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(54) APPARATUS FOR CUTTING A PATTERN IN SHEET MATERIAL

(57) An apparatus 10 for cutting a pattern in a sheet material includes a template 14 having a channel 20 with a predetermined shape. The apparatus also includes a cutting device 12, including a base 22 having one or more projections 30 configured to interact with the channel, a handle 24 coupled to the base and moveable relative to the base between a first position and a second position, and a retractable rotary blade 34 coupled to the handle. The retractable rotary blade is moveable between a retracted position when the handle is in the first position, and an extended position when the handle is in the second position. The retractable rotary blade is configured to cut a pattern according to the predetermined shape of the channel when the cutting device is tracked along the channel while both the handle is in the second position and the one or more projections are positioned within the channel.

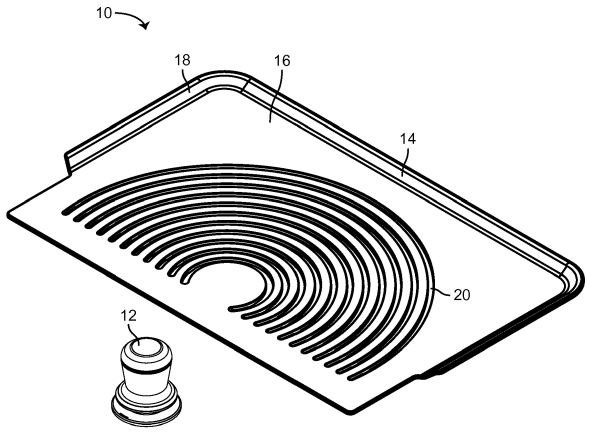


FIG. 1

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation-in-part of U.S. Application No. 29/527,353, filed May 18, 2015, and is also a continuation-in-part of U.S. Application No. 29/528,575, filed May 29, 2015, both of which are incorporated herein by reference in their entireties.

TECHNICAL FIELD

[0002] The present application relates generally to the field of cutting devices for cutting patterns in sheet material.

BACKGROUND

[0003] Cutting devices may be used to cut a desired shape in sheet material. However, it may be difficult to consistently cut the desired shape with scissors or another similar hand-held tool. A rotary blade and a template may also be used, but the rotary blade may be difficult to maneuver within the desired pattern. A user may be required to adjust the rotary blade at least once before the cut is completed due to the desired shape. The rotary blade may also wander into the template as the cut is performed, damaging the template and/or the blade itself.

SUMMARY

[0004] One embodiment relates to an apparatus for cutting a pattern in a sheet material. The apparatus includes a template comprising a channel having a predetermined shape, and a cutting device. The cutting device includes a base having one or more projections configured to interact with the channel, a handle coupled to the base and moveable relative to the base between a first position and a second position, and a retractable rotary blade coupled to the handle, the retractable rotary blade moveable between a retracted position when the handle is in the first position and an extended position from the base in line with the one or more projections when the handle is in the second position, the retractable rotary blade configured to cut a pattern according to the predetermined shape when the cutting device is tracked along the channel while both the handle is in the second position and the one or more projections are positioned within the channel.

[0005] Another embodiment relates to an apparatus for cutting a pattern in a sheet material. The apparatus includes a template comprising a channel having a predetermined shape, and a cutting device. The cutting device includes a base having one or more projections configured to interact with the channel, a handle coupled to the base, the handle rotatable relative to the base about a vertical axis provided by the base, the handle moveable along the vertical axis relative to the base between a first position and a second position, and a removable blade cartridge coupled to the handle, the blade cartridge including a rotary blade moveable with the blade cartridge between a retracted position when the handle is in the first position and an extended position from the base in line with the one or more projections when the handle is in the second position, the rotary blade configured to cut a pattern according to the predetermined shape when the cutting device is tracked along the channel while both the handle is in the second position and the one or more projections are positioned within the channel.

[0006] Yet another embodiment relates to an apparatus for cutting a pattern in a sheet material. The apparatus includes a template, including a bottom surface, a channel formed through the template and having a predetermined shape, and a stop coupled to the bottom surface, the stop raised relative to the bottom surface and configured to align a sheet of material to be cut. The apparatus also includes a cutting device, including a base having one or more projections configured to interact with the channel, a handle coupled to the base, the handle rotatable relative to the base about a vertical axis provided by the base, the handle moveable along the vertical axis relative to the base between a first position and a second position, and a retractable rotary blade coupled to the handle, the retractable rotary blade moveable between a retracted position when the handle is in the first position and an extended position from the base in line with the one or more projections when the handle is in the second position, the retractable rotary blade configured to cut a pattern according to the predetermined shape when the cutting device is tracked along the channel while the handle is in the second position and the one or more projections are positioned within the channel.

[0007] The foregoing is a summary and thus by necessity contains simplifications, generalizations, and omissions of detail. Consequently, those skilled in the art will appreciate that the summary is illustrative only and is not intended to be in any way limiting. Other aspects, inventive features, and advantages of the devices and/or processes described herein, as defined solely by the claims, will become apparent in the detailed description set forth herein and taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

FIG. 1 is a top perspective view of an apparatus for cutting a pattern in a sheet material, the apparatus including a cutting device and a cutting template, in accordance with an exemplary embodiment.

FIG. 2 is a top perspective view of a cutting device for the cutting apparatus of FIG. 1, the cutting device having a retractable blade shown in the retracted position, in accordance with an exemplary embodi-

ment.

FIG. 3 is a bottom perspective view of the cutting device of FIG. 2 with the retractable blade in the retracted position.

FIG. 4 is a front plan view of the cutting device of FIG. 2 with the retractable blade in the retracted position.

FIG. 5 is a front plan view of the cutting device of FIG. 2 with the retractable blade in the extended position.

FIG. 6 is a top perspective view of the cutting device of FIG. 2 with the retractable blade in the extended position.

FIG. 7 is a bottom perspective view of the cutting device of FIG. 2 with the retractable blade in the extended position.

FIG. 8 is a cross-sectional view of the cutting device of FIG. 3, taken along line 8-8.

FIG. 9 is a perspective cross-sectional view of the cutting device of FIG. 3, taken along line 9-9.

FIG. 10 is a top perspective view of a removable blade cartridge for the cutting device of FIG. 2, in accordance with an exemplary embodiment.

FIG. 11 is a top perspective view of a cutting template for the cutting apparatus of FIG. 1, in accordance with an exemplary embodiment.

FIG. 12 is a bottom plan view of the template of FIG. 11.

FIG. 13 is a front plan view of the template of FIG. 11.

FIG. 14 is a cross-sectional view of the template of FIG. 11, taken along line 14-14.

DETAILED DESCRIPTION

[0009] Referring generally to the Figures, an apparatus for cutting a circular pattern in a sheet material and components thereof are shown according to an exemplary embodiment.

[0010] Referring to FIG. 1, a cutting apparatus 10 is shown according to an exemplary embodiment. The apparatus 10 shown in FIG. 1 is configured to facilitate making circular cuts in a sheet of material (e.g., a sheet of fabric). However, in other embodiments the apparatus 10 may be configured to cut another desired (i.e., non-circular) shape in a sheet of material, including other symmetrical shapes such as an oval, hexagon, rectangle, triangle, and the like. The apparatus 10 includes a cutting device 12 (e.g., carriage, cutting tool, etc.) and a cutting template 14 (e.g., board). The cutting template 14 includes a flat top surface 16, a raised outer edge 18 bordering rear and side portions of the top surface 16, and a plurality of channels 20 (e.g., grooves, guides, etc.) formed in the top surface 16 and through the template 14. Each of the channels 20 is configured to receive the cutting device 12. The channels 20 are configured to guide the cutting device 12 around the circumference of the channel's 20 predetermined radius to make a circular cut. For instance, a material to be cut may be folded in half and placed underneath the template 14. The cutting device 12 may then be placed into one of the channels 20. The selected channel 20 is configured to guide the movement of the cutting device 12 from one end of the channel 20 to the other. The movement of the cutting device 12 causes a semi-circular cut through both halves of the sheet material when a blade 34 (shown in FIG. 3) of the device 12 is extended, causing a wholly circular pattern to be cut within the material. In other embodiments in which the apparatus 10 is configured to cut a non-circular shape in the sheet of material, the channels 20 may be configured (e.g., shaped) accordingly.

[0011] Referring to FIGS. 2-7, the cutting device 12 of the apparatus 10 is shown according to an exemplary embodiment. The cutting device 12 is configured to move between a first position (i.e., a retracted position) in which the blade 34 (e.g., rotary blade) is retracted within the device 12 (shown in FIGS. 2-4), and a second position (i.e., a cutting, extended, or exposed position) in which the blade 34 is projected from the device 12 to make a cut (shown in FIGS. 5-7). The cutting device 12 includes a base 22, a handle 24 rotatably coupled to the base 22, and a blade cartridge 36 housing the blade 34. The handle 24 is configured to be manipulated (e.g., held, received, operated, moved, etc.) by an operator of the apparatus 10, including to move the device 12 within the channel 20 when the cutting device 12 is in the second position. The handle 24 is freely rotatable relative to the base 22 and about a vertical axis provided by the base 22, including as a cut is being performed within one of the channels 20. The rotatable handle 24 allows a user of the apparatus 10 to maintain a comfortable hand position and/or grip on the handle 24 as the user tracks the device 12 within the channels 20 in the template 14.

[0012] Referring still generally to FIGS. 2-7, the handle 24 includes a body 70 having a skirt 76 and a flange 72. The body 70, including the skirt 76 and the flange 72, may be a single piece. The body 70 has an annular shape, having an opening formed therethrough that is configured to receive at least a portion of the base 22 (see FIG. 8). The handle 24 also includes a cap 26 removably coupled to and covering an open top end of the body 70. For instance, the cap 26 and a portion of the body 70 may each include corresponding threads configured to mate the cap 26 with the body 70. The handle 24 is sized and shaped to enable a user of the apparatus 10 to grip the

handle 24 while tracking the device 12 within the channels 20 of the template 14 when the device 12 is in the second position. The skirt 76, for instance, has a smaller maximum diameter than the cap 26 or the flange 72, enabling a user to grip the handle 24 more easily at the skirt 76. The skirt 76 is V-shaped, decreasing in diameter from a top end of the skirt 76 (i.e., at or near the cap 26) to the lower end of the skirt 76 (i.e., at the flange 72).

[0013] In addition to being rotatable, the handle 24 is configured to move axially relative to the base 22, along the vertical axis provided by the base 22. When a downward (e.g., compressive) force is applied to the handle 24 while the device 12 is in the first position (shown in FIG. 4), the blade 34 of the cutting device 12 is moved from the retracted position to the cutting position (as shown in FIG. 5). For instance, a manual force may be applied by the user at the cap 26. Downward movement of the handle 24 forces the blade cartridge 36 downward in the same direction as the handle 24, causing the blade 34 of the blade cartridge 36 to extend to the cutting position (as shown in FIGS. 5 and 7). When the blade 34 is extended, the cutting device 12 may be used to cut a desired pattern within a sheet of material. The handle 24 is spring-loaded to return the device 12 (e.g., the blade 34) to the first position when the force is removed.

[0014] Still referring generally to FIGS. 2-7, the base 22 has an annular disc shape, having an opening 32 formed through the center of the base 22 to allow the blade 34 to extend out from the base 22 to make a cut. The base 22 includes projections 30 (e.g., guides) configured to interface with the channels 20 of the template 14, guiding movement of the cutting device 12 within the channels 20 when the cutting device 12 is in the cutting position. The projections 30 are intended to guide the blade 34 within the channels 20, being positioned in line with the cutting path of the rotary blade 34. The projections 30 may have a width approximately equal to the width of the channels 20 to prevent the blade 34 from wandering into the sides of the channels 20. By aligning (e.g., centering) the blade 34 within the channels 20, the projections 30 may prevent damage to the template 14 and/or the blade 34. The projections 30 include chamfers 60 in the illustrated embodiment. The chamfers 60 are intended to interface with complementary features of the channels 20 to align the projections 30 (i.e., the cutting device 12) within the channels 20. The chamfers 60 may aid in aligning (e.g., centering) the blade 34 within the corresponding channel 20 when the blade 34 is in the extended position within the channel 20. In other embodiments, the projections 30 and the channels 20 may have other complementary shapes configured to align the projections 30 (and the blade 34) within the channels 20. The base 22 also includes a flat bottom surface 74 configured to interface with the top surface 16 of the template 14 when the projections 30 are positioned within one of the channels 20. Tabs 28 are positioned opposite each other on a top side of the base 22. The tabs 28 are intended to assist the user in moving the cutting device 12 within the channels 20 by providing an indication of the direction of the blade 34 when the blade 34 is not visible (e.g., is positioned within one of the channels 20).

[0015] Referring now to FIGS. 8 and 9, the cutting device 12 is shown in further detail and according to an exemplary embodiment. FIG. 8 shows a cross-sectional view of the cutting device 12 when the cutting device 12 is between the first and second positions (i.e., with the blade 34 partially extended). FIG. 9 shows a cross-sectional view of the cutting device in the first position, but with the cap 26 removed. The blade cartridge 36 is positioned within the cutting device 12. In an exemplary embodiment, the blade cartridge 36 is a single unit configured to be removed and replaced when the blade 34 requires replacement. The blade cartridge 36 provides a case for the blade 34 so that a user of the cutting device 12 may remove the blade 34 without touching the blade 34. The blade cartridge 36 includes a tab 38 having an annular flange 40, as well as a housing 42 configured to store the blade 34. When the cutting device 12 is in the first (i.e., resting) position (as shown in FIG. 9), the tab 38 extends vertically above the body 70 into an area that is typically covered by the cap 26. The cap 26 includes a pocket 80 that is sized and shaped to accommodate the tab 38 when the cap 26 is coupled to the body 70 (as shown in FIG. 8). The tab 38 is configured to be grasped by a user of the cutting device 12 to remove and replace the blade cartridge 36, and thus the blade 34. For instance, the cap 26 may be removed (as shown in FIG. 9) to reveal the tab 38. In an exemplary embodiment, the tab 38 is positioned parallel to and on the same two-dimensional plane as the rotary blade 34.

[0016] Still referring to FIGS. 8 and 9, the base 22 includes a skirt 46 configured to receive the blade cartridge 36. The cutting device 12 includes a spring 44 or other form of biasing member positioned between the flange 40 of the blade cartridge 36 and the skirt 46. The spring 44 is configured to push against both the flange 40 and the skirt 46, driving apart the blade cartridge 36 and the base 22 (i.e., the skirt 46) in absence of an oppositional force (i.e., a force applied by a user of the device 12 to cut). The spring 44 is configured to return the device 12 to the first (i.e., retracted) position after the cut has been made. The flange 40 is captured within a pocket 78 formed by the body 70 and the cap 26, such that the body 70 and the cap 26 (i.e., the handle 24) are also driven upward by the force of the spring 44. The skirt 46 forms an annular outer rib 48 positioned at or near a top end of the skirt 46. An inner surface of the handle 24 includes a shelf 58. The rib 48 is configured to provide a stop for the shelf 58 (i.e., for the handle 24) against the force of the spring 44, preventing the handle 24 and/or the blade cartridge 36 from being de-coupled from the base 22 by the force of the spring 44 by interfacing with the shelf 58 (as shown in FIG. 9).

[0017] When a downward force is applied to the handle 24, the blade cartridge 36, and thus the blade 34, are shifted similarly to expose the blade 34. The cap 26 in-

cludes a projection 50 configured to engage the tab 38 of the blade cartridge 36 when the handle 24 is depressed. The cap 26 also includes interfaces 82 configured to engage the flange 40, and interfaces 84 configured to engage the body 70, moving the cartridge 36 and the body 70 along with the cap 26. The cap 26 is configured to mate with a lip 52 formed by the body 70.

[0018] Referring to FIG. 10, the blade cartridge 36 is shown according to an exemplary embodiment. As described previously, the cartridge 36 includes the cylindrical (e.g., annular) housing 42 configured to house the blade 34. The housing 42 includes a track 54 configured to provide a guide for the blade 34, preventing the blade 34 from twisting or moving from side to side. The track 54 may also match with corresponding components of the base 22 to align the blade cartridge 36 relative to the base 22. Similarly, the blade cartridge 36 includes a guide 56 configured to match with a corresponding feature of the base 22 to align the blade cartridge 36 relative to the base 22. In an exemplary embodiment, the blade cartridge 36 is "keyed" (e.g., interlocked, mated, etc.) to the base 22 such that the blade 34 cuts tangent to the circular pattern.

[0019] Referring to FIGS. 11-14, the template 14 of the cutting apparatus 10 is shown according to an exemplary embodiment. As shown in FIGS. 11 and 12, the plurality of channels 20 are semi-circular in shape, with each of the plurality of channels 20 providing a different predetermined circular cutting radius. The predetermined cutting radii associated with each of the channels 20 corresponds to the radius of the circular material pattern that will be produced using a selected channel 20. The channels 20 are arranged on the template 14 according to their cutting radius, in ascending order from a front portion of the template 14 to a rear portion of the template 14 (i.e., at or near the rear raised edge 18). In an exemplary embodiment, the cutting radii range from a minimum radius of approximately 5.08 centimeters (2 inches) to a maximum diameter of approximately 15.24 centimeters (6 inches). In other embodiments, the radii of the channels 20 may be larger or smaller, depending on the particular application. In some embodiments, for instance, the template 14 may be manipulatable by an operator of the apparatus 10 to create a custom channel having an operator-determined cutting radius. As noted previously, in other embodiments the apparatus 10 may be configured to cut another desired (i.e., non-circular) shape in a sheet of material. In such embodiments, the channels 20 may be configured according to the desired shape. For instance, in embodiments in which the desired cutting shape is an oval, the channels 20 may each be semi-ovular in shape.

[0020] Referring particularly to FIGS. 12-14, the template 14 includes a stop 64 formed on a bottom surface 62 of the template 14. The stop 64 is formed across a length of the bottom surface 62. The stop 64 is raised relative to the bottom surface 62 in order to provide alignment for a sheet of fabric to be cut by the cutting device 12. The stop 64 extends across the length of the template 14 and across each of the channels 20. However, the channels 20 are continuous and formed entirely through the template 14. Thus, as shown in FIG. 13, the stop 64 may be formed from a plurality of stop strips positioned between each of the channels 20. In an exemplary embodiment, the stop 64 is positioned across the diameter of each of the plurality of channels 20, such that the portion of each of the channels 20 that is positioned above the stop 64 (according to the orientation of FIG. 12) has a semi-circular shape. Thus, if a sheet of material is folded in half and the material's fold line is aligned with the stop 64, the cutting device 12 is configured to make a circular shape within the material through any of the channels 20.

[0021] Referring to FIGS. 13 and 14, the raised edge 18 is formed around a rear end and the sides of the template 14. The raised edge 18 is configured to provide a handle for an operator to manipulate the template 14. For instance, the raised edge 18 includes ledges 66 (shown in FIG. 13) at each side of the template 14 for lifting the template 14. The raised edge 18 also includes a ledge 68 at a rear edge of the template 14. The ledges 66 and 68 may be one continuous ledge formed at the top of the raised edge 18.

[0022] The construction and arrangement of the elements of the apparatus as shown in the exemplary embodiments are illustrative only. Although only a few embodiments of the present disclosure have been described in detail, those skilled in the art who review this disclosure will readily appreciate that many modifications are possible (e.g., variations in sizes, dimensions, structures, shapes and proportions of the various elements, values of parameters, mounting arrangements, use of materials, colors, orientations, etc.) without materially departing from the novel teachings and advantages of the subject matter recited. For example, elements shown as integrally formed may be constructed of multiple parts or elements. The elements and assemblies may be constructed from any of a wide variety of materials that provide sufficient strength or durability, in any of a wide variety of colors, textures, and combinations. Additionally, in the subject description, the word "exemplary" is used to mean serving as an example, instance, or illustration. Any embodiment or design described herein as "exemplary" is not necessarily to be construed as preferred or advantageous over other embodiments or designs. Rather, use of the word "exemplary" is intended to present concepts in a concrete manner. Accordingly, all such modifications are intended to be included within the scope of the present disclosure. Other substitutions, modifications, changes, and omissions may be made in the design, operating conditions, and arrangement of the preferred and other exemplary embodiments without departing from the scope of the appended claims.

[0023] It should be noted that references to "front," "back," "rear," "upward," "downward," "inner," "outer," "right," and "left" in this description are merely used to

identify the various elements as they are oriented in the FIGURES. These terms are not meant to limit the element which they describe, as the various elements may be oriented differently in various applications.

[0024] It should further be noted that for purposes of this disclosure, the term "coupled" means the joining of two members directly or indirectly to one another. Such joining may be stationary in nature or moveable in nature and/or such joining may allow for the flow of fluids, electricity, electrical signals, or other types of signals or communication between the two members. Such joining may be achieved with the two members or the two members and any additional intermediate members being integrally formed as a single unitary body with one another or with the two members or the two members and any additional intermediate members being attached to one another. Such joining may be permanent in nature or alternatively may be removable or releasable in nature.

[0025] The order or sequence of any process or method steps may be varied or re-sequenced according to alternative embodiments. Any means-plus-function clause is intended to cover the structures described herein as performing the recited function and not only structural equivalents but also equivalent structures. Other substitutions, modifications, changes and omissions may be made in the design, operating configuration, and arrangement of the preferred and other exemplary embodiments without departing from the scope of the appended claims.

Claims

1. An apparatus, comprising:

a template comprising a channel having a predetermined shape; and
a cutting device, including:

a base having one or more projections configured to interact with the channel;
a handle coupled to the base and moveable relative to the base between a first position and a second position; and
a retractable rotary blade coupled to the handle, the retractable rotary blade moveable between a retracted position when the handle is in the first position and an extended position from the base in line with the one or more projections when the handle is in the second position, the retractable rotary blade configured to cut a pattern according to the predetermined shape when the cutting device is tracked along the channel while both the handle is in the second position and the one or more projections are positioned within the channel.

2. The apparatus of claim 1, wherein the handle is freely rotatable relative to the base about a vertical axis provided by the base, the handle moveable along the vertical axis relative to the base between the first position and the second position.

3. The apparatus of claim 1 or 2, further comprising a biasing member biasing the handle in the first position, and wherein the handle is moveable to the second position in response to a force applied to the handle in the direction of the base.

4. The apparatus of claim 3, further comprising a blade cartridge housing the retractable rotary blade, wherein the biasing member is a spring positioned between the blade cartridge and the base, the spring biasing the retractable rotary blade in the retracted position.

5. The apparatus of any preceding claim, wherein the one or more projections include two projections, and wherein the blade extends between the two projections when the handle is in the second position.

6. The apparatus of any preceding claim, wherein the one or more projections and the channel include complementary chamfers configured to interface with each other, thereby aligning the one or more projections within the channel, the one or more projections guiding the retractable rotary blade within the channel when the handle is in the second position.

7. The apparatus of any preceding claim, wherein the channel has a semi-circular shape having a predetermined radius, and wherein the retractable rotary blade is configured to cut a circular pattern having the predetermined radius when the cutting device is tracked along the channel while both the handle is in the second position and the one or more projections are positioned within the channel.

8. The apparatus of any preceding claim, wherein the one or more projections project from a bottom surface of the base, and wherein the retractable rotary blade extends a further distance from the bottom surface than the one or more projections when the handle is in the second position.

9. The apparatus of claim 1, wherein:

the handle is rotatable relative to the base about a vertical axis provided by the base, the handle moveable along the vertical axis relative to the base between the first position and the second position; and further comprising
a removable blade cartridge coupled to the handle, the blade cartridge including the rotary blade

moveable with the blade cartridge between the retracted position when the handle is in the first position and the extended position from the base in line with the one or more projections when the handle is in the second position.

10. The apparatus of claim 9, wherein the removable blade cartridge includes a guide aligning the removable blade cartridge with the base such that the rotary blade cuts in a direction that is tangential to the pattern and/or wherein the removable blade cartridge further comprises a flange captured between the cap and the body of the handle.

11. The apparatus of claim 9 or 10, wherein the removable blade cartridge is moveable with the handle relative to the base between the first position and the second position, wherein the cutting device further comprises a biasing member biasing the removable blade cartridge in the first position, and wherein the removable blade cartridge is moveable to the second position in response to a force applied to the handle in the direction of the base.

12. The apparatus of claim 9, 10 or 11, wherein the handle comprises a body and a cap removably coupled to the body, and wherein the cap is removable so as to provide access to the removable blade cartridge and, optionally or preferably, wherein the removable blade cartridge further comprises a tab that is graspable by a user of the cutting device to remove the removable blade cartridge from the cutting device, and wherein the tab is accessible when the cap is de-coupled from the body and, optionally or preferably, wherein the cap comprises a pocket that is sized and shaped to accommodate the tab, and wherein the cap further comprises a projection within the pocket that engages the tab when the handle is moved to the second position, causing the rotary blade to extend from the base.

13. The apparatus of claim 1, wherein:

the template includes a bottom surface and the channel is formed through the template, and further comprising a stop coupled to the bottom surface, the stop raised relative to the bottom surface and configured to align a sheet of material to be cut; and wherein
the handle of the cutting device is rotatable relative to the base about a vertical axis provided by the base, the handle moveable along the vertical axis relative to the base between the first position and the second position.

14. The apparatus of claim 13, wherein the stop includes a plurality of strips having the channel positioned in between, and, optionally or preferably, wherein the stop is positioned across the diameter of the channel, such that a portion of the channel on one side of the stop has a semi-circular shape.

15. The apparatus of claim 13 or 14, wherein the template further comprises a top surface opposite the bottom surface, and a raised outer edge bordering rear and side portions of the top surface and, optionally or preferably, wherein the raised outer edge includes a continuous upper ledge providing a lift point for the template.

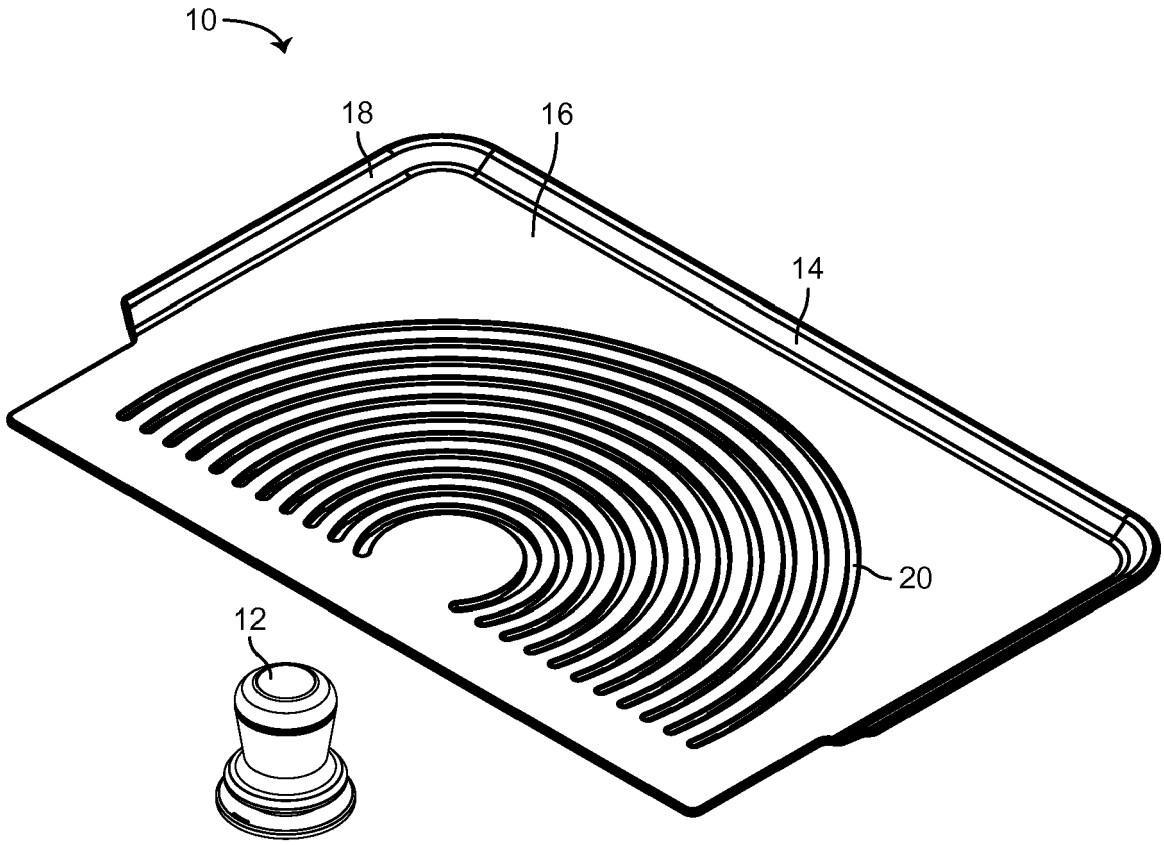


FIG. 1

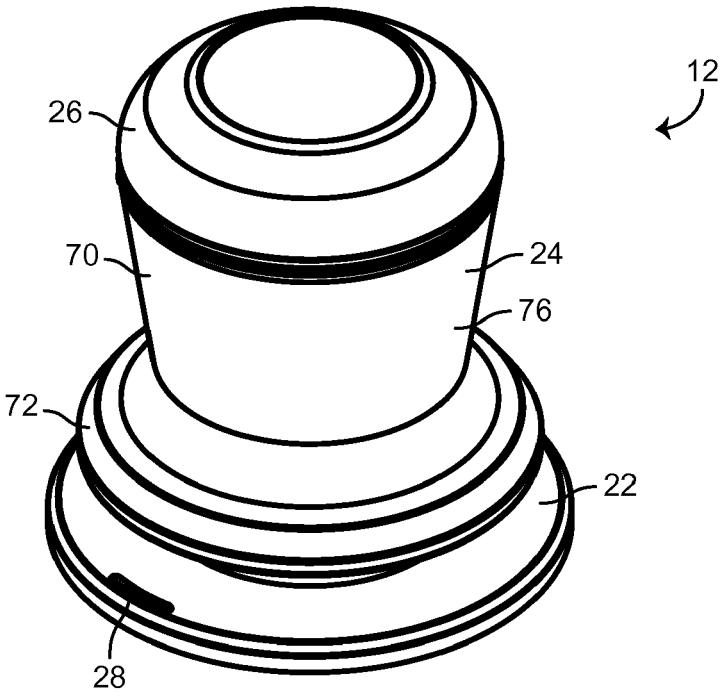


FIG. 2

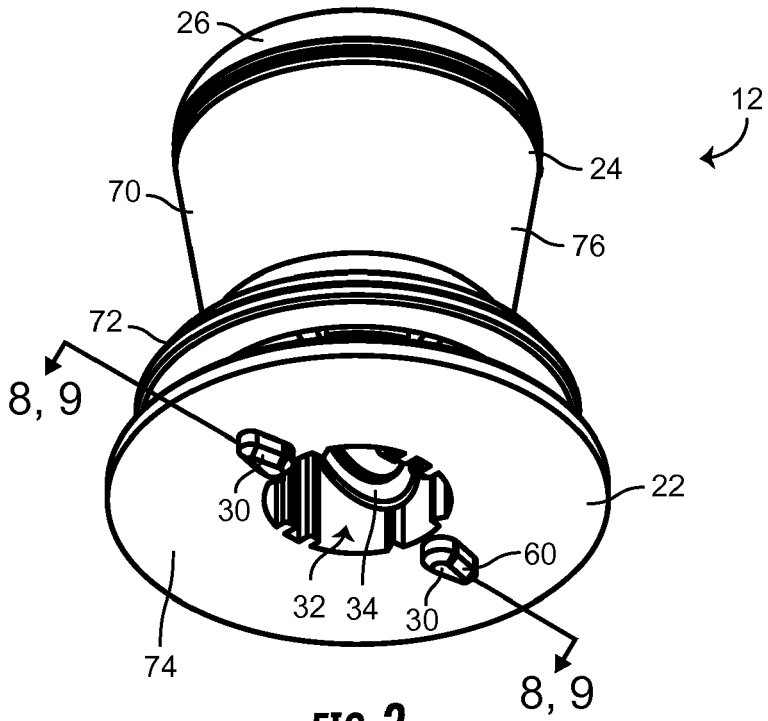


FIG. 3

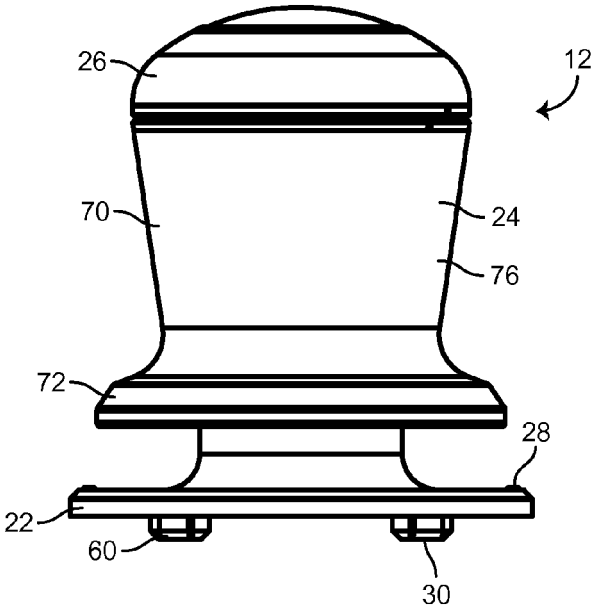


FIG. 4

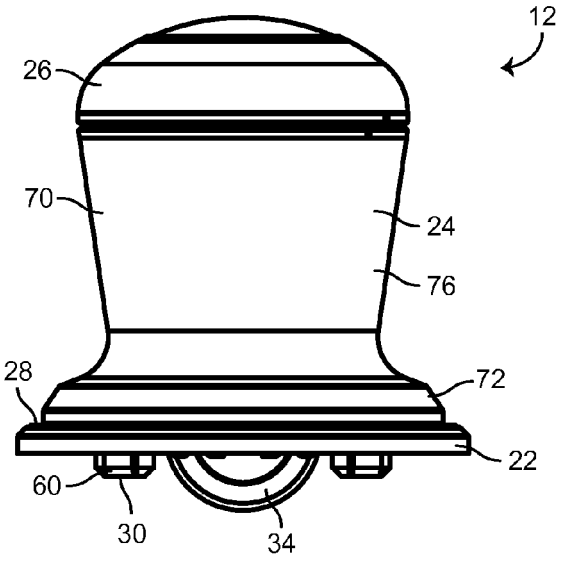


FIG. 5

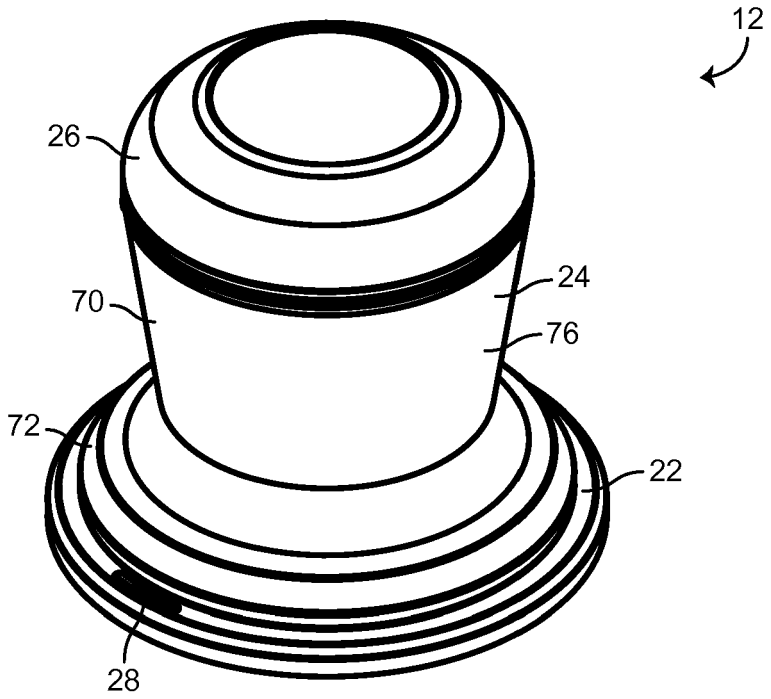


FIG. 6

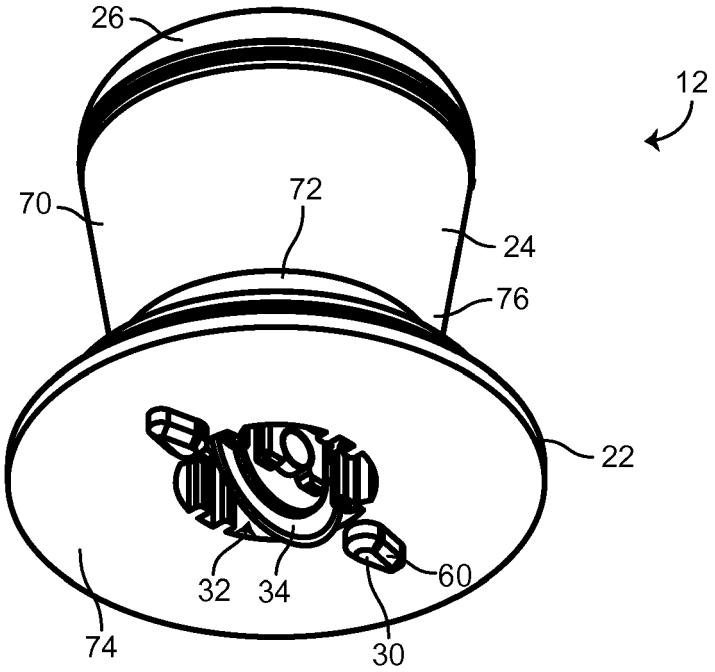


FIG. 7

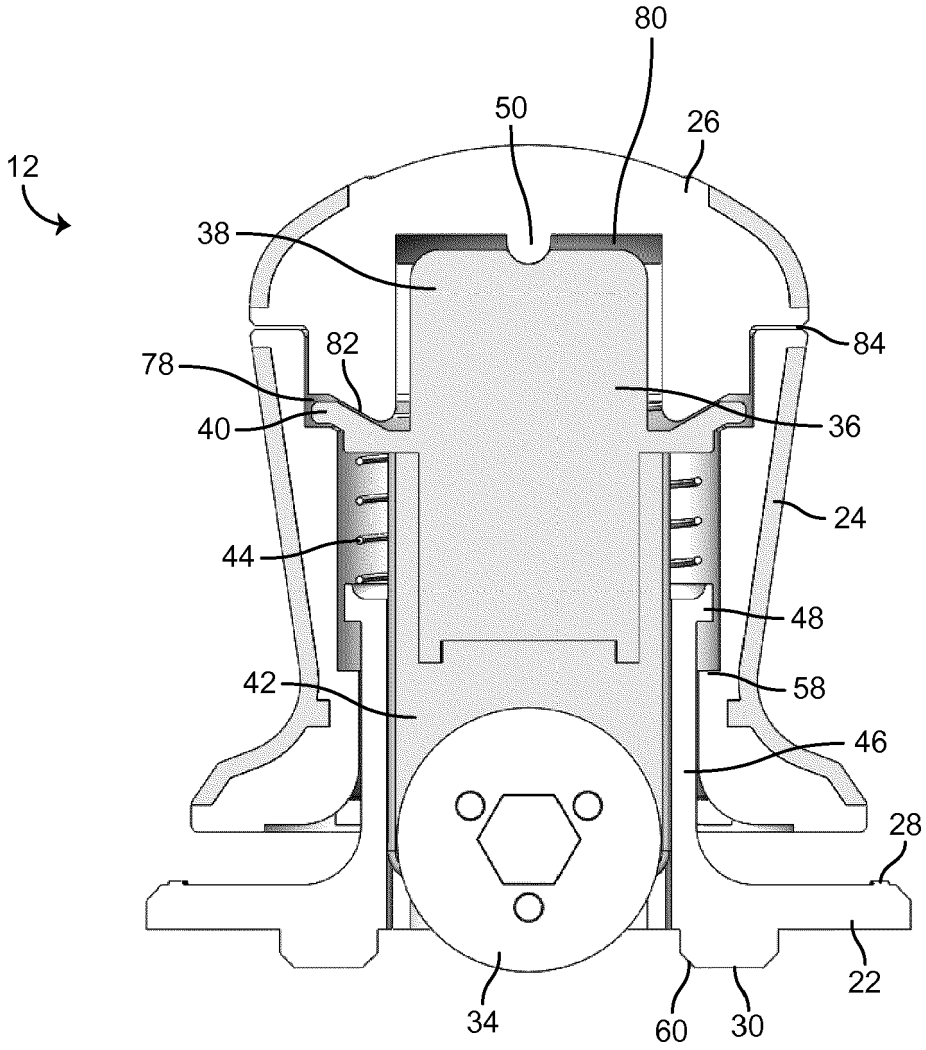


FIG. 8

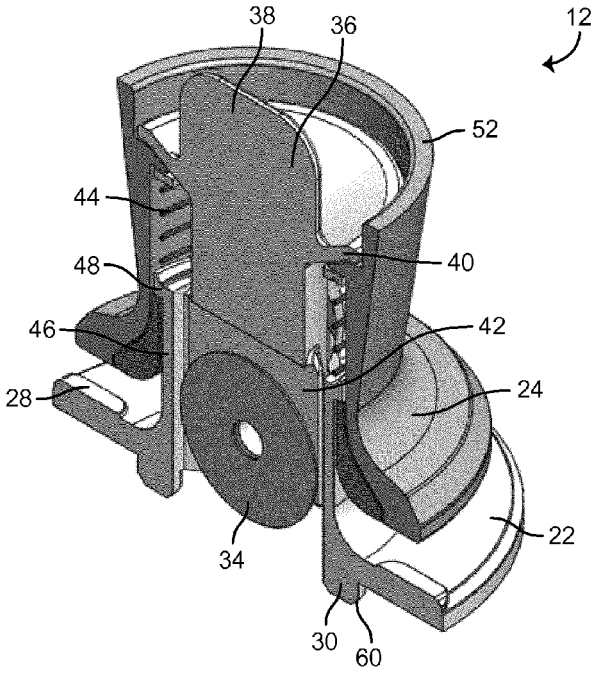


FIG. 9

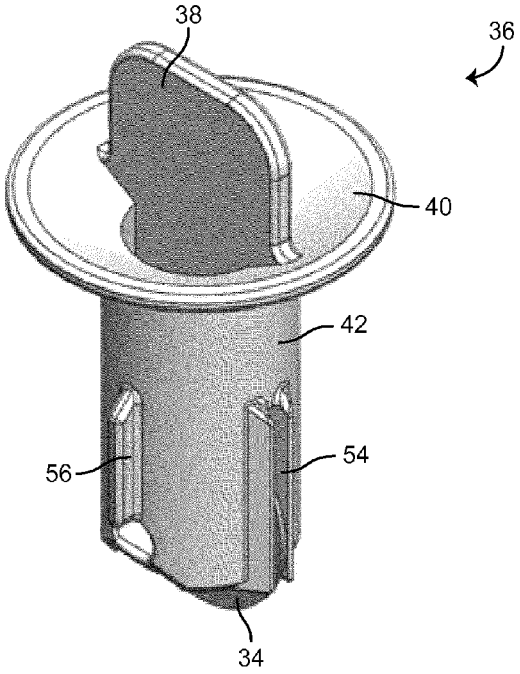


FIG. 10

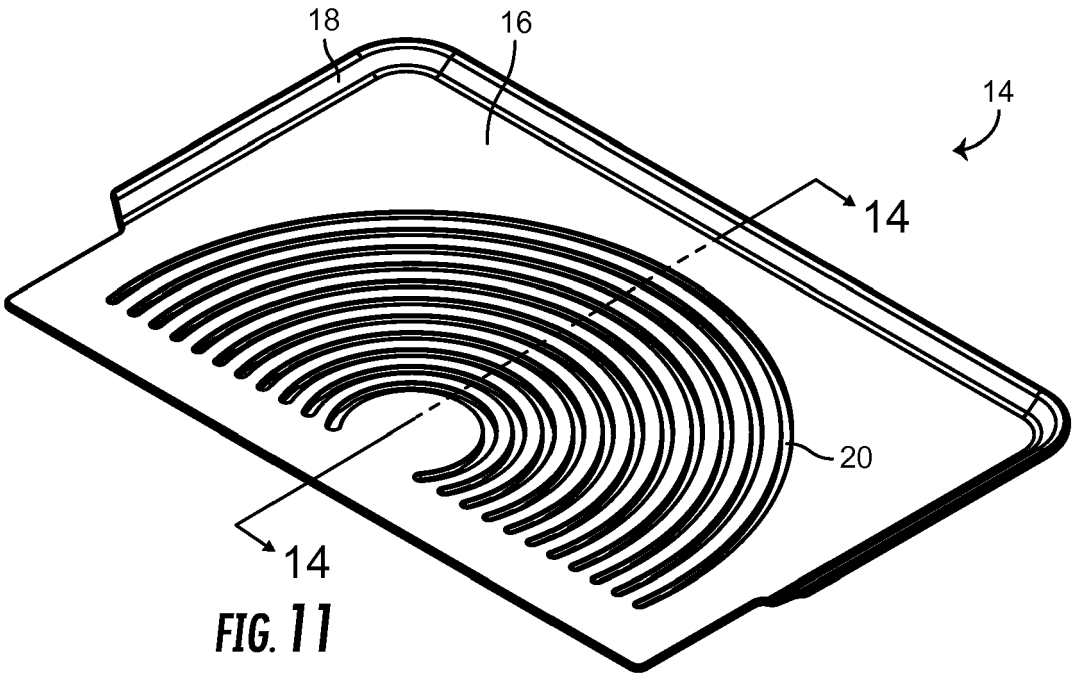


FIG. 11

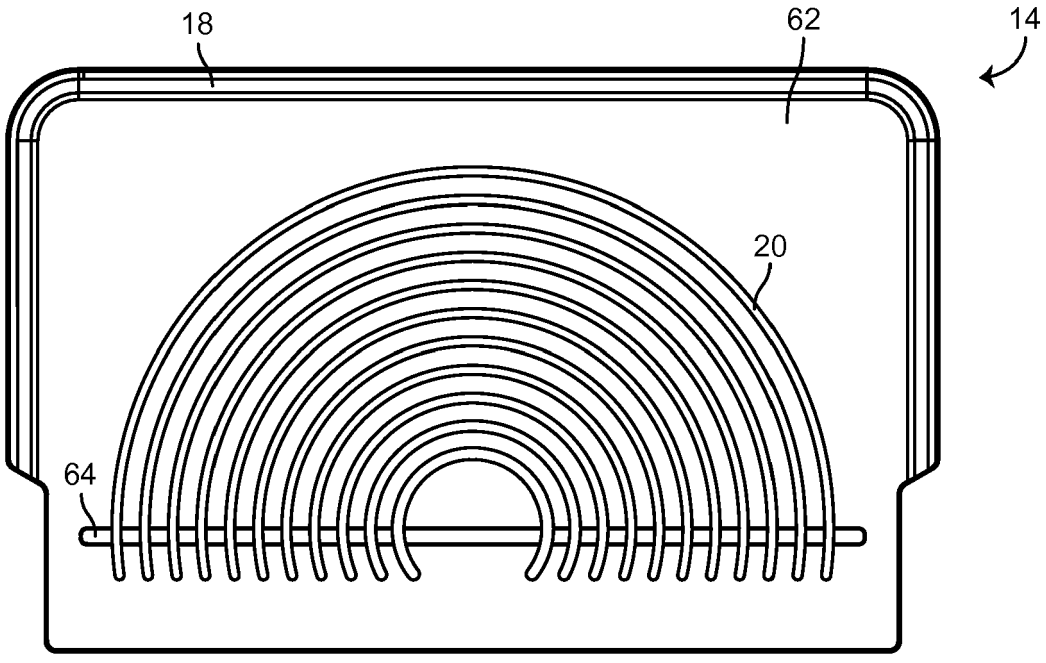


FIG. 12

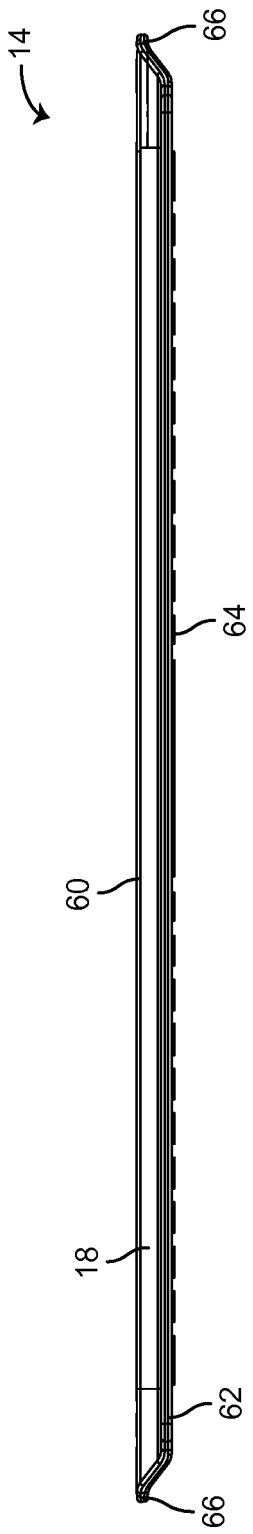


FIG. 13

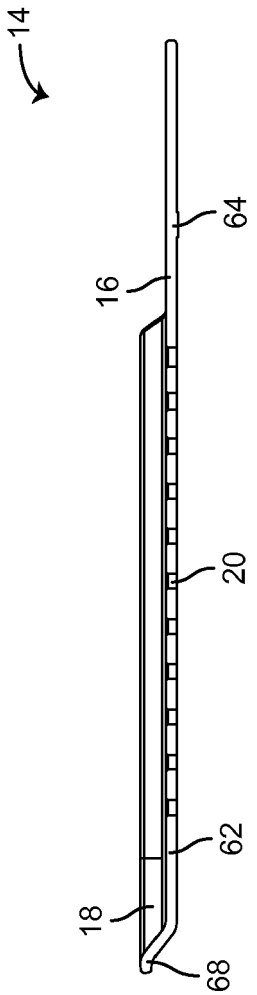


FIG. 14

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EUROPEAN SEARCH REPORT

Application Number
EP 16 19 4234

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 821 681 A (VANDERMARK JOHN LORENZO [US]) 29 May 1906 (1906-05-29) * the whole document *	1-15	INV. B26B25/00 B26B29/06
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TECHNICAL FIELDS SEARCHED (IPC)

B26B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	7 April 2017	Cardan, Cosmin

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07-04-2017

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