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Van Schoyck

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[54] **METHOD AND APPARATUS FOR PROVIDING A SANITARY ELEVATED FLOORING SYSTEM**

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[52] **U.S. Cl.** **52/180;** 52/475; 52/660; 105/375; 119/28

[51] **Int. Cl.²** **E04F 15/04**

[58] **Field of Search** 52/177, 180, 181, 660, 52/664, 475; 119/28, 9; 105/375; 404/36, 43, 46, 19, 20

[56] **References Cited**

UNITED STATES PATENTS

502,221	7/1893	Brown	119/28
528,849	11/1894	Brown	119/28
2,895,389	7/1959	Nagin	52/180
3,244,147	4/1966	Kogeichi	119/28
3,530,830	9/1970	Smith	119/9

FOREIGN PATENTS OR APPLICATIONS

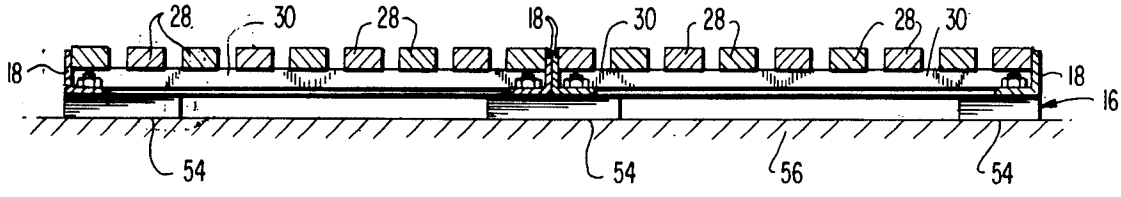
713,747	7/1965	Canada	52/660
41,722	6/1907	Switzerland	52/660

Primary Examiner—John E. Murtagh
Attorney, Agent, or Firm—Burns, Doane, Swecker & Mathis

[57] **ABSTRACT**

A method and apparatus for providing and maintaining an elevated flooring system in a clean and sanitary condition. The apparatus includes a framing grid directly engageable and supported upon a conventional flooring surface and a plurality of flooring modules positioned within the grid. Each flooring module comprises a plurality of substantially parallel spaced apart slats fixedly interconnected by transversely extending slats which form a modular unit having a substantially planar tread surface. The modular units are dimensioned to be snugly received within the framing grid to prevent shifting of the elevated flooring. The method includes the steps of installing a framing grid upon a conventional or subflooring surface, positioning flooring modules upon the framing grid, cleaning the flooring modules, once they have become soiled, by removing the modules and passing the modules through a continuous pass through commercial dishwasher, and removing the cleaned flooring modules from the dishwasher and replacing the modules within the framing grid.

3 Claims, 9 Drawing Figures



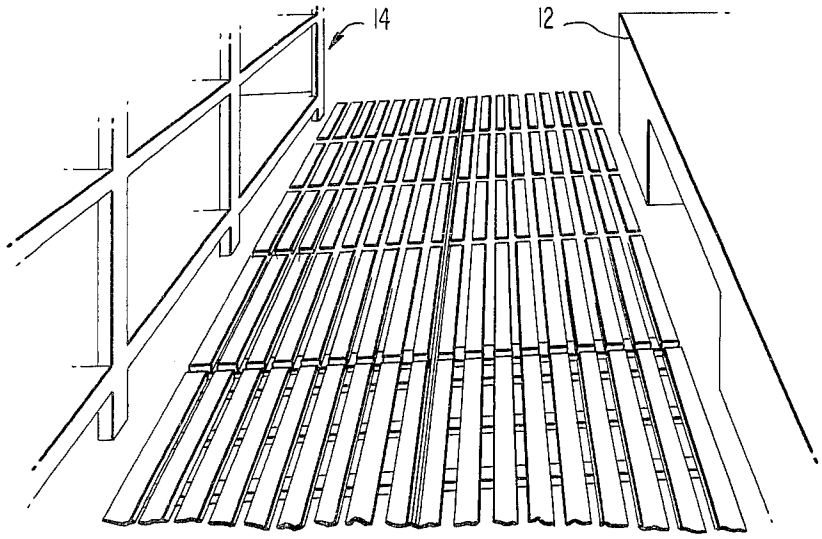


FIG. 1

FIG. 2

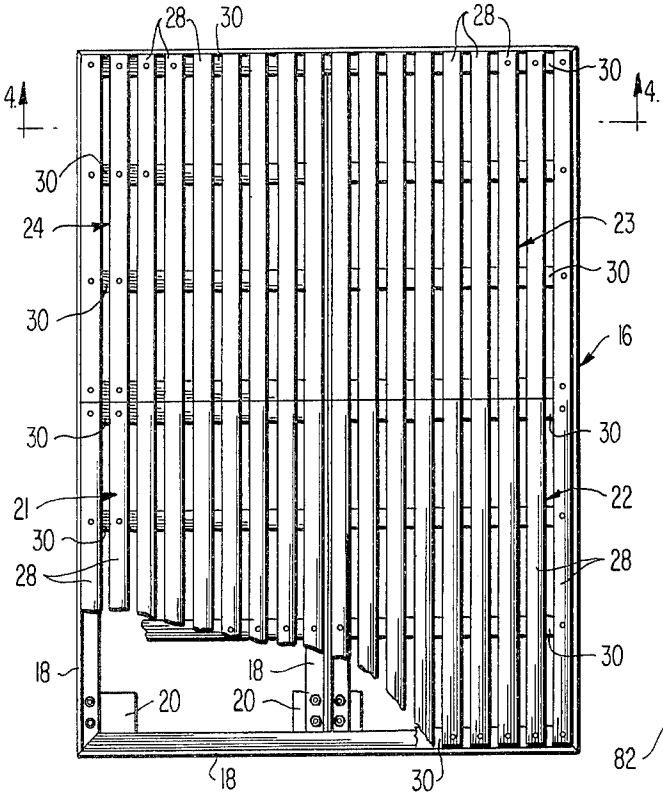


FIG. 9

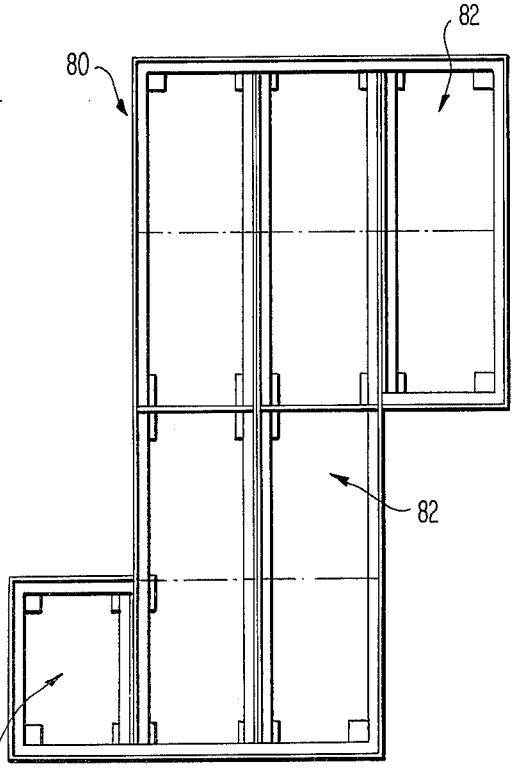
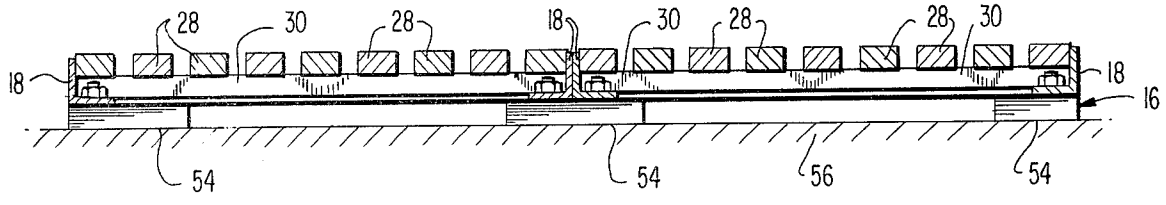


FIG. 5



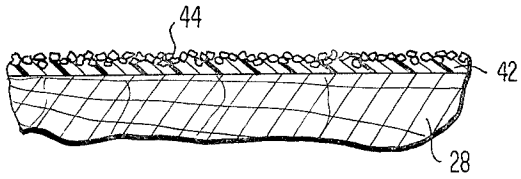


FIG. 4

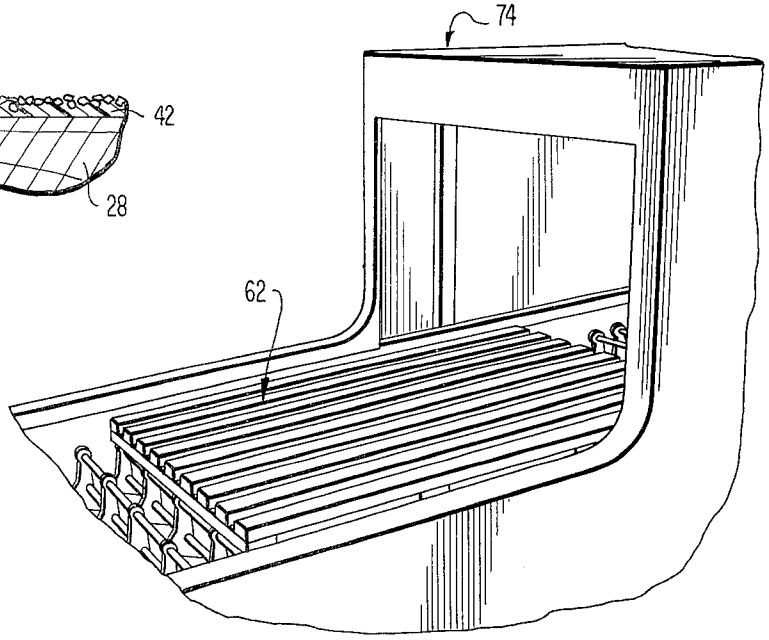


FIG. 8

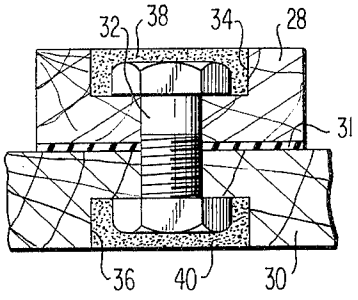


FIG. 3

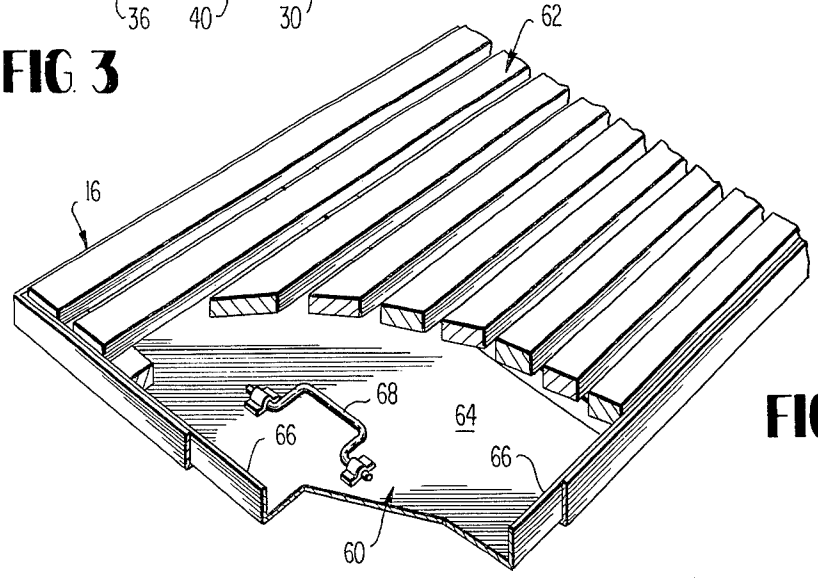


FIG. 6

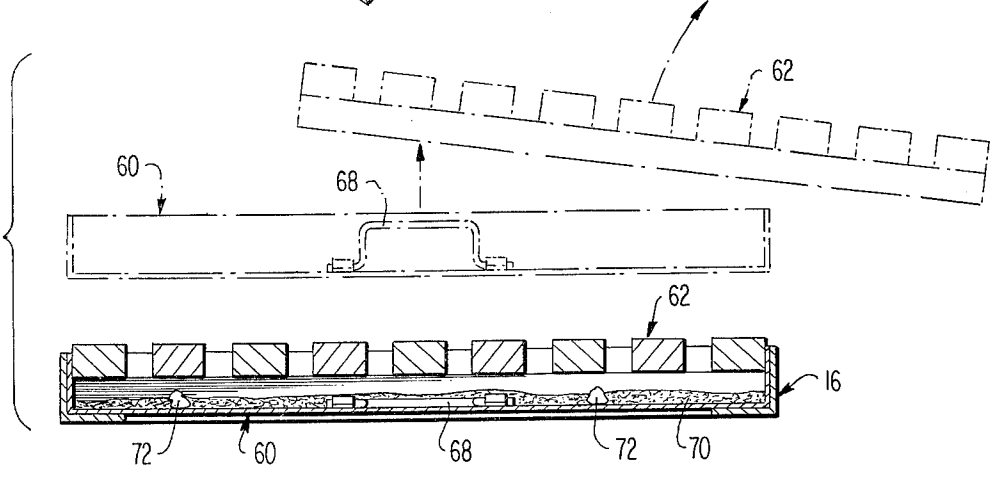


FIG. 7

METHOD AND APPARATUS FOR PROVIDING A SANITARY ELEVATED FLOORING SYSTEM

BACKGROUND OF THE INVENTION

This invention pertains to a method and apparatus for providing and maintaining an elevated flooring system in a clean and sanitary condition. More particularly, the invention pertains to a method and apparatus for providing and maintaining an open slat flooring system of the type commonly utilized in restaurant kitchens and the like in a clean and sanitary condition.

In the food processing and serving industry flooring surfaces in front of cooking facilities, around dishwashing areas, behind bar counters, within walk-in refrigerators, around meat processing areas, etc. are normally covered with wooden slats commonly called "duck boards." These duck boards are designed to provide resiliency and enhance traction for laborors who must "work on their feet" all day.

The standard duck boards comprises a plurality of one by four inch boards nailed to a plurality of cross boards to form four by six foot rectangular units. These duck boards serve to elevate personnel above a conventional flooring surface by one or 2 inches.

While conventional duck board systems have long been employed in the food handling and serving industry, a multiplicity of problems have accompanied the use of such flooring systems. More particularly conventional duck boards present a continuous repair problem because of the tendency of the boards to become decayed and broken or because of the tendency for nails in cross pieces to work loose, etc. Such situations cause frequent injuries to the feet and ankles of employees working in the kitchen areas. Moreover conventional duck boards tend to be amabulatory under use and thus require frequent repositioning. This ambulatory tendency is accentuated when loosened cross pieces permit the units to become skewed or "rack". Further, duck boards rapidly become embedded with grease and dirt which renders them slick and hazardous during utilization and subsequently difficult to clean and maintain in a sanitary condition. In this connection, although daily cleaning is often required, the grease and dirt laden four by six foot units are extremely difficult to pick up and drag into an alley to be hosed down. Moreover the units quickly become water soaked and thus provided further difficulty in terms of manipulation if cleaning with a lye solution or the like is required. Still further those instances where duck boards are utilized in bar areas, alcoholic beverages spilled upon the boards tend to be absorbed within the wood and after a period of time produce a decidedly unpleasant odor.

Accordingly it would be highly desirable to provide a stationary elevated flooring system operable to be utilized by the food handling and serving industry which would be highly rugged in design and construction in order to minimize repair difficulties, and which would be resistant to the absorption of grease, dirt, alcohol and the like. In the same vein it would be highly desirable to provide an elevated flooring system which would not easily rot or crack under heavy loading conditions. Still further it would be highly desirable to provide an elevated flooring system that may be easily handled and readily cleaned and sanitized in a regular and reliable manner. Still further it would be desirable to provide a flooring system which would be operable to collect matter dropped through the slats of the elevated flooring to facilitate a cleanup operation.

OBJECTS OF THE INVENTION

It is therefore a general object of the invention to provide a novel method and apparatus for providing and maintaining an elevated flooring system which will obviate or minimize problems of the type previously described.

It is a particular object of the invention to provide a novel method and apparatus for providing and maintaining an elevated flooring system in a clean and sanitary condition.

It is a further object of the invention to provide a novel method and apparatus for providing and maintaining an elevated flooring system which is resistant to the absorption of water, grease, alcohol, etc.

It is yet a further object of the invention to provide a novel method and apparatus for providing and maintaining an elevated flooring system which may be easily handled and readily cleaned.

It is still a further object of the invention to provide a novel method and apparatus for providing and maintaining an elevated flooring system which is resistant to rot, decay and breakage under normal traffic conditions.

It is another object of the invention to provide a novel method and apparatus for providing and maintaining an elevated flooring system which will remain stationary at a predetermined location upon a conventional flooring surface.

It is still another object of the invention to provide a novel method and apparatus for maintaining an elevated flooring system with a high traction walking surface even when liquids have been spilled upon the surface.

It is yet another object of the invention to provide a novel method and apparatus for providing and maintaining an elevated flooring system wherein foreign particles droped between the slats of the flooring system may be collected and readily removed.

BRIEF SUMMARY OF THE INVENTION

A method and apparatus for achieving at least some of the foregoing objects includes a framing grid directly engageable and supported upon a conventional flooring surface and a plurality of flooring modules positioned within the grid. Each flooring module comprises a plurality of substantially parallel spaced apart slats fixedly interconnected by transversely extending slats which form a modular unit having a substantially planar tread surface. The modular units are dimensioned to be snugly received within the framing grid to prevent shifting of the elevated flooring.

The method includes the steps of installing a frame grid upon a conventional of subflooring surface, positioning flooring modules upon the framing grid, cleaning the flooring modules, once they have become soiled, by removing the modules and passing the modules through a conventional continuous pass through commercial dishwasher, and removing the cleaned flooring modules from the dishwasher and replacing the modules within the framing grid.

THE DRAWINGS

Further objects and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying draw-

ings wherein:

FIG. 1 is an axonometric view of a typical kitchen or bar area where the resiliency and traction of a duck board system is desired;

FIG. 2 is a plan view of an elevated flooring system according to the subject invention, partially broken away to disclose an underlying framing system;

FIG. 3, not sheet 2, is a partial cross sectional detail view of a mechanical connection assembly embedded within a flooring module;

FIG. 4 discloses a typical partial sectional view of one of the parallel slats of the flooring system provided with an epoxy resin coating and with an anti-skid aggregate embedded within the coating;

FIG. 5, note sheet 1, is a cross sectional view taken along section line 5—5 in FIG. 2 and particularly discloses a plurality of elevation blocks which extend between the subject elevated flooring system and a conventional flooring system;

FIG. 6, note sheet 2, discloses a partially broken away axonometric view of an elevated flooring system module and particularly illustrates a removable tray disposed beneath the elevated flooring surface;

FIG. 7 discloses a typical cross sectional view of a tray positioned within a framing grid and underlying an elevated walking surface, and in phantom representation, discloses a removal capability of the elevated walking surface and subsequently removal of an underlying catch pan for cleaning;

FIG. 8 schematically discloses the positioning of a removable flooring module into a conventional commercial kitchen pass through dishwasher; and

FIG. 9, not sheet 1, is an alternate arrangement of a modular flooring system according to the subject invention which has been fashioned to accommodate a non-rectangular traffic pattern.

DETAILED DESCRIPTION

Context of the Invention

With reference now to the drawings and particularly to FIG. 1, there will be seen an axonometric view of a typical environment wherein the subject elevated flooring system is advantageously utilized. More specifically, an elevated flooring system is frequently disposed adjacent to either a restaurent kitchen dishwashing area 12 or behind the counter of a bar or the like. Of course units 12 and 14 are merely illustrated as being representative rather than exhaustive of the type of facilities in which an elevated flooring system is utilized and one skilled in the art will readily appreciate a multiplicity of areas in which an elevated flooring system has significant advantageous application to provide a resilient, tractive flooring surface.

Elevated Flooring System

With reference now to FIG. 2 there will be seen a plan view of an elevated flooring system 10 according to a preferred embodiment of the subject invention. The flooring system includes a framing assembly 16 directly engageable with an underlying supporting conventional or subflooring surface. The framing assembly 16 is composed of bracing strips of galvanized angle iron 18 which are connected into a generally rectangular grid work as by welding or the like. The corners of the angle iron modules are fitted with underlying bearing pads 20. Pads 20 typically are composed of a sheet of iron bolted to the angle iron strips. It has been found that a framework of the foregoing character possesses adequate weight and stability characteristics to prevent ambulatory movement of the duck board system under normal use.

Overlying and snugly positionable within the framing assembly 16 are a plurality of flooring modules 21, 22, 23 and 24. As previously noted the framing assembly 16 serves to maintain the set of flooring modules in a constrained posture with respect to the underlying flooring surfaces so as to minimize the tendency of the flooring modules to become displaced with use.

Each of the flooring modules is composed of a plurality of substantially parallel slats 28 which are interconnected and maintained in a mutually spaced posture by a plurality of transversely extending underlying slats 30.

With reference now to FIG. 3, there will be seen a means for uniting the upper slats 28 and transverse slats 30. The connecting junction entails the utilization of an epoxy cement 31 in conjunction with a mechanical fastening assembly 32. The fastening assembly 32 comprises a conventional threaded fastener which is countersunk within the upper slat 28 as at 34 and also countersunk within the transverse slat 30 as at 36. The countersunk areas are subsequently covered with a conventional wood filler composition 38 and 40, respectively. Thus the junction locations of the parallel slats and the transverse crossing members are rigidly united and concomitantly effectively isolated from corrosion and contamination. It will readily be appreciated that the foregoing junction is highly resistant to being worked loose during utilization of the elevated flooring system.

With reference now to FIG. 4 there will be seen a typical section of a flooring slat. In this connection the first and second sets of slats 28 and 30 are composed of wood and coated throughout with a water, grease and alcohol resistant epoxy resin 42. The upper surface of the epoxy resin is impregnated with an aggregate composed of sand or ground granite 44 and provides an advantageous skid resistant surface so as to minimize the possibility of slippage upon the elevated flooring system even when the flooring is in a wet condition.

With reference now to FIG. 5, not sheet 1, there will be seen a cross sectional view of the subject elevated flooring system taken along section line 5—5 in FIG. 2. A pair of flooring modules 23 and 24 are disclosed positioned upon a framing grid 16. The grid work 16 in turn is supported by a plurality of vertically raised blocks 54. These blocks may be substituted for the previously discussed plates 20 when it is desired to raise the height of the upper tread surface.

Turning now to FIGS. 6 and 7 it will be seen that the underlying framing grid 16 is preferably provided with a tray or pan 60 dimensioned to coextend with and underly a flooring module 62. The tray includes a generally planar bottom surface 64 with upturned edges 66 extending about the periphery thereof. In order to facilitate removal and cleaning of the tray, a handle 68 may be pivotally mounted upon the bottom surface 64. In this connection, and with specific reference to FIG. 7, it will be seen that in the event it is desired to clean the elevated flooring system the flooring module 62 may be easily raised out of the framing assembly 16 and the underlying pan 68 may be lifted upwardly to dump liquid 70 or particulate debris 72 of the type which tends to fall through the slats of the flooring module.

In order to clean the subject flooring system the individual flooring modules 62 and the underlying pan 68

may be fed into a conventional continuous pass through commercial kitchen dishwasher **74**, note FIG. **8.** In this connection the flooring modules **62** are specifically dimensioned to be compatible with all conventional commercial dishwashers so that grease and foodstuff which have been ground into the surface of the flooring modules may be entirely removed while passing through the dishwasher utilizing high pressure water jets, and/or concentrated detergents and/or superheated stream. Accordingly the flooring module exits from the dishwasher in a "dish clean" condition and is ready to be repositioned within the framing grid **16.**

One skilled in the art will be thoroughly familiar with conventional commercial dishwashers of the foregoing type. A specific and illustrative example, however, may be had by reference to commercial kitchen dishwasher Model No. UC-15C-37 manufactured by the Champion Dish Washing Machine Co., Winston-Salem, North Carolina.

It will now be appreciated that by the provision of coating the entire wooden flooring with epoxy resin and countersinking the mechanical fasteners at the crossing junctions of the slates the flooring modules will not only possess several advantageous properties in terms of use but also will be capable of withstanding the high temperature of superheated stream within a conventional dishwasher without soaking up moisture and warping.

While the invention has been described with reference to a generally rectangular grid as depicted in FIG. **2,** it will be appreciated that other nonrectangular flooring systems may be designed such as, for example, an overall Z-shaped pattern **80** as disclosed in FIG. **9,** note sheet **1.** It will be appreciated from the foregoing that the modular construction of the subject invention will indeed accommodate a multiplicity of patterns in restraint facilities according to existent traffic flow patterns.

BRIEF SUMMARY OF THE INVENTION

The foregoing detailed description of a preferred embodiment of the invention specifically and inherently delineates several significant advantages of the subject invention.

In brief summary however it will be noted inter alia that the framing system maintains the modular flooring units in a stationary posture during utilization while permitting an individualistic design, so that a plurality of traffic patterns in various restaurant facilities may be accommodated.

Additionally the highly ruggedized yet resilient wooden structure advantageously provides the spring and traction desirable of a duck board system while exhibiting extremely long wearing characteristics. In this connection the countersunk mechanical fasteners enclosed within a wood filler effectively unites the slats into an indestructable unit. The epoxy coating then completely isolates the fasteners and wood slats from moisture. This moisture barrier prevents the slats from warping, rotting or absorbing alcohol under normal use. Moreover, the flooring modules may be raised and fed through a conventional commercial kitchen dishwasher wherein high pressure water jets and superheated steam may be used to clean and sanitize the flooring modules.

A layer of sand or crushed granite is impregnated within the upper surface of the epoxy resin so as to maintain a high traction surface upon the flooring modules even in the event the modules have been dampened.

Still further the removable tray positioned beneath the modules which is held in position by the framing assembly serves to advantageously collect liquid and solid debris which passes through the slats thus facilitating removal and cleaning.

In addition the grid work is provided with replaceable pads to accommodate a variety of desired working height of the flooring system.

While the invention has been described with reference to preferred embodiments, it will be appreciated by those skilled in the art that additions, deletions, modifications and substitutions or other changes not specifically described may be made which will fall within the purview of the appended claims.

What is claimed is;

1. An elevated flooring system operable to be positioned upon a conventional flooring surface to provide an elevated tread comprising:

frame means directly engageable with and supported upon and above a conventional, planar flooring surface; and

a plurality of individual flooring modules each comprising,

a first plurality of substantially parallel, spaced apart, flexurallly resilient, wooden coplanar slats,

a second plurality of substantially parallel, spaced apart slats transversely extending across and interconnecting said first plurality of slats into a unit;

said unit affording a substantially planar tread surface elevated above the conventional flooring, said unit being dimensioned to be snugly received within said frame means to prevent skewing and shifting thereof while supporting a person walking thereon; and said unit being further dimensioned to be manually removable from said frame means and receivable for cleaning within a continuous pass through dishwasher;

a water, grease, and alcohol resistant coating of epoxy completely covering each of said wooden flooring modules; and

a strip of aggregate embedded within said epoxy coating covering the uppermost surface of each of said first plurality of slats to provide a slip resistant tread for the substantially planar tread surface of said at least one flooring module.

2. An elevated flooring system operable to be positioned upon a conventional, planar flooring surface to provide an elevated tread comprising:

a frame comprising

bracing strips connected into generally rectangular units, said units being connected to form a rigid framing grid, and

means extending between said bracing strips and the underlying conventional, planar flooring suface to selectively support said framing grid at selected elevations relative to the flooring surface; and

a plurality of vertically removable flooring modules, each module comprising

a first plurality of wooden slats positioned in a mutually parallel, coplanar posture,

a second plurality of wooden slats transversely extending across and interconnecting said first plu-

rality of wooden slats into a generally rectangular flooring module having a substantially planar upper tread surface,

each of said generally rectangular flooring modules being dimensioned to be snugly but removably received and rigidly constrained laterally within one of said generally rectangular frame units, each of said flooring modules being supported thereby in an elevated condition relative to the plane of said flooring surface and in a manner amenable to generally vertical manual removal of said flooring module from said framing grid;

a water, grease, and alcohol resistant coating of epoxy completely covering each of said wooden flooring modules; and

a strip of aggregate embedded within said epoxy coating along the to surface of each of said first plurality of wooden slats to provide a slip resistant tread for the substantially planar tread surface of said flooring modules.

3. An elevated flooring system operable to be positioned upon a conventional flooring surface to provide an elevated tread as defined in claim 2 and further comprising:

a layer of epoxy cement between adjacent surfaces of said slats at junction locations thereof; and

metallic mechanical fasteners extending through each junction location of said slats of said first and second plurality thereof to bind together and compress said wooden slats and said epoxy cement into an integral unit, both ends of said mechanical fasteners being countersunk within the wooden slats beneath the surfaces thereof, said countersunk voids being filled to a planar condition with respect to the surface of said slats by a rigid wood filler which fully surrounds and encloses the ends of each of the mechanical fasteners to lock each fastener in said binding relation with said slats.

* * * * *