
	L4F2	L4F4
	L5F2	L5F4
	L5F1	L5F3
		L5F5
U4	U5	U6
3-Bedroom W/Terrace	4-Bedroom	Efficiency Apt.

L2F6	L2F7	L1F8
L3F5	L3F7	L2F8
L3F6	L3F8	
L4F5	L4F7	
L4F6	L4F8	
L5F5	L5F7	
L5F6	L5F8	

The cell designation having a suffix consisting of the letter P & G indicates that the cell at that level and file is used for parking and a garden area respectively.

It will be appreciated from a review of FIGS. 4 and 5 that units U1 and U2 are vertically interleaved one with the other. Unit U6 and unit U5 are also vertically interleaved one with the other. Units U1 and U2 are horizontally interleaved and units U5 and U6 are also horizontally interleaved. Note that units U1 and U6 lie on levels L1 and L2 whereas units U2-U5 lie on levels L2-L5. Thus, units U1 and U6 may be termed duplex apartments while units U2-U5 may be termed multi-level apartments.

To provide communication between the cells at the various levels in each unit, the cells in adjacent levels in each file where such adjacent cells form a part of a single unit communicate one with the other by stairways. For example, the cells L1F1 and L2F1 forming unit U1 communicate one with the other via a stairway designated 60 in FIG. 8. The cell L2F2 communicates with cell L3F2. (FIGS. 8 and 9) of unit U2 by a stairway designated 62. Cells L3F1 and L4F1 of unit U2 communicate one with the other by a stairway 64 while cells L4F2 and L5F2 communicate one with the other via a stairway 66 (FIGS. 9 and 10). Laterally adjacent cells of a particular unit, for example, cells L3F1 and L3F2 of unit U2 in FIG. 9 lie in communication through one or more doorways designated 68. The stairways 62, 64, 66 and 68 may be provided in performed modules.

Precast bathroom and kitchen modules are also provided. For example, in FIG. 8, there is disclosed a bathroom module, generally designated 70, comprised of a back wall 72, side walls 74 and 76, and a ceiling 78. The side walls 74 and 76 extend beyond back wall 72 to provide a readily accessible plumbing chase 80. Likewise, kitchen modules may be provided. For example, and referring to FIG. 9, there is disclosed a kitchen module, generally designated 82, which in this form comprises a kitchen doublet or a pair of kitchens arranged in side-by-side relation. The kitchens have a common back wall 84, side walls 86 and 88 at opposite ends, an intermediate wall portion 90 segregating the module into two separate kitchens, and a ceiling. The side walls 86 and 88 and intermediate wall 90 extend beyond back wall 84 to provide a readily accessible plumbing chase 92. It will be appreciated from a review of FIG. 9 that the illustrated kitchen module 82 serves both units U2 and U3 and may be backed against a similarly formed bathroom module forming a part of units U2 and U3. Particularly, the bathroom module in FIG. 9 may also be a doublet comprised of a back wall 94, side walls 96 and 98, an intermediate wall 100 segregating the module into two discrete bathrooms and a ceiling. Again, the side and end walls project beyond the back wall to define with the kitchen modules a plumbing chase 92. Thus, it will be appreciated that either bathroom or kitchen modules can be provided in singles or doublets as the building design requires. Note that the bathroom, kitchen and stairway

modules comprise substantially the central portion of the building.

It will be appreciated that the building is formed of T's and modified T's. For example, and referring to FIG. 8, the end walls of the building are provided by columns of modified T's with the end wall 74 of the bathroom module being disposed between the ends of the T's. The module lies at a like level as the cell it serves. The dividing wall between cells L1F1 and L1F2P is provided by the stem of a T in rank R1. The dividing wall between cells L2F1 and L2F2 is also provided by the stem of a T in rank R2, the stems of the T's in ranks R1 and R2 being in end-to-end alignment though vertically displaced a half-story or full level one from the other.

It will be appreciated that the T's and modified T's are themselves modified. For example, the T's and modified T's can be readily provided in shorter or longer lengths as desired, with or without facades, with cantilevered projections extending beyond the end of the stem, with one flange inset from the end of the other, and in various other modifications in accordance with a particular building design. For example, referring to FIG. 9, cells L4F2 and L4F3 extend horizontally outwardly beyond the adjacent cells L4F1 and L4F4. It will be appreciated that these cell extensions are provided by making the stems and flanges of the T's defining those cells (also including the flanges of the underlying T's) longer than the standard T's. For example, in FIG. 8, a T stem is indicated at 110, the T having flanges 112 and 114 illustrated in FIG. 9. The T whose stem is designated 116 in FIG. 8 has flanges 118 and 120 in FIG. 9. It will be appreciated from a review of these figures that the stem 110 has been inset from the end of the flanges 112 and 114 to provide an overhang. Also, the flange 129 of the T between cells L2F3 and the garden area designated G has been inset from the end of the flange 118, the stem 116 lying coterminously with the end of flange 118. Thus, various overhangs and cantilevered flanges can be provided in accordance with the particular building design merely by inseting the stems and/or inseting one or more of the ends of the flanges of a particular T. The foregoing represents only a few of the various T configurations which can be utilized to form a splitlevel construction in accordance with the present invention.

Referring specifically to FIGS. 11-13, there is shown a splitlevel building construction comprised of a plurality of endwise and laterally juxtaposed T's and modified T's to form ranks of T's and modified T's R1 and R2. The building illustrated may be described as a two-rank, 10-level structure having 13 files of T's and modified T's with 12 cells defined thereby in each level in each rank. The T's and modified T's forming this building are superposed, and laterally and endwise juxtaposed similarly as in the previous described embodiment with the T's and modified T's suitably modified to form a plurality of apartment units, 24 units being illustrated.

Referring to the chart comprising FIG. 13, it will be noted that the apartment units may comprise one, two, three and four bedroom units or efficiency units with one or more of the units having certain features such as room and balcony projections. The T's and modified T's are thus assembled and modified in order to form

the various cells comprising the individual apartment units and the various features thereof. The apartment units of building 100 are numerically designated in the first column of the chart illustrated as FIG. 13 and are keyed to the cells illustrated in FIGS. 11a and 11b with like numeral designations preceded by the prefix U whereby the cells comprising the various apartment units are identified. It will be appreciated from a review of FIGS. 11a, 11b and 12, that an individual unit is defined by cells on opposite sides of the building, that is, one or more cells in each of ranks R1 and R2. For example, it will be noted in FIGS. 11b that apartment unit U9 is defined in part by cells L3F6, L5F6 and L5F5. Apartment unit U9 is also defined in FIG. 11a on the opposite side of the building by cells L4F5, L4F6, L6F5 and L6F6. Thus, it will be appreciated that apartment unit U9 comprises four levels L3-L6 of the building structure 100 and spans the entire width of the building. The floor plan for apartment unit U9 is illustrated in FIG. 18.

Referring to FIGS. 15 and 18, cell L3F6 of apartment unit U9 level 3, its lowest level cell, includes an entryway 102 and a laundry room 104. The floor plan for level 3 also includes a bathroom 106. Stairway 107 communicates between cell L3F6 with the cells L4F6 and L4F5 on the next level. These latter cells define a kitchen and dining area and a living room respectively. The cells on level L4 communicate with the cells L5F6 and L5F5 on the next level via a stairway 112. These latter cells define respective bedrooms 114 and 116. The cells L5F6 and L5F5 communicate with the cells L6F6 and L6F5 on the next and final level via a stairway 118, these cells define a second set of bedrooms 119 and 121 respectively. Note that the bedroom 114 projects outwardly beyond bedroom 116 and that bedroom 121 is provided with a balcony 122.

It will be appreciated that the previously describe four bedroom unit U9 is formed primarily utilizing T's and modified T's and that each of the other apartment units in building 100 is similarly formed but with T's and modified T's suitably altered for adaptation to the particular design of that apartment unit. The ensuing description will indicate the manner in which the T's are formed with respect to the particular apartment unit U9.

Referring to FIG. 12, it will be noted that outside corridors are provided at 120 and 130 for access to the apartment units. Corridor 120 lies in rank R1 at level 3 and corridor 130 lies in rank R2 at level 8, each corridor extending the full length of the building along a side thereof. It is a feature of the present splitlevel construction hereof that the corridors need not lie at every level along either or both sides of the building. In accord with a particular building design, the corridors may be vertically spaced multiple stories one from the other with a single corridor serving units at two or more levels. It will be appreciated that stair towers or elevator towers or both can be provided at one or both ends of the building to serve as a means of communicating between level L1 and the various corridors. Also, the building structure illustrated in FIG. 12 may comprise additional levels, depending upon the particular design and is not limited to the ten levels herein illustrated.

The cells overlying and underlying apartment unit U9 form cells of various other apartment units, or ex-

ample, the cells L2F5 and L2F6, which form part of an apartment unit U3, underlie respective cells L4F5 and L4F6 of unit U9. Overlying cells L8F5 and L8F6 are cells comprising portions of apartment units U21 and U16 respectively. Also, in FIG. 11b, cell L3F5, a portion of unit U3, underlies cell L5F5 and also lies laterally juxtaposed to cell L3F6, both cells L5F5 and L3F6 forming a part of apartment unit U9. Thus, apartment unit U9 is vertically and horizontally interleaved with apartment unit U3 and vertically interleaved with apartment units U21 and U16.

Referring now to FIGS. 14a-14l, there are disclosed the various T's forming apartment unit U9 of building 100. It will be appreciated that only the T's which form the side walls and ceilings for the unit U9 are illustrated, the floor therefor being provided by the flanges of underlying T's similarly as the flanges of the T's illustrated in FIGS. 14a-14l provide the floor for the superposed cells. Referring particularly to FIG. 14a, there is disclosed at T1 a T having a stem 131, a facade 132 and flanges 134 and 136. The stem 131 is provided with an opening 138 which forms a part of corridor 120. The flange 134 and a portion of the stem are extended at 135 to provide a portion of the floor for room 114 on the next level L5. In FIG. 14b, a T indicated T2 has a stem 142 and a facade 144 having lateral edges inset from the side edges of the flanges to form doorways 143 and 145. T2 also has flanges 146 and 148, flange 146 being extended outwardly to form a portion of the floor of room 114. In FIG. 14c, a T indicated T3 has a stem 150 and flanges 152 and 154. T3 forms a part of cell L4F6 and has flange 152 with edges inset both laterally and endwise from one end of the T as indicated at 153. In FIGS. 14d, a T indicated T4 has a stem 156, flanges 158 and 160, and a facade 162. Flange 158 projects outwardly beyond T4 at 164 to form a part of a balcony 165 for the superposed cell. Stem 156 is provided with an opening 167 which provides communication between adjacent cells L4F6 and L4F5 in the building structure. Facade 162 includes a pair of door openings 166 and 168 on either side of stem 156. FIGS. 14f discloses a T indicated T5 having a stem 170, flanges 172 and 174, and a facade 176. Flange 172 is extended at 178 to form a part of the balcony 165 for the superposed cell. Flange 172 is also inset laterally and endwise for the majority of its length as indicated at 179. FIG. 14g illustrates at T6 a T having a stem 180, a facade 182 and flanges 184 and 186. Referring to FIG. 14h, there is illustrated at T7 a T having a stem 188, flanges 190 and 192, and a facade 194. The end of flange 190 remote from the facade is inset. Also, facade 194 has a pair of door openings 196 and 198 on opposite sides of stem 188. In FIG. 14i, there is designated at T8 a T having a stem 200, flanges 202 and 204, and a facade 206. In FIG. 14j, there is illustrated at T9 a T having a stem 210, flanges 212 and 214, and a facade 216 having a pair of door openings 218 and 220 on opposite sides of stem 210. The stem 210 is elongated as at 222 and has a downwardly sloping upper edge 224. In FIG. 14k, there is illustrated at T10 a T having a stem 226, flanges 228 and 230, and a facade 232. The stem 226 projects beyond the end of the flanges at 234 and has a sloping edge 236 similarly as the stem 210 in FIG. 14j.

Referring to FIG. 143, there is shown a bathroom module B1 comprising a rear wall 238, side walls 240 and 242, a horizontal wall 244 defining a ceiling and projections 246 and 248 forming respective continuations of side walls 240 and 242 on the back side of wall 238. The projections engage in end-to-end relation with the various stems of the T's forming the building and also define a plumbing chase behind wall 238. Side wall 242 is provided with a door opening 250. Referring to FIG. 141, there is provided a doublet bathroom module B1 having a back wall 252, side walls 254 and 256, an intermediate wall 258 and a horizontal wall 260 defining a ceiling therefor. Side walls 254 and 256 are cut back to provide door openings. Projections 262, 264 and 266 extend from the back wall 252 in line with the side and intermediate walls 256, 258 and 254 respectively and define a pair of side-by-side plumbing chases.

Referring now to FIGS. 16 and 19, the formation of apartment unit U9 is provided by the lateral and endwise juxtaposition and superposition of the T's T1-T10 and the placement of the modules B1 and K1. Particularly, the cell L3F6 is formed by the lateral juxtaposition of T's T1 and T2 with the stems 130 and 142 thereof defining the cell L3F6 therebetween. The door opening 143 opens into the stairway area. Bathroom module B1 is disposed behind T1 at the same level thereof with the facade 132 forming the wall of the bathroom opposite wall 238. Thus, doorway 250 of module B1 also opens into the stairway area. At the next level L2, T's T3 and T4 are laterally juxtaposed with the flange 160 of T4 fitting within the inset portion 153 of flange 152 of T3. The stems 156 and 150 thus form the oppositely disposed side walls of cell L4F6 with the door openings 166 and 168 opening into the stairway area and opening 167 providing intercommunication between cells L4F6 and L4F5. T5 is then disposed in side-by-side relation with T4 with the flange 158 received in the inset portion 180 of T5. Thus, stems 156 and 170 of T's T4 and T5 respectively form the oppositely disposed side walls of cell L4F5, the projecting flange portions 164 and 178 of T's T4 and T5 respectively forming floor projections for the balcony 165 off of cell L6F5.

At the next level L3, T's T6 and T7 are disposed in side-by-side relation whereby the stems 180 and 188 form the oppositely disposed side walls of a cell L5F6. Doorway 196 provides access to cell L5F6 while doorway 198 provides access to the cell L5F5 formed by side-by-side disposition of T8 and T7. The stems 200 and 188 thereof form the opposite side walls of cell L5F5. At level L4, a T indicated T3', similar to T3, is disposed in side-by-side relation with respect to T9 with the flange 214 of T9 lying in an inset portion of the flange of T3'. The doorway 220 provides access to cell L6F6 formed by T3' and T9. T10 is disposed in side-by-side relation with T9 with the flange 212 received within the inset portion of flange 228 of T10. The cell L6F5 is thus defined between stems 210 and 226 with doorway 218 providing access thereto. The stem projections 222 and 234 cooperate with the underlying projections 164 and 178 of T's T4 and T5 respectively to form a balcony off of cell L6F5. A preformed balcony wall 235 may then be secured to edges of projections 164 and 178. Thus, it will be appreciated that the

entire apartment unit U9 is formed primarily of T's with the only additional structural support being provided by the bathroom and kitchen modules. Also, the stairways are preferably preformed modules and are disposed in columnar fashion within the building.

Referring now to FIGS. 20-26, there are disclosed various circulation patterns and floor plans for various types of units which may be utilized in a building construction similarly as illustrated in FIG. 12. For example, in FIG. 20 there is disclosed a two-rank, three-level, four-cell unit having an outside lower entry corridor 300. The unit schematically illustrated in FIG. 20 may comprise the one bedroom apartment unit U22 of the building 100 in FIG. 12.

In FIG. 21, there is disclosed a two-rank, three-level, four-cell unit having an outside upper entry corridor 302. In this form, corridor 302 provides access to a cell of the unit at level L3 with stairways providing communication to the cells at levels L2 and L1. An apartment unit of this configuration may comprise the one bedroom apartment unit U17 in the building 100 illustrated in FIG. 12.

FIG. 22 illustrates a two-rank, three-level, five-cell unit having an upper entry corridor 304. In this unit, entry is effected from corridor 304 into a cell at the L3 level and stairways communicate between the L3 level cell and a pair of cells on the L2 level and a pair of cells on the L1 level. The unit illustrated in FIG. 22 may comprise a two bedroom apartment.

FIG. 23 illustrates the circulation and floor plan for a two-rank, three-level, three-cell unit having a lower outside entry corridor 308. In this unit, corridor 308 provides access to a cell at the L1 level with stairways providing communication between the L1 level cell and the two cells at the L2 level and between the L2 and L3 level cells. The unit may comprise a two bedroom plus study apartment unit in the building illustrated in FIG. 12, for example, unit U23.

FIG. 24 discloses a two-rank, two-level, four-cell unit having a central upper corridor 310. As illustrated in FIG. 24a, the central corridor 310 is superposed over the cells on the L1 level, i.e., the corridor lies at the L3 level. Entry from the corridor 310 into the cells on the L2 level is provided by a stairway 312 in FIG. 24c with stairway 314 providing communication between the L2 and L1 level cells. The central corridors may be formed by inseting the stems of the T's from the ends of the stems whereby the flanges project beyond the stem ends to provide common floor and ceilings for hallways. Alternatively, a series of modified T's disposed end-to-end and extending from one end of the building to the other may comprise the side wall and ceiling of a hallway while the end facades of the T in one rank may comprise the opposite walls of the hallways.

FIG. 25 illustrates a two-rank, three-level, four-cell unit having a central lower access corridor 316 at an L1 level. The central corridor 316 communicates with the cells at the L2 level via a stairway 318 with stairway 320 provided communication between the L2 and L3 level cells. In this form, the cells at the L3 level are provided with an overhang 322 which forms a balcony for the cells thereof. The overhang 322 is formed by the flanges of the underlying T, the T stem being inset from the ends of the flanges. FIG. 26 illustrates a two-rank, four-level, five-cell unit having a central upper access

corridor 326 at the L4 level and opening into the cells at the L3 level. It will be readily apparent that various other unit configurations may be provided utilizing the T and modified T splitlevel construction hereof.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by United States Letters Patent is:

1. A building construction for human occupancy having a plurality of functional units comprised of internal cells with each cell including at least a floor, a ceiling, and a pair of oppositely disposed side walls comprising, first, second, third and fourth elements forming portions of said cells, each of said first and third elements comprising an elongated generally T-shaped member having a stem and a pair of flanges extending substantially normal to said stem along opposite sides thereof, each of said second and fourth elements comprising an elongated member having a stem and at least one flange extending substantially normal to said stem along one side thereof, said first and second elements being arranged in substantially side-by-side relation with a flange on each element in opposing relationship and with the stems thereof forming the generally oppositely disposed side walls of a first cell defined therebetween, said third and fourth elements being arranged in substantially side-by-side relation with a flange on each element in opposing relationship and with the stems thereof forming the generally oppositely disposed side walls of a second cell defined therebetween, said first and second elements and said third and fourth elements being relatively arranged such that the stems of said first and third elements lie in a common plane and the stems of said second and fourth elements lie in a common plane, the stem of each said element extending substantially the entire distance between the floor and ceiling of the associated cell at least for a distance of 7 feet, means connecting the opposing flanges of said first and third elements and the opposing flanges of said second and fourth elements whereby said flanges form respective ceilings for said first and second cells, said third and fourth elements being elevated with respect to said first and second elements a distance less than the height of said stems to elevate said second cell relative to said first cell, and means providing for communication between said first and second cells.

2. A building construction according to claim 1 including fifth and sixth elements forming portions of said cells, said fifth element comprising an elongated generally T-shaped member having a stem and a pair of flanges extending substantially normal to said stem along the opposite sides thereof, said sixth element comprising an elongated member having a stem and at least one flange extending substantially normal to said stem along one side thereof, said fifth and sixth elements being arranged in substantially side-by-side relation with a flange on each element in opposing relation-

ship and with the stems thereof forming the generally oppositely disposed side walls of a third cell defined therebetween, the stem of each said fifth and sixth element extending substantially the entire distance between the floor and ceiling of said third cell at least for a distance of 7 feet, said fifth and sixth elements being respectively superposed over said first and second elements with the stems thereof lying in the planes common to said first and third elements and said second and fourth elements respectively, means connecting the opposing flanges of said fifth and sixth elements whereby said flanges form a ceiling for said third cell, the opposing flanges of said first and second elements forming the floor for said third cell, means respectively connecting said fifth and sixth elements to said first and second elements, said fifth and sixth elements being elevated with respect to said third and fourth elements a distance less than the height of said stems to elevate said third cell relative to said second cell, and means providing for communication between said second and third cells.

3. The building construction as defined in claim 1 including fifth and sixth elements forming portions of said cells, each of said fifth and sixth elements comprising an elongated generally T-shaped member having a stem and a pair of flanges extending substantially normal to said stem along opposite sides thereof, said first and fifth elements being arranged in substantially side-by-side relation with a flange on each element in opposing relationship and with the stems thereof forming the generally oppositely disposed side walls of a third cell defined therebetween, said sixth and third elements being arranged in substantially side-by-side relation with a flange on each element in opposing relationship and with the stems thereof forming the generally oppositely disposed side walls of a fourth cell defined therebetween, said fifth and sixth elements being relatively arranged such that the stems thereof lie in a common plane, the stems of said fifth and sixth elements extending substantially the entire distance between the floor and ceiling of the third and fourth cells respectively and at least for a distance of 7 feet, means connecting the opposing flanges of said fifth and first elements and the opposing flanges of said sixth and third elements whereby the respective opposing flanges form ceilings for said third and fourth cells, said sixth element being elevated with respect to said fifth element a distance less than the height of said stems to elevate said fourth cell relative to said third cell, and means providing for communication between said third and fourth cells.

4. The building construction as defined in claim 1 wherein each of said first and third elements include a facade carrier adjacent one end thereof, said facade extending substantially normal to said stem and forming a wall portion of the building construction.

5. The building construction according to claim 1 wherein said first and third elements are spaced endwise one from the other, said second and fourth elements being spaced endwise one from the other, a building module defining a discrete functional area within a unit and having at least a pair of walls substantially coextensive in height with the height of the stems, said module being disposed in the space defined between at least one of said first and third elements and

said second and fourth elements and at an elevation corresponding to the elevation of one of said cells.

6. The building construction according to claim 5 wherein said module comprises preformed stairs providing communication between said first and second cells.

7. The building construction according to claim 5 wherein said module comprises a plumbing module.

8. The building construction according to claim 3 wherein said first, second and one of said third and fourth cells form a discrete functional unit within said building construction, the other of said third and fourth cells forming a portion of another discrete functional unit in said building construction, and means providing for communication between said one cell and the first or second cell at a like elevation therewith.

9. A building construction for human occupancy having a plurality of functional units comprised of internal cells with each cell including a floor, a ceiling, and a pair of oppositely disposed side walls comprising, a plurality of elements forming portions of said cells, each of said elements comprising an elongated generally T-shaped member having a stem and a pair of flanges extending substantially normal to said stem along opposite sides thereof, a portion of said elements being superposed one over the other with their stems in substantial vertical alignment one with the other to form first and second columns of elements, said first and second columns of elements lying in substantial side-by-side relation one with the other with a flange of each element in each column in opposing relationship with a flange of an element of the other column at a like elevation, the stems of the laterally adjacent elements forming the generally oppositely disposed side walls of a cell defined therebetween at each elevation with the superposed cells defining a first rank thereof, said stems extending substantially between the floor and ceiling of each cell with the opposed flanges of said elements forming a common floor and ceiling between superposed cells, a portion of said elements being superposed one over the other with their stems in substantial vertical alignment one with the other to form third and fourth columns of elements, said third and fourth columns of elements lying in substantial side-by-side relation one with the other with a flange of each element in each column in opposing relationship with a flange of an element of the other column at a like elevation, the stems of the laterally adjacent elements of said third and fourth columns forming the generally oppositely disposed side walls of cells defined therebetween with the superposed cells defining a second rank thereof, said stems of said third and fourth columns of elements extending substantially between the floor and ceiling of each cell of said second rank with the opposed flanges of said elements forming a common floor and ceiling between superposed cells of said second rank, the elements comprising said first and third columns being relatively arranged such that the stems thereof lie in a common plane whereby said first and third columns form a first file of elements, the elements comprising the second and fourth columns being relatively arranged such that the stems thereof lie in a common plane spaced from said first mentioned plane whereby said second and fourth columns form a second file of elements, the elements of said first rank being

elevated with respect to the elements of said second rank a distance less than the height of said stems to elevate the cells of said first rank relative to the cells of said second rank, and means providing for communication between predetermined cells of said first and second ranks.

10. A building construction according to claim 9 wherein one of the units forming a portion of the building construction comprises cells of said first and second ranks.

11. A building construction according to claim 9 wherein portions of said elements are superposed one over the other with their stems in vertical alignment one with the other to form fifth and sixth columns of elements, said fifth column of elements being disposed in substantial side-by-side relation with said second column of elements, a flange of each element in each of said fifth and second columns lying in opposing relationship with a flange of an element of the other of said fifth and second columns at a like elevation, the stems of the laterally adjacent elements of said fifth and second columns forming the generally oppositely disposed side walls of a cell defined therebetween and at each elevation with the superposed cells lying in said first rank thereof, the stems of the elements comprising said fifth and second columns extending substantially between the floor and ceiling of each cell defined thereby with the opposed flanges of said elements forming a common floor and ceiling between superposed cells, said sixth column of elements being disposed in substantial side-by-side relation with said fourth column of elements, a flange of each element in each of said sixth and fourth columns lying in opposing relationship with a flange of an element of the other of said sixth and fourth columns at a like elevation, the stems of the laterally adjacent elements of said sixth and fourth columns forming the generally oppositely disposed side walls of a cell defined therebetween and at each elevation with the superposed cells lying in said second rank thereof, said stems of the elements com-

prising said sixth and fourth columns extending substantially between the floor and ceiling of each cell defined thereby with the opposed flanges of said elements forming a common floor and ceiling between superposed cells, the elements comprising said fifth and sixth columns being relatively arranged such that the stems thereof lie in a common plane whereby said fifth and sixth columns form a third file of elements.

12. A building construction according to claim 11 wherein one of the units forming a portion of the building construction comprises cells of said first and second ranks formed by said first and second files of elements and an additional cell in one of said first and second ranks at a like elevation as one of said cells of said first and second ranks.

13. A building construction according to claim 11 including a pair of corridors disposed along the outside of one of said ranks of elements for access to the cells thereof, said pair of access corridors being spaced one from the other a distance greater than the height of the stems of the T's.

14. The building construction according to claim 13 including a corridor along the outside of the other of the ranks, said latter corridor lying at an elevation intermediate the elevation of said first pair of corridors.

15. A building construction according to claim 10 including a corridor for access to the cells, said corridor being located at an elevation for entry into one of the cells of said first and second ranks.

16. A building construction according to claim 15 wherein said corridor is located at an elevation providing access into one of the cells forming said one unit with the remaining cells thereof being at a like or a higher elevation.

17. A building construction according to claim 15 wherein said corridor is located at an elevation providing access into one of the cells forming said one unit with the remaining cells thereof being at a like or lower elevation.

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