United States Patent [19]

Short

[11] **3,803,778**

[45] **Apr. 16, 1974**

[54] **MEZZANINE-STORAGE WAREHOUSE WITH INTEGRAL RETAIL SHOWROOM FACILITIES**

[75] Inventor: **Thomas W. Short,** Phoenix, Ariz.

[73] Assignee: **Levitz Furniture Corporation,** Pottstown, Pa.

[22] Filed: **Aug. 14, 1972**

[21] Appl. No.: **280,491**

[52] **U.S. Cl.** ..... **52/33,** 52/174, 214/16.4 A

[51] **Int. Cl.** **E04h 14/00**

[58] **Field of Search** ..... 214/16.1 EB, 16.4 A, 16.42, 214/16.16 B; 52/27, 33, 174

[56] **References Cited**

UNITED STATES PATENTS

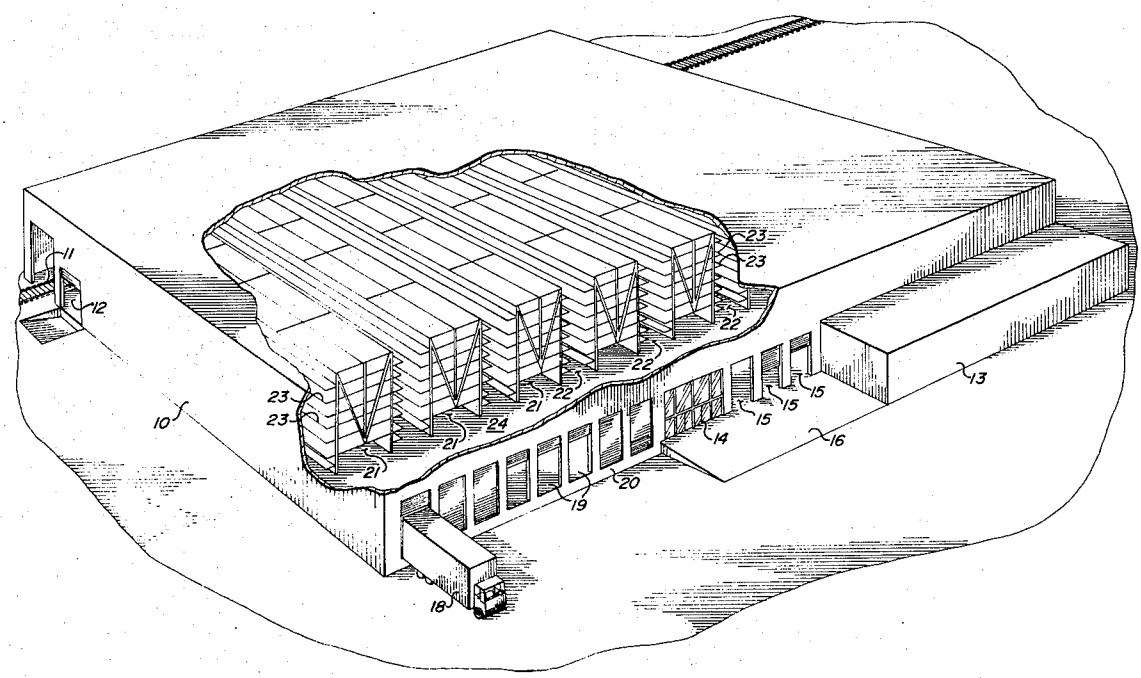
3,075,655	1/1963	Bryant	214/16.1 EB
1,288,567	12/1918	Hall	214/16.1 EB
2,714,456	8/1955	Manaugh	214/16.1 EB
1,554,584	9/1925	Lake	214/16.1 EB
2,276,294	3/1942	Farmer	186/1 B

Primary Examiner—Gerald M. Forlenza
Assistant Examiner—Kenneth Noland
Attorney, Agent, or Firm—William H. Drummond

[57] **ABSTRACT**

A combination showroom-warehouse retail sales facility includes a plurality of parallel elongate enclosures which define retail showroom areas inside the enclosures and warehouse access aisles between them. A plurality of vertically spaced warehouse storage floors are located above the showroom enclosures. The warehouse storage spaces between the floors open onto and are accessible from the warehouse aisles between the retail showrooms. A building encloses the retail showroom areas, associated warehouse access aisles, and warehouse storage spaces.

1 Claim, 9 Drawing Figures



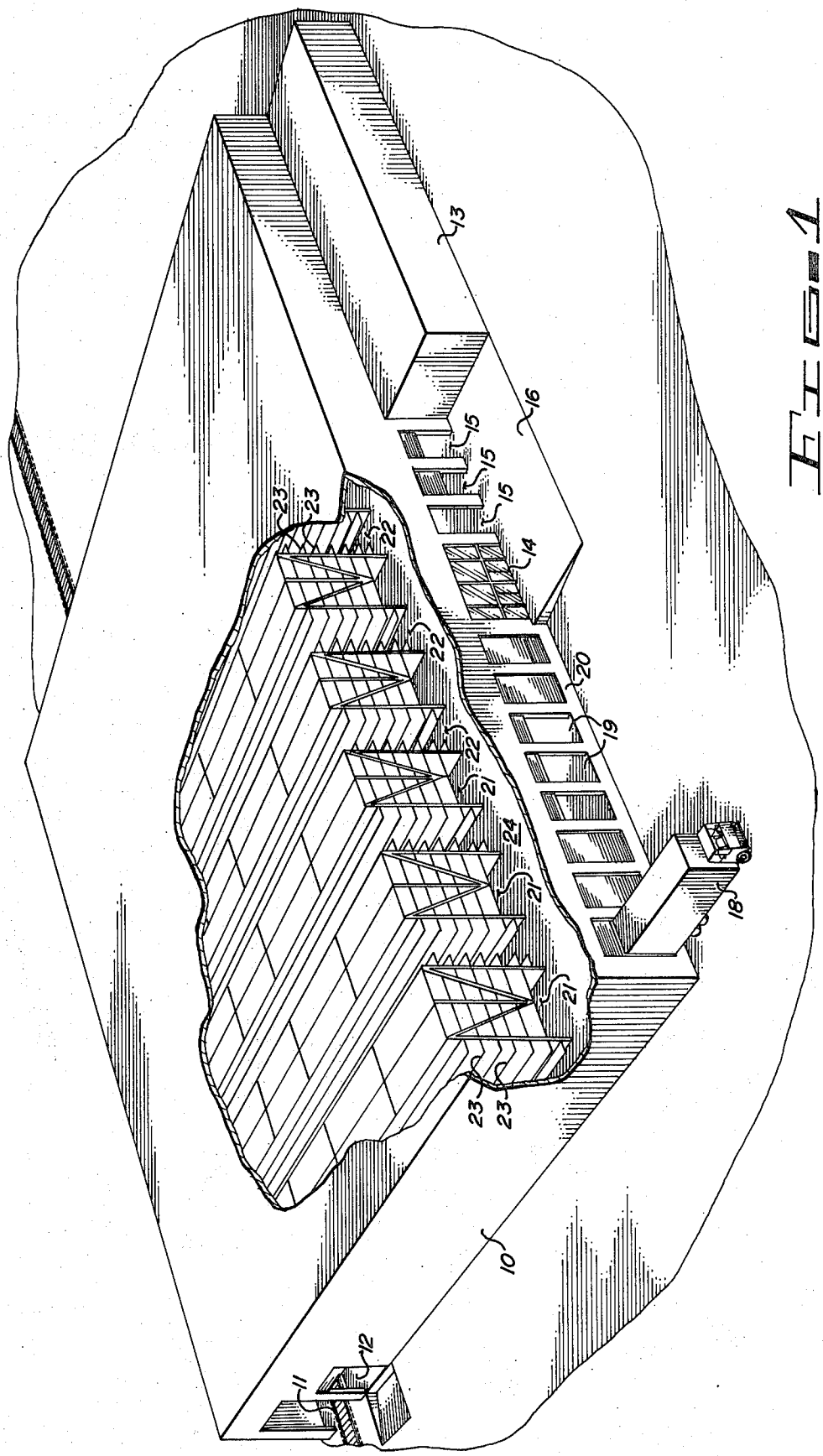


FIG. 1

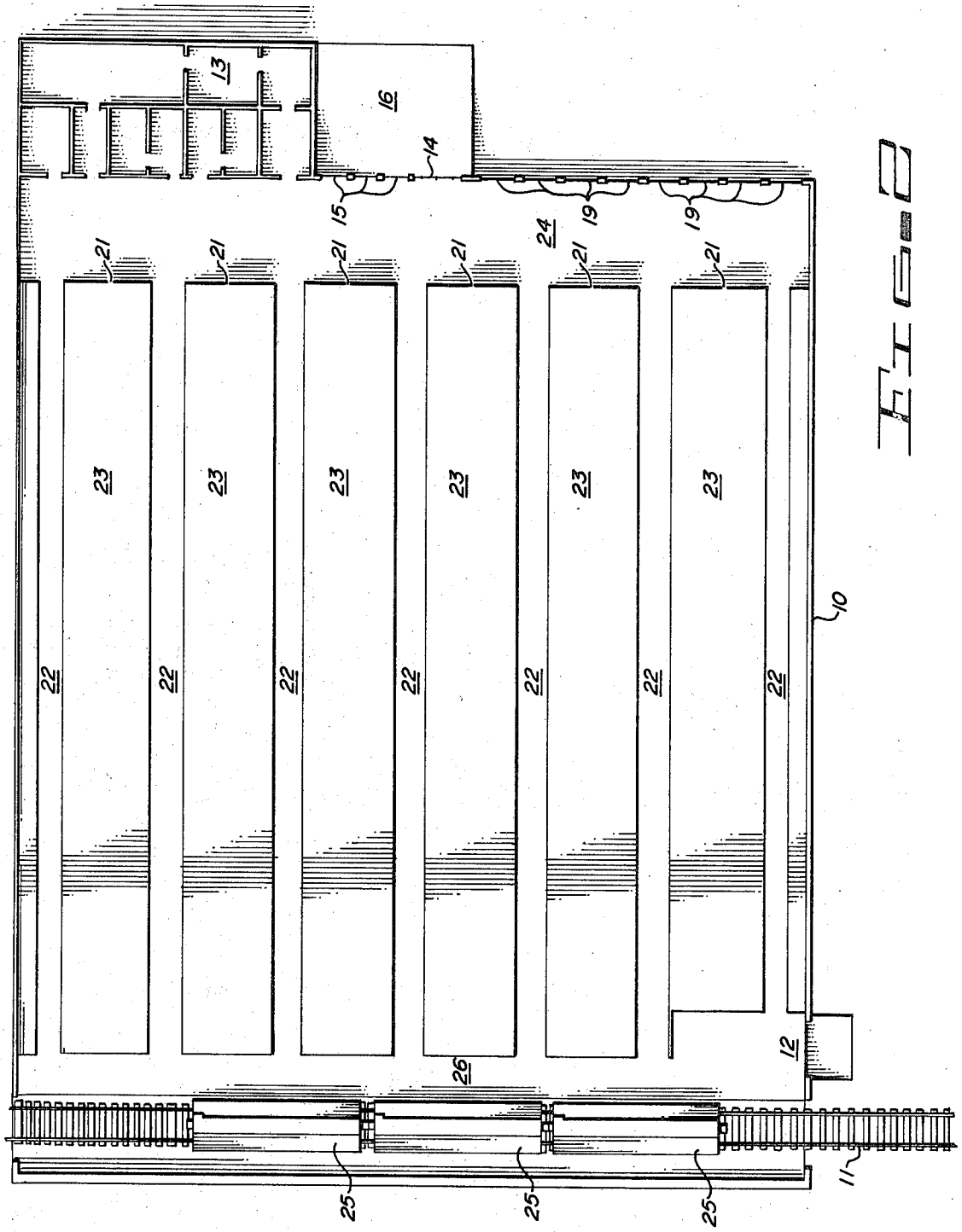

13
16
14
15
19
19
24
21
21
21
21
21
21
23
23
23
23
23
23
22
22
22
22
22
22
10
12
26
25
25
25
11

FIG. 2

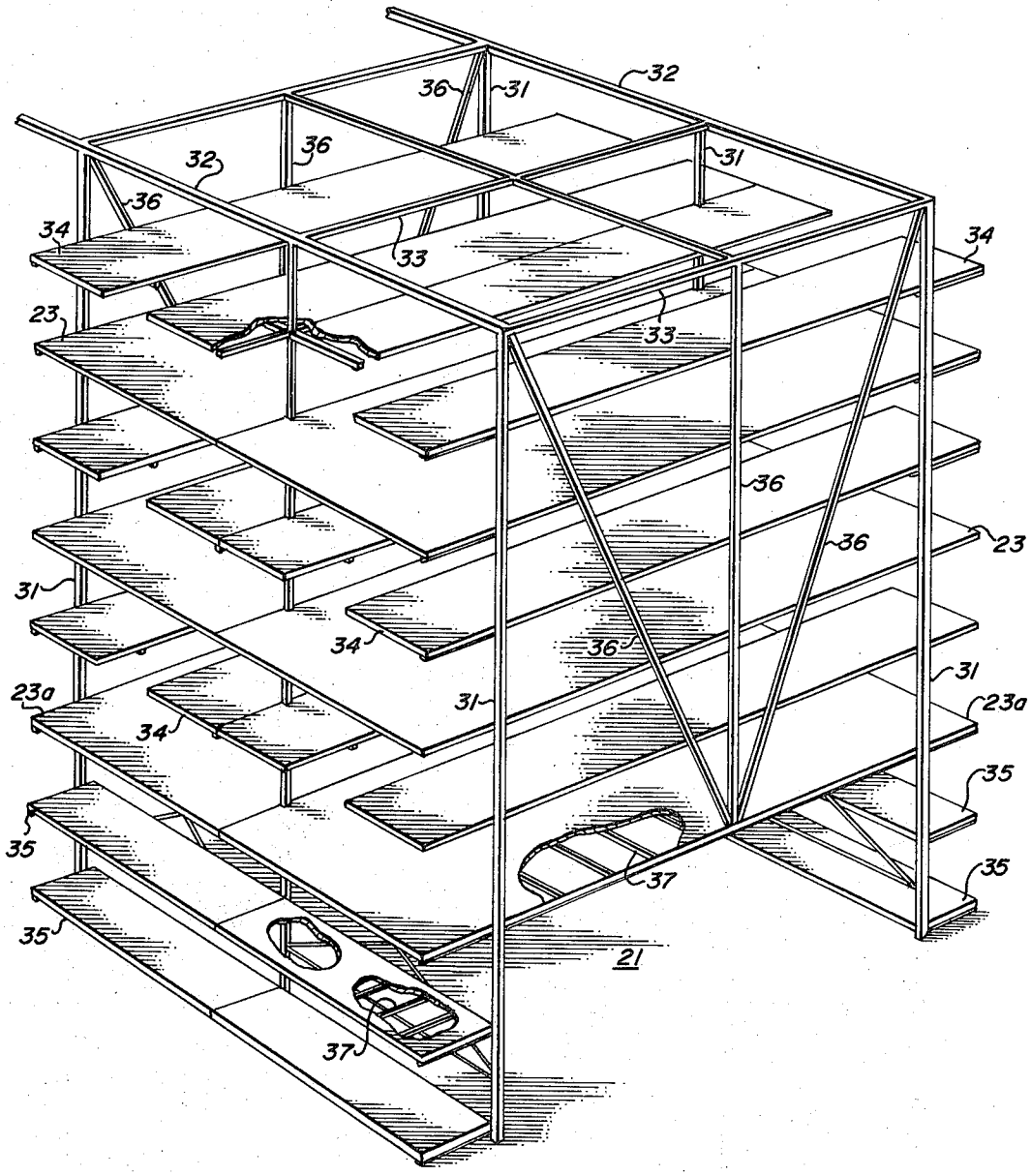

32
36
31
32
36
31
36
34
33
34
23
33
36
36
23
31
34
36
31
23a
34
31
23a
35
35
37
35
21
37

Fig-3

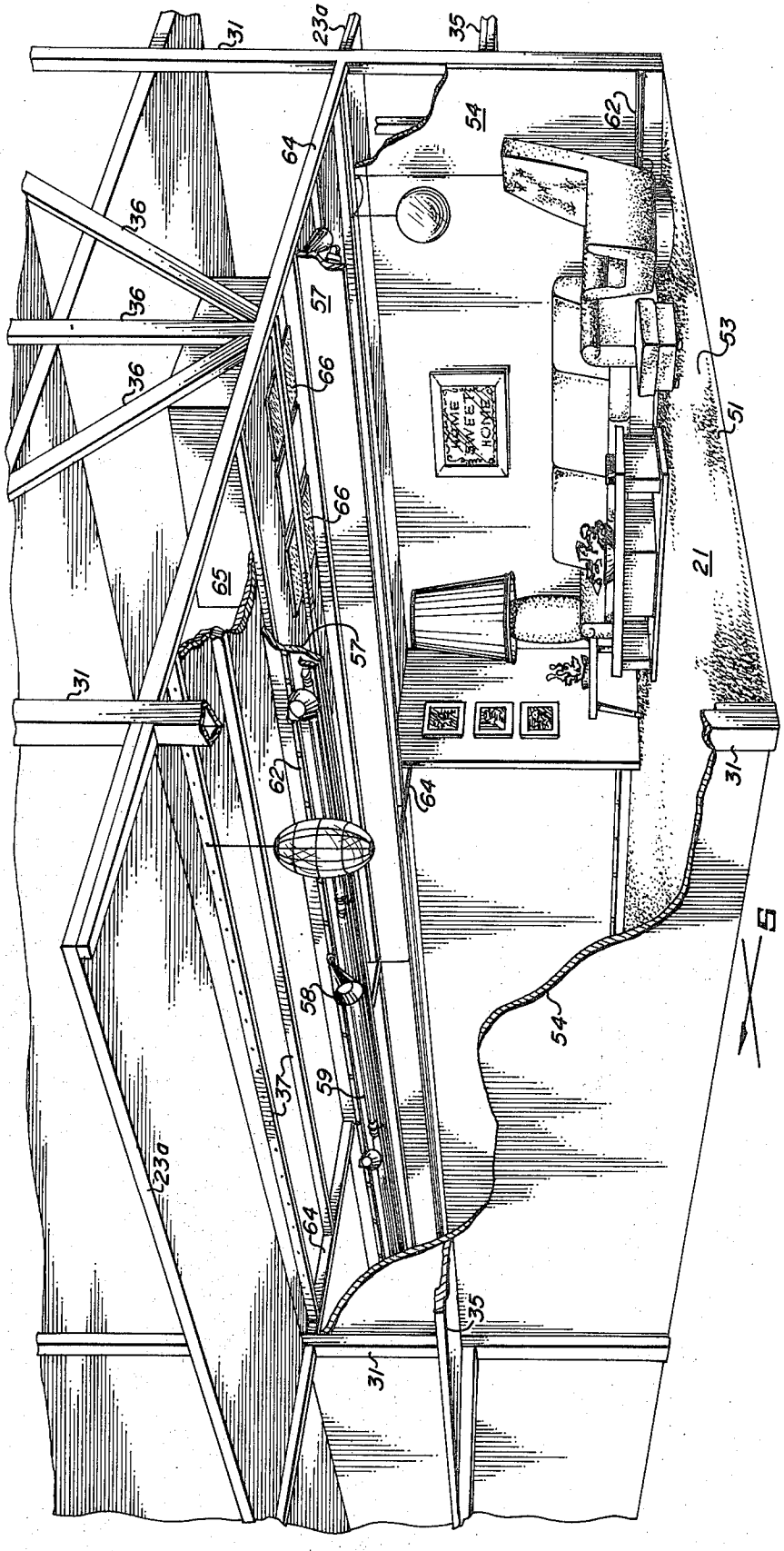


FIG. 4

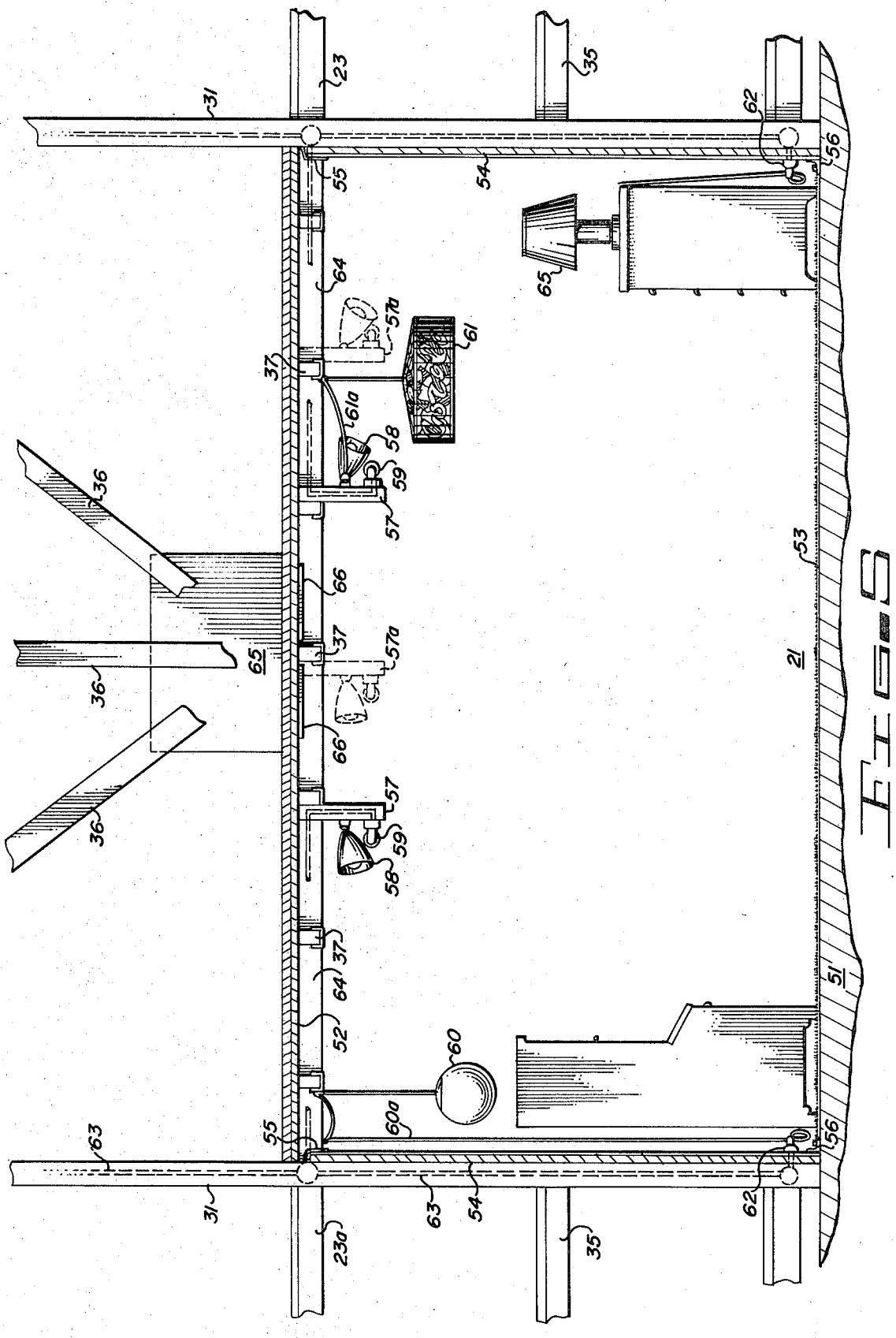

31
23
35
62
56
55
54
64
57a
61
37
61a
58
59
57
36
66
65
53
21
51
52
60
60a
63
230

FIG 8

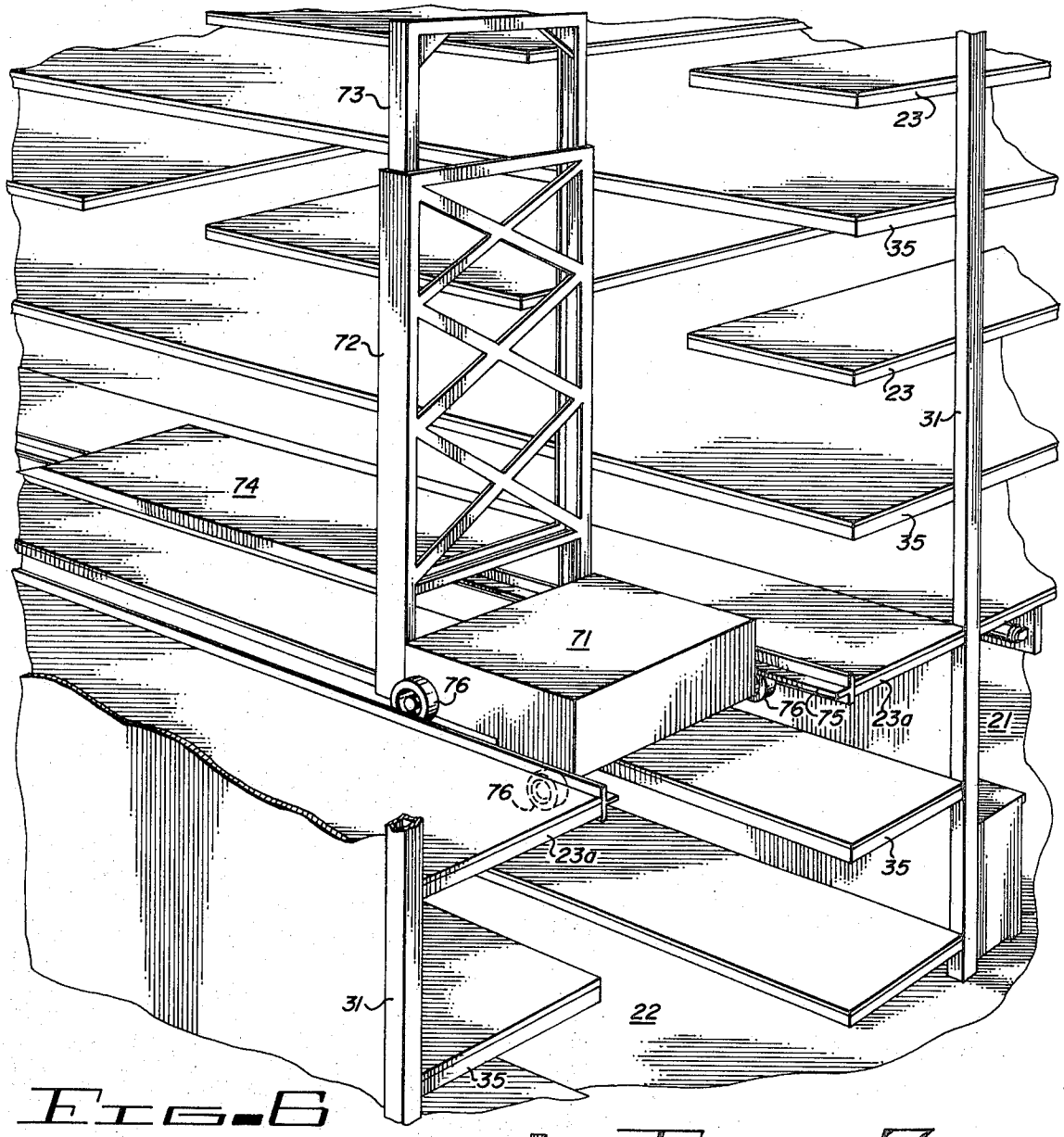
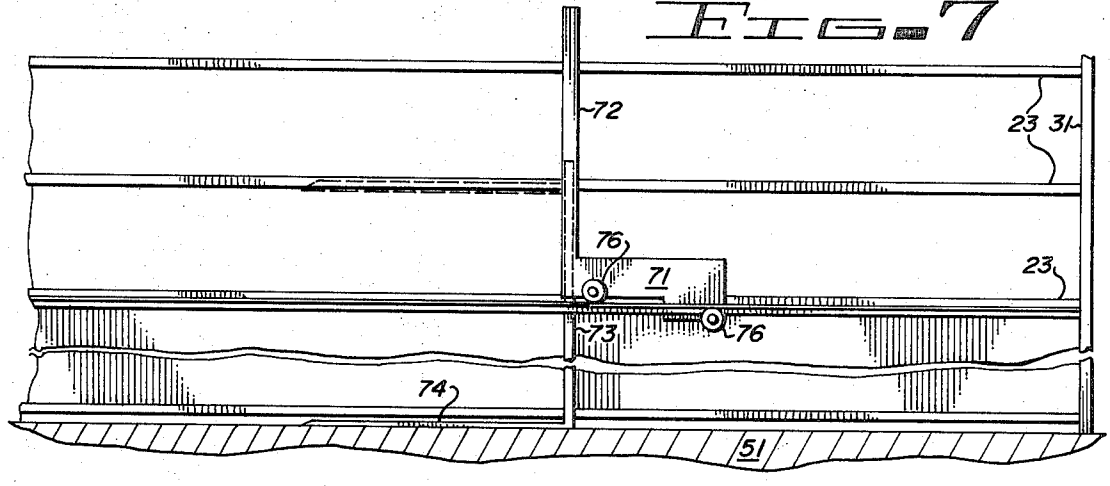

73
23
35
72
23
31
74
35
71
76
76
75
23a
21
76
23a
35
31
22
35

Fig. 6

Fig. 7


72
23 31
76
71
23
73
76
74
51

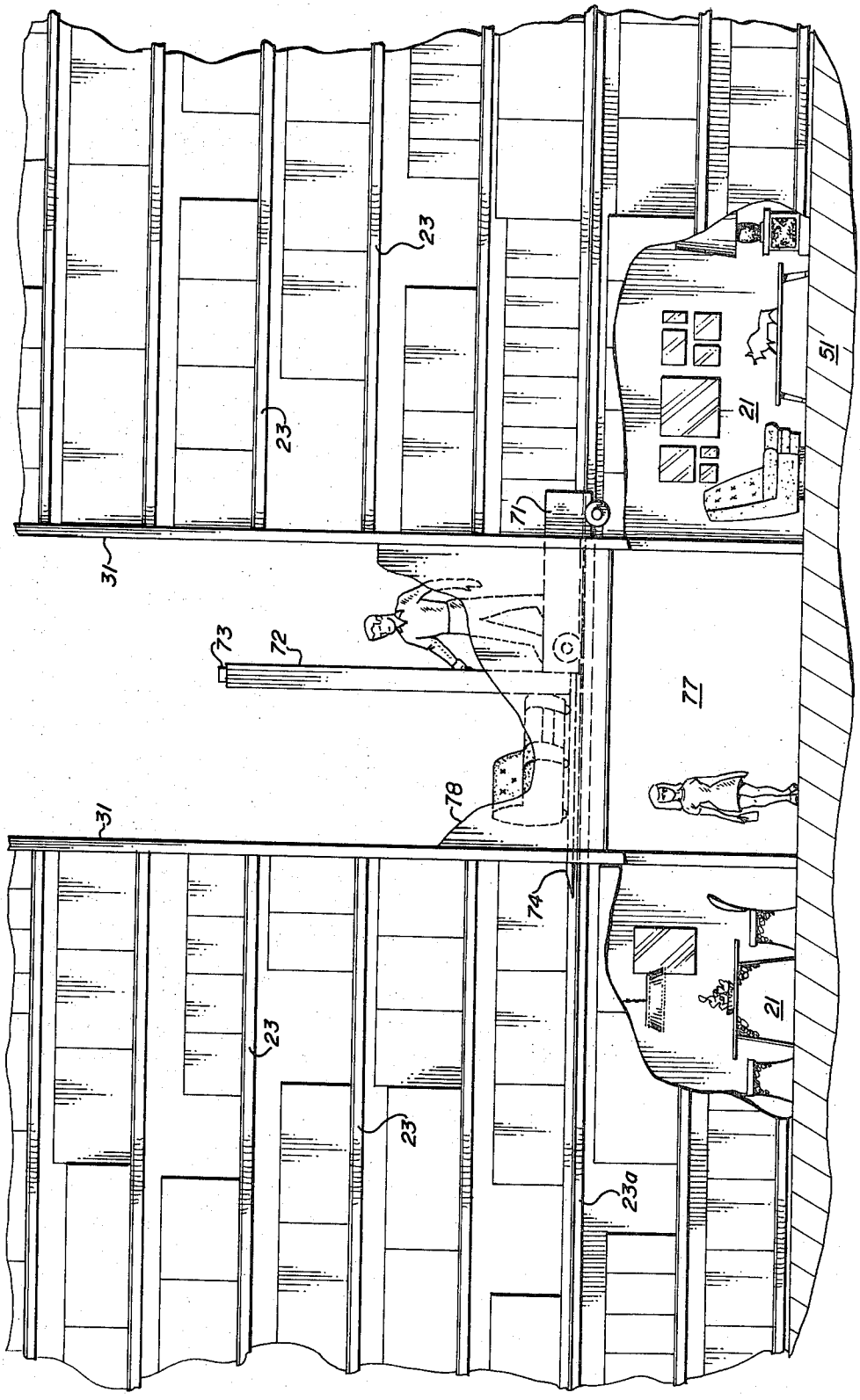


FIG. 8

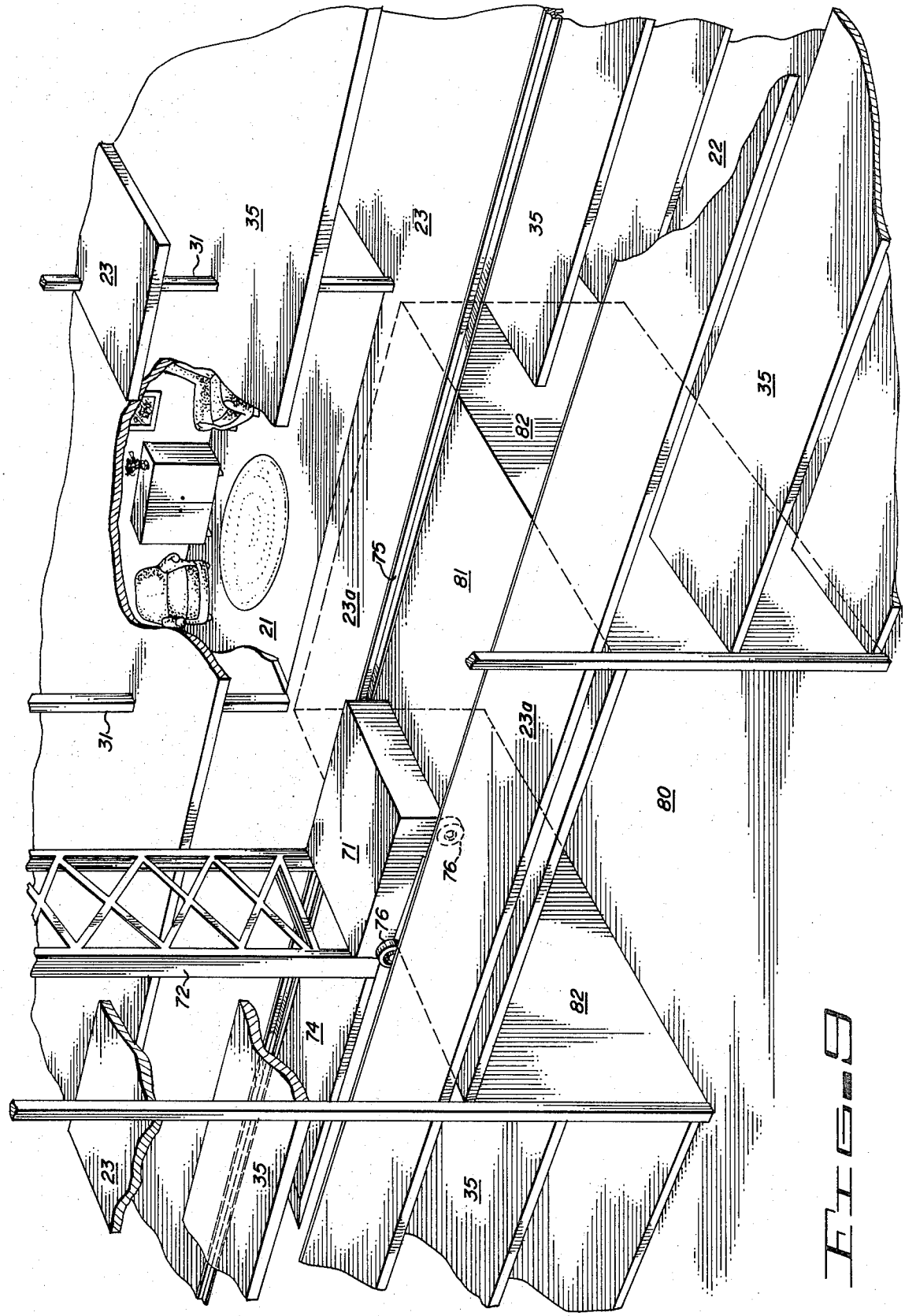


Fig. 9

MEZZANINE-STORAGE WAREHOUSE WITH INTEGRAL RETAIL SHOWROOM FACILITIES

This invention relates to a novel building construction.

More specifically, the invention relates to a mezzanine-storage warehouse with integral retail showroom facilities.

In a further and more particular respect, the invention relates to a building construction specially adapted for warehouse storage and retail sale of furniture, household appliances and related items.

In still another and more specific respect, the invention relates to an integrated building facility to which merchandise is delivered by rail or truck directly from the manufacturer where it is stored in specially constructed warehouse areas, displayed for sale in specially constructed retail showroom areas, sold to retail customers, and delivered directly to the customer or loaded into vans for delivery to the customers' residences.

In still another specific respect, the invention concerns an integrated building facility of the type described in which special stacker crane apparatus is employed to load the merchandise from freight cars on a rail siding directly into the warehouse storage areas and to selectively remove specific items of merchandise from the warehouse storage areas as they are sold to retail customers.

In another important respect, the invention concerns a building facility of the type described which occupies less land than conventional retail furniture stores and associated warehouse facilities and which can be more rapidly and economically erected, using less highly skilled labor.

Until very recent times, virtually all furniture and appliances were sold at conventional retail furniture stores located in the business districts of metropolitan areas. These business districts were usually located at some distance from major transportation facilities such as railroads and interstate highways. Consequently, merchandise was transported from the furniture factories to warehouses located in the vicinity of the major transportation facilities and was then re-distributed to the conventional retail furniture stores to replace stock as it was sold to the retail purchaser. In the retail store, the furniture was conventionally displayed in vast open areas where it was virtually impossible to visualize the furniture as it would appear in the purchaser's home, grouped in room settings with appropriate light fixtures, lamps, pictures, wall hangings, and other accessories. After the retail customer made his selections, the furniture was normally transferred to a shipping dock where it was loaded into vans for delivery to the customer's residence. Usually, there were no facilities provided for the customer to pick up his own purchases and load them into his own vehicle for immediate self-delivery.

Recently, conventional retail furniture stores located in downtown metropolitan business districts have been widely displaced by combination warehouse-showroom facilities located in outlying metropolitan areas served by both rail and highway transportation. The potential retail customer can usually reach such sales facilities more quickly and conveniently as they are located on major highways away from normally congested downtown business districts. The furniture is delivered by

rail directly into the combination warehouse-showroom facility where it is stored and where representative items are displayed in adjacent retail facilities. The customer makes his selections from samples available in the retail showroom portion of the facility and corresponding items, still crated or boxed, are removed from the warehouse portion of the facility and delivered directly to the customer at a special pickup dock or loaded into vans for delivery to the customer's residence. Substantial savings are effected because of reduced furniture handling costs as compared to the handling costs encountered in operating conventional retail furniture stores, and the customer is able to effect even further savings by self-delivery of his purchases, if desired.

Special display techniques were also developed to complement the warehouse-showroom facilities described above. The retail showroom, located in a separate area adjacent to the warehouse storage area, was divided by numerous elongate partitions into aisles not substantially wider than a room in a conventional residence, and a room-height ceiling further contributed to the home-like setting. The furniture could then be displayed in room-setting groups along with appropriate wall-mounted accessories, ceiling fixtures, etc., such that the customer could more accurately visualize how the furniture would appear in his home. Furthermore, related room settings such as living room suites, dining room sets, etc., could be rapidly inspected and compared by the purchaser as he walked along the elongate aisles containing the repeated groupings of similar furniture.

The operators of warehouse-showroom facilities expanded considerable sums in advertising to impress the prospective retail customer that he was, in fact, purchasing his furniture from a warehouse facility, with attendant savings, increased availability of specific items, and immediate delivery. However, despite these advertising expenditures, it was discovered that the only completely effective way of impressing the customer with these facts was to have the customer entrance to the facility located in close proximity to the customer pickup dock where he could see previous customers picking up the merchandise they had just purchased and have the customer entrance open directly into the warehouse area where the customer could actually see the merchandise just purchased being removed from the warehouse storage racks and taken to the customer pickup dock. After the customer passed by the pickup dock and through a portion of the warehouse area, he then entered the separate retail showroom area described above to view the room settings of furniture arranged along the elongate aisles.

Although the warehouse-showroom facilities described above operate with a high degree of efficiency, it would be desirable, in view of land and construction costs, to reduce the overall area occupied by the facility and reduce the cost and complexity of the building and equipment. However, it would also be desirable to effect these economies in building constructien and land costs without reducing the storage capacity of the warehouse facility or the amount of retail showroom space available, while retaining the advantageous layout of the showroom facilities and enabling the customer to readily perceive that he is, in fact, making his purchases in a warehouse facility.

Accordingly, it is an object of the present invention to provide an improved combination showroom-warehouse retail sales facility.

Another object of the invention is to provide an improved combination showroom-warehouse retail sales facility which occupies less ground area without substantial reduction in the available warehouse storage space or retail showroom area.

Still another object of the invention is to provide an improved combination showroom-warehouse retail sales facility of simplified and more economical construction.

Yet another object of the invention is to provide a combination showroom-warehouse retail sales facility having the above-mentioned advantages which is arranged and constructed so as to improve the retail customer's awareness that he is purchasing his selections in a warehouse facility.

Yet another object of the invention is to provide a combination showroom-warehouse retail sales facility which is more quickly erected from standardized components.

Still another and further object of the invention is to provide an improved combination showroom-warehouse retail sales facility which can be erected using a minimum of skilled craft labor.

These and other, further and more specific objects and advantages of the invention will be apparent from the following detailed description, taken in conjunction with the drawings, in which:

FIG. 1 is a partially cutaway perspective view of a combination showroom-warehouse retail sales facility embodying the present invention, showing the arrangement of modular showroom-warehouse storage racks therein;

FIG. 2 is a plan view of the interior of the facility of FIG. 1;

FIG. 3 is a perspective view showing details of construction of one of the interior showroom-warehouse storage racks of FIG. 1;

FIG. 4 is a more detailed perspective view of the combination showroom-warehouse rack units of FIG. 3, showing the general features of the interior of the retail showroom area;

FIG. 5 is a cross-sectional view taken along section line 5—5 of FIG. 4, illustrating further details of the construction of the walls and ceiling of the retail showroom;

FIG. 6 is a perspective view of a stacker crane specially adapted for operation in the warehouse access aisles between the retail showroom units;

FIG. 7 is a plan view of the stacker crane apparatus of FIG. 6, showing further details of the mounting and operation of the crane; and

FIGS. 8–9 are perspective views of the interior of a combination showroom-warehouse retail sales facility, showing alternative provisions made for safely operating the stacker crane over a customer cross-aisle.

Briefly, in accordance with the invention, a combination showroom-warehouse retail sales facility is provided. The facility includes a plurality of elongate enclosures which are parallel and spaced laterally apart, the enclosures defining retail showroom areas therein and warehouse access aisles therebetween. A plurality of warehouse storage floors are spaced vertically above the elongate enclosures and extend transversely across the enclosures. The warehouse-showroom storage spaces between the floors open onto and are accessible from the aisles on either side of the elongate enclosures for the purpose of storing furniture shipped to the facility from the manufacturer until it is purchased by the retail customer. Walls and a roof are provided to form a building enclosing the elongate retail showroom enclosures, the warehouse access aisles, and the warehouse storage spaces.

According to a further and preferred embodiment of the invention, a stacker crane apparatus is provided which is adapted to operate in the warehouse access aisles. The stacker crane apparatus includes a movable carriage, a vertical mast carried by the carriage, a vertically adjustable loading platform carried on and extending horizontally from the mast and adapted to be vertically positioned on the mast at levels corresponding to the height of each of the warehouse-showroom floors. The stacker crane apparatus includes means for mounting the crane, including a pair of rails affixed to opposed edges of warehouse-showroom floors located on either side of the access aisles and wheel means affixed to the movable carriage and cooperating with the rails to support the stacker crane for movement along the access aisles.

The major features of the combination showroom-warehouse facility are identified in FIGS. 1 and 2, which depict a building enclosure 10 having appropriate apertures accommodating a rail siding 11 running through the rear of the building 10. A delivery dock 12 is provided for minor amounts of merchandise delivered to the facility by truck. A single-story office wing 13 houses offices for operational and sales management personnel, accounting and credit offices and offices for other necessary operating personnel.

The customer enters the facility through doors 14 next adjacent to a series of larger doors 15 through which newly purchased merchandise is delivered to a customer pickup area 16. Merchandise which is too large to be self-delivered by the customer or which the customer does not wish to take with him immediately after the sale is delivered to vans 18 loaded through doors 19 on an elevated dock 20 adjacent to the customer entrance doors 14.

A plurality of elongate showroom units 21 are located inside the building and extend toward the rear thereof. The retail showroom units 21 are spaced to provide warehouse access aisles 22. Storage floors 23 are located above each of the showroom units 21, defining warehouse storage spaces between the floors which open onto and are accessible from the warehouse aisles 22. An open area 24 extends across the front end of the building, providing access to each of the showroom units 21 by a customer entering the doors 15.

Merchandise delivered in railroad cars 25 on the siding 11 or by truck to the loading dock 12 is moved across the rear of the building on the platform 26 into the appropriate access aisle 22 and along the aisle 22 to the appropriate point for storing that particular type of furniture on the storage floors 23. After a particular item of furniture has been purchased, it is removed from its storage position on the storage floors 23, delivered to the open area 24 at the front of the building, and out of the building onto the customer loading dock 16 or the delivery truck loading dock 20.

FIG. 3 depicts in greater detail a portion of the combination retail showroom —rack storage units of FIGS.

1 and 2. Vertical support columns 31 are spaced longitudinally along the length of the showroom — rack storage unit. The support columns 31 are spaced laterally apart, providing a retail showroom area 21. Spaced warehouse storage floors 23 are located above and extend transversely across the elongate enclosure defining the retail showroom area 21. Appropriate longitudinal bracing members 32 and transverse bracing members 33 join the vertical columns 31, providing a rigid structure having the requisite strength to support the floors 23. Triangular bracing members 36 are provided to further increase the structural rigidity of the rack.

Preferably, shelves 34 are located between the floors 23 to increase the support area for furniture and other merchandise stored in the warehouse racks. Longitudinal shelves 35 are also supported along the rack unit below the first storage floor 23a. The floors 23 and shelves 34 and 35 are formed of suitable plywood or particle board laid on and affixed to tubular or angular structural support members 37.

Further exact details of construction of the rack support structure are not deemed necessary since any suitable prior art technique can be employed in assembling the various support components, floors, shelves, etc. For example, in a preferred embodiment of the invention, vertical, horizontal and triangular support members and assembly hardware such as disclosed in U.S. Pat. No. 3,233,374 to Micheels et al. are used. Using the support members and assembly hardware disclosed in the Micheels patent, the rack structures can be quickly and conveniently assembled by semi-skilled workmen and the vertical support columns 31 function to support the roof of the building 10.

FIGS. 4 and 5 further depict the details of construction and arrangement of the retail showroom areas 21. The vertical support members 31 are spaced laterally apart, forming an elongate enclosure, the width of which is not substantially greater than the length of a typical room in the customer's residence. The ceiling of the room is supported above the floor 51 at approximately normal room ceiling height. The ceiling is formed of a sheet of pre-finished particle board 52 laid across the support channels 37. Carpet 53 is laid on the floor 51. The side walls of the showroom 21 are formed of sheet members 54. The upper edges of the sheet members are received under brackets 55 and the bottom edges of the sheets 54 are held inwardly against the vertical support columns 31 by floor-mounted support brackets 56.

Longitudinal fascia members 57 extend downwardly from the ceiling 53 affixed to the support channels 37, a plurality of which are spaced laterally across the ceiling. As indicated by the fascia members 57a, shown in dashed lines, the distance of the fascia members from the walls and from each other can be adjusted to accommodate the type of furniture being displayed against the walls 54. The fascia members carry indirect lighting units such as spot lights 58 and florescent rail fixtures 59. Additional light fixtures 60 and 61 may be supported at appropriate points along support channels 37 and may be electrically connected by means of swagged cords 60a and 61a to electrical plug molding 62 carried on the lower portion of the wall panel 54 or to plug molding carried on the inside of the fascia members 57. Electrical conduits 63 carred in the vertical columns 31 and the cross support members 64 supply electricity to the lights 58 and 59 and other plug molding 62. The interior of the showroom unit is cooled or heated as required by heat-pump air-conditioning units 65 supported above the ceiling 52 and exhausting into the interior of the showroom unit 21 through the louvered openings 66.

FIGS. 6, 7 and 8 illustrate stacker crane apparatus which is preferably employed in practicing the invention to load merchandise into the warehouse-showroom shelves and to remove specific items as they are purchased by the retail customer. The stacker crane apparatus includes a movable carriage 71 on which is mounted a vertical mast 72. A telescoping slide member 73 operates within the mast structure.

A vertically adjustable loading platform 74 is carried on the slide 73 and extends horizontally along the access aisle 22. The loading platform 74 and associated slide 73 may be raised or lowered on the mast 72 to the level of the various floors 23 suchthat furniture may be off-loaded for storage on the floors 23 and the shelves 35. The crane is mounted on a pair of rails 75 carried on opposed edges of warehouse-showroom floors 23a located on either side of the aisle 22, and wheels 76 affixed to the movable carriage 71 cooperate with the rails 75 to support the stacker crane for movement along the access aisle 22. Supported in this manner, the stacker crane apparatus can move over customer cross-aisles 77 which may be optionally provided to allow more flexible access between longitudinally spaced showroom units without interfering with customers walking in the aisle 77.

The crane may be powered by any suitable technique such as an electric motor enclosed within the carriage 71, driving the wheels 76. The electric motor can be operated by batteries carried within the carriage 71 or by electrical conduits carried on the rail structure 75. Details of the stacker crane control, drive mechanism, etc., are omitted for the sake of clarity and in view of the fact that such details are well known in the art.

Although the stacker crane apparatus described above is preferably used in practicing the invention, those skilled in the art will recognize that conventional floor-supported stacker cranes could also be operated in the warehouse access aisles to load incoming merchandise onto the storage shelves and remove items therefrom as they are sold to retail customers.

In installations where the showroom enclosures 21 are lengthy, it may be desirable to provide cross-corridors between the enclosures so that customers can pass from one showroom to adjacent showrooms without walking to open area 24 at the front of the building. Such cross-corridors can be constructed as shown in FIGS. 8–9.

As shown in FIG. 8, the lower storage floor 23a is extended across the cross-corridor 77 and side-walls 78 extend upwardly to prevent merchandise from falling off the stacker crane onto customers passing beneath in the aisle 77.

Preferably, as shown in FIG. 9, all of the storage floors 23 and shelves 35 are extended across the cross-corridor 80 which is totally enclosed by side walls 82 and ceiling 81.

The invention having been described with sufficient particularity and in sufficient detail to enable those skilled in the art to understand and practice it, what is claimed is:

I claim

1. A furniture warehouse with integral retail sales facilities, said warehouse comprising:

a. side walls and ceiling means forming a plurality of spaced, parallel, elongate enclosures, said enclosures defining

1. continuous elongate retail showroom areas therewithin having customer access openings at like ends thereof, and

2. elongate warehouse access aisles on both sides of said elongate showroom areas;

b. a plurality of vertically spaced warehouse storage floors located above and extending tranversely across said elongate enclosures, the warehouse storage spaces between said floors opening onto and being accessible from the warehouse access aisles on both sides of each said elongate enclosure;

c. means defining a continuous cross-aisle extending at right angles to said elongate enclosures, said cross-aisle communicating with each of said customer access openings in the like ends of said elongate showroom areas and also communicating with like ends of the warehouse access aisles, for providing communication therebetween for customers and furniture handling equipment, respectively, said warehouse access aisles and the storage floors on either side thereof being visible to customers traversing said cross-aisle;

d. outer walls and roof means forming a building enclosing said elongate enclosures, said warehouse access aisles, said warehouse storage spaces and said cross-aisle; and

e. means defining a customer entrance door in one of the outer walls communicating with said cross-aisle inside said building.

* * * * *