

July 13, 1965

M. RUBINOFF  
METHOD OF SIMULTANEOUSLY EMBOSSING ARTICLES  
OF DIFFERENT DIMENSIONS

3,194,152

Filed June 16, 1964

2 Sheets-Sheet 1

Fig. 1.

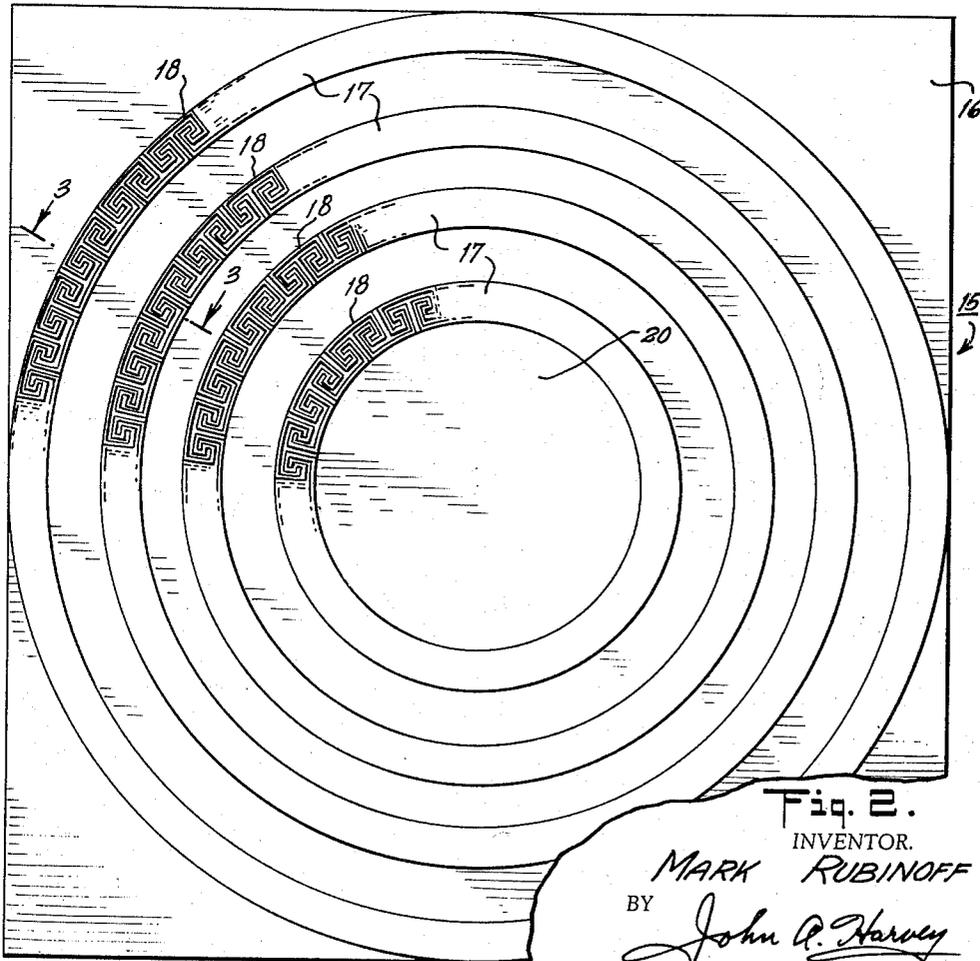
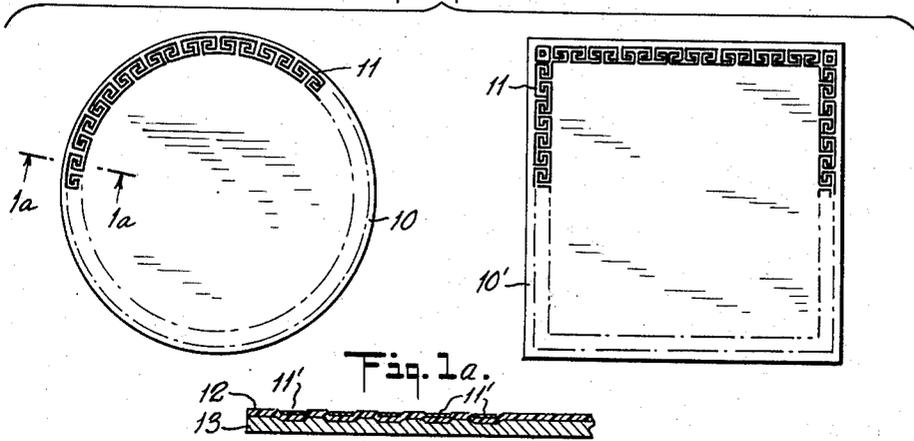


Fig. 2.

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2 Sheets-Sheet 2

Fig. 3.

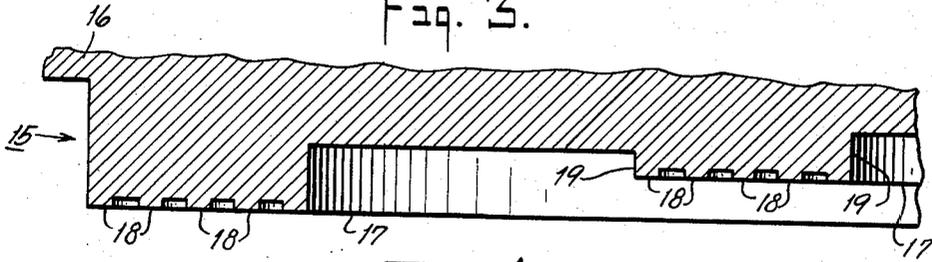


Fig. 4.

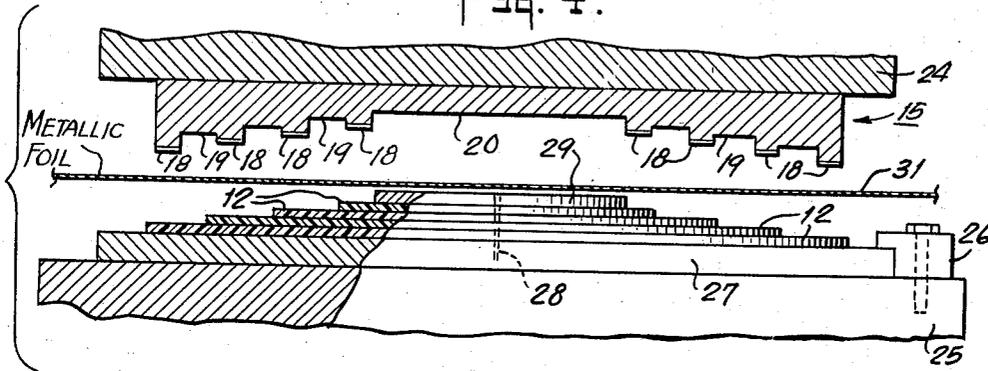


Fig. 5.

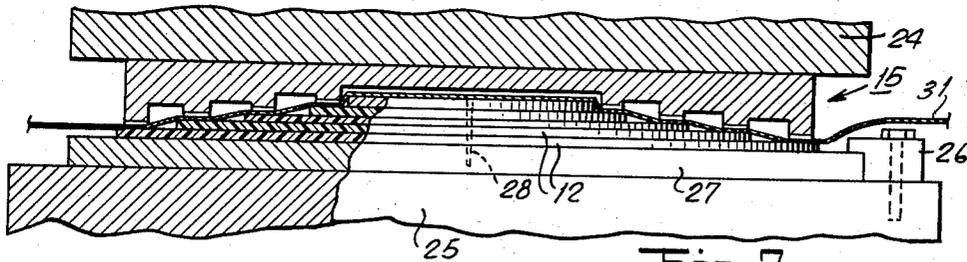


Fig. 7.

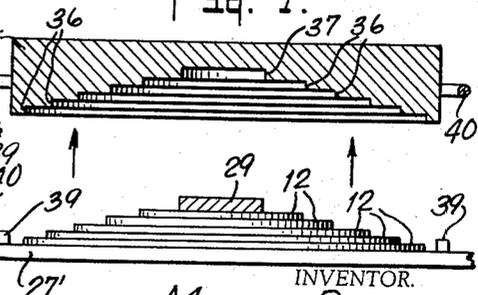
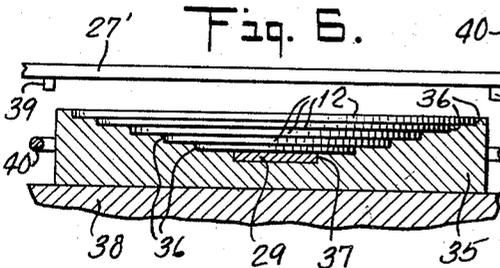


Fig. 6.



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3,194,152  
**METHOD OF SIMULTANEOUSLY EMBOSSING  
 ARTICLES OF DIFFERENT DIMENSIONS**

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4 Claims. (Cl. 101—32)

The present invention relates to structures and methods for effecting the peripheral edge-border decorative embossing of table mats, place mats and the like articles fabricated in various sizes and of various materials usually of the leather and imitation leather or plastic types. In greater particularity, the invention relates to an improved embossing structure and method particularly suitable for economical edge decorative embossing employing gold leaf and like decorative foils and will be described in that connection.

Table mats, table place mats, and like articles are widely used to protect the surface finish of articles of furniture from possible scratching or marring by objects placed upon them. Such mats are available in various sizes and configurations, and are conventionally fabricated from felt-surfaced leather and lamination leather or sheet plastic. They are usually decorated around their peripheral edge surface by an embossed design of the cameo-embossed type employing gold leaf. In gold leaf cameo embossing of such articles, the embossing plate is etched to provide a relief decorative pattern formed of a design of flat surfaced lines in linearly repetitive geometrical configurations. The plate is heated and is brought into pressure engagement against a sheet of gold foil laminated upon a backing material placed over a mat accurately centered beneath the embossing plate. The gold foil is heated by the embossing action of the relief pattern and thus provides a duplicate gold leaf pattern embedded somewhat into the surface of the mat. The remaining gold leaf lying outside of the duplicate pattern is not heated during the pressure engagement, and is not transferable to the mat surface so that it is stripped away with the backing material for rejection as scrap. It is evident that only the peripheral portion of a relatively large area of gold foil has heretofore been used in providing each such decorative pattern on a mat, and consequently that a major portion of the gold leaf sheet has heretofore been uneconomically but necessarily rejected as scrap material.

It is an object of the present invention to provide a novel embossing plate and method which facilitates the fabrication and reduces the manufacturing cost of peripheral edge decorated table and place mats and the like articles of commerce.

It is a further object of the invention to provide a new and improved structure and method enabling the mass production, economically and at relatively low cost, of gold leaf cameo-type embossed table and place mats and the like articles of commerce having various sizes and geometrical configuration.

The foregoing and other objects, features and advantages of the invention will be apparent from the following more particular description of a preferred embodiment of the invention, as illustrated in the accompanying drawings, in which:

FIG. 1 illustrates table or place mats of both circular and rectangular configuration having peripheral embossed ornamentation placed thereon according to the method and structure of the present invention, FIG. 1a being an elevational cross-sectional view of an edge portion of a mat of the FIG. 1 type and illustrating the usual form of mat construction;

FIG. 2 illustrates in plain view an embossing plate for embossing annular edge portions of a concentric convex

stack of a disc-configuration sheet materials, FIG. 3 illustrating in elevation cross-section an edge portion of the FIG. 2 embossing plate;

FIG. 4 is an elevational view partly in cross-section illustrating the operative support and positioning of the FIG. 2 embossing plate in relation to an annular stack of sheet materials to be edge embossed with a gold leaf foil, FIG. 5 being similar to FIG. 4 but illustrating the pressure engagement of the embossing plate and materials stack during the embossing operation; and

FIGS. 6 and 7 are elevational cross-sectional views of a convenient jig for assembling an annular stack of sheet materials upon a supporting make-ready plate in preparation for the embossing operation.

The table mats, table place mats, and like articles illustrated in FIG. 1 are conveniently manufactured with a circular disc configuration such as the mat 10 or with a square or rectangular configuration like the mat 10'. They are provided with a peripheral edge surface decoration 11, placed thereon according to the method and structure of the present invention, by surface embossing or gold foil-cameo embossing employing an embossing plate of unique construction. As illustrated more clearly in the elevational cross-sectional view of FIG. 1a, such mats are fabricated of a leather or leather-like or plastic sheet material 12 to which is often cemented a felt base 13. The peripheral decorative edge embossing is accomplished by pressure engagement of an embossing plate, which may or may not be heated, directly with the surface of the sheet material 12. A heated embossing plate may exert pressure engagement upon a sheet of gold foil placed over the sheet material 12 to provide a gold foil cameo embossing pattern 11' embedded somewhat into the surface of the sheet material 12.

In accordance with the present invention, a pyramidal or conical stack of plural such table or place mats or like articles of different sizes are all peripheral edge-embossed at the time by use of an embossing plate 15 of the type illustrated in plan view in FIG. 2 and in elevational, enlarged cross-sectional edge view in FIG. 3. The embossing plate 15 is illustrated by way of example as one suitable for edge embossing a stepped conical stack of circular mats having differing sizes and arranged for embossing in an annular stack. The plate 15 includes a base portion 16 shown as of square configuration and by which the plate is secured by any convenient means to the movable pressure plate of a printing press or like machine for transporting the embossing plate into pressure engagement with the stack of mats to be embossed, the stack being supported upon a fixed table of the machine. The embossing plate 15 is fabricated as a unitary structure with concavely stepped but concentric planar surface portions 17 having individual relief decorative patterns 18 conveniently of repetitive geometrical configurations. These decorative patterns correspond in size to the peripheral edge surface portions of individual ones of the mats as arranged in the convex stack thereof. As shown more clearly in the enlarged edge cross-sectional view of FIG. 3, each of the stepped concentric planar surface portions 17 lie in planes which are spaced by the thickness of the material to be embossed, and are preferably separated by concentric undercut annular grooves 19. An annular innermost concentric portion 20 of the embossing plate 15 is recessed to receive a hold-down metal plate which is placed upon the top of the convex stack of mats to be embossed for a purpose presently to be explained more fully.

The relief decorative patterns 18 are formed in individual ones of the planar surface portions 17 in any convenient manner. For example, they may be formed by machine engraving or, for an embossing plate of copper

or brass, may be most conveniently formed by the well-known photo-resist acid-etching technique widely employed in making engraved printing plates in the printing industry. When used for gold-foil embossing, the embossing plate 15 should utilize a material having good thermal conductivity such as copper or brass.

As illustrated in FIG. 4, the embossing plate 15 just described is secured in any convenient manner (not shown) to the movable pressure plate 24 of a conventional gold stamping or like machine which forms no part of the present invention and accordingly is not particularly shown. The gold stamping machine includes a stationary press bed or table 25 having positioning or locating guide members 26 secured thereto for detachably engaging at least two and preferably three sides of a metal make-ready plate 27 to locate the latter in concentric position with respect to the axis of concentricity of the embossing plate 15. The make-ready plate 27 supports a convex stack of mat blanks 12 to be edge-embossed, and maintains the stack in concentric relation to the axis of concentricity of the embossing plate 15. To this end, the make-ready plate 27 is provided with a small-diameter locating pin 28 positioned axially of the axis of concentricity of the decorative patterns 18 of the embossing plate 15. The sheet material from which the mats are fabricated, such as leather or a leather-like or plastic material, is cut to each size of mat to be edge-embossed and to the desired mat configuration (circular in the illustrative example here described) by a conventional blanking operation and during the blanking step a small aperture is punched in the center of the mat blank. The mat blanks of differing sizes are then stacked on the make-ready plate 27 by inserting the locating pin 28 of the latter in the small center aperture of each mat blank, the stacking progressing from the largest to the smallest size mat as shown. A relatively thin hold-down metal disc or plate 29, which in addition to its own weight may be of a magnetic material permanently magnetized to provide a magnetic attractive force between the hold-down plate and the make-ready plate 27 of magnetic material and which is also centrally apertured to receive the locating pin 29, is then placed upon the top of the assembled stack of mat blanks to maintain them flat during the embossing operation. It may be noted in this respect that, for clarity of illustration, both the mat blanks 12 and hold-down plate 29 are shown as having substantially greater thicknesses than they would usually have in practice. The assembling of the stack of mat blanks as just described is preferably done for convenient and rapid manipulation with the make-ready plate 27 removed from the press bed 25, the make-ready plate 27 being thereafter returned to the press bed 25 and accurately positioned thereon by engagement with the locating guide members 26.

If the mat blanks 12 are to be gold embossed, the embossing plate 15 is heated by thermal energy supplied from a heated form of pressure plate 24 and a sheet 31 of gold foil is placed over the stack of mat blanks 12 as illustrated in FIG. 4. The pressure plate 24 is then closed against the press bed 25 as illustrated in FIG. 5 to bring the relief decorative patterns 18 of the embossing plate 15 into pressure engagement with the gold foil 31 and preferably partially embed it into the surface of the mat blanks 12. This pressure engagement heats the gold foil in engagement with the plate 15 to leave on the peripheral edge portion of each mat blank a gold foil decorative design corresponding to an individual one of the relief designs of the embossing plate. Areas of the gold foil not engaged by the decorative relief pattern of the embossing plate are not significantly heated, so that these areas are not transferable to the mat blanks and may be stripped away and discarded when the pressure plate 24 is opened or withdrawn to the position illustrated in FIG. 4. This leaves each of the mat blanks 12 with

a gold foil cameo-embossed peripheral edge decorative pattern.

Decorative edge embossing of the mat blanks 12 without employing gold foil may be similarly accomplished in the manner just described, sufficient embossing plate pressure being employed to attain an adequate depth of impression. In this case, the embossing plate 15 may be either heated or cold depending upon the surface embossing impression desired and the characteristics of the particular material selected for the mat blanks 12.

After removal of the edge embossed mat blanks 12 from the make-ready plate 27, a felt or felt-like material (blanked to the size and configuration of each size mat blank) may if desired be cemented to the bottom of each mat blank as illustrated in FIG. 1a to complete its fabrication as a table or place mat. The central aperture used in stacking each mat blank on the locating pin 28 of the make-ready plate 27 is ordinarily so small in size as not to be noticeable. It is, however, obscured from view on the bottom by the felt covering, and may often be closed on the top surface of the mat by suitable hand-peening the material around the edges of the aperture or may be obscured by a centrally positioned small decorative label or other ornamentation cemented or otherwise affixed in place on the top surface of the mat.

The use of such central apertures for stacking the mat blanks on the locating pin 28 of the make-ready plate 27 may be dispensed with by use of the stacking jig illustrated in FIGS. 6 and 7. This jig is fabricated of a plate 35 of any suitable material (which should be nonmagnetic if a magnetized hold-down plate 29 is employed) and having one surface machined to provide a concavely stepped series of concentric surface grooves 36 of increasingly smaller sizes corresponding to the size of an individual mat blank to be stacked. An innermost concentric groove 37 at the lowest depth receives the metallic hold-down plate 29 earlier described. In use, the plate 35 is placed upon the surface of a work table 38, the hold-down plate 29 is placed in the lowermost groove 37, and mat blanks 12 are then stacked in the grooves 36 beginning with the smallest sized mat blank and progressing to the largest size thereof. The make-ready plate 27', which does not use the locating pin 28 shown in FIGS. 4 and 5 but which is provided with locating pins 39 arranged to engage the peripheral edges of the plate 35 to locate the plate 27' in relation to the jig and thus to the assembled stack of mat blanks 12, is then placed on top of the jig. The latter is provided with handles 40 by which the completed assembly may be lifted from the work table 38, turned upside down, and placed upon the press bed (not shown) and the make-ready plate 27' accurately positioned thereon by locating members such as the members 26 described in relation to FIG. 4. The jig is then lifted as illustrated in FIG. 7 to leave upon the make-ready plate 27' the convex stack of mat blanks 12 with hold-down plate 29 in readiness for embossing in the manner earlier described.

It will be apparent from the foregoing description of the invention that the novel embossing plate and method described facilitates the fabrication and reduces the manufacturing cost of peripheral edge decorated table and place mats and like articles of commerce, particularly in that it enables their mass production economically and at relatively low cost. One embossing plate takes the place of the several sized embossing plates heretofore required for embossing each of several sizes of mats, and hence results in a substantial saving of the material and cost of fabricating such multiple embossing plates. The invention has important advantages in gold leaf cameo-type embossing of mats fabricated in various sizes and geometrical configurations, and in minimizing the quantity of gold foil scrap effects a substantial saving of the order of 65% of the cost of the gold foil used.

While a specific form of the invention has been described for purposes of illustration, it is contemplated

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that numerous changes may be made without departing from the spirit of the invention.

What is claimed is:

1. The method of concurrently embossing the exposed peripheral edge surface portion of each of a concentric convex stack of sheet materials which comprises the steps of placing upon a planar rigid make-up surface a concentric stack of sheet materials having progressively smaller sizes from a lowermost sheet to an uppermost sheet to leave the peripheral edge surface portion of each larger size sheet exposed by the adjacent smaller size sheet, placing on said stack a planar hold-down weight member of size smaller than that of said uppermost sheet to leave a peripheral edge portion thereof exposed, and bringing into surface deforming pressure engagement with said stack an embossing plate having a central chamber to receive said weight member and concavely stepped concentric surfaces corresponding in size and configuration to the exposed edge portion of individual ones of said sheet materials and lying in individual planes normal to the axis of concentricity and which are spaced by the approximate thickness of said sheet material and have surface engravings to provide in relief thereon concentric designs for impression into the peripheral edge surface portions of said sheet materials.

2. The method of concurrently embossing the exposed peripheral edge surface portion of each of a concentric convex stack of sheet materials which comprises the steps of placing upon a planar rigid make-ready surface a concentric stack of sheet materials having progressively smaller sizes from a lowermost sheet to an uppermost sheet to leave the peripheral edge surface portion of each larger size sheet exposed by the adjacent smaller size sheet, placing on said stack a planar hold-down weight member of size smaller than that of said uppermost sheet to leave a peripheral edge portion thereof exposed, placing a sheet of foil over said stack, and bringing into pressure engagement with said foil a heated metallic embossing plate having a central chamber to receive said weight member and concavely stepped concentric surfaces corresponding in size and configuration to the exposed edge portion of individual ones of said sheet materials and lying in individual planes normal to the axis of concentricity and which are spaced by the approximate thickness of said sheet material and have surface engravings to provide in relief thereon concentric designs for adherent foil impression into the peripheral edge surface portions of said sheet materials.

3. The method of concurrently embossing the exposed

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peripheral edge surface portion of each of a concentric convex stack of sheet materials which comprises the steps of placing upon a planar rigid make-up surface a concentric stack of sheet materials having progressively smaller sizes from a lowermost sheet to an uppermost sheet to leave the peripheral edge surface portion of each larger size sheet exposed by the adjacent smaller size sheet, and bringing into surface deforming pressure engagement with said stack an embossing plate having a central chamber and concavely stepped concentric surfaces corresponding in size and configuration to the exposed edge portion of individual ones of said sheet materials and lying in individual planes normal to the axis of concentricity and which are spaced by the approximate thickness of said sheet material and have surface engravings to provide in relief thereon concentric designs for impression into the peripheral edge surface portions of said sheet materials.

4. The method of concurrently embossing the exposed peripheral edge surface portion of each of a concentric convex stack of sheet materials which comprises the steps of placing upon a planar rigid make-ready surface a concentric stack of sheet materials having progressively smaller sizes from a lowermost sheet to an uppermost sheet to leave the peripheral edge surface portion of each larger size sheet exposed by the adjacent smaller size sheet, placing a sheet of foil over said stack, and bringing into pressure engagement with said foil a heated metallic embossing plate having a central chamber and concavely stepped under-cut-separated concentric surfaces corresponding in size and configuration to the exposed edge portion of individual ones of said sheet materials and lying in individual planes normal to the axis of concentricity and which are spaced by the approximate thickness of said sheet material and have surface engravings to provide in relief thereon concentric designs for adherent foil impression into the peripheral edge surface portions of said sheet materials.

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WILLIAM B. PENN, *Primary Examiner.*

UNITED STATES PATENT OFFICE  
CERTIFICATE OF CORRECTION

Patent No. 3,194,152

July 13, 1965

Mark Rubinoff

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 23, for "lamination" read -- imitation --; line 69, for "illustrateing" read -- illustrating --; line 71, for "plain" read -- plan --; column 2, line 38, for "the time" read -- the same time --.

Signed and sealed this 28th day of December 1965.

(SEAL)

Attest:

ERNEST W. SWIDER

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents