This is a continuation-in-part application of my co-pending application entitled Table Construction, filed Nov. 25, 1964, Ser. No. 416,191, now Patent No. 3,223,056.

This invention relates to method for making panel constructions, and more particularly to method for making panel edge construction for table top panels.

Table tops having a decorative veneer top sheet conventionally have a peripheral veneer edge strip covering the panel core. These edge strips often become damaged and dislodged after a relatively short period of time. This is especially true in institutions such as colleges, hospitals, schools and dormitories where the tables are treated roughly, both by banging their edges together or against the walls, or by sliding them along the floor on one edge when students are clearing the room. Consequently, the edge strip becomes chipped, loosened and/or peeled to create an unsightly appearance. Ordinarily, the remainder of the table is still in excellent condition, but loses its attraction due to the edge damage. Often however, the upper veneer also tends to peel along its edge with damage of the edge strip. Therefore, a constant expense and nuisance exists today to periodically recondition these damaged edges. To achieve this, the panels must either be returned to the factory, or a special expensive crew of workmen must travel to the place where the panels are utilized.

Consequently, although a veneer covered furniture panel provides an attractive and generally durable unit today for various purposes, their edges constitute a definite Achilles' heel that shortens the useful decorative life of the entire panel, unless periodically reconditioned at a substantial expense.

It is therefore an object of this invention to provide a panel edge construction that eliminates the readily damageable characteristics of the conventional panel edge, and extends the life of the edge to a value at least equal to and normally greater than the remainder of the panel itself.

It is another object of this invention to provide a panel edge construction having excellent aesthetic appeal, as well as providing a unique bumper along the edge capable of withstanding abuse.

It is a further object of this invention to provide a table top that can be bumped against other table tops or against the wall, etc. with tremendous impact without the slightest damage to the panel edge or veneer, either structurally or aesthetically. It can even be skidded along the floor on one edge without any noticeable damage to the edge.

Another object of this invention is to provide a door having an edge construction that absorbs bumping or abuse by carelessly wheeled hospital beds or such other equipment without any noticeable damage.

A still further object of this invention is to provide a method of forming a protective decorative bumper strip on furniture panels such as table tops, doors, countertops and the like without the formation of any air pockets in the strip, providing permanent bonding, enabling manufacture using relatively inexpensive techniques, and extending the useful life of the panel, yet without any periodic reconditioning of the edges.
3 sturdy, wear-resistant, acid-resistant, water-resistant, non-corroding, rigid bumper strip having only slight resilience. The edge also possesses excellent aesthetic qualities, especially when provided with one of any selected colors to match the room decor. This novel bumper 22 is provided around the periphery of the panel.

The edge is formed by casting or molding the resin in place on the panel. This casting in place has been found, after extended experimental use, to be very important to prevent the formation of any air bubbles beneath the plastic adjacent the core, and to achieve good bonding. The uncured fluid resin is held in place and thereby confined between the protruding edges of the veneer sheets, enabling the bond securely to both the veneer sheets and to the core, while maintaining precisely the proper dimension and shape. The bond is especially secure if the material has an epoxy resin base due to the excellent bonding characteristics of epoxy resins. Several different epoxy resins are satisfactory for this use, with the preferred one being formed from conventional components of epichlorohydrin and bisphenol A. Suitable catalysts may be used such as the Lewis acid type, including boron trifluoride and its complexes. Straight epoxy resins may also be utilized, but since these normally require elevated temperatures for curing, they are not preferred.

A polymer of epoxy-polyimides may be employed. This copolymer may be formed from stoichiometric amounts of epoxy resin and a primary or secondary polyamine to form a betahydroxyamino compound. Both have a hard, durable characteristic. Instead of the preferred poly epoxy, with its excellent adhering qualities as well as its wear-resistance and aesthetic appeal, a suitable polyester may be employed. This polyester may be from conventional components of a dihydric alcohol and a dibasic acid as described above with respect to the adhesive to be employed for the veneer sheets. Typical catalysts may be used with the polyester resins such as an organic peroxide and a hydro-peroxide. A 2% addition of methyl ethyl ketone peroxide is preferred. Accelerators such as cobalt napthenate, alkyl mercaptans and dialkyl aromatic amines in amounts of approximately ½% in a 6% solution may be added to the catalysts. Obviously these percentages and particular components will vary with the desired curing time and curing temperature, in accordance with presently known technology.

Instead of the poly epoxy, poly epoxy-polyimine, or polymeric materials described above, certain other thermosetting materials may be used for this purpose. An example of these are the polyurethane resins conventionally formed from ethylene glycol or other di- or poly-hydropoxy organic materials, and a disiocyanate such as tolylene diisocyanate or castor oil diethanolamine disiocyanate. Equivalent materials useful for this purpose will of course require good bonding characteristics, excellent wear qualities, and aesthetic appeal. These resins may be reinforced by a suitable fibrous agent such as fibrous glass, nylon or the like in random form embodied in the resin. Such reinforcement is not necessary normally however.

In order to form the novel edge strip, one of three of the modifications of the novel method illustrated in FIGS. 3, 5 and 7 may be employed.

Referring to FIG. 3, in this form of the invention only the upper veneer sheet 18 protrudes beyond the edge of the core, while the lower veneer sheet 20 has its edges coinciding with the edges of the core. This assembly is surrounded by a mold 28 which abuts the edges of the extending veneer sheet 18 to form closed cavities 30 between the core and the mold 28 having an open upper end. Subsequently, the uncured resin 22a is cast, injected or poured from injector 32 into this peripheral space 30 around the core to fill this space. It bonds securely to the veneer sheet 18 and the core as it cures. After the resin is at least partially cured to a self-supporting state, the mold is removed to allow complete curing of the edging either at elevated or room temperatures, depending upon the catalyst used, the polymer or copolymer employed and other operational factors. The cured polymeric edge projects beyond the veneer sheet 18.

The corners of the panel edge may be purposely beveled as illustrated at 24 and 24a in FIG. 4, so that each bevel 24 recesses the protruding edge of the adjacent veneer strip 18 to prevent it from being bumped and thereby peeled from the remainder of the panel or chipped. Consequently, the most protruding portion constitutes the rigid resin material which can absorb bumps or be slid along the floor without damage to the decorative veneer sheet. Preferably the lower corner 24a is also beveled as illustrated for protection of the lower veneer sheet against peeling and chipping, for symmetry of design, and for maximum wearing capacity.

Instead of forming a flat edge and beveling it to cause the bumper edge protrusion beyond the decorative veneer, this same result can be achieved by initially providing a protruding plastic portion with a generally convex cross sectional configuration. This can be achieved by employing a flexible mold having a peripheral concavity to form the resin.

In the form of the invention where both of the veneer strips 18 and 20 protrude beyond the edge of the core, one of the methods illustrated in FIGS. 5 and 7 is employed.

Referring to FIG. 5, a series of the panels are butted together side to side, and lowered endwise into a tank 50 containing uncured liquid resin 22a in the bottom thereof to a depth at least as great as the depth of the cavity or gap between the veneer sheets. The resin material is allowed to cure at room temperature either at elevated or room temperature, or it may be accelerated by properly selecting the curing cations within the principles taught, are deemed to be part of this invention, which is to be limited only by the scope of the present application.
of the appended claims and the reasonably equivalent structures and methods to those defined therein.

I claim:

1. The method of providing a protective decorative edge on a panel, comprising the steps of: providing a panel core; adhering to at least one side of said core a decorative cover sheet; causing said sheet to extend beyond the entire peripheral edge of said core; positioning said core with said sheet downwardly and surrounding said core and sheet with a mold against said sheet to define an open top recess above the overlapping sheet portion which actually forms a wall of the recess; casting an uncured resin into said recess; curing said resin to bond it to said sheet and core, and removing said mold; and forming said decorative edge into a convex configuration with only said resin protruding beyond said sheet as a decorative and sturdy bumper edge, by removing the corner edges of the sheet and resin, without exposing said core.

2. The method of forming a protective decorative edge on a panel, comprising the steps of: adhering cover sheets to opposite sides of a panel core, and causing said sheets to extend beyond the edges of said core to form a channel recess with the inner surfaces of said sheets forming the side walls of said recess and the peripheral surface of said core forming the base of said recess; filling said recess with uncured resin; curing said resin to bond it directly to said core and to said sheets; and finishing the corner edges of the panel by removing corner portions of the sheets and cured resin, without exposing the core, thereby causing the outermost portions to be only resin, to create a sturdy resin bumper protruding beyond said sheets.

References Cited

UNITED STATES PATENTS

753,641 3/1904 Shepherd.
1,936,113 11/1933 Jelliffe.
2,278,351 3/1942 Meyercord.
2,717,187 9/1955 Morgan et al.

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