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(54) **DOUBLE SKIN DOOR APPARATUS**

DOPPELWANDTüRVORRICHTUNG

DISPOSITIF DE PORTE A DOUBLE PEAU

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Description

Cross Reference to Related Application and Claim to Priority:

[0001] This application is a continuation-in-part of application serial no. 10/308,263, filed November 27, 2002 for the invention entitled Double Skin Apparatus, which was a continuation-in-part of application Serial No. 10/223,744, filed August 20, 2002, titled Double Skin Door Apparatus.

Field of the Invention:

[0002] The present invention is direction to a molded composite door akin according to the preamble of claim 1. Further the present invention relates to a door according to the preamble of claim 8.

Background of the Invention:

[0003] Man-made boards, such as fiberboard, e.g., medium density fiberboard; hardboard; chipboard; oriented strand board-fiberboard composites; particle board; oriented strand board-particle board composites; and the like, may be the formed into articles having contoured portions simulating stiles, rails, panels, or other desired features. Such articles may be formed to include one or more interior depressions or raised contours simulating panels or other decorative features. Such formed depressions and contoured portions may replicate a natural wood paneled door.

[0004] With respect to conventional doors, molded door skins may be adhesively secured to a wood frame support structure to produce a finished door. Rails and stiles may also be used to provide additional structure support for the door. Such door are well known in the art, and provide consumers with an aesthetically appealing, yet cost efficient alternative to traditional, solid wood doors.

[0005] For example, U.S. Patent 5,782,055 to Crittenden discloses an asymmetrically formed door and a method of making the door. The asymmetry allows the door portion inwardly from its perimeter frame to warp in response to temperature and humidity conditions without warping the perimeter frame. Accordingly, the door perimeter frame remains in its original planar configuration. The disclosed door comprises a pair of asymmetrically configured skins secured to a perimeter frame, with a foam disposed between the skins. Generally, the door is used as an exterior door. U.S. Patent 5,074,087 to Green discloses a door having a composite construction with a convention perimeter frame and a pair of molded fiberglass skins secured to the perimeter frame. Within the skins and the perimeter frame is a plastic foam core. U.S. Patent 5,438,908 to Costello disclosed a door having a perimeter frame, which is sandwiched between formed metal stampings or body panels. Wood panels or veneers may then be adhesively secured to the metal stampings to provide a wood appearance. Several different exterior configurations are disclosed.

[0006] The present invention provides door comprising a conventional perimeter frame and a pair of reverse molded wood composite skins. The molded skins include asymmetrical configurations and fill elements between selected portions of the skins. The fill portion are disposed adjacent to the asymmetrical elements so not to interface with any warping of the asymmetrical elements due to temperature or humidity conditions.

Summary of the Invention:

[0007] The present invention relates to a molded wood composite door skin according to the preamble of claim 1.

[0008] The present invention also directed to a door according to the preamble of claim 8.

[0009] A double skin door apparatus is provided, comprising a door frame having opposing sides. A first door skin is secured to one side of the frame. The first door skin has a first asymmetrical profile including a convex portion and a concave portion. A second door skin is secured to an opposing side of the frame, and is spaced frame the first door skin. The second door skin has a second asymmetrical profile including a convex portion and a concave portion. The convex portions of the first and second door skins define a first distance, and the concave portions of the first and second door skins define a second distance, wherein the first distance is greater than the second distance. A plate is disposed between the first and second door skins.

[0010] A door comprises a perimeter frame having a first face and a second face. The frame has a first width. A first akin having a perimeter planar portion is secured to the first face of the frame. The first skin has an upper convex portion and an upper inner planar portion, a lower convex portion and a lower planar portion spaced from the upper convex portion and the upper inner planar portion. A second skin has a perimeter planar portion secured to the second face of the frame. The second skin has an upper convex portion and an upper inner planar portion, a lower convex portion and a lower inner planar portion spaced from the upper convex portion and the upper inner planar portion on the second skin. The upper convex portions of the first and second skins and the inner planar portion of the first and second skins are aligned with each other. Preferably the door skins are molded from a wood composite, such as medium density fiberboard, chip board, flake board, oriented strand board, and the like.

[0011] It is the object of the present invention to provide a molded wood composite door skin and a door comprising the door skin wherein the door skin is free from surface fracturing. This object is solved by the door skin of claim 1 and by the door of claim 8.

Detailed Description the Figures:

[0012]

Figure 1 in an elevational view of a door according to the present invention;
Figure 2 is a fragmentary cross-sectional view taken along line 2-2 of Figure 1 and viewed in the direction of the arrows;
Figure 3 is an elevational view of a door according to a second embodiment; and
Figure 4 is a fragmentary exploded view of a door according to a third embodiment.

Detailed Description of the Invention:

[0013] As best shown in Figure 1, a door 10 comprises a perimeter frame 12, frame 12 having a pair of stiles 14, 16 and a pair of rails 18, 20. Rail 20 is disposed near the top of door 10, and rail 18 is disposed near the bottom of door 10. Stiles 14, 16 and rails 18, 20 are approximately secured together to define frame 12 of door 10. Frame 12 may also include an intermediate rail 22 disposed intermediate rails 18, 20 and extending fully between stiles 14, 16. Preferably, intermediate rail 22 extends parallel top and bottom rails 18, 20. As well known in the art, a handle set (not shown) may be secured to door 10 at intermediate rail 22. Rail 22 allows door 10 to be hung as either a right band or a left hand door. Since rail 22 extends fully between stiles 14,16, a handle set may be secured to door 10 adjacent either stile 14 or stile 16.

[0014] Preferably, stiles 14, 16, rails 18, 20, and intermediate rail 22 are made of wood or wood product. Door 10 is particularly well suited as an interior door, and may be referred to as a hollow core door Door 10 further comprises two skins 30, 50. Each of skins 30, 50 has exterior visible surface 31, 51 and an interior surface 33, 53 for securing to opposite sides frame 12, a best shown in Figure 2, skins 30, 50 may be secured to frame 12 so that they are mirror image of each other.

[0015] Skin 30 includes an planar area 32. Inwardly from outer planar area 32 is an asymmetrical profile P formed in skin 30. Asymmetrical profile P includes convex pardon 34 and a concave portion 36. The particular configuration of convex portion 34 and concave portion 36 may vary depending on consumer preference. Inwardly from concave portion 36 is an inner planar area 38. It can be seen from Fig. 2 that the planar areas 32 and 38 have a thickness exceeding the thickness of concave portion 34 and convex portion 38. Therefore, inner planar area 38 is disposed within the perimeter of asymmetrical profile P and is inwardly spaced relative to planar portion 32. That is, asymmetrical profile P comprises a closed area relative to exterior surface 31. This closed area may be either regular or irregular, depending on consumer preference. For example, asymmetrical profile P may define a rectangular closed area, or asymmetrical profile P may define a closed area having a curved side, as shown in Figure 1. In either case, asymmetrical profile P defines a continuous or closed loop, with inner planar area 38 disposed within the closed loop.

[0016] Door 10 may include more than one asymmetrical profile portion P. For example, door 10 shown in Figure 1 includes asymmetrical profile P defined by convex portion 34 and concave portion 36, as described above. Asymmetrical profile P is disposed in an upper portion of door 10, preferably above intermediate rail 22 and below rail 20. In addition, door 10 includes a second asymmetrical profile portion P2 disposed below intermediate rail 22 and above rail 18. Asymmetrical profile portion P2 may have a different closed loop configuration and shape compared to asymmetrical profile portion P. Asymmetrical profile P2 is defined by a lower convex portion 40 and a lower concave portion 42. Inwardly from lower concave portion 42 is a lower planar portion 44. Thus, lower asymmetric profile P2 also comprises a closed loop, with convex portion 40 and concave portion 42 comprising continuous elements.

[0017] The particular configuration of asymmetric profiles P, P2, or their connecting elements, may vary from that illustrated in Figure 1 depending on consumer preference. While lower asymmetric profile P2 is shown as a square or a rectangle, upper asymmetric profile P is shown as an irregular shape with three straight sides and a curved side. It should be understood that any configuration or shape of an asymmetric profile may be formed in door skin 30. Furthermore, skin 30 may include any number of asymmetric profiles, thereby simulating multi-panel doors. In addition, skin 30 may include a wood grain pattern, as shown in Figure 1. As well known in the art, a wood grain pattern may be embossed or formed in skin 30, or a veneer or paper overlay may be secured to exterior surface 31.

[0018] Skin 50 is substantially identical to skin 30, as best shown in Figure 2. Thus, skin 50 includes an outer planar portion 52, an upper convex portion 54, an upper concave portion 56, and an upper inner planar portion 58 within an asymmetric profile defined by the convex portion 54 and the concave portion 56 and their connecting elements. The other portions of skin 50 may be understood from Figure 1 in that skin 50 is essentially a mirror image of skin 30. Thus, skin 50 may also include any configuration or shape of asymmetric profiles, but preferably corresponds to the configurations formed in skin 30 so that convex and concave portions of skin 30 are aligned with convex and concave portions of skin 50, as shown in Figure 2. The use of double skins, with the skins being mirror images of each other, and both including asymmetric elements, provides a door that is stable under virtually all conditions of temperature and humidity, and is also aesthetically pleasing for consumers. Specifically, the asymmetry allows the portion of door 10 that is disposed inwardly from frame 12 to warp in response to temperature and humidity conditions without warping frame 12. In this way, frame 12 remains in its original planar configuration.

[0019] Skins 30, 50 are secured to opposing sides of frame 12 at the interior surface 33, 53 of outer planar areas 32, 52, respectively, and to the interior surface 33, 53 corresponding to an intermediate rail (or lock rail) 22. Skins 30 and 50 are preferably molded from a wood composite, such as medium density fiberboard. The skins 30 and 50 preferably are identical. In one embodiment of the present invention, a plate element 70 is disposed between and secured to interior surface 33 of inner planar portions 38, 58 of skins 30, 50, respectively, as best shown in Figure 2. Plate element 70 provides stability to skins 30, 50 without hindering the warping of asymmetric profile P adjacent to the plate element 70. A second plate element 70 may also be disposed between and secured to interior surface 33 of lower inner planar portion 44 and the corresponding lower inner planar portion on skin 50. The asymmetric profiles P, P2 may warp in response to temperature and humidity conditions without affecting either perimeter frame 12 or inner planar portions 38, 58 with their plate elements. And likewise, inner planar portions 38, 58 with plates 70 secured to them, do not affect the warping of the asymmetric elements. Plates 70 provide additional strength and stability to door 10, regardless of the temperature and humidity conditions of the structure in which the door is installed. Plates 70 are formed from wood, wood composite, foam and like materials used to form a door core. The plate 70 is preferably adhesively secured to the adjacent door skins.

[0020] As best shown in Fig. 2, perimeter frame 12 has a predetermined width or thickness, and the distance between convex portion 34 and convex portion 54, shown by arrow d1, is greater than the width of perimeter frame 12, shown by arrow d2. The distance between concave portions 36 and 56, shown by arrow d3, is less than the width of perimeter frame 12. The distance between inner planar portion 38 and inner planar portion 58 (with plate 70 disposed between them), shown by arrow d4, is less than the distance between convex portions 34 and 54 (d1), but is greater than the distance between concave portions 36 and 56 (d3). Also, it can be seen from Fig. 2 that the plate 70 secured to skins 30 and 50 is longitudinally spaced from rail 14, thus providing a hollow space encompassing planar portions 32, convex portions 34, and concave portions 36.

[0021] In addition, the caliper of skin 30 at convex portion 34 is less than the caliper of skin 30 at outer planar area 32 or inner planar area 38. Convex portion 34 extends outwardly beyond the plane of outer planar area 32 relative to exterior surface 31. Concave portion 36 extends inwardly from the plane of outer planar area 32 relative to exterior surface 31. Inner planar area 38 lies on a plane spaced from the plane of outer planar area 32, and is preferably recessed from outer planar area 32, as shown in Figure 2. Concave portion 36 may also extend inwardly from the plane of inner planar area 38, creating a relatively small distance d3 between concave portions 36, 56, as noted above.

[0022] Similarly, the caliper of skin 50 at convex portion 54 is less than the caliper of skin 50 at outer planar area 52 or inner planar area 58. Convex portion 54 extends outwardly beyond the plane of outer planar area 52 relative to exterior surface 51. Concave portion 56 extends inwardly from the plane of outer planar area 52 relative to exterior surface 51. Inner planar area 58 lies on a plane spaced from the plane of outer planar area 52, and is preferably recessed from outer planar area 52. Concave portion 56 may also extend inwardly from the plane of inner planar area 58, as with concave portion 36 and thereby defining distance d3.

[0023] The configuration and alignment of the lower asymmetric profile P2, with respect to the convex and concave portions, is substantially the same as that discussed above for the upper asymmetric profile P with respective convex and concave portions, and the inner planar portion with its plate, aligned accordingly. It should be understood that the configuration of lower asymmetric profile P2 may vary depending on consumer preference.

[0024] As best shown in Figure 3, a second embodiment of the present invention provides for a door 110 having a perimeter frame 112, and a plurality of upper asymmetric elements 134, 144 and inner planar elements 140, 150, a plurality of intermediate asymmetric elements 154, 164 and inner planar elements 160, 170, and a plurality of lower asymmetric elements 174, 184 and inner planar elements 180, 190. Perimeter frame 112 includes a pair of vertical stiles 114, 116 and a pair of horizontal rails 118, 120. Door 110 may also include an intermediate rail 122 extending between stiles 114, 116 and appropriately secured thereto. A pair of skins 130 are appropriately secured to opposing sides of perimeter frame 112 and to intermediate rail 122, as described above for door 10. Although only one skin 130 is shown in Figure 3, it should be understood that a second skin is secured to the opposite side of frame 112, and is preferably a mirror image of skin 130 just as skin 50 is preferably a mirror image of skin 30 on door 10. Each of skins 130 is manufactured from a molded wood composite, such as medium density fiberboard.

[0025] Each of skins 130 includes a perimeter planar area 132, which may be secured to perimeter frame 112. Skin 130 includes a pair of upper asymmetric profiles 134, 144, a pair of intermediate asymmetric profiles 154, 164, and a pair of lower asymmetric profiles 174, 184. Note that asymmetric profiles 134, 144, 154, 164, 174 and 184 may differ in size and shape. For example, as shown in Figure 3, upper asymmetric profiles 134, 144 are smaller than intermediate and lower asymmetric profiles 154, 164, and 174,184, respectively. The differences in size and shape are for illustrative and explanatory purposes only, and are immaterial to the functionality of door 110.

[0026] As described above for door 10, each asymmetric profile on door 110 includes a closed loop convex portion integral with and connected to a closed loop concave portion. Each concave portion is disposed about an inner planar portion. For example, profile 134 includes a

closed loop convex portion 136 connected to a closed loop concave portion 138, and an enclosed inner planar portion 140. Profile 144 includes a closed loop convex portion 146 connected to a closed loop concave portion 148, and an enclosed inner planar portion 150.

[0027] Intermediate asymmetric profiles 154, 164 include, respectively, closed loop convex portions 156, 166, integral with and connected to closed loop concave portions 158, 168, and enclosed inner planar portions 160, 170. Lower asymmetric profiles 174, 184 include closed loop convex portions 176, 186, integral with and connected to closed loop concave portions 178, 188, and disposed about or enclosing inner planar portions 180, 190, respectively.

[0028] As shown in Figure 3, the closed loop asymmetric profiles are of a generally elongated rectangular configuration. However, the profile configurations of door 110 may have any desired size and shape, depending on consumer preference. For example, the asymmetric profiles may be round, square, rectangular, irregular, or a combination of such shapes (as in asymmetric profile P in Figure 1). In order to allow for appropriate warping of door 110, without distorting or warping perimeter frame 112, the profiles need only be closed loop. Each profile includes a convex portion, a concave portion connected to the convex portion, and an enclosed inner planar portion.

[0029] Preferably, the opposing skins 130 are secured to frame 112 so that skins 130 have a mirror image when viewed in cross-section (as shown in Figure 2 for door 10). Skins 130 are therefore secured to frame 112 in a similar manner as described above for door 10. Furthermore, door 110 may also include plates secured between the pair of skins 130 between the enclosed inner planar portions 140, 150, 160, 170, 180, 190 and corresponding inner planar portions of the other skin 130 securing to the opposing side of frame 112, as discussed above. Furthermore, door 110 may also include a wood grain pattern, as shown in Figure 3.

[0030] As best shown in Figure 4, a third embodiment of the present invention provides for a door 210 having a lock block 222 secured to a stile 214, as opposed to an intermediate rail or lock rail extending fully between the vertical stiles (as in doors 10 and 110). A second lock block (not shown) may be secured to the opposing stile on the opposite side of door 210. Except for the omission of an intermediate rail extending fully between opposing stiles, and the inclusion of at least one lock block 222, the configuration of door 210 is identical to that described for doors 10 and 110. With two lock blocks, door 210 may have a lock set secured on either side of door 210.

[0031] Therefore, door 210 includes a full perimeter frame 212, which includes stile 214 to which block 222 is secured. A pair of outer skins 230, 250 are secured to opposing sides of frame 212. For purposes of discussion, skin 230 is a "front" skin, and skin 250 is a "rear" skin. Skins 230, 250 are mirror images of each other, as discussed for doors 10 and 110. Skin 230 includes an outer perimeter planar area or portion 232, and skin 250 includes an outer perimeter planar area or portion 252. Outer perimeter portions 232, 252 are appropriately secured to frame 212 and to the lock block 222, as well as a lock block opposite lock block 222 on the opposing stile (not shown).

[0032] The asymmetrical design or portion for skin 230 includes a convex portion 234 and a concave portion 236, as described above. The asymmetrical design or profile for skin 250 includes a convex portion 254 and a concave portion 256. The respective convex and concave portions of the skins are aligned with each other, as discussed above and as illustrated for the door 10 in Figure 2.

[0033] The convex and concave portions extend continuously, without a break, for the full length of skins 230, 250, and are disposed inwardly from outer perimeter portions 232, 252, respectively. The convex and concave elements therefore provide relatively long closed loops compared to the shorter closed loops of doors 10 and 110. Without a transversely extending intermediate or lock rail, door 210 may have such full-length asymmetric portions in skins 230, 250.

[0034] Each skin 230, 250 includes an inner planar area adjacent to concave portions of the skins, as described above. For example, skin 230 includes an inner planar portion 238 and skin 250 includes an inner planar portion 258. A plate 270 may be secured between inner planar portions 238, 258. Plate 270 provides stability for door 210, as explained above. Plate 270 may extend fully within the asymmetrical profile of door 210, adjacent concave portions 236, 256, without restricting warping of the aligned asymmetrical portions in response to temperature and humidity conditions.

Claims

1. A molded wood composite door skin (30, 50, 130), comprising:

an outer planar area (32, 132);
an inner planar area (38, 44, 140, 150, 160, 170, 180, 190); and
an asymmetric profile area (P, P2) surrounding said inner planar area (38, 44, 140, 150, 160, 170, 180, 190) and interconnecting and integral with said outer planar area (32, 132) and said inner planar area (38, 44, 140, 150, 160, 170, 180, 190), said asymmetric profile area (P, P2) having a convex portion (34, 40, 136, 146, 156, 166, 176, 186) extending outwardly from and relative to the plane of
said outer planar area (32, 132) or of said outer planar area (32, 132) and said inner planar area (38, 44, 140, 150, 160, 170, 180, 190), **characterized in that** said convex portion (34, 40, 136, 146, 156, 166, 176, 186) has a first caliper, said

outer planar area (32, 132) has a second caliper, and said first caliper is less than said second caliper.
said outer planar area (32, 132) or of said outer planar area (32, 132)

2. The door skin (30, 50, 130) of claim 1, wherein said inner planar area (38, 44, 140, 150, 160, 170, 180, 190) has a caliper that is greater than said first caliper.

3. The door skin (30, 50, 130) of claim 2, wherein said inner planar area (38, 44, 140, 150, 160, 170, 180, 190) lies on a plane spaced in particular inwardly from the plane of said outer planar area (32, 132).

4. The door skin (30, 50, 130) of any preceding claim, wherein said asymmetric profile area (P, P2) further comprises a concave portion (36, 42, 138, 148, 158, 168, 178, 188) extending inwardly from and relative to the plane of said outer planar area (32, 132).

5. The door skin (30, 50, 130) of claim 4, wherein said concave portion (36, 42, 138, 148, 158, 168, 178, 188) extends from and is integral with said inner planar area (38, 44, 140, 150, 160, 170, 180, 190) and said convex portion (34, 40, 136, 146, 156, 166, 176, 186) and wherein in particular said convex portion (34, 40, 136, 146, 156, 166, 176, 186) extends from and is integral with said outer planar area (32, 132) and said concave portion (36, 42, 138, 148, 158, 168, 178, 188).

6. The door skin (30, 50, 130) of any preceding claim, wherein said inner planar area (38, 44, 140, 150, 160, 170, 180, 190) defines a rectangular area.

7. The door skin (30, 50, 130) of any preceding claim, further comprising at least two of said inner planar areas (38, 44, 140, 150, 160, 170, 180, 190) and at least two of said corresponding asymmetric profile areas (P, P2), wherein preferably at least two of said inner planar areas (38, 44, 140, 150, 160, 170, 180, 190) have differing configurations.

8. A door (10, 110), comprising:

a perimeter frame (12, 112);
first and second molded skins (30, 50, 130), each of said skins (30, 50, 130) having an exterior surface (31, 51) and an interior surface (33, 35) secured to opposing sides of said frame (12, 112), **characterized in that** at least one of the skins (30, 50, 130) has a configuration as set out in any preceding claim.

9. A door (10, 110) according to claim 8, comprising:

a perimeter frame (12, 112);
first and second molded skins (30, 50, 130), each of said skins (30, 50, 130) having an exterior surface (31, 51) and an interior surface (33, 35) secured to opposing sides of said frame (12, 112), wherein the skins (30, 50, 130) each have an asymmetric profile (P, P2) including a convex portion (34, 40, 136, 146, 156, 166, 176, 186) and concave portion (36, 42, 138, 148, 158, 168, 178, 188), wherein a first distance between said convex portions (34, 40, 136, 146, 156, 166, 176, 186) of the first and second door skins (30, 50, 130) is greater than a second distance between said concave portions (36, 42, 138, 148, 158, 168, 178, 188) of said first and second door skins (30, 50, 130).

10. The apparatus of claim 9, wherein said asymmetric profiles (P, P2) define inner planar areas.

11. The door (10, 110) of claim 8 or 10, wherein said first and said second skins (30, 50, 130) are secured to said frame (12, 112) so that an inner planar area (38, 44, 140, 150, 160, 170, 180, 190) and an asymmetric profile (P, P2) of said first skin (30, 50, 130) is aligned with an inner planar area (38, 44, 140, 150, 160, 170, 180, 190) and an asymmetric profile (P, P2) of said second skin (30, 50, 130).

12. The door (10, 110) of any of claims 8 to 11, further comprising a plate element (270) disposed between interior surfaces of inner planar areas (38, 44, 140, 150, 160, 170, 180, 190) of said first and second skins (30, 50, 130) and preferably wherein outer planar areas (32, 132) of the interior surface of said skins (30, 50, 130) are secured to said frame (12, 112).

13. A door (212), comprising:

a perimeter frame (212) having a first face and a second face, said frame (212) having a first width;
a first skin (230, 250) having a perimeter planar portion (232, 252) secured to said first face of said frame (212), said first skin having an upper convex portion (254) and an upper inner planar portion (238, 258), a lower convex portion (234) and a lower inner planar portion (238, 258) spaced from said upper convex portion (234) and said upper inner planar portion (238, 258);
a second skin (230, 250) having a perimeter planar portion (232, 252) secured to said second face of said frame (212), said second skin (230, 250) having an upper convex portion (234) and an upper inner planar portion (238, 258), a lower convex portion (234) and a lower inner planar portion (238, 258) spaced from said upper con-

vex portion (234) and said upper inner planar portion (238, 258) on said second skin (230, 250), wherein
said upper convex portions (234) of said first and second skins (230, 250) and said inner planar portions (238, 258) of said first and second skins (230, 250) are aligned with each other, **characterized in that** the door (212) has a configuration as set out in any of claims 8 to 13.

14. A door (212) according to any of claims 8 to 13, wherein said first and second skins (230, 250) include a plurality of said convex portions and corresponding inner planar portions.

15. A door (212) according to any of claims 8 to 14, wherein said first skin (230, 250) and said second skin (230, 250) are secured to said parameter frame (212) to be mirror images of each other.

Patentansprüche

1. Eine geformte Türhaut (30, 50, 130) aus einem Holzverbundmaterial mit:

einem äußeren ebenen Bereich (32, 132);
einem inneren ebenen Bereich (38, 44, 140, 150, 160, 170, 180, 190); und
einem asymmetrisch profilierten Bereich (P, P2), der den inneren ebenen Bereich (38, 44, 140, 150, 160, 170, 180, 190) umgibt und integral mit dem äußeren ebenen Bereich (32, 132) und dem inneren ebenen Bereich (38, 44, 140, 150, 160, 170, 180, 190) ausgebildet ist und diese mit einander verbindet, wobei der asymmetrisch profilierte Bereich (P, P2) einen konvexen Bereich (34, 40, 136, 146, 156, 166, 176, 186) besitzt, der sich nach außen von und relativ zu der Ebene des äußeren ebenen Bereichs (32, 132) oder von dem äußeren ebenen Bereich (32, 132) und dem inneren ebenen Bereich (38, 44, 140, 150, 160, 170, 180, 190) erstreckt, **dadurch gekennzeichnet, dass** der konvexe Bereich (34, 40, 136, 146, 156, 166, 176, 186) eine erste Stärke besitzt, der äußere ebene Bereich (32, 132) einen zweite Stärke besitzt und die erste Stärke kleiner als die zweite Stärke ist.

2. Die Türhaut (30, 50, 130) nach Anspruch 1, worin der innere ebene Bereich (38, 44, 140, 150, 160, 170, 180, 190) eine Stärke besitzt, die größer als die erste Stärke ist.

3. Die Türhaut (30, 50, 130) nach Anspruch 2, worin der innere ebene Bereich (38, 44, 140, 150, 160, 170, 180, 190) auf einer Ebene liegt, die nach innen beabstandet von der Ebene des äußeren ebenen Bereichs (32, 132) ist.

4. Die Türhaut (30, 50, 130) nach irgendeinem vorhergehenden Anspruch, worin der asymmetrisch profilierte Bereich (P, P2) weiterhin einen konkaven Bereich (36, 42, 138, 148, 158, 168, 178, 188) besitzt, der sich nach innen von und relativ zu der Ebene des äußeren ebenen Bereichs (32, 132) erstreckt.

5. Die Türhaut (30, 50, 130) von Anspruch 4, worin der konkave Bereich (36, 42, 138, 148, 158, 168, 178, 188) sich von dem inneren Bereich (38, 44, 140, 150, 160, 170, 180, 190) und dem konvexen Bereich (34, 40, 136, 146, 156, 166, 176, 186) erstreckt und damit integral ausgebildet ist, und worin insbesondere der konvexe Bereich (34, 40, 136, 146, 156, 166, 176, 186) sich von dem äußeren ebenen Bereich (32, 132) und dem konkaven Bereich (36, 42, 138, 148, 158, 168, 178, 188) erstreckt und integral damit ausgebildet ist.

6. Die Türhaut (30, 50, 130) von irgendeinem vorhergehenden Anspruch, worin der innere ebene Bereich (38, 44, 140, 150, 160, 170, 180, 190) einen rechteckigen Bereich definiert.

7. Die Türhaut (30, 50, 130) von irgendeinem vorhergehenden Anspruch, die weiterhin wenigstens zwei der inneren ebenen Bereiche (38, 44, 140, 150, 160, 170, 180, 190) und wenigstens zwei der entsprechenden asymmetrisch profilierten Bereiche (P, P2) aufweist, wobei vorzugsweise wenigstens zwei der inneren ebenen Bereiche (38, 44, 140, 150, 160, 170, 180, 190) unterschiedliche Konfigurationen haben.

8. Eine Tür (10, 110) mit
einem Umfangsrahmen (12, 112);
ersten und zweiten geformten Häuten (30, 50, 130), wobei jede der Häute (30, 50, 130) eine Außenoberfläche (31, 51) und einen Innenoberfläche (33, 35) besitzt, die an gegenüberliegenden Seiten des Rahmens (12, 112) befestigt sind, aufweist, **dadurch gekennzeichnet, dass** wenigstens eine der Häute (30, 50, 130) eine Konfiguration besitzt, wie sie in irgendeinem vorherigen Anspruch definiert ist.

9. Eine Tür (10, 110) nach Anspruch 8, mit:

einem Umfangsrahmen (12, 112);
ersten und zweiten geformten Häuten (30, 50, 130), wobei jede der Häute (30, 50, 130) eine Außenoberfläche (31, 51) und eine Innenoberfläche (33, 35), die an gegenüberliegenden Seiten des Rahmens (12, 112) befestigt ist, aufweist, wobei die Häute (30, 50, 130) jeweils ein asymmetrisches Profil (P, P2) mit einem konvexen Bereich (34, 40, 136, 146, 156, 166, 176,

186) und einem konkaven Bereich (36, 42, 138, 148, 158, 168, 178, 188) aufweisen, wobei ein erster Abstand zwischen den konvexen Bereichen (34, 40, 136, 146, 156, 166, 176, 186) der ersten und zweiten Türhäute (30, 50, 130) größer als ein zweiter Abstand zwischen den konkaven Bereichen (36, 42, 138, 148, 158, 168, 178, 188) der ersten und zweiten Türhäute (30, 50, 130) ist.

10. Die Vorrichtung nach Anspruch 9, worin die asymmetrischen Profile (P, P2) innere ebenen Bereiche definieren.

11. Die Tür (10, 110) von Anspruch 8 oder 10, worin die ersten und zweiten Häute (30, 50, 130) an dem Rahmen (12, 112) so befestigt sind, dass ein innerer ebener Bereich (38, 44, 140, 150, 160, 170, 180, 190) und ein asymmetrisches Profil (P, P2) der ersten Haut (30, 50, 130) zu einem inneren ebenen Bereich (38, 44, 140, 150, 160, 170, 180, 190) und einem asymmetrischen Profil (P, P2) der zweiten Türhaut (30, 50, 130) ausgerichtet ist.

12. Die Tür (10, 110) nach irgendeinem der Ansprüche 8 bis 11, die weiterhin ein Plattenelement (270) aufweist, welches zwischen Innenoberflächen der inneren ebenen Bereiche (38, 44, 140, 150, 160, 170, 180, 190) der ersten und zweiten Häute (30, 50, 130) angeordnet sind und wobei vorzugsweise äußere ebene Bereiche (32, 132) der Innenoberflächen der Häute (30, 50, 130) an dem Rahmen (12, 112) befestigt sind.

13. Eine Tür (212) mit:

einem Umfangsrahmen (212) mit einer ersten Fläche und einer zweiten Fläche, wobei der Rahmen (212) eine erste Breite besitzt;
einer ersten Haut (230, 250) mit einem ebenen Umfangsbereich (232, 252), der an der ersten Fläche des Rahmens (212) befestigt ist, wobei die erste Haut einen oberen konvexen Bereich (254) und einen oberen inneren ebenen Bereich (238, 258), sowie einen unteren konvexen Bereich (234) und einen unteren inneren ebenen Bereich (238, 258), die von dem oberen konvexen Bereich (234) und dem oberen inneren ebenen Bereich (238, 258) beabstandet sind, aufweist;
einer zweiten Türhaut (230, 250) mit einem ebenen Umfangsbereich (232, 252), der an der zweiten Fläche des Rahmens (212) befestigt ist, wobei die zweite Haut (232, 252) einen oberen konvexen Bereich (234) und einen oberen inneren ebenen Bereich (238, 258), sowie einen unteren konvexen Bereich (234) und einen unteren inneren ebenen Bereich (238, 258), die von dem oberen konvexen Bereich (234) und dem oberen inneren ebenen Bereich (238, 258) an der zweiten Haut (230, 250) beabstandet sind, aufweist, wobei
die oberen konvexen Bereiche (234) der ersten und zweiten Häute (230, 250) und die inneren ebenen Bereiche (238, 258) der ersten und zweiten Häute (230, 250) zueinander ausgerichtet sind, **dadurch gekennzeichnet, dass** die Tür (212) eine Konfiguration hat, wie sie in den Ansprüchen 8 bis 13 definiert ist.

14. Eine Tür (212) nach einem der Ansprüche 8 bis 13, worin die ersten und zweiten Häute (230, 250) eine Vielzahl von konvexen Bereichen und entsprechenden inneren ebenen Bereichen aufweisen.

15. Eine Tür (212) nach irgendeinem der Ansprüche 8 bis 14, worin die erste Haut (230, 250) und die zweite Haut (230, 250) an dem Umfangsrahmen (212) befestigt sind, so dass sie Spiegelbilder voneinander darstellen.

Revendications

1. Une peau de porte composite en bois moulé (30, 50, 130), comprenant:

- une surface plane extérieure (32, 132);
- une surface plane intérieure (38, 44, 140, 150, 160, 170, 180, 190); et
- une surface de profile asymétrique (P, P2) environnant ladite surface plane intérieure (38, 44, 140, 150, 160, 170, 180, 190) et s'interconnectant et intégrale avec ladite surface plane extérieure (32, 132) et ladite surface plane intérieure (38, 44, 140, 150, 160, 170, 180, 190), ladite surface de profile asymétrique (P, P2) ayant une portion convexe (34, 40, 136, 146, 156, 166, 176, 186) s'étendant vers l'extérieur de et relatif au plan de ladite surface plane extérieure (32, 132) et ladite surface plane intérieure (38, 44, 140, 150, 160, 170, 180, 190), **caractérisé en ce que**, ladite portion convexe (34, 40, 136, 146, 156, 166, 176, 186) présente une première épaisseur, ladite surface plane extérieure (32, 132) présente une seconde épaisseur, et ladite première épaisseur est moins que ladite seconde épaisseur.

2. Peau de porte (30, 50, 130) selon la revendication 1, où ladite surface plane intérieure (38, 44, 140, 150, 160, 170, 180, 190) présente une épaisseur qui est plus grande que ladite première épaisseur.

3. Peau de porte (30, 50, 130) selon la revendication 2, où ladite surface plane intérieure (38, 44, 140,

150, 160, 170, 180, 190) est assise sur un plan espacé particulièrement vers l'intérieur à partir du plan de ladite surface plane extérieure (32, 132.

4. Peau de porte (30, 50, 130) selon l'une quelconque des revendications antérieures, où ladite surface de profile asymétrique (P, P2) comprend de plus une portion concave (36, 42, 138, 148, 158, 168, 178, 188) s'étendant vers l'intérieur de et relatif au plan de ladite surface plane extérieure (32, 132.

5. Peau de porte (30, 50, 130) selon la revendication 4, où ladite portion concave (36, 42, 138, 148, 158, 168, 178, 188) s'étend de et est intégrale avec ladite surface plane intérieure (38, 44, 140, 150, 160, 170, 180, 190) et ladite portion convexe (34, 40, 136, 146, 156, 166, 176, 186) et où particulièrement ladite portion convexe (34, 40, 136, 146, 156, 166, 176, 186) s'étend de et est intégrale avec ladite surface plane extérieure (32, 132) et ladite portion concave (36, 42, 138, 148, 158, 168, 178, 188).

6. Peau de porte (30, 50, 130) selon l'une quelconque des revendications antérieures, où ladite surface plane intérieure (38, 44, 140, 150, 160, 170, 180, 190) définit une surface rectangulaire.

7. Peau de porte (30, 50, 130) selon l'une quelconque des revendications antérieures, comprenant de plus au moins deux d'entre lesdites surfaces planes intérieures (38, 44, 140, 150, 160, 170, 180, 190) et au moins deux d'entre lesdites surfaces de profile asymétrique (P, P2) correspondantes, où préférablement au moins deux d'entre lesdites surfaces planes intérieures (38, 44, 140, 150, 160, 170, 180, 190) ont des configurations différentes.

8. Une porte (10, 110), comprenant:

- un cadre de contour (12, 112);
- les première et seconde peaux moulées (30, 50, 130), chacune d'entre lesdites peaux (30, 50, 130) ayant une surface extérieure (31, 51) et une surface intérieure (33, 35) assurées aux côtés opposés dudit cadre (12, 112), **caractérisée en ce qu'**au moins l'un d'entre les peaux (30, 50, 130) présente une configuration comme présentée dans l'une quelconque des revendications antérieures.

9. Une porte (10, 110) selon la revendication 8, comprenant:

- un cadre de contour (12, 112);
- les première et seconde peaux moulées (30, 50, 130), chacune d'entre lesdites peaux (30, 50, 130) ayant une surface extérieure (31, 51) et une surface intérieure (33, 35) assurées aux côtés opposés dudit cadre (12, 112), où les peaux (30, 50, 130) présentent chacun un profile asymétrique (P, P2) incluant une portion convexe (34, 40, 136, 146, 156, 166, 176, 186) et la portion concave (36, 42, 138, 148, 158, 168, 178, 188), où une première distance entre lesdites portions convexes (34, 40, 136, 146, 156, 166, 176, 186) des première et seconde peaux de porte (30, 50, 130) est plus grande qu'une seconde distance entre lesdites portions concaves (36, 42, 138, 148, 158, 168, 178, 188) desdits première et seconde peaux de porte (30, 50, 130).

10. Un dispositif selon la revendication 9, où lesdits profiles asymétriques (P, P2) définissent les surfaces planes intérieures.

11. La porte (10, 110) selon la revendication 8 ou 10, où lesdits première et lesdits seconde peaux (30, 50, 130) sont assurés audit cadre (12,112) de sorte qu'une surface plane intérieure (38, 44, 140, 150, 160, 170, 180, 190) et un profile asymétrique (P, P2) de ladite première peau (30, 50, 130) soient alignés avec une surface plane intérieure (38, 44, 140, 150, 160, 170, 180, 190) et un profile asymétrique (P, P2) de ladite seconde peau (30, 50, 130.

12. La porte (10, 110) selon l'une quelconque des revendications 8 à 11, comprenant de plus un élément plat (270) disposé entre les parties intérieures des surfaces planes intérieures (38, 44, 140, 150, 160, 170, 180, 190) desdites première et seconde peaux (30, 50, 130) et préférablement où les parties planes extérieures (32, 132) de la surface intérieure desdites peaux (30, 50, 130) sont assurées audit cadre (12, 112.

13. Une porte (212), comprenant:

- un cadre de contour (212) ayant une première face et une seconde face, ledit cadre (212) ayant une première largeur;
- une première peau (230, 250) ayant une portion plane de contour (232, 252) assurée à ladite première face dudit cadre (212), ladite première peau ayant une portion supérieure convexe (254) et une portion plane intérieure supérieure (238, 258), une portion convexe inférieure (234) et une portion plane intérieure inférieure (238, 258) espacées de ladite portion convexe supérieure (234) et ladite portion plane intérieure supérieure (238, 258);
- une seconde peau (230, 250) ayant une portion plane de contour (232, 252) assurée à ladite seconde face dudit cadre (212), ladite seconde peau (230, 250) ayant une portion supérieure convexe (234) et une portion plane intérieure

supérieure (238, 258), une portion convexe inférieure (234) et une portion plane intérieure inférieure (238, 258) espacées de ladite portion convexe supérieure (234) et ladite portion plane intérieure supérieure (238, 258) sur ladite seconde peau (230, 250), où
- lesdites portions convexes supérieures (234) desdites première et seconde peaux (230, 250) et lesdites portions planes intérieures (238, 258) desdites première et seconde peaux (230, 250) sont alignées l'une à l'autre, **caractérisée en ce que** la porte (212) présente une configuration comme expliquée dans l'une quelconque des revendications 8 à 13.

14. Une porte (212) selon l'une quelconque des revendications 8 à 13, où lesdites première et seconde peaux (230, 250) comprennent une pluralité desdites portions convexes et portions planes intérieures correspondantes.

15. Une porte (212) selon l'une quelconque des revendications 8 à 14, où ladite première peau (230, 250) et ladite seconde peau (230, 250) sont assurées audit cadre de contour (212) pour être des images en miroir l'un à l'autre.

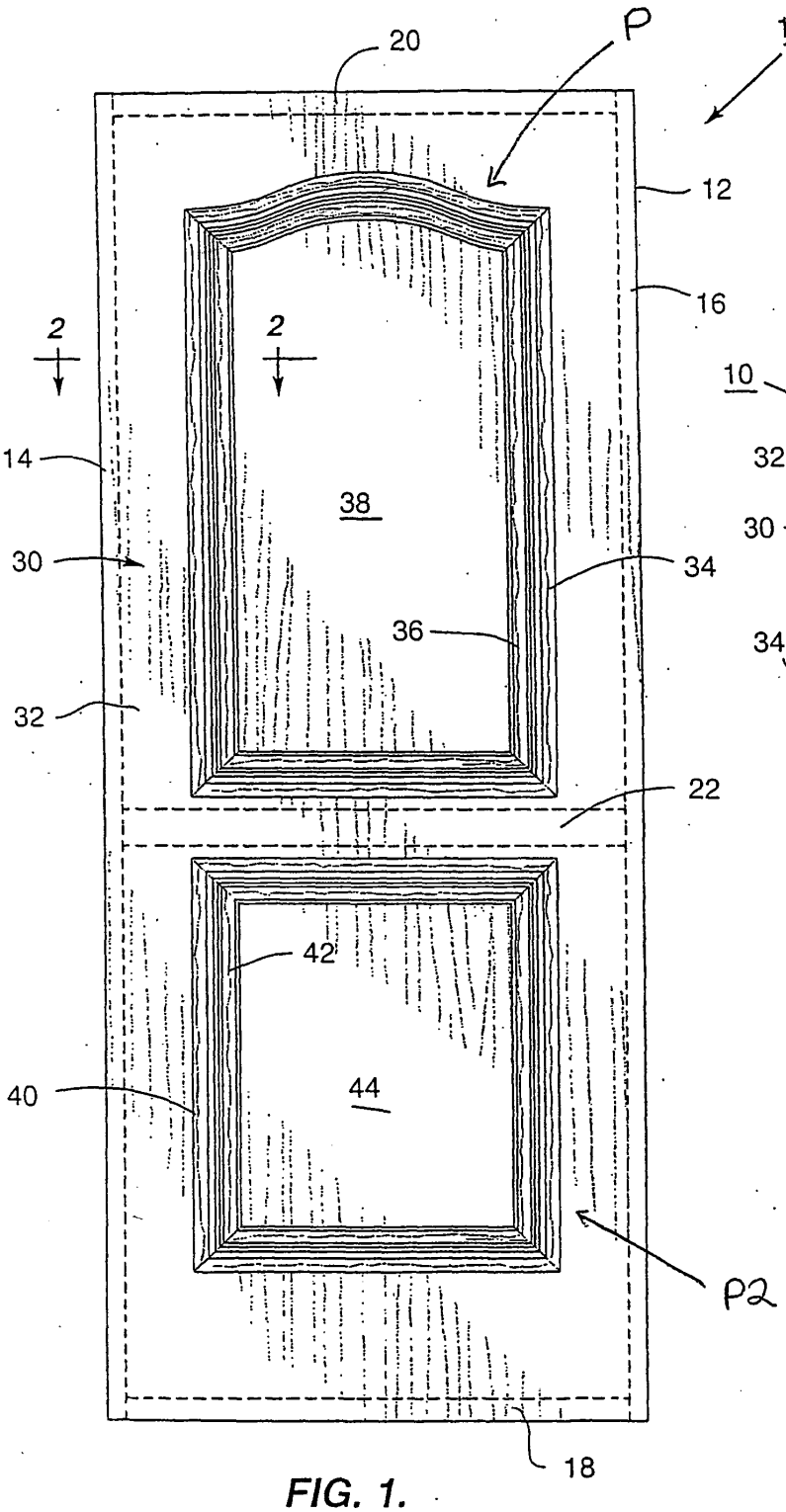

P
10
20
12
16
2
2
14
38
30
34
36
32
22
42
40
44
P2
18

FIG. 1.

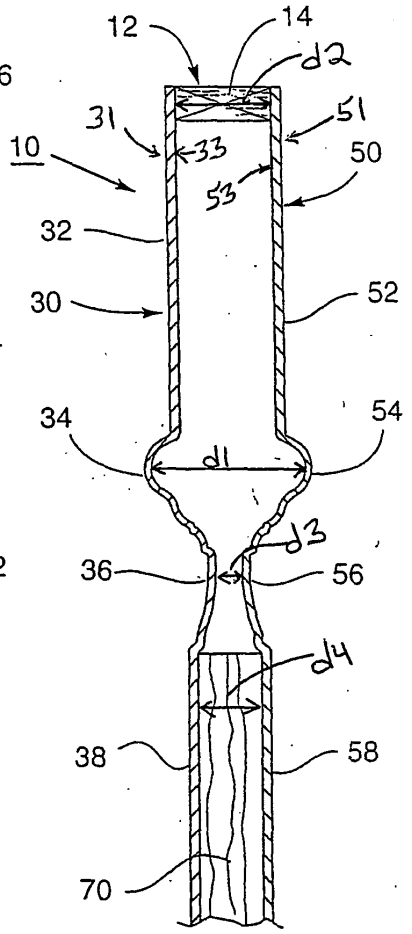

12
14
d2
31
51
10
33
50
53
32
52
30
34
54
d1
d3
36
56
d4
38
58
70

FIG. 2.

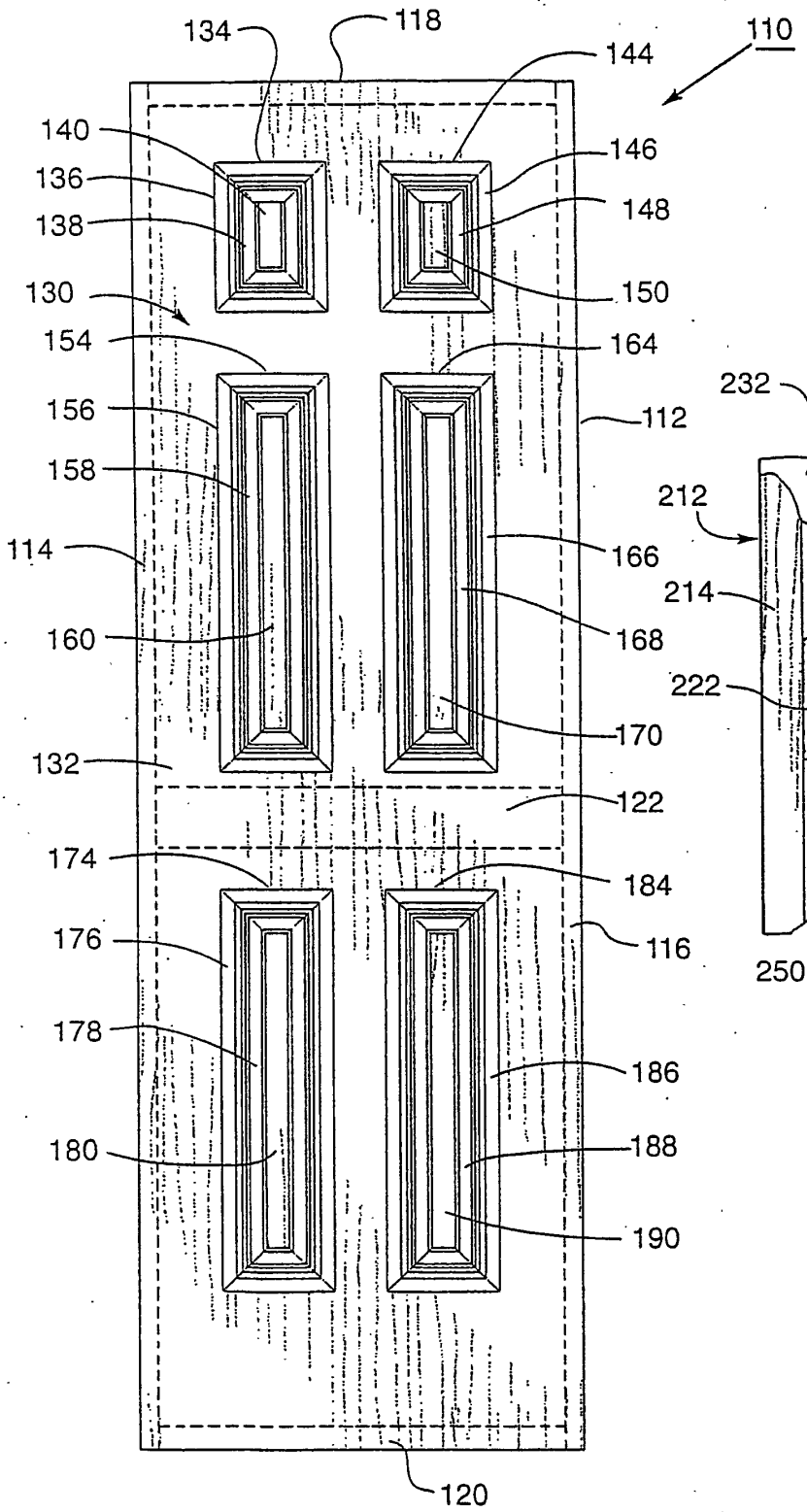

134
118
144
110
140
146
136
148
138
150
130
154
164
156
112
158
166
114
168
160
170
132
122
174
184
176
116
178
186
180
188
190
120

FIG. 3.

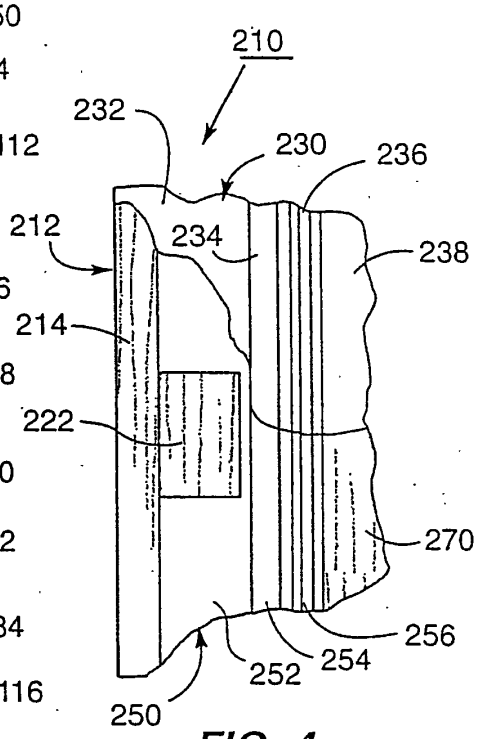

210
232
230
236
212
234
238
214
222
270
256
254
252
250

FIG. 4.

REFERENCES CITED IN THE DESCRIPTION

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