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(54) **Distressed flooring**

(57) A distresse board. The distressed board may include grooves randomly positioned on a surface of the distressed board, the grooves having a radius greater than about 5 inches. The ratio of the surface scrape area of the distressed board that has been scraped compared to a surface board area that is available to be scraped

may be greater than 1:1. The grooves may be randomly positioned with respect to the longitudinal axis of the distressed board, the grooves being applied at an angle of greater than about +/- 5 degrees relative to the longitudinal axis of the distressed board.

EP 2 743 093 A2

Description

FIELD OF THE INVENTION

[0001] The present disclosure relates to a scraped flooring product. Specifically, the present disclosure relates to a scraped wood or wood base flooring material.

BACKGROUND OF THE INVENTION

[0002] It has become fashionable to subject furniture and other objects/fixtures or surfaces of walls or flooring of a structure, such as a residence to a design style or technique sometimes referred to as distressing or antiquing. These design styles are intended to "age" the surface of the item or object treated to achieve a unique and/or rustic look. In one aspect of this design style, the surface of the item may be subjected to operations such as sanding, denting, scooping, and/or scraping. Typically these types of operations would be performed on flooring or other items, including furniture, that are composed of a cellulose-containing material, such as wood and composite board to produce a distressed surface.

[0003] Aspects of a distressed surface can include random irregularities formed in the surface of a material, such as variations relating to depth, width and length of the formed surface irregularity by a tool brought into contact with the material surface, as well as random locations along the surface of the material being scraped. In addition, imperfections are typically desirable, and can occur in response to variations, especially abrupt changes, in mechanical properties of a material having a surface to be distressed. Such changes or variations in mechanical properties could relate to density or hardness of the material. Examples include knots, burls and changes in grain direction, such as commonly associated with wood. The desirable appearance of a material surface variation such as a burl, for example, would typically exhibit discontinuities, sometimes referred to as "chattering", such as formed by a scraping tool in the material surface both prior to and subsequent to a scraping tool encountering the burl.

[0004] Several methods are predominantly used to give the surfaces the distressed or scraped appearance. The distressing can be done by hand. While this method has a very natural look, it is expensive and dependent upon the skill of the person distressing the floor. Alternatively, in an effort to reduce labor costs, manufacturers have used apparatuses to create machine-made distressed or scraped floors. Known constructions of apparatus have been devised in an attempt to produce materials having the desired aspects associated with a distressed material surface. Such constructions have included sanding heads having discontinuities formed therein, molded heads that are placed in a pressurized contact with a material surface, as well as embossing drums or plates. However, all known apparatus have failed to produce the desired features associated with a

distressed material surface.

[0005] It would be desirable to provide a flooring product with a distressed surface that has improved life and shows minimum wear and which can be made using hand scraping or machine scraping.

BRIEF DESCRIPTION OF THE INVENTION

[0006] According to an embodiment, a distressed board includes grooves randomly positioned on a surface of the distressed board, the grooves having a radius greater than about 5 inches. The ratio of the surface scraped area of the distressed board that has been scraped compared to a surface board area that is available to be scraped is greater than 1:1.

[0007] According to an alternate embodiment, a distressed board includes grooves randomly positioned on a surface of the distressed board, the grooves having a radius greater than about 5 inches. The grooves are randomly positioned with respect to the longitudinal axis of the distressed board, the grooves extend at an angle of greater than about +/- 5 degrees relative to the longitudinal axis of the distressed board.

[0008] According to an alternative embodiment, a distressed board includes grooves randomly positioned on a surface of the distressed board with respect to the longitudinal axis of the distressed board, the grooves extend at an angle of greater than about +/- 5 degrees relative to the longitudinal axis of the distressed board. The ratio of the surface scraped area of the distressed board that has been scraped compared to a surface board area that is available to be scraped is greater than 1:1.

[0009] Other features and advantages of the present invention will be apparent from the following more detailed description of the preferred embodiment, taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

FIG. 1 is a perspective view illustrating an embodiment distressed board.

FIG. 2 is a cross-sectional view taken along line 2-2 of the board of FIG 1 taken.

FIG. 3 illustrates an apparatus which cooperates with a board to distress the board.

[0011] Wherever possible, the same reference numbers will be used throughout the drawings to represent the same parts.

DETAILED DESCRIPTION OF THE INVENTION

[0012] The description of illustrative embodiments ac-

cording to principles of the present invention is intended to be read in connection with the accompanying drawings, which are to be considered part of the entire written description. In the description of embodiments of the invention disclosed herein, any reference to direction or orientation is merely intended for convenience of description and is not intended in any way to limit the scope of the present invention. Relative terms such as "lower," "upper," "horizontal," "vertical," "above," "below," "up," "down," "top" and "bottom" as well as derivative thereof (e.g., "horizontally," "downwardly," "upwardly," etc.) should be construed to refer to the orientation as then described or as shown in the drawing under discussion. These relative terms are for convenience of description only and do not require that the apparatus be constructed or operated in a particular orientation unless explicitly indicated as such. Terms such as "attached," "affixed," "connected," "coupled," "interconnected," and similar refer to a relationship wherein structures are secured or attached to one another either directly or indirectly through intervening structures, as well as both movable or rigid attachments or relationships, unless expressly described otherwise. Moreover, the features and benefits of the invention are illustrated by reference to the preferred embodiments. Accordingly, the invention expressly should not be limited to such preferred embodiments illustrating some possible non-limiting combination of features that may exist alone or in other combinations of features; the scope of the invention being defined by the claims appended hereto.

[0013] The disclosure is directed to wood or wood based flooring product that has been scraped to provide a distressed surface that has improved life and shows minimum wear. The surface can be made using hand scraping tools or machine scraping apparatuses. The flooring product can be made from any wood or wood based material, including, but not limited to, engineered wood (including plywood), solid wood, wood based composites (including medium and high density fiberboard), wood plastic composites or acrylic infused wood.

[0014] For purposes of the disclosure, a distressed surface is intended to exhibit a number of characteristics or aspects. For example, a distressed surface or material surface having a distressed appearance or the like is intended to include random irregularities formed in the surface of a material, such as variations relating to depth, width and length of the formed surface irregularity, such as by a blade brought into contact with the material surface. In addition, a distressed surface is intended to include imperfections that may occur in response to variations, especially abrupt changes, in mechanical properties of a material having a surface to be distressed. Such changes or variations in mechanical properties could relate to density or hardness of the material. Examples include knots, burls and changes in grain direction, such as commonly associated with wood. With a distressed surface, the desirable appearance of a material surface variation such as a burl, for example, would

typically exhibit discontinuities, sometimes referred to as "chattering", such as formed the blade of the apparatus. The discontinuities would be manifested in the material surface at locations both prior to and subsequent the blade encountering the burl.

[0015] Referring to FIG. 1, a representative flooring plank or board 10 made according to the present disclosure is shown. The board 10 has an upper surface 12, an oppositely facing bottom surface (not shown), side walls 16 and end walls 18 which extend between the upper surface 12 and the bottom surface. The upper surface 12 is distressed or scraped to include grooves or recesses 20 which are provided in an unrepeating and random manner. The grooves 20 are applied by means of a hand tool or machine, shown as apparatus 30 (FIG. 3).

[0016] As shown in FIG. 3, in one embodiment, the apparatus 30 includes a cutter head 32 which may be supported by a cutter head support (not shown). The cutter head 32 further includes a cutter blade or blade 34. The blade 34 cooperates with the surface 12 to be distressed. While blades of different radiuses can be used in the apparatus, in one embodiment, the cutter blade 34 has a radius of between about 5 inches to about 25 inches. In use, in response to at least one of cutter head 32 and the surface 12 of board 10 being brought into cutting contact and moved relative to each other, a resulting portion of surface 12 will be distressed. For purposes of the present disclosure, the term cutter head is also intended to include abrading contact devices which scrape surface 12 of board 10.

[0017] When in use, the cutter head 32 is movable in at least three directions, also sometimes referred to as degrees of freedom. For example, cutter head 32 is movable in a first direction 40 (FIG. 1) that is coincident or substantially coincident or substantially parallel with the longitudinal axis of the board 10. Cutter head 32 may also be movable in a second direction 42 (FIG. 1) that is transverse or substantially transverse or perpendicular or substantially perpendicular to the longitudinal axis 41 of the board 10. In addition, cutter head 32 may also be movable in a third direction 44 (FIG. 3) that raises or lowers cutter head 32 relative to surface 12 of board 10. Stated another way, moving cutter head 32 in third direction 44 brings cutter head 32 toward surface 12 or away from surface 12 of board 10. In one embodiment, third direction 44 is substantially mutually perpendicular to respective first and second directions 40 and 42. In one embodiment, cutter head 32 may be movable in one or more of directions 40, 42, 44 simultaneously. Such movement may be achieved by any suitable movement source such as by hand, hydraulic actuators, pneumatic actuators, mechanical linkages, including articulating linkages or other movement source. In one embodiment, movement of cutter head 32 operates in a random manner. In one embodiment, cutter head 32 movement may be controlled.

[0018] A manually performed scraping movement is

generally understood to correspond to a scraping movement stroke performed by an individual utilizing a scraping tool to scrape a surface of a material. In such movement, one arm of an individual holding a scraping tool would be substantially extended, placing the blade of a scraping tool in contact with a surface of a material that is to be distressed. Simultaneously, a hand of the other arm would be placed substantially over the blade of the scraping tool, with the arm associated with the hand applying a force directing the blade of the scraping tool into contact with the surface of the material to be distressed. While maintaining the contacting force, the individual would subsequently pull or draw the scraping tool toward himself/herself until the elbow of the individual's arm holding the scraping tool is sufficiently near the individual's torso, wherein the individual would discontinue both of the pulling/drawing movement of the scraping tool, as well as the contacting force. That is, the initial scraping stroke is completed, and subsequently repeated until the desired "scraped" appearance is achieved.

[0019] Referring again to FIG. 1, boards 10 made using the method and apparatus described have a scraped upper surface 12 with grooves 20 that is unrepeating and random. In one embodiment, the surface scraped area (SSA) of the board 10 that has been scraped by the apparatus 10 is larger than the available board surface area for scraping, referred to as the surface board area (SBA). In one embodiment, the SSA to SBA ratio is about 3:1, about 2.5:1, about 2:1, about 1.5:1, about 1:1, from about 1:1 to about 3:1, from about 1.5: to about 2.5:1, greater than about 1:1, less than about 3:1, or any combination or sub combination thereof. The ratios greater than 1:1 indicate that there is a portion of the board that has been over scraped, or scraped in the same location multiple times. This over scraping can increase scrape groove depth, adding to the variability in the product. A ratio of 1:1 or less indicates that there is relatively little over scraping generally resulting from scrape grooves that are long, linear and substantially parallel to the long edge of the board.

[0020] Although the ratio of SSA to SBA is greater than 1:1, in one embodiment a portion of the surface board area remains unscraped. In one embodiment, the surface board area that remains unscraped is from about 0 percent to about 20 percent, from about 0 percent to about 15 percent, from about 0 percent to about 10 percent, greater than about 0 percent, greater than about 5 percent or any combination or sub combination thereof.

[0021] In one embodiment, the grooves 20 or scrape length L made by a single scrape, as described above, is from about 11 inches to about 16 inches, from about 11 inches to about 15 inches, from about 11 inches to about 14 inches, from about 11 inches to about 13 inches, from about 11 inches to about 12 inches, from about 12 inches to about 14 inches, about 11 inches, about 12 inches, about 13 inches, about 14 inches, about 15 inches, about 16 inches, greater than about 11 inches, greater than about 12 inches, or any combination or sub combination thereof.

As will be more fully described below, as the grooves 20 are not all parallel to the edges of the board 10, respective grooves 20 may intersect other grooves as the surface 12 is distressed. In so doing, single scraped grooves are intersected, causing the length of the respective intersected grooves to be from about 0 inches to about 16 inches, from about 1 inch to about 15 inches, from about 2 inches to about 14 inches, from about 3 inches to about 13 inches, from about 4 inches to about 12 inches, greater than about 0 inches, less than about 16 inches, or any combination or sub combination thereof.

[0022] As the board is scraped with the cutter blade 34, in one embodiment, the grooves 20 will have a radius R of from about 5 inches to about 25 inches, from about 5 inches to about 20 inches, from about 5 inches to about 15 inches, from about 5 inches to about 10 inches, from about 10 inches to about 25 inches, from about 10 inches to about 20 inches, from about 10 inches to about 15 inches, from about 15 inches to about 25 inches, from about 15 inches to about 20 inches, about 15 inches, greater than about 5 inches, less than about 25 inches, or any combination or sub combination thereof. As the grooves are scraped into the surface, the radius of the grooves will not be uniformly consistent over the entire length of the grooves, as irregularities and non-uniformity of the board (i.e. density of board) will cause the radius of the grooves to vary over the length.

[0023] Referring to FIG. 2, in one embodiment, the grooves 20 have a depth D from about 0.005 inches to about 0.025 inches, from about 0.005 inches to about 0.015 inches, from about 0.005 inches to about 0.010 inches, from about 0.010 inches to about 0.025 inches, from about 0.010 inches to about 0.015 inches, from about 0.015 inches to about 0.025 inches, about 0.005 inches, about 0.010 inches, about 0.015 inches, about 0.025 inches, greater than about 0.005 inches, less than about 0.025 inches, or any combination or sub combination thereof. As will be more fully described below, as the grooves 20 are not all parallel to the edges of the board 10, respective grooves 20 may intersect other grooves as the surface 12 is distressed. In so doing, single scraped grooves are intersected or over scraped. This over scraping can cause the cumulative scrape depth at any point on the board 10 to exceed the depth of the individual grooves, adding to the variability in the product. Consequently, in one embodiment, the cumulative depth of the grooves to be greater than about 0.025 inches, greater than about 0.030 inches, greater than about 0.040 inches, greater than about 0.050 inches, or any combination or sub combination thereof. During the scraping process, the scraped grooves that originate on one board can extend onto contiguous boards, either in length or width, which emulates a floor that was installed first and then manually hand scraped at a later time.

[0024] In one embodiment, the grooves 20 have a width W from about 0.5 inches to about 1.5 inches, from about 0.5 inches to about 1 inch, from about 0.5 inches to about 0.75 inches, from about 0.75 inches to about 1 inch, from about 0.75 inches to about 1.5 inches, from about 1 inch to about 1.5 inches, from about 1 inch to about 0.75 inches, from about 0.5 inches to about 1.5 inches, greater than about 0.5 inches, less than about 1.5 inches, or any combination or sub combination thereof.

to about 0.75 inches, from about 0.75 inches to about 1 inch, from about 0.75 inches to about 1.5 inches, from about 1 inch to about 1.5 inches, about 0.5 inches, about 0.75 inches, about 1 inch, about 1.5 inches, greater than about 0.5 inches, less than about 1.5 inches, or any combination or sub combination thereof. As will be more fully described below, as the grooves 20 are not all parallel to the edges of the board 10, respective grooves 20 may intersect other grooves as the surface 12 is distressed. In so doing, single scraped grooves may intersect other single scraped grooves. This can cause the cumulative scrape width at any point on the board 10 to exceed the width of the individual grooves, adding to the variability in the product. Consequently, in one embodiment, the cumulative width of the grooves to be greater than about 1.5 inches, greater than about 2 inches, greater than about 2.25 inches, greater than about 2.5 inches, or any combination or sub combination thereof.

[0025] The grooves 20 are generated such that all grooves 20 are not aligned to be parallel to the longitudinal axis or the edges of the board 10. The grooves are applied at random angles A with respect to the longitudinal axis of the board 10. In one embodiment, the grooves are applied at random angles with respect to the longitudinal axis of the board from about of about a +/- 25 degrees to about a +/- 5 degrees, about a +/- 25 degrees to about a +/- 15 degrees, about a +/- 15 degrees to about a +/- 5 degrees, about a +/- 25 degrees, about a +/- 15 degrees, about a +/- 5 degrees, greater than about a +/- 5 degrees, less than about a +/- 25 degrees, or any combination or sub combination thereof.

[0026] Because of the apparatus used and the parameters recited above, when the blade 34 of the cutter head 32 encounters an irregularity in the wood grain in encountered, chatter is exhibited on the board. Chatter is a term used in the art to describe the result of the cutting or scraping tool jumping through the cutting stroke when an irregularity in wood grain is present. Natural tool chatter is found within the scraped groove, never bridging more than one scrape groove. Most mechanized scraping techniques currently used in the art do not recreate natural tool chatter because they employ methods such as sanding or rotational cutters, such as molding. To generate chatter on these products, an embossing roll or scraper is typically used. Hand planers are often used and they create chatter by varying the tool speed through the stroke, however, the chatter does not look natural as it rarely aligns with wood irregularities such as knots and grain deviations.

[0027] The board 10 may contain scraped long and short board edges. The board may also contain beveled edges 50 and ends 52, pillowed (or rounded) edges and ends, and/or square edges and ends. In one embodiment, the edges are scraped. In one embodiment, the scraped edges contain chatter where there are wood irregularities. Multiple different edge angles (as referenced from the face 12 of the board 10) can be employed (whether scraped or beveled). In one embodiment the

angle of the edge is from about 10 degrees to about 45 degrees, from about 20 degrees to about 40 degrees, from about 30 degrees to about 35 degrees, about 10 degrees, about 20 degrees about 30 degrees about 35 degrees, about 40 degrees, about 45 degrees, greater than about 10 degree, less than about 45 degrees, or an combination or sub combination thereof.

[0028] The board contains random and unrepeating distress marks that replicate a time worn board. In use, a floor board, over time, will encounter items that are dropped onto the floor board. These drops cause indentations on the surface. As these boards 10 are made with the random and unrepeating grooves and marks, the indentations left by the dropped item enhances the appearance of the floor rather than diminish the appearance as is the case with the prior art floor boards which have a repeating pattern.

[0029] While the invention has been described with reference to a preferred embodiment, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the spirit and scope of the invention of the invention as defined in the accompanying claims. In particular, it will be clear to those skilled in the art that the present invention may be embodied in other specific forms, structures, arrangements, proportions, sizes, and with other elements, materials, and components, without departing from the spirit or essential characteristics thereof. One skilled in the art will appreciate that the invention may be used with many modifications of structure, arrangement, proportions, sizes, materials, and components and otherwise, used in the practice of the invention, which are particularly adapted to specific environments and operative requirements without departing from the principles of the present invention. The presently disclosed embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being defined by the appended claims, and not limited to the foregoing description or embodiments.

Claims

1. A distressed board comprising:

grooves randomly positioned on a surface of the distressed board, the grooves having a radius greater than about 5 inches;
the ratio of the surface scraped area of the distressed board that has been scraped compared to a surface board area that is available to be scraped is greater than 1:1.

2. The distressed board as recited in claim 1, wherein the grooves are randomly positioned with respect to the longitudinal axis of the distressed board, the grooves being applied at an angle of greater than

about +/- 5 degrees relative to the longitudinal axis of the distressed board.

3. A distressed board comprising:

grooves randomly positioned on a surface of the distressed board, the grooves having a radius greater than about 5 inches;
the grooves are randomly positioned with respect to the longitudinal axis of the distressed board, the grooves extend at an angle of greater than about +/- 5 degrees relative to the longitudinal axis of the distressed board.

4. The distressed board as recited in claim 1 or claim 3, wherein the surface board area that remains unscraped is greater than about 5 percent.

5. The distressed board as recited in claim 1 or claim 3, wherein each groove has a scraped length of greater than about 11 inches.

6. The distressed board as recited in claim 1 or claim 3, wherein each intersected groove has a scraped length of less than about 16 inches.

7. The distressed board as recited in claim 1 or claim 3, wherein each groove has a depth of between about 0.005 inches to about 0.025 inches.

8. The distressed board as recited in claim 1 or claim 3, wherein each groove has a width of between about 0.5 inches to about 1.5 inches.

9. A distressed board comprising:

grooves randomly positioned on a surface of the distressed board with respect to the longitudinal axis of the distressed board, the grooves extend at an angle of greater than about +/- 5 degrees relative to the longitudinal axis of the distressed board;
the ratio of the surface scraped area of the distressed board that has been scraped compared to a surface board area that is available to be scraped is greater than 1:1.

10. The distressed board as recited in claim 9, wherein the ration of the surface scraped area of the distressed board that has been scraped compared to a surface board area that is available to be scraped is greater than 1.5:1.

11. The distressed board as recited in claim 10, wherein the ration of the surface scraped area of the distressed board that has been scraped compared to a surface board area that is available to be scraped is greater than 2:1.

12. The distressed board as recited in claim 9, wherein the grooves extend at an angle of less than about +/- 25 degrees relative to the longitudinal axis of the distressed board.

13. The distressed board as recited in claim 9, wherein the grooves have a radius greater than about 5 inches.

14. The distressed board as recited in claim 13, wherein the grooves have a radius less than about 25 inches.

15. The distressed board as recited in claim 9, wherein each groove has a scraped length of about 11 inches to about 16 inches.

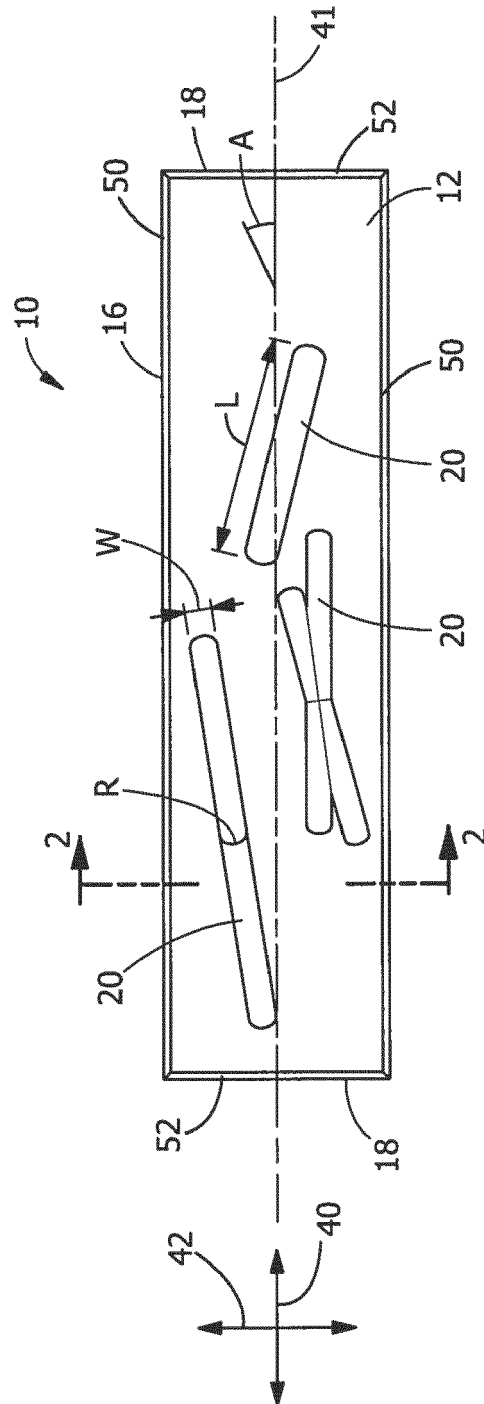


FIG. 1

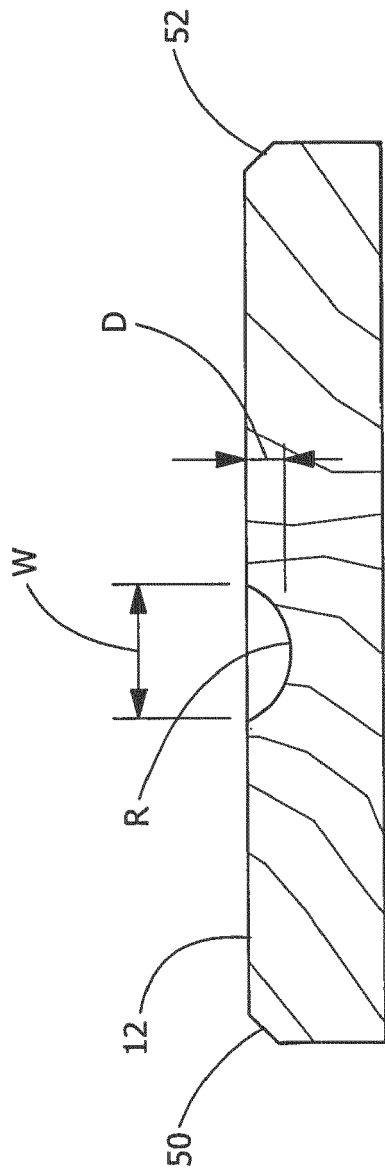


FIG. 2

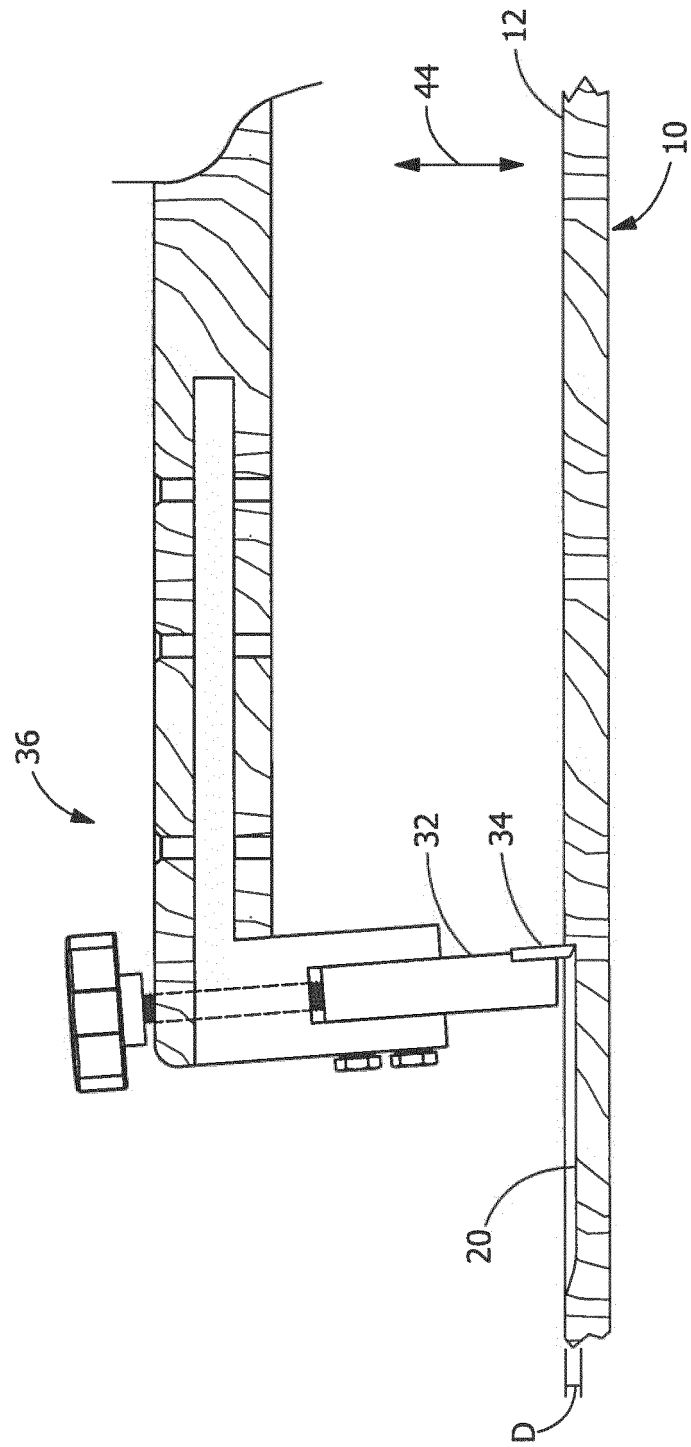


FIG. 3