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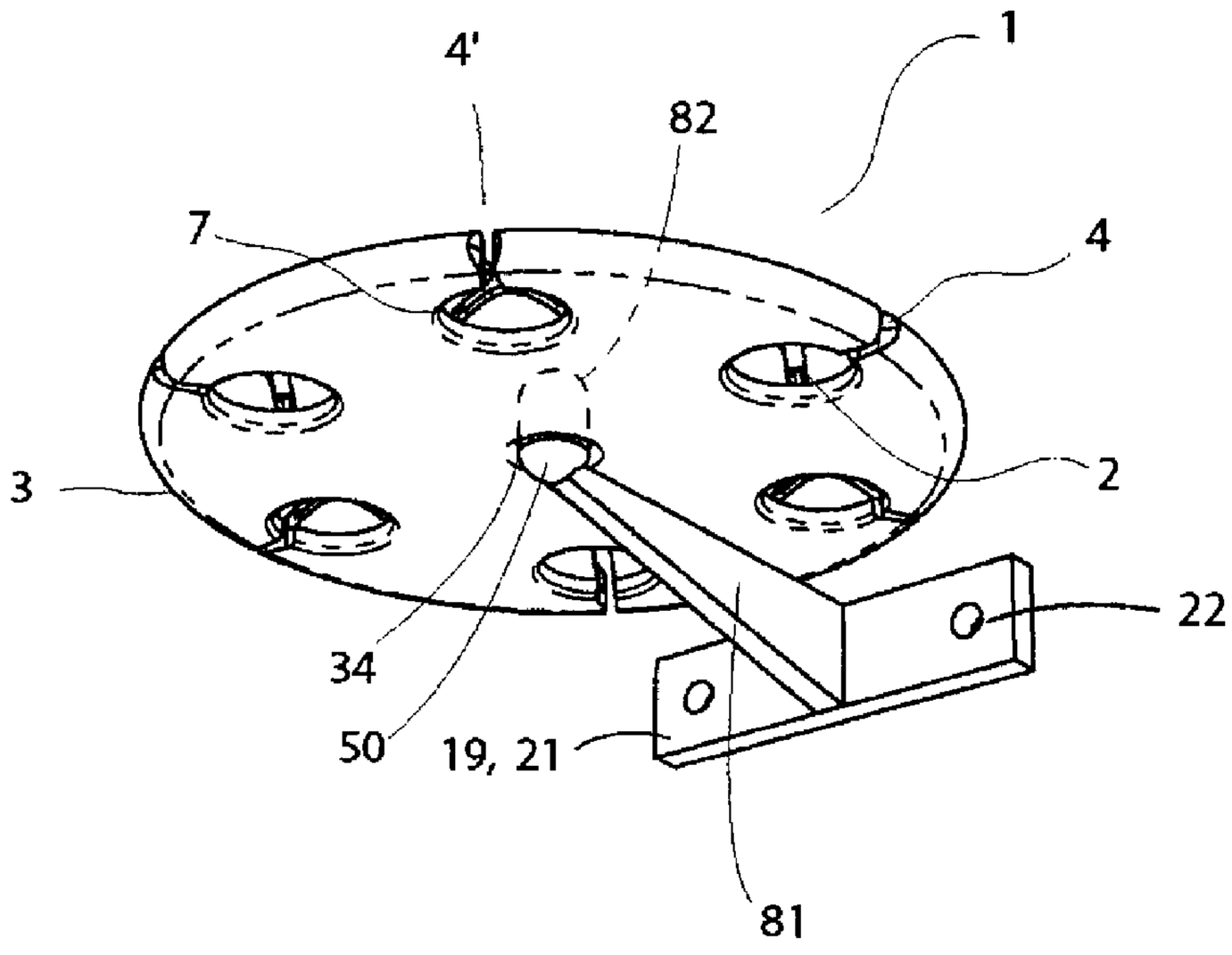

(57) Abrégé/Abstract:
The invention relates to an organizing device for organizing pens, screwdrivers, toothbrushes, tools, Christmas tree lights and branches, and the like; objects that are nominally long and cylindrical. The flexible elastomer material has holes with narrow passages to them that deflect due to the elastomeric properties of the material that permit the entry of an object into the hole from a perimeter wherein they are held tight as the elastomer at the narrow passage returns to a neutral state. Additional flexible flanges permit a variety of object sizes to be held within the hole, the flexible flanges flexing to accommodate the variety of sizes while still retaining the objects. The device or combination of such devices comprises a plurality of such holes so that a collection of tools or objects can be held therein organizing them together. Certain objects, like heavy screw drivers, would benefit by the additional support provided by being inserted into a hole in each of two sequentially placed Organizing Devices to prevent a moment caused to the tool by a heavy handle from forcing the tool out of place. The device is generally used in conjunction with a variety of support means, such as extruded, bent, cast, or injection molded bracket, each providing some means to mount to a surface such as by way of fasteners, adhesive tape, or magnets. Thereby the invention could be positioned to a wooden bench or shelf, a wall, or to the surfaces of refridgerators or toolboxes. The invention is configurable as a strap that can be formed into a compact assembly

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(57) Abrégé(suite)/Abstract(continued):
when the two ends are fastened together to form a compact device for organizing objects, and can be attached around table legs, ducts, or a workers arms, thighs, wrists, etc. Alone, the invention can be hung to a support structure by one of its holes and supporting other objects with the other holes, such as by hanging a Christmas tree light to a tree branch, with the purpose of orienting it visibly outwards. The invention can have a variety of forms, such as disc shaped, rectangular, or be comprised of a number of like devices strung together on a common support, or be decorative in nature to appear like a star or snowflake for example in the case of a Christmas tree ornament that is self supporting on the tree's branches.

TOOL ORGANIZING AND SUPPORT DEVICE

The invention relates to an organizing device for organizing pens, screwdrivers, toothbrushes, tools, Christmas tree lights and branches, and the like; objects that are nominally long and cylindrical. The flexible elastomer material has holes with narrow passages to them that deflect due to the elastomeric properties of the material that permit the entry of an object into the hole from a perimeter wherein they are held tight as the elastomer at the narrow passage returns to a neutral state. Additional flexible flanges permit a variety of object sizes to be held within the hole, the flexible flanges flexing to accommodate the variety of sizes while still retaining the objects. The device or combination of such devices comprises a plurality of such holes so that a collection of tools or objects can be held therein organizing them together. Certain objects, like heavy screw drivers, would benefit by the additional support provided by being inserted into a hole in each of two sequentially placed Organizing Devices to prevent a moment caused to the tool by a heavy handle from forcing the tool out of place. The device is generally used in conjunction with a variety of support means, such as extruded, bent, cast, or injection molded bracket, each providing some means to mount to a surface such as by way of fasteners, adhesive tape, or magnets. Thereby the invention could be positioned to a wooden bench or shelf, a wall, or to the surfaces of refridgerators or toolboxes. The invention is configurable as a strap that can be formed into a compact assembly when the two ends are fastened together to form a compact device for organizing objects, and can be attached around table legs, ducts, or a workers arms, thighs, wrists, etc. Alone, the invention can be hung to a support structure by one of its holes and supporting other objects with the other holes, such as by hanging a Christmas tree light to a tree branch, with the purpose of orienting it visibly outwards. The invention can have a variety of forms, such as disc shaped, rectangular, or be comprised of a number of like devices strung together on a common support, or be decorative in nature to appear like a star or snowflake for example in the case of a Christmas tree ornament that is self supporting on the tree's branches.

BACKGROUND OF THE INVENTION

Many common objects in the household and workplace need to be organized in a manner where they are readily available and at hand. Many sorts of brackets, tool boxes, hangers, and the like exist to allow a user to place an object such as a tool in effort to organize or store the tool, and generally in the proximity of other like tools. Those products that make the task of organizing tools, pens, toothbrushes, and like cylindrical objects, and permitting the ease of selection and retrieval of such an object as well as replacement are successful in making a task easier for a user. Those products also include a means to mount the organizer to a surface in proximity to the task succeed in making the product efficient. There are several types of mounts, brackets, and hangers that succeed in organizing tools, but generally at the cost of having a number of parts, some of them quite expensive, which require assembly, or have mechanical parts that may fail or take up space where another solution may have been more efficient. Other solutions, from the basic workshop wooden rack with holes drilled into it to support screwdrivers, or brackets for toothbrushes, are all limited to support a tool that fits the hole intended for it; to big and the tool may not enter; too small and it may not be well supported, especially with a top-heavy handle. What conventional tool supports have in common are inherent material limitations. In order to achieve the support, entry, and fastening of tools to a tool holder for the purpose of organizing them, a number of parts are required because existing materials used for such a purpose, such as plastic and metal, do not permit all these features to exist in one part. Elastomer, however, is a material that will permit, through the design of the part and due to its unique balance between elasticity and rigidity, the support, entry, and fastening of a tool to a tool holder comprised of elastomer in a single part.

Toothbrush holders in particular have become redundant as recent popularity in designer toothbrushes with large, ergonomic handles have prevented them from being placed inside the holes of the conventional cast, plastic, and sheet metal holders. An elastomeric device can support and organize a family's toothbrushes that have a wide range of handle dimensions as the elastomer permits deflection to accommodate a wide range of toothbrush sizes. Often a tool such as a toothbrush has large proximal and distal ends – but a narrow neck. The ends prevent insertion into a standard stiff bracket, however with an elastomeric bracket the toothbrush neck can be pushed through a narrow passage into the support hole as the material deflects to accommodate such a force.

SPECIFICATION

The Organizing Device is an elastomeric object holder that may hold any sort of nominally long, nominally cylindrical object such as screwdrivers and other tools, pens, brooms, toothbrushes, even Christmas tree branches and lights. The invention comprises of an elastomeric body that has one or a plurality of holes with narrow passages leading to them from a perimeter where by the tool can be made to pass through the narrow passage into the hole, or downward directly into the hole. The narrow passage of the elastomeric material would deflect to permit the entry of the object into the Organizing

Device. Once within the support hole, the narrow passage would return to a neutral state, holding the object within captive, well supported, and organized. The invention would benefit by having the more flexible gripping flanges at the holes to permit objects smaller than the actual hole size to be held captive sufficiently by an element of static friction. The objects, hereafter noted as 'tool' and 'tools', can likewise be easily removed by the user pulling the tool distally out through the narrow passage or outwards of the support hole.

The invention can be made more compact and easier to manufacture than other such concepts as since a single elastomeric device body comprises a general body supporting the other features, a hole or holes to hold a tool or other object singly or in collection together, and entry passage from a perimeter of the general body to each hole, flexible gripping flanges to accommodate and hold secure a wide range of nominal part diameters of the tool, a mounting feature such as a hole, and possibly a support flange or flanges with features that support assembly to a support structure, support surface, or support bracket that is the intermediary between the general body and the support structure or surface. Therefore as one body, the elastomeric device requires no assembly of parts as mentioned of features integral to the general device body, as such as there is no assembly of parts, the design can be more efficient to eliminate space needed for part thicknesses, tolerances, space to permit mechanical movement of a part, etc.

The organizing device and system and/or configuration of devices disclosed herein were designed to provide a solution for effective and aesthetic tool support and organization. The preferred embodiment of the device is a single entity integrally made of pliable material, such as injection molded thermoplastic elastomer, to permit elastic deformation of the device body or features on the device that are both temporal and impermanent; these deformations allow the entry of tools into support holes of predetermined size in the device, deformations which afterwards relax to a neutral state, holding the tools within. The neutral state is defined herein as the state or orientation of features in the device as they were at manufacture and that the device maintains or returns to without the presence of external forces. The addition of pliable flanges extending from the support holes provides a measure of positive connection to a range of tool part diameters.

The device may be fashioned with variations in design, and in a variety of colors and translucencies, to make the product attractive both at point of purchase and in use. Color may be employed at discreet portions around support holes to code the support holes to discriminate the tools within them. Other signifiers like symbols may also be employed for the same. The material may be fashioned in a variety of durometers to impart stiffness or softness, or stickyness, depending on requirements of application and the specific features may have specific durometers that can be facilitated by the process of co-injection, overmolding or assembly, or stiffness variation imparted by thickness of material as fashioned. Where requirements for specific durometers, or degrees of hardness and stiffness, are met in an embodiment that requires co-injection, overmolding or assembly, certain portions like the general device body can be made of relatively stiffer and harder material, such as polypropylene (an olefin), and other portions that require deflection and elastic properties as disclosed in this specification can be made of

softer, more pliable material, such as thermoplastic olefin, a variant of thermoplastic elastomer that shows excellent molecular adhesion to other olefins such as polypropylene. An embodiment of the device would be a compact form such as a disk or plate.

The invention could have design variations to permit, for example, arrangement in a linear group, or dispersed in an irregular pattern, to be held plurally within a bracket, or held individually within individual brackets to be arranged together or ad hoc as required.

The organizer device can be used to support and organize Christmas tree lights to tree branches in a manner to make them more visible. The devices can take the appearance of stars, snowflakes, and the like to be thematic.

The invention may also benefit from having a support flange or flanges for supporting the device by way of fasteners or into a support structure. A hole in a support flange can be disposed to permit a fastener such as a screw to pass through into a support structure in order to support it. Do to the elastomeric nature of the invention, a screw may also be driven through the material of the body of the invention without requiring a pre-made hole. Support flanges can also be employed to support the invention to all manner of brackets. An embodiment of the invention features a portion of the posterior of the elastomeric device body fashioned as a suction cup to permit fastening by means of creating a vacuum. Another embodiment features holes or slots by way entry of a tie-wrap, strap, or rope into the hole or slot that holds the device captive in the tie-wrap, strap, or rope, wherein such a utility a number of devices may be likewise fastened to comprise a group. Such a fastening means may be tie-wrapped to a table-leg or duct, strapped to a user's arm, leg, or wrist, or other body part, or supported over a space by a rope. Such list of fastening means is not meant to be limiting to the many possibilities of supporting this unique, elastomeric organizing device for tools and the like.

The organizer device generally has features to permit it to be supported to a support device or support surface. In some instances the elastomeric body itself has means for fastening to a surface, such as by driving a screw through the device body, or a hole in a support flange, or the elastomeric body can be supported by a more substantial support bracket. The latter is generally employed to hold collectively several modular inventions such that a group of devices can be assembled as required. The system is considered modular in that the number of like devices required to perform the tasks of wire management and support may vary depending on need, and is flexible to permit changes in the number to reflect changes in need. In other instances, support brackets hold the elastomeric bodies of the invention individually to support them in a group collectively, where the modularity and individuality of them permit the user to place them at spacings that accommodate different size tools, to be placed between obstacles or other tool organizing devices, or be individually mounted ad hoc to surfaces as need requires.

Such support brackets could be an extruded aluminum or plastic C-Shape bracket with a forward facing slot where the device bodies are slid into the bracket from the open side, where by the supporting means and tool holding hole protrudes free through the forward

facing slot to receive a tool, and a support flange on the elastomeric body is retained within the extruded bracket and held there by flanges on the aluminum body at the slot that has the purpose of retaining the devices. Other brackets include a flat plate with punched metal recesses to receive support flanges of a device, or individual cast or injection molded brackets that receive a single device in a captive manner, having fastening means on its posterior side. Any such bracket can be fastened to a support structure or surface by fasteners, adhesives, adhesive tapes, magnets, suction cups and the like. The product can be marketed to meet specific requirements for mounting, or include a number of options the user can choose from to make the product work with their fastening requirements. A typical bracket could be an L-shaped bracket that supports a circular device with a plurality of tool holding holes to support toothbrushes on a bathroom wall. An alternative embodiment of the invention is a general device body that can be inserted into a grommet that is supported by a support structure. The tools generally enter from the top of each tool hole, wherein flexible flanges accommodate a wide range of tool diameters.

In some cases the support of a tool, such as a screw driver by its thin metal drive rather than by the thick handle, requires additional support to prevent a force caused by a moment on the tool's top-heavy handle to force the tool out of place, and this can be achieved by having two or more devices spaced a distance apart to support a tool at two points to prevent a point of rotation at an axis which could be the case where only one organizing device exists.

DESCRIPTION OF THE DRAWINGS

A tool organizing and support device as illustrated in FIG. 1 is comprised of a device body 1 comprising of a compact form, such as nominally flat, compact disk or plate, or group of branches fashioned or connectible together to form the device body 1, shown here as a compact disc with portions made of pliable material, a plurality of discreet tool holes 2 of predetermined size nominally disposed near a perimeter 3 of the device body 1 with narrow passages 4, narrower than the width of a tool 5 (shown as a section), between the perimeter 3 and each of the tool holes 2 such that the tool 5 may be forced to pass through a narrow passage 4, causing elastic deformation of the pliable material at the narrow passage 4, and be connectible and held circumferentially or at a perimeter 7 by a tool hole 2 by act of static friction between the surfaces of the tool 5 and the pliable material at the tool hole 2, wherein the pliable material deformed at the narrow passage 4 returns to a relaxed neutral state to further hold the tool 5 in the device by barring the narrow passage 4 to the tool 5 by virtue of it being narrower than the width of the tool 5 when in the neutral state, the plurality of tool holes 2 devised to hold individual tools 5 separate from each other to organize them and hold the tool 5 or tools 5 by the static friction. A flange 6 or flanges 6 extending from a hole perimeter 7 of a tool hole 2, directed toward the center of the tool hole 2 and nominally more thin and pliable than the general device body 1, act to hold a tool 5 smaller in diameter or size than the tool hole 2 by static friction, the flange 6 or flanges 6 being pliable enough to permit their elastic deformation 6' to accommodate a range of tool diameters not larger than the diameter of

the tool hole 2 or the diameter permitted by the elasticity of the hole perimeter 7 at tool hole 2. Tool holes 2 can be fashioned to be round to accommodate round tools 5 such as screw drivers, or rectangular, square, hexagonal, etc. to accommodate other tools 5 such as kitchen tools with flat handles that are rectangular in cross-section like ladles manufactured from sheet metal, or hex keys. Tool hole 2 diameters therefore can be read hereon to include any shaped perimeter 7 of a tool hole 2, the shape being conditionally on the type of tool 5 the organizing device 1 was manufactured to organize and support.

Support means 19, as shown in Figure 3 and 6 as a support flange 21, may also be a part of the general device body 1, making manufacture efficient as the composition of features requires no assembly. In some cases however, a secondary support structure 20 not a part of the general device body 1 can be affixed to the device at support means 19 by way of a support hole 34 in one embodiment. In all instances some form of support means 19 is required as the device functions to support and organize tools by being affixed or rested on a stable structure or surface.

Embodiments of the invention can be configured with tool hole 2 diameters that accommodate the tool 5 at a tool neck 5a or tool handle 5b. Embodiments of the invention include device bodies 1 that include no narrow passages 4 and portions or elements resulting therefrom so that a tool 5 can only enter axially to the tool hole 2 and be frictionally held, as seen in FIG.s 18, 19, 20, 29, and 31 through 34, and does so provided the tool hole 2 is large enough for the largest part of a tool 5 required to enter, and yet having the flexible flanges 6 that deflect and return to hold smaller portions of a tool 5 where the tool 5 is said to be held in place. Many tools 5, like an ergonomic toothbrush, have a handle 5b that is thick that a user can hold and a tool head 5c that performs the task of the tool 5, between which is a narrow neck 5a, which occurs either transitionally or abruptly from the other parts mentioned. In the act of storing and organizing a tool in a device 1, one of three possibilities will typically occur, and the same applies for retrieval: the tool 5 is placed handle 5b first into a tool hole 2 where it is held at the tool hole 2 along the handle's 5b length or at the neck 5a of the tool, which is seen as being more secure as the narrowness of the neck 5a and the thickness of the handle 5b makes the tool 5 more captive; in another action the tool head 5c is placed into the tool hole 2, where the tool 5 again is held along either the neck 5a or the handle 5b, or the tool 2 at a portion is pushed laterally through the narrow passage 4 if so deployed in an embodiment into a tool hole 2 where it is considered captive.

The invention can be manufactured by several different processes to achieve desired features and material properties, both as an integrally manufactured, one-part device, or as an assembly of parts. Injection molding thermoplastic elastomer is the preferred process of manufacture however the invention can also be fashioned by die-cutting pliable material or extruding thermoplastic elastomer, as depicted in FIG. 23. Each method employs procedures and designs that enable the pliability of discreet features to be controlled so that some are more pliable, whereas others may be stiff. Some elastomers are sticky to the touch and as such may be employed to provide strain relief of a tool 5 (shown as a section) within a tool hole 2 by imparting a greater degree of static friction between these features. Pliable materials employed in die-cutting may include

rubber, neoprene, or any other cast, extruded or expanded foam sheet material.

One method of controlling pliability of discreet features is to vary part thickness, as depicted in FIG.s 1, 2, 4 through 23, 25, 27, 28, and 30 through 37. A tool organizing device can comprise a device body 1 of varied thickness to permit thinner portions such as flanges 6 to be pliable, such as to allow elastic deformation of the narrow passage 4 to permit entry of a tool 5 to a tool hole 2, and other, thicker portions to be rigid to make a device body 1 that provides support of the tools 5 captive at flanges 6 extending from the thicker material at hole perimeters 7. In die-cut and extruded parts, the variance in thickness can only occur as shaped in a die and in directions perpendicular to forces used in manufacture, as depicted in FIG. 23. Injection molding can employ variance in material thickness within the mold cavity. FIG.s 1, 5, 19 through 21, and 23 show the deflection 6' of flanges 6 caused by elastic deformation when a tool is inserted within a tool hole 2. FIG 26 shows visually imperceptible elastic deformation of a hole perimeter 7 when a tool 5 is inserted within a tool hole 2 that does not have flanges wherein the tool hole 2 was fashioned to match the gauge of the tool 5 to permit an element of static friction between them that utilizes a control of tolerance to do so.

Varying material durometers, as permitted by the injection molding processes of co-injection and overmolding, permit portions of lower durometer 91 to be pliable (generally below durometer 80 Shore A), such as to allow elastic deformation of the narrow passage 4 to permit entry of a tool 5 to a tool hole 2, and other portions of higher durometer 92 to be more rigid (generally above durometer 80 Shore A), to make a device body 1 that provides support of the tools 5 at the tool holes 2, as depicted in FIG. 24.

Controlling pliability may also be possible by making an assembly of parts as depicted in FIG. 25, wherein the device body 1 comprises a rigid frame of material with a plurality of keyholes 8 near the perimeter 3, the keyholes 8 being narrow near the perimeter 3 and wider toward the center 9 of the device body 1, to permit the assembly of tool holders 10 made of pliable material thereto, each of the tool holders 10 fashioned in the shape of a keyhole 8 with a fastening channel 11 around the tool holder perimeter 12 to be fixable within the keyholes 8 by deforming portions of the extremities of the channels 11 of the tool holders 10 while inserting it into place within the keyholes 8 wherein the deformed portions will return to a neutral state, each of the pliable tool holders 10 comprising the features of the narrow passage 4, the hole perimeter 7 and portions extending therefrom, such as flanges 6.

The invention may also exhibit other features to help provide greater degrees of tool capture and strain relief.

To improve tool capture and retention, FIG. 26 depicts an embodiment of the invention wherein the narrow passage 4 does not extending radially from the adjacent tool hole 2 with a clear view of the center 13 of the tool hole 2 such that it provides a measure that prevents a tool 5 (shown as a section) from being forced out of the tool hole 2 by a force perpendicular 14 to an axis 15 corresponding to the center 13.

To improve strain relief, FIG. 27 depicts an embodiment of the invention wherein a pliable tool support 16 extending from a tool hole 2 at a portion of its hole perimeter 7, extending nominally parallel to the axis 15 of the tool hole 2, is intended to further support a portion of a tool 5 located in the tool hole 2 to prevent pressure being placed on a narrow portion of the tool 5 at the hole perimeter 7 of the tool hole 2 should a force be exerted on the tool 5, and to provide greater surface contact between the tool 5 and the device to provide more static friction, serving to provide a degree of strain relief.

FIG. 10 depicts a tool support 28 that extends from the perimeter 3 of the tool hole 2 in a conic fashion toward the axis 15 to provide a narrow sleeve nominally smaller in diameter than the tool 5, the insertion of the tool 5 therein causing elastic deformation of the tool support 16 to create a circumferential force on the tool 5 that increases static friction and functions to grip the tool 5 to provide a greater degree of strain relief. The tool supports 16 can be fashioned with relief slits 17 to separate portions of tool supports 16 so as to functions as flanges 6 to permit ease of deflection as required.

FIG. 2 depicts another embodiment of the device without the presence of flanges 6, in which the plurality of discreet tool holes 2 is comprised of a range of tool hole 2 diameters to permit tools of different diameters to be attached and benefiting from a measure of elastic deformation at the hole perimeters 7 to permit static friction of the material at the hole perimeter 7 to the tool 5 inserted therein. In such a configuration, the tool hole 2 diameters would typically be fashioned to match standard tool gauges, the sizes of which would be predicted by the application of the device. Chamfered or rounded edges at the perimeter entrance 4' to a narrow passage 4 facilitates entry of a tool into the device body 1 in that the notch at the perimeter entrance 4', created by the chamfering or rounding of the edges, permits a tool to register thereto in a funnel-like manner and permits the tool to be pushed into said narrow passage without slipping against an otherwise uniform perimeter 3. Due to the simplicity and lack of small details, the composition of the device as represented in FIG. 2 would benefit from die-cut manufacturing.

As depicted in FIG. 3, embodiments of the invention employ features so the invention can interface with support means 19 fixable to a support structure 20, or directly to support structures 20 themselves; the term support means 19 is used herein to be inclusive of support structures 20 as well. The various forms of support means 19 fixable to support structures 20 utilize fastening elements such as screws, rivets, adhesive tapes, and suction cups, and these may be used interchangeably in some embodiments depending on application and mating surface properties. As depicted in FIG. 3, support means 19 can be an integrally fashioned part of the invention; support means 19 depicted as a foot or support flange 21 that descends from a portion of the perimeter 3 of the device that is fixable to a surface 18 on a support structure 20 by fastening means such as a screw that passes through a mounting hole 22 in the support flange 21. An external part, like a suction cup, magnet, hook, and the like can be inserted in a captive manner into the mounting hole 22 as well.

FIG. 4 depicts an alternative embodiment of the invention where the support means 19 is

a bracket made of sturdy material such as cast aluminum insertable at a device mounting point 50 at an extremity 82 of a standoff 81 of the support means 19 by way of the support hole 34. A portion of the extremity 82 passes into the support hole 34 keeping the device 1 laterally stable and another portion comprising a standoff 81 that keeps the device 1 axially stable, shown in Fig. 4 as supporting the device body 1 from the effects of gravity. Support flanges 21 extend from the support means 19 to mate against a support surface 18 (not shown) of a support structure 20 such as a wall. Mounting holes 22 permit affixing to a support surface 18 by use of fasteners, but other methods can be employed, such as adhesive tape.

The invention can also be employed to isolate a tool 5 or tools 5 from its surrounding environment. As depicted in FIG. 5, the device is restable on a surface 18 (not shown) like a bathroom counter by support structure 20, the device configured with appropriate spacing between the tool holes 2 providing a measure to prevent a tool 5 from coming into contact with the surface 18, other tools 5 or objects in the surrounding environment by providing necessary distance at the tool hole 2 of the device between the surface 18 or objects and tool 5 within the tool hole 2. FIG. 5 shows the example of a tool 5 as a toothbrush 5 with a thick handle and a narrow neck that can only be inserted in the tool hole 2 through the narrow passage 4, wherein it is held by friction, away from objects in the surrounding environment like the bathroom counter, bathroom wall, and other toothbrushes 5. In much the same manner can the embodiment described in FIG. 4 isolate a tool 5 from other objects in its environment. Other objects that would benefit from isolation would be medical tools or paint brushes. Isolation prevents local contamination of the tool 5 or from the tool 5.

Fig.s 5, 35, 36, and 37 depict an embodiment of the invention wherein the device mounting point can comprise of a bead or pronounced lip 85 extending from an narrow extension 84 at the extremity 82 such that the pronounced lip 85 is forced to pass through a support hole 34 in the center of a device 1 disposed to fasten to the external support means 19, the pronounced lip 85 being nominally larger than the support hole 34 so that when passing through the support hole 34, the pronounced lip 85 deflects the pliable material of the device 1 at the support hole 34, the pliable material returning to the neutral state within the channel 86 around the extension 84 where it is considered fastened in place. A ledge 81a is formed at the general body of the standoff 81 at the opposing end of the extension 84 that forms a channel between the general body of the standoff and the pronounced lip 85 at the extremity 82; the ledge 81a of the standoff 81 supports the device 1 and prevents it from moving along a portion of the support means by barring travel along the support hole 34 by being larger than the support hole 34. Since the support hole 34 can be round in embodiments of the invention, the device body 1 can be axially rotatible to make tool 5 selection facile. Support structure 20 has a flat bottom 128 in these embodiments to rest stably on a support surface 18 (not shown).

FIG. 36 is a section view III-III of the assembly as described in FIG. 35 clearly depicting an extremity 82 of the standoff 81 having an extension 84 with a pronounced lip 85 that forms a channel 86 between the pronounced lip 85 and the general body of the standoff 81.

FIG.s 35, 36, and 37 show a cavity 119 in the support structure 20 that can be utilized to hold all manner of small tools 5 not suitable to be held in the tool holes 2. If the tool organizing and support device is employed to hold pens, pencils, highlighters and the like, then the cavity 119 could hold paperclips and the like; likewise if the invention is employed to support and organize toothbrushes, the cavity 119 could hold toothpaste tubes and the like. In FIG. 27, the cavity 119 can also hold or contain portions of the tools 5, which is beneficial if there are such tools 5 so mounted such as leaky pens or wet brushes and the like to keep them from soiling the surrounding environment.

As depicted in FIG. 31, the invention can be configured to be mountable to an aperture 23 (or hole) in a support structure 20 such as sheet material. The aperture is circumferentially connectible to the device within a channel 24 integrally disposed around the perimeter 3 of the device and be fixable thereto, the device pliable enough to allow elastic deformation of sidewalls 25 on one side of the channel 24 to pass through the aperture 23 and to relax into a neutral state on the posterior side 26 of the aperture 23, whereby the support means 19 at the aperture 23 is held between sidewalls 25 on both sides of the channel 24 circumferentially.

FIG. 32 depicts added means for strain relief, wherein a portion of the material at the perimeter 3 near an entrance 4' to a passage 4 to a tool hole 2 of the device is deflected inwards when the device is inserted into the aperture 23 creating clamping pressure to the tool 5 within the tool hole 2 that adds a high measure of strain relief.

FIG.s 33 and 34 show a tool organizing device fixed to support means 19, installed in an aperture 23 of a support structure 20 through the procedure as described in the text correlating to FIG. 31 and 32. FIG. 33 shows a perspective view of the installation, FIG 34 is a section view II-II of this installation, showing the aperture 23 captive between sidewalls 25 of a channel 24 at the perimeter 3 of the device.

FIG 19 depicts support means 19 that, at an interior perimeter 38, is connectible to the device nominally around the perimeter 3 of the device, whereby the device is pliable enough to be elastically deformed into a channel 39 within the interior perimeter 38 of the support means 19 and be held therein, wherein the support means 19 has a tool passage 40 that exits along a portion of the interior perimeter 38 to an exterior perimeter 41 to facilitate the entry of tools 5 (tool 5 is shown as a section in perspective where the tool handle is not shown) connectible to the device axially. Support means 19 can be fashioned as a grommet 42 connectible to a support structure 20, such as a table, shelf, or cabinet panel.

FIG. 20 depicts a section view II-II of an assembly of the device 1 within a grommet 42 in a support structure 20, wherein support means 19 in the form of a ledge 43, upon which the device at the perimeter 3 rests, within an interior channel 44 of the grommet 42 placed in an aperture 23 in the support structure 20 fashioned to allow the passage of tools 5 (tool 5 is shown passing axially through tool hole 2 and deflecting flanges 6 in the section) through the support structure 20 via the grommet 42. Such an embodiment of the

invention would benefit the dental, medical, or painter industries where the device 1 can be supported in support structures such as dental or medical instrument tables to support a surgery tool 5, or the top cap or step of a painter's ladder or on an easle to support a paint brush 5.

FIG.s 21 and 22 depicts a unique application for an organizing device where by the device 1, showing an ornamental design as a snowflake or star-like Christmas tree ornament, can be clipped to a tree branch 125 by way of a tool hole 2. A support hole 34 is shown to support and organize a Christmas tree light 126, where the device permits a user determined orientation of the light by fastening it to a support means, in this case a tree branch 125. Since the device employs a number of tool holes 2, two or more branches 125 can be connected to the device 1, with the purpose of closing an annoying hole or space between tree braches 125 which is an aesthetic method to organize the look of the tree 125. The device 1 can therefore be used as an ornament that can be organized and supported on a tree 125 by user preference, one that also organizes tree or other plant branches 125, a light 126 support mountable to a support structure 20 for support and organization, or as specifically illustrated an embodiment that incorporates both functions.

FIG 30 depicts support means 19 comprising a hook detail 47 fashioned at an extremity disposed for fastening to a support structure 20, generally in the shape of the letter C, connectible to an edge 48 of the support structure 20 whereby the edge 48 of the support structure 20 is restable within the C-shaped hook detail 47 and generally held in compression by deflecting arms 49 comprising the C-shape of the hook detail 47.

FIG. 18 depicts support means 19 comprising a hook detail 51 fashioned at an extremity, generally in the shape of the letter L, for attaching the device into a slot or channel 52 within the support structure 20 such that an extremity of the L-shaped hook detail 51 enters the slot or channel 52, pivots anteriorly at a fulcrum 53 on a lower surface 54 of the opening of the slot or channel 52, and braces at a state of rest against a posterior surface 55 of the support structure 20 at the slot or channel 52 when a moment applied to the device causes the device to pivot on the fulcrum 53.

FIG.s 3 and 6 depict support means 19 as support flange 21 fashioned at an extremity, restable against a support structure 20, the support means 19 fixable thereto by fastening means; mounting hole 22 is deployed for use with fastening means.

FIG.s 7, 8 and 10 show embodiments depicting support means 19 as a profile detail 56 fashioned at an extremity fits into a compatibly shaped channel 57 in the support structure 20 such as extruded aluminum or plastic, or wood slatwall, that permits only lateral movement of the support means 19 within the channel 57 in the support structure 20; FIG. 7 shows the support means 19 as fastenable to the support structure 20 at the channel 57 by fastening means 58, such as a set-screw, that prevents the lateral movement of the support means 19 along the channel 57. Figure 6 shows the device body with support means 19 in the form of support flanges 21 that is a profile detail 56 that is inserted into the compatibly shaped channel as shown in Fig.s 7, 8, and 10. Tolerences

permit the lateral travel of the profile detail 56 through the channel 57. The channel 57 of the support structure 20 can be an independent extrusion as shown or part of a slatwall. The support structure as described may have mounting holes 22 to fasten the invention to another support structure 20 such as a wall or shelf. A groove 129 can be employed in the manufacture of an extrusion to help locate the position of a secondary drilling operation to produce the mounting hole 22, such that it can be visibly seen through the aperature of the slatwall on the other side of the part so that a screw or other fastener may enter this mounting hole 22, and fasten the assembly to a secondary support structure 20 (not shown). The mounting hole would benefit by having a countersink so a flathead screw, once inserted, would be flush to the interior surface of the posterior wall of the support structure 20 to permit the travel of the profile detail 56 through the channel 57 unobstructed.

FIG.s 6 through 10 depict embodiments of the invention with relief cuts 122, similar in nature to a relief providing relief post 102. The material around the perimeter 7 of a tool hole 2 functions as gripping arms that grip a tool 5 and the definition of perimeter 7 is synonymous with the definition of gripping arms, which is particularly evident when relief cuts 122, as seen in Figure 6, are present that permit deflection of a tool hole perimeter 7 without disturbing the tool hole perimeter of an adjacent tool hole 2. The flanges 6 function as secondary gripping arms as indicated to hold tools 5 smaller in diameter than the tool hole 2 permitted by the size of perimeter 7 and should not be construed as one and the same element; the perimeter has enough material to support a tool 5, and yet be elastic enough to permit the entry of a tool 5; where flanges 6 are present, the perimeter 7 supports a flange 6 that supports a tool 5, the flange being flexible enough to permit the range in nominal tool 5 diameters as indicated, the perimeter 5 not being able to do so with the same efficacy. Where relief cuts 122 are present, the perimeter 7 may stretch to a degree by virtue of the elasticity of the material to accommodate a tool 5 larger than the size of the tool hole 2, whereas the flexible flanges 6 permit a tool 5 of smaller nominal diameter than the tool hole 2 to be held. In such a way are they construed to have different functions altogether. The general device body 1 is preferentially fashioned out of a contiguous elastomer material, all features as indicated being part of the same manufactured part. These embodiments also show spacers 123 that keep tool holes 2 a pre-determined distance apart, which is especially useful for modular systems, as shown in figure 10.

Individual, modular tool supporting and organizing device bodies 1, hereafter described as modular tool bracklets 103 as seen in FIG.s 9 through 17, can be assembled together by the support means, or to each other. Figure 10 depicts modular versions of the invention as depicted and described in reference to FIG.s 6, 7, and 8 being inserted in a channel 57, whereby they come to rest against one another at an appropriate distance determined by the spacers 123. Contiguous or modular, the tool support and organizing devices perform the function of supporting and organizing tools 5 and the like.

FIG.s 9 and 10, and 11 through 17 depict embodiments of the invention wherein the device body 1 is synonymous to modular tool brackets 103, and the term general device body 1 can be understood as a collection of said modular tool brackets 103. Fig. 9 depicts

a modular tool bracket 103 where a mounting hole 22 is deployed to receive a support means 19, here depicted as a hook for assembly to a support structure 20 such as a pegboard (not shown) the support means 19 depicted as an extremity 82 of a standoff 81 extending from the mounting hole 22. The separation of the two parts is to show that an assembly of parts is possible, although it would be more ideal to manufacture them as one part, especially as a softer durometer overmolding or co-injection for the device body 1, and a harder durometer stand-off 82. Likewise FIG. 17 shows support means as a suction cup 59 at an extremity that permits attachment of support means 19 to a smooth, flat surface 60 of a support structure 20 by way of surface cohesion created by a vacuum 61 between the suction cup 59 and the surface 60. The suction cup is depicted as an integral part of the device's elastomeric general body 1, but does not exclude the two elements to be comprised of discrete parts fashioned into an assembly. Alternatively, the device may be attached to a support structure by other means, such as adhesive, magnets, or hook and pile.

Fig. 13 is an alternative embodiment of the invention fashioned as a strap formed of stiff but pliable material such as nylon polyamide wherein, like a conventional tie-wrap, said strap being synonymous with support means 19 and together with the modular tool brackets 103 comprises the main body 1 of the invention. The strap 19 with a ratcheting rack 99 and pinion 100 fastening means allows the opposing two ends 110 of the tie-wrap to fasten together into a compact assembly and lock, upon which curved-arms 101, comprising of flanges 6, hole perimeter 7, and extend and come into proximity to each other to form a passage 4 leading to a tool-hole 2, said curved-arms 101 fashioned of the same pliable material as the main device body 1 of the device-as-strap 19, said curved-arms 101 being pliable enough to allow the passage of a tool 5 into the tool-hole 2 and be deformable enough to allow a range of tool 5 diameters into the tool-hole 5. Advantageously, the curved-arms 101 extend from a relief post 102 between them and the main body 1 of the strap 19 to prevent the action of fastening the two ends 110 of the strap together into a compact assembly from influencing the deflection of the curved arms 101, preventing a tool 5 from being loosened therefrom. These features can be manufactured into a single integral body, hence strap 19 and main device body 1 are one and the same. Alternatively as depicted in FIG.s 11 through 13 are individual modular tool brackets 103, comprising of a channel body 104 and curved arms 101, in turn comprising of flange 6, hole perimeter 7, tool hole 2, and passage 4, are connectible to a main strap body 1 by passing a free end 110 through the channel body 104 where it is slid along the strap 19 and held captive thereupon when the two ends 110 of the strap 19 are joined at the ratcheting rack 99 and pinion 100. Advantageously, bumps 105 will hold the modular tool brackets 103 captive in place along the strap 19, the material of the tool brackets 103 and/or bumps being pliable enough to allow the passage of the modular tool brackets 103 when a degree of force is applied, where otherwise the modular tool brackets 103 would be kept captive between bumps 105.

These modular tool brackets 103 can be of differing colors a, b, c, d, e, etc., to differentiate the tools 5 within them. This embodiment is shown with the tool holes 2 of modular tool brackets 103 oriented exterior to the closed strap 19 of the invention comprising a strap 19 holding modular tool brackets 103 to form a compact assembly

such that support structure 20 (such as a table leg or ventilation duct; not depicted) can be fastened interiorly to the central support hole 34 within the strap 19 without compressing the tools 5 during the assembly, however the modular tool brackets 103 can be deployed interiorly in the assembly as well. An added advantage of having the modular tool brackets 103 positioned exteriorly is the addition of compression anvils 124 on an interiorly disposed surface of a modular tool holder such that when the strap 19 is cinched, the strap 19 tightens around a support structure 20, compressing the anvil 124 so that an interior portion of the passage of the channel body 104 compresses against the strap 19 holding it fast. The strap 19 as indicated can be fashioned as a tie-wrap, but it can also be fashioned out of other strapping material, such as hook and pile fastener. As such, it could be attached to user's body part such as wrist to keep tools 5 at hand during an operation such as surgery or construction where the quick change of tools 5 is required.

FIG.s 14 through 16 depicts the modular tool bracket 103 as an assembly with components, shown more clearly in the exploded view in FIG. 15, that facilitate inclusion of a fastening element to the modular tool bracket 103. A modular tool bracket 103 with a support flange 21 can pass through an aperture 125 in a support housing 126, much like as depicted in FIG. 10 (the support housing 126 being the extruded channel 20). The support housing 126 is connectable fitted to a support means bracket 19 by way of adhesive, a mechanical snap fit, or welding, or the like. Once captive between these two parts, the modular tool bracket 103 can be supported by them without fear of separation. In embodiments of the invention the support means bracket 19 features a support hole 34 or mounting hole 22 for purpose of connecting by way of a fastener or support element to a support structure 20; other embodiments as shown in FIG.s 15 and 16 feature a magnet that is mechanically or adhesively fixed as in FIG. 16 to the support means bracket 19, and may include a mounting hole 22 or support hole 34 through the magnet as well to allow a user to employ both mounting elements ad hoc.

FIG. 29 is an alternative embodiment of the invention as disclosed showing a tool passage 40 to an interior portion of the device to allow the entry of a tool 5 or support means 19, such as a screwdriver handle, to an interior portion of the device body 1, which can be conceived as a larger version of a support hole 34.

FIG. 38 shows an embodiment of the invention fashioned to be useful for a user at a support structure 20 such as the top end of a ladder or on a table. The invention as described in Figure 6 is fashioned with an extension of its perimeter 3 a non-skid surface that has around its perimeter 3 flanges 21 that acts as support means 19 by being fitted over the top stair or cap of the support structure depicted as a ladder. The embodiment of the invention may also appear an overmolded component on the support structure 20. A cavity 119 to hold other tools 5 not suitable for the tool holes 5 is available and a drip tray 121 is deployed to catch drip from tools 5 held in the tool holes 2.

FIG. 39 shows an embodiment of the invention as a cap for a golf bag where the support flange at the perimeter is fixably held to a top edge of the golf bag as support structure 20. The tool holes 2 may hold all manner of golf clubs and tools to keep them organized,

and a central hole 2 provides ample space for other tools 5.

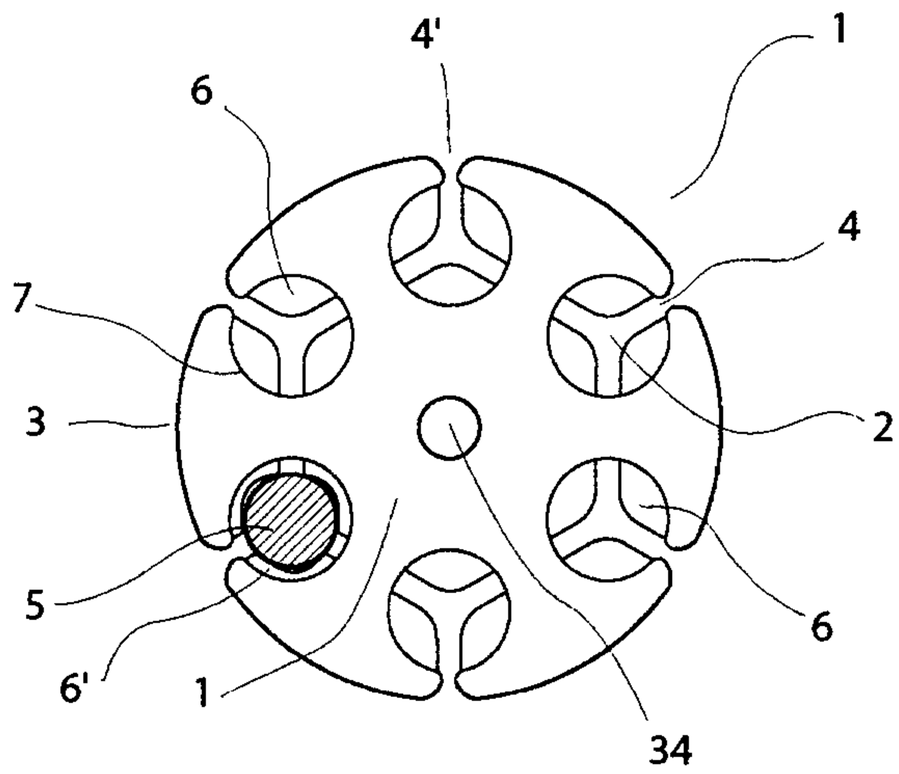


Figure 1

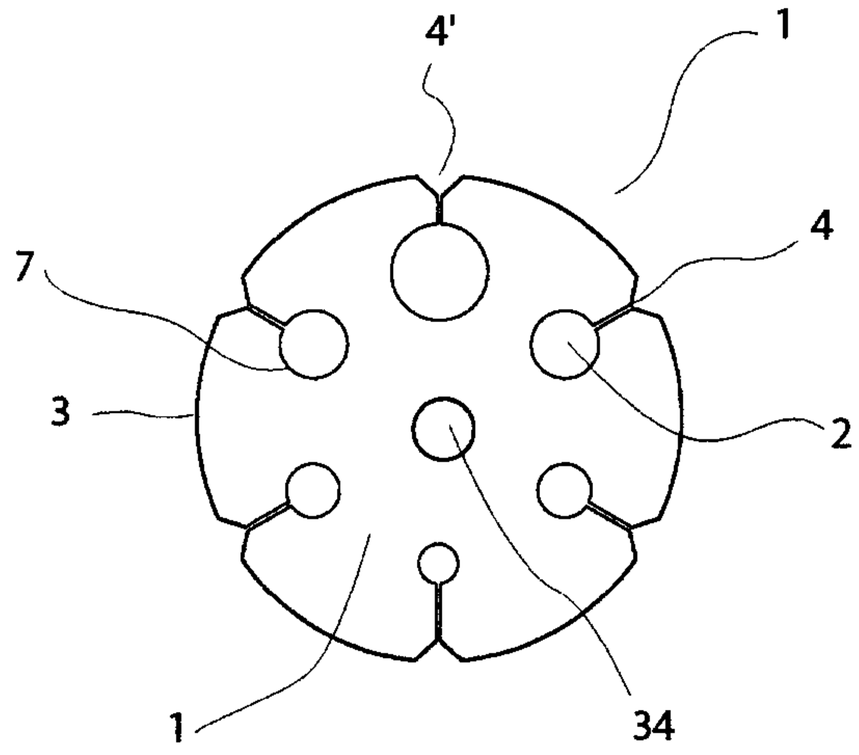


Figure 2

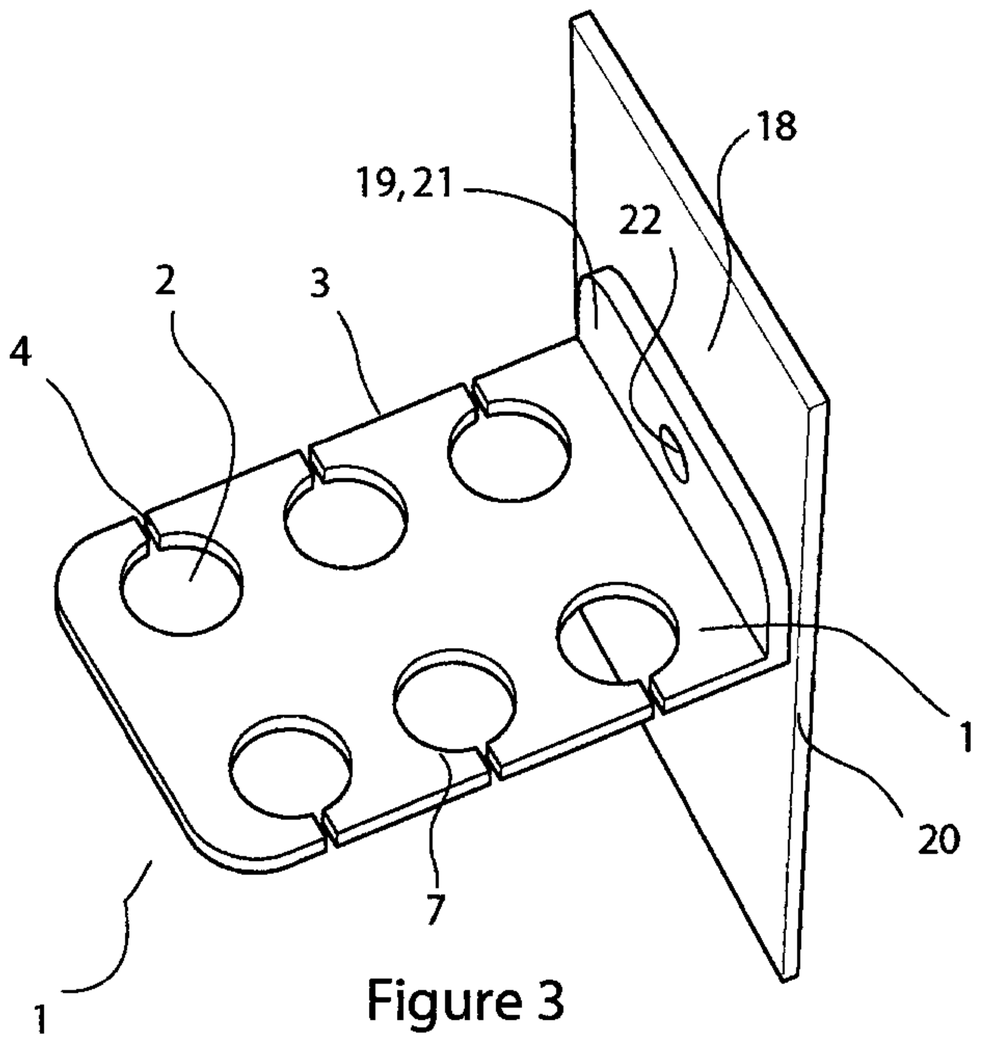


Figure 3

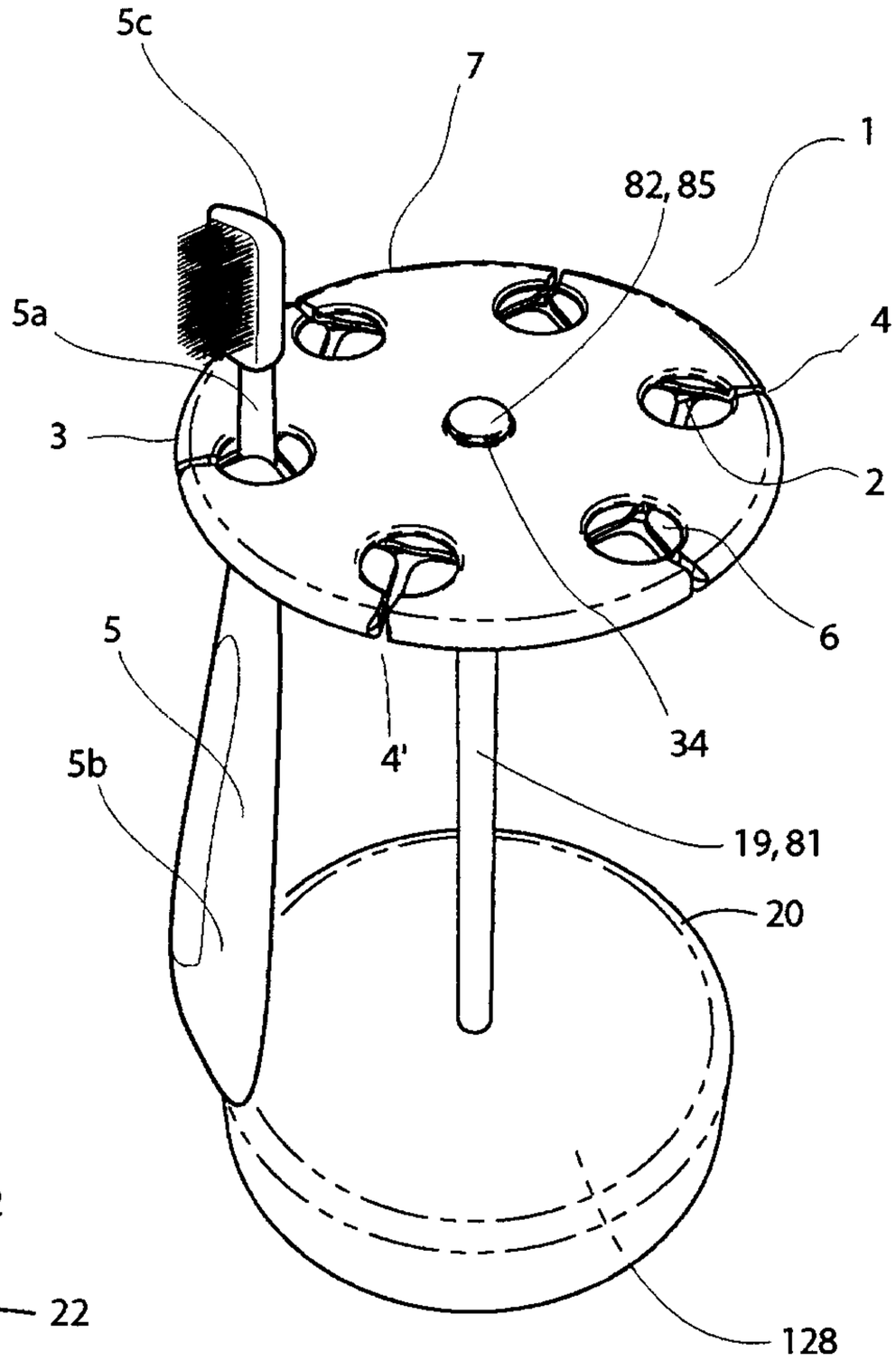


Figure 5

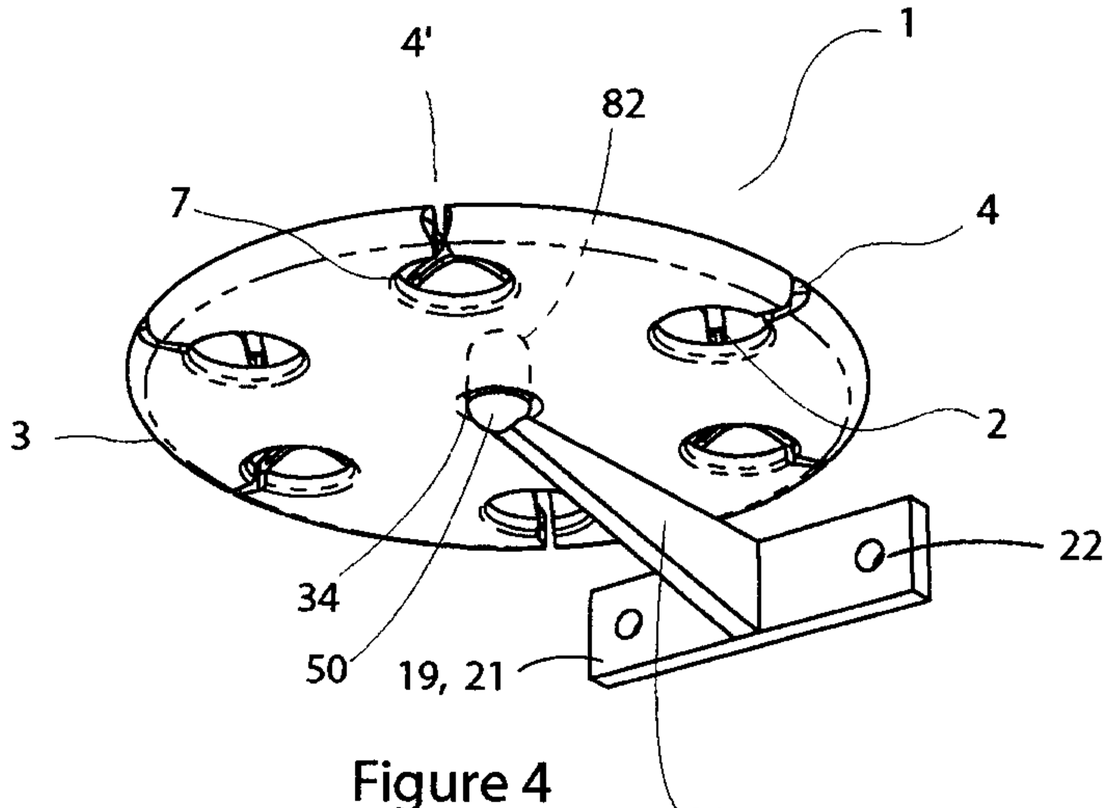


Figure 4

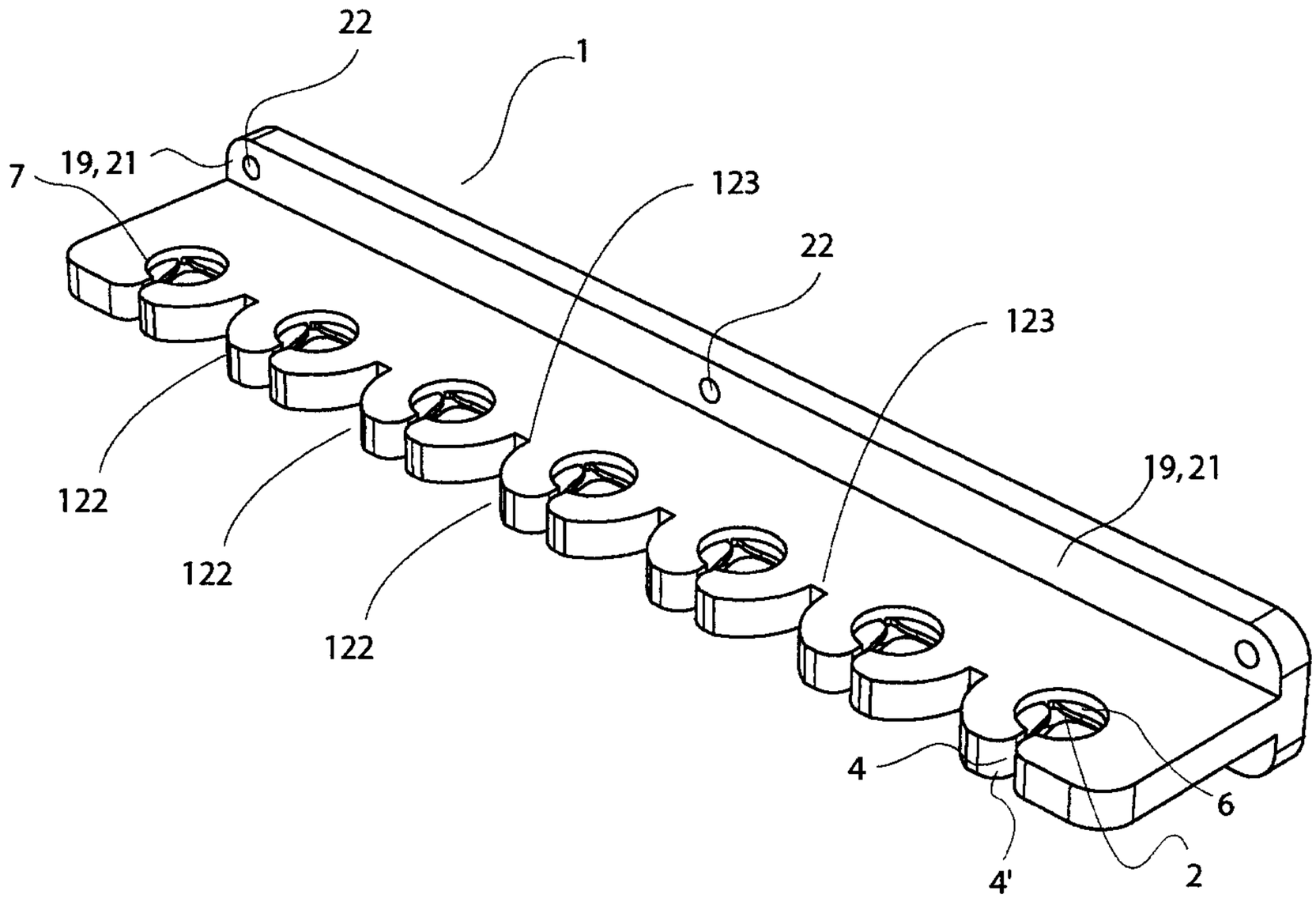


Figure 6

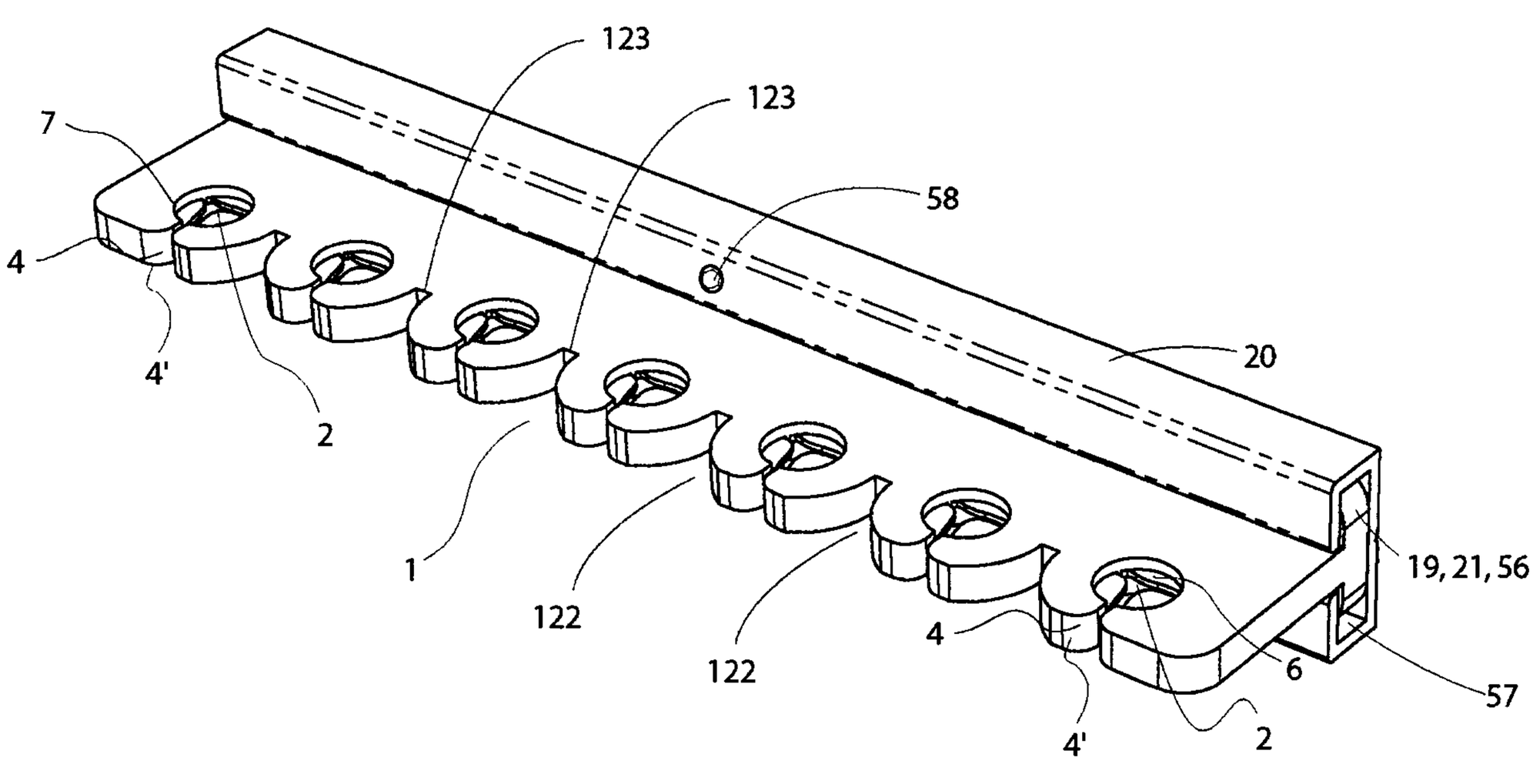


Figure 7

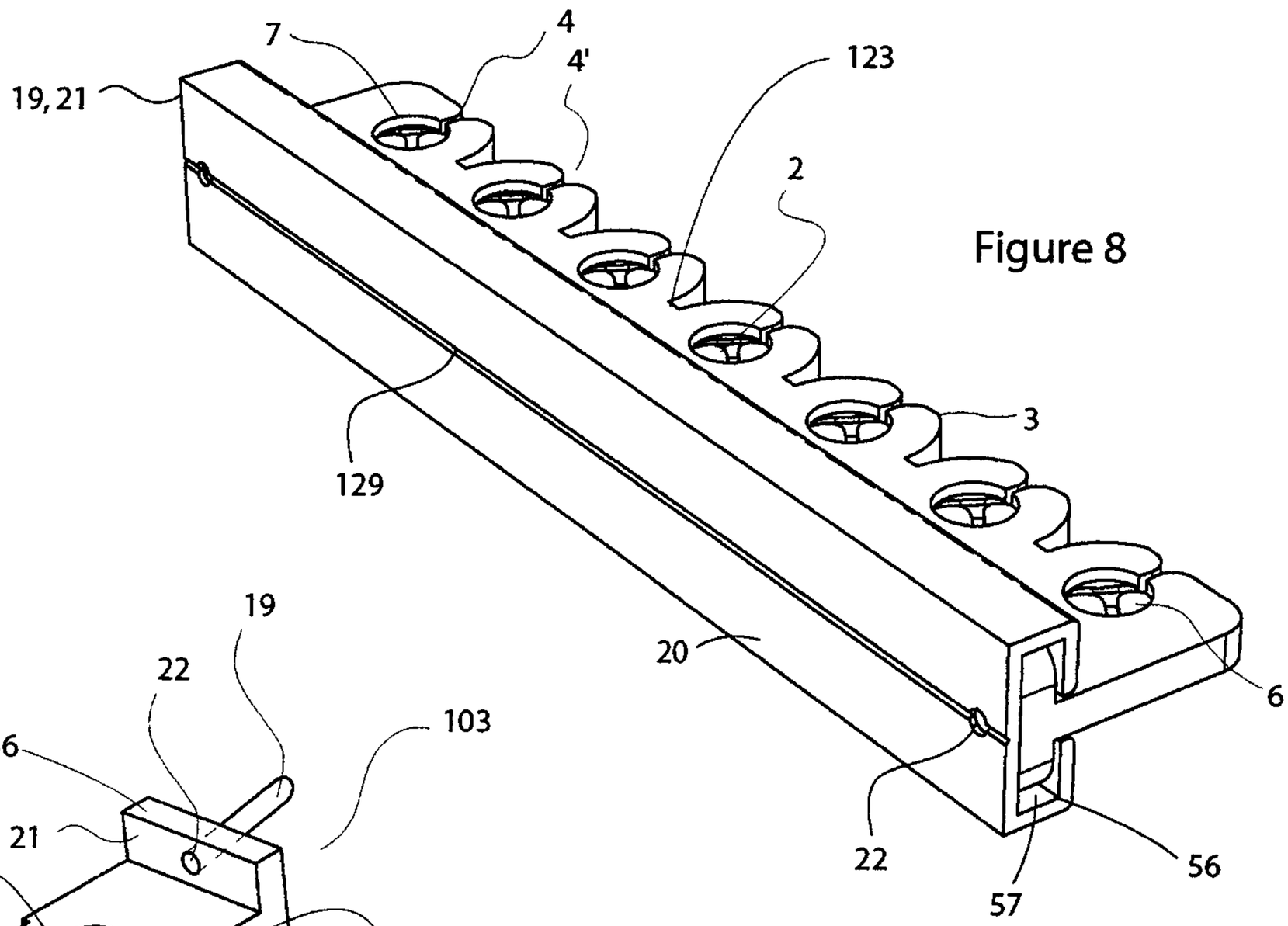


Figure 8

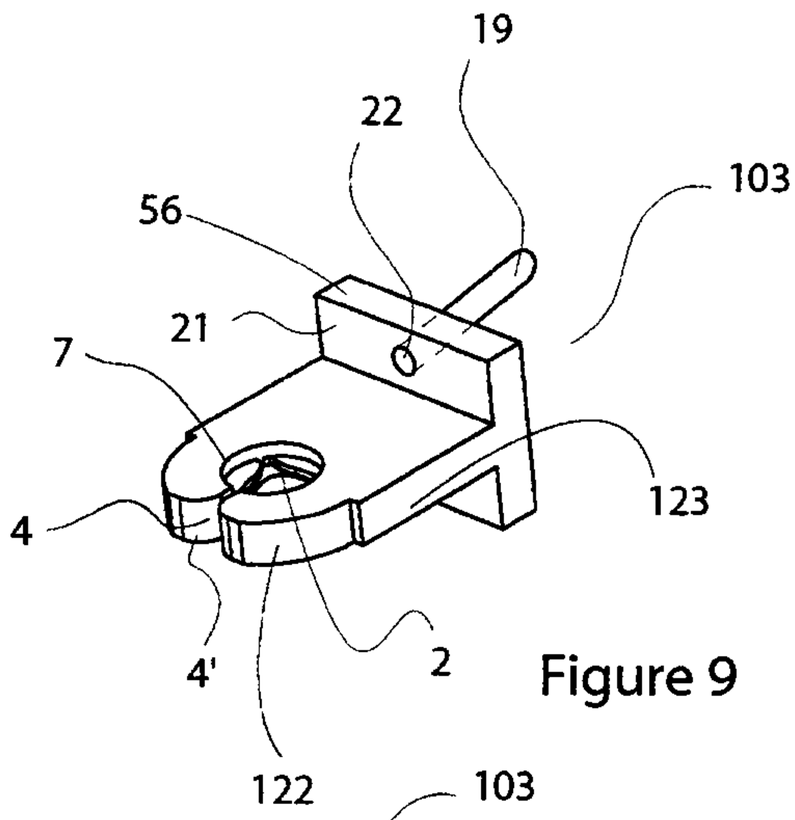


Figure 9

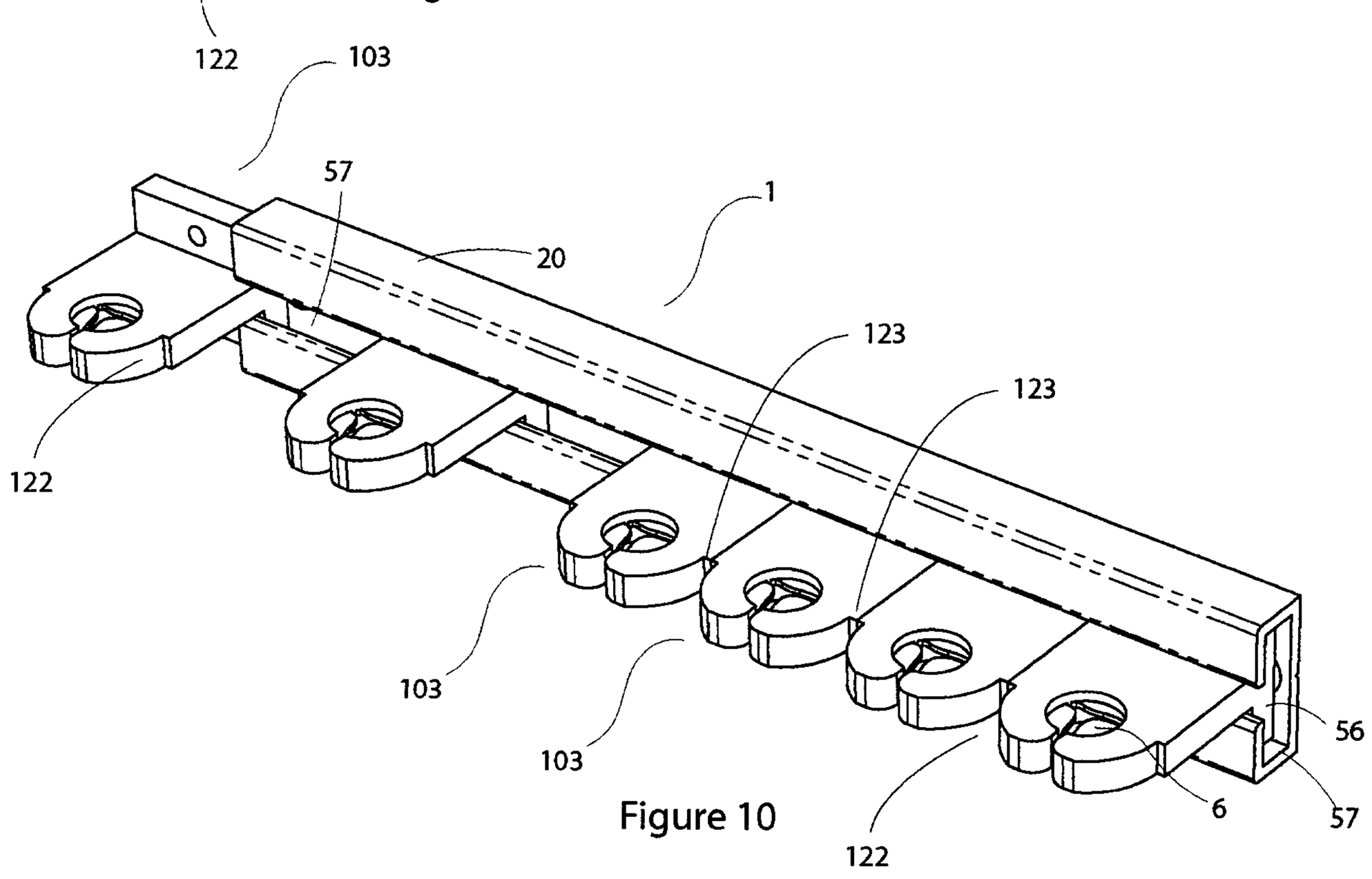


Figure 10

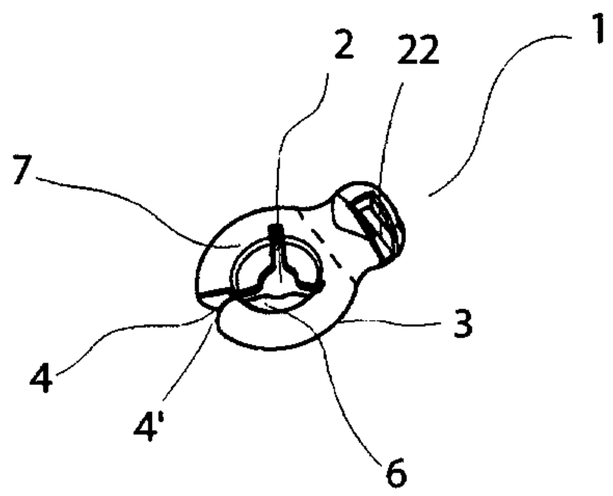


Figure 11

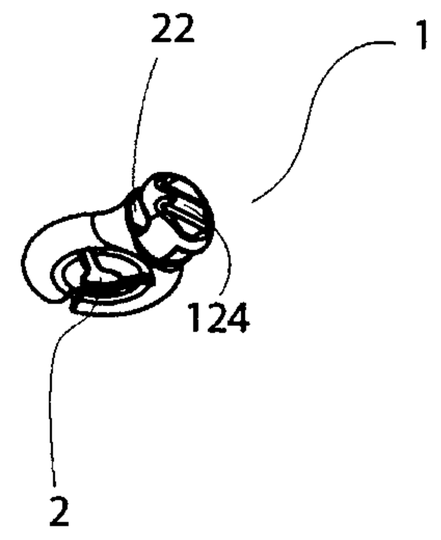


Figure 12

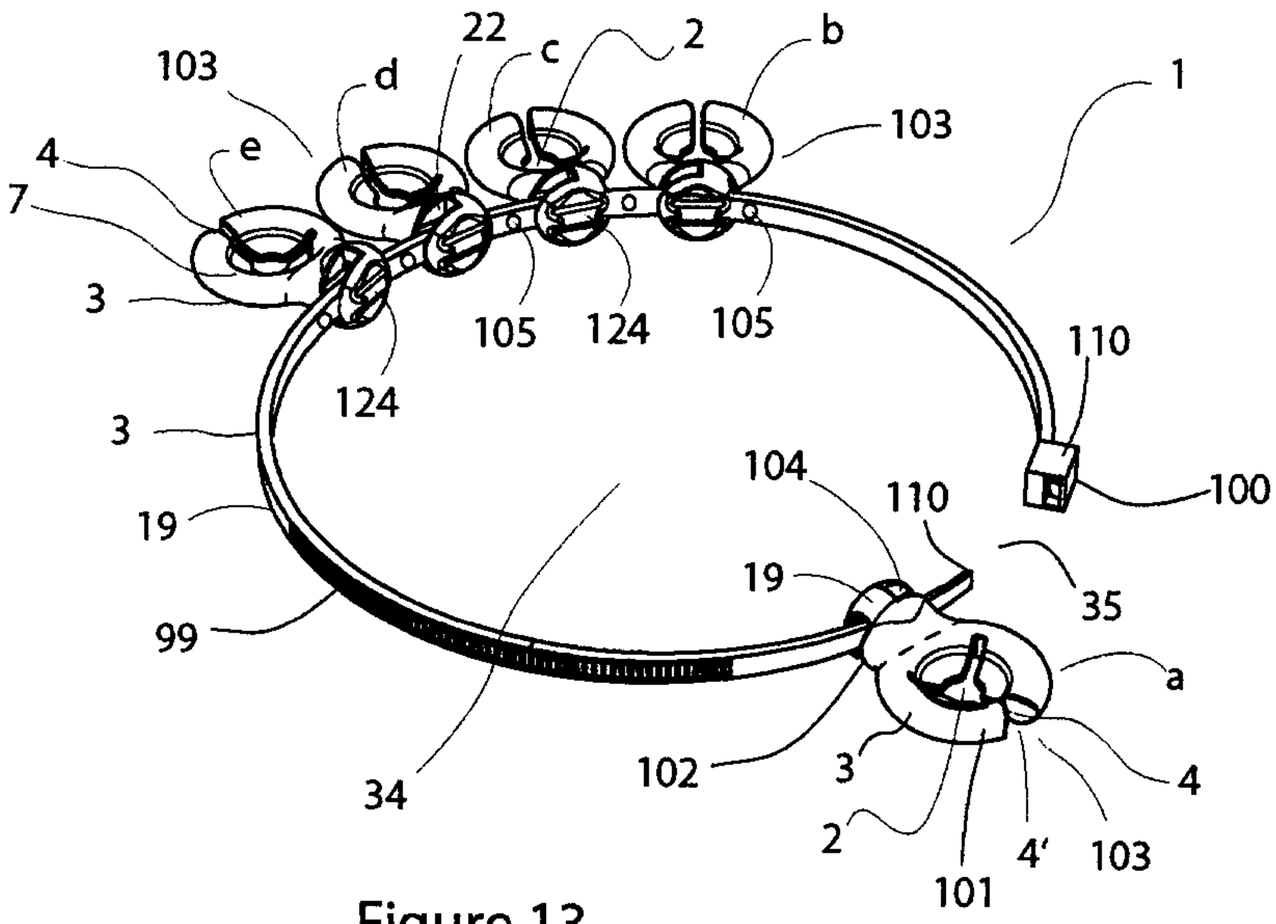


Figure 13

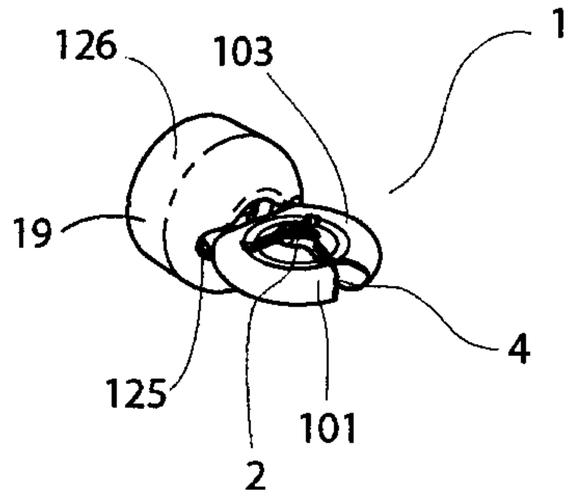


Figure 14

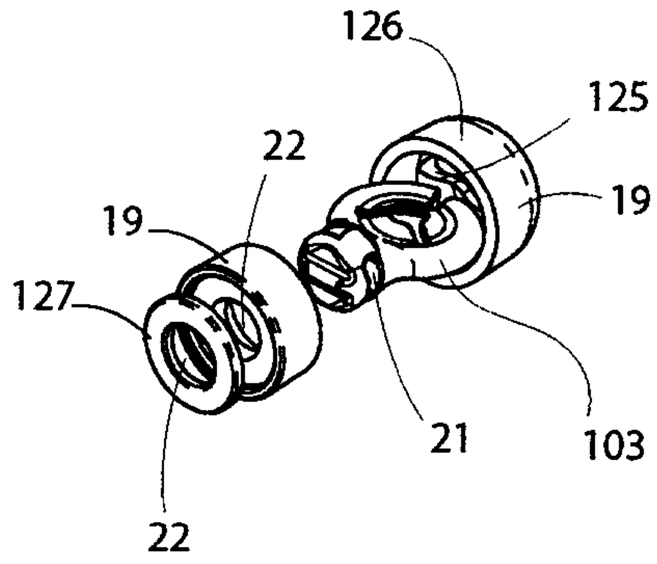


Figure 15

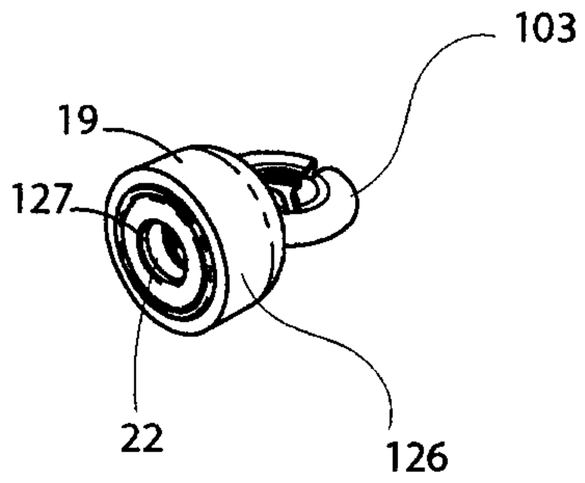


Figure 16

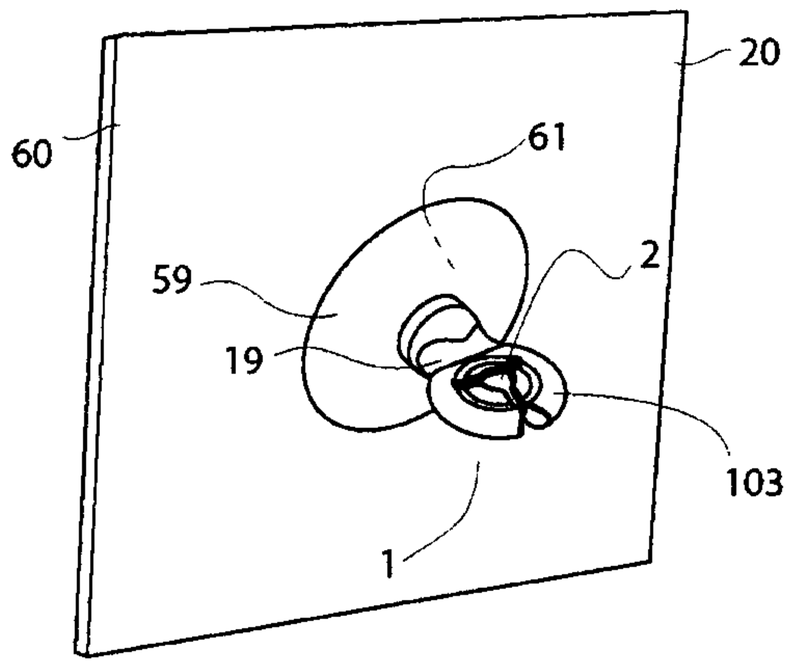


Figure 17

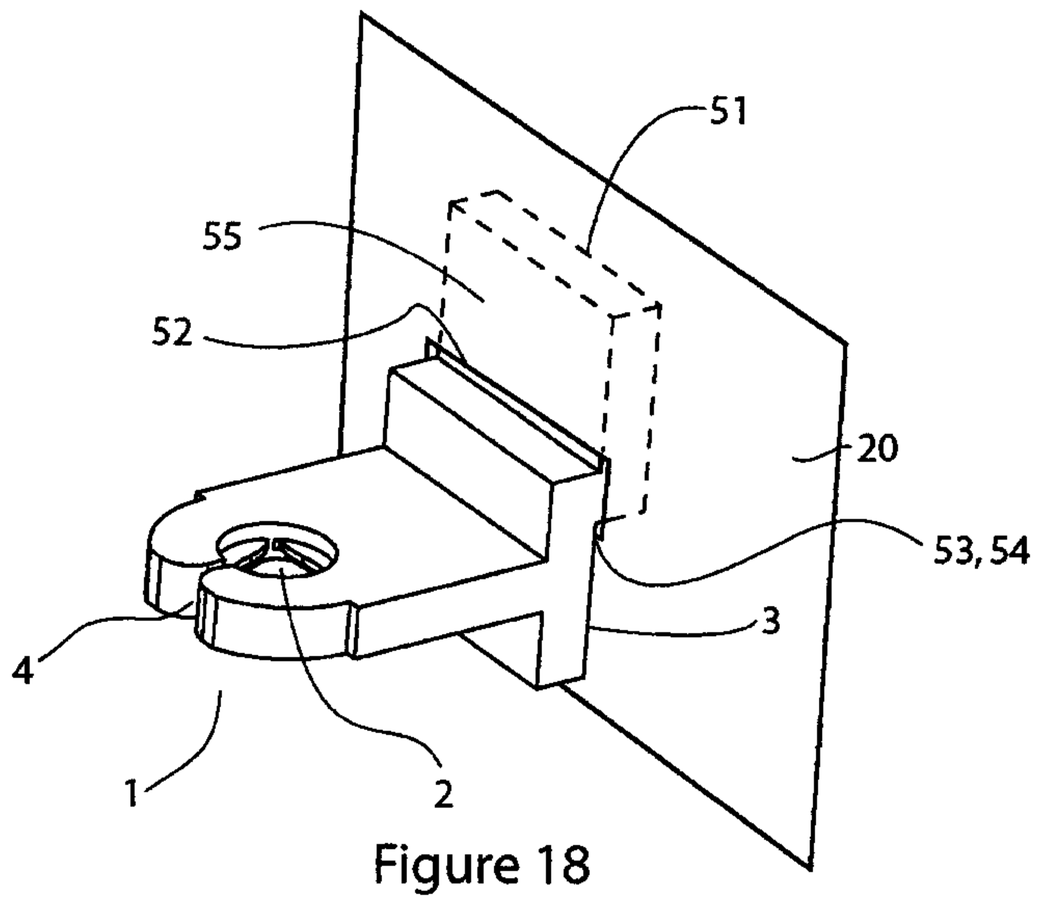


Figure 18

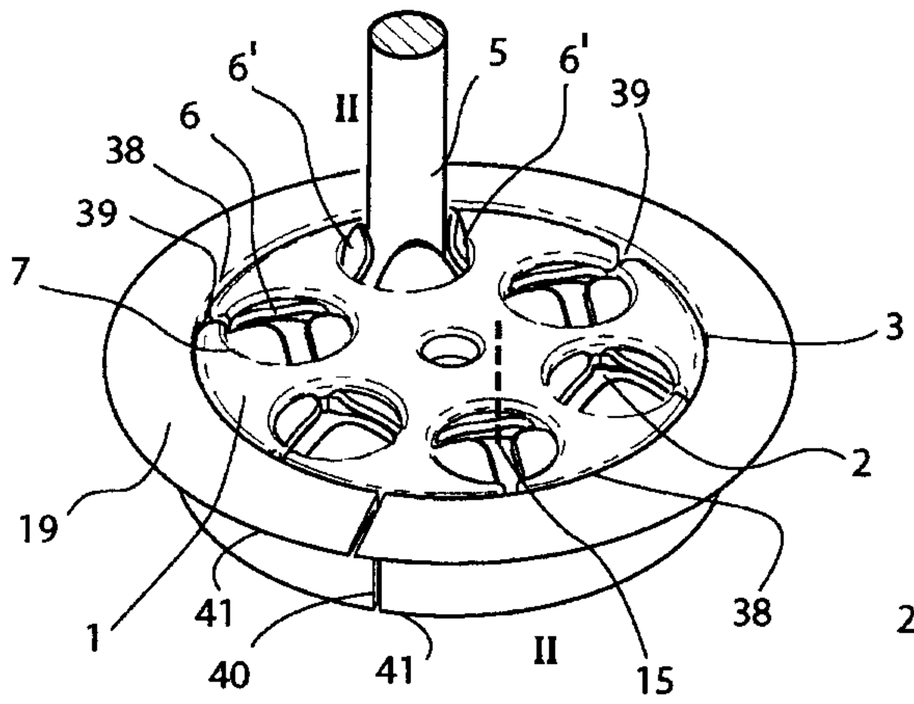


Figure 19

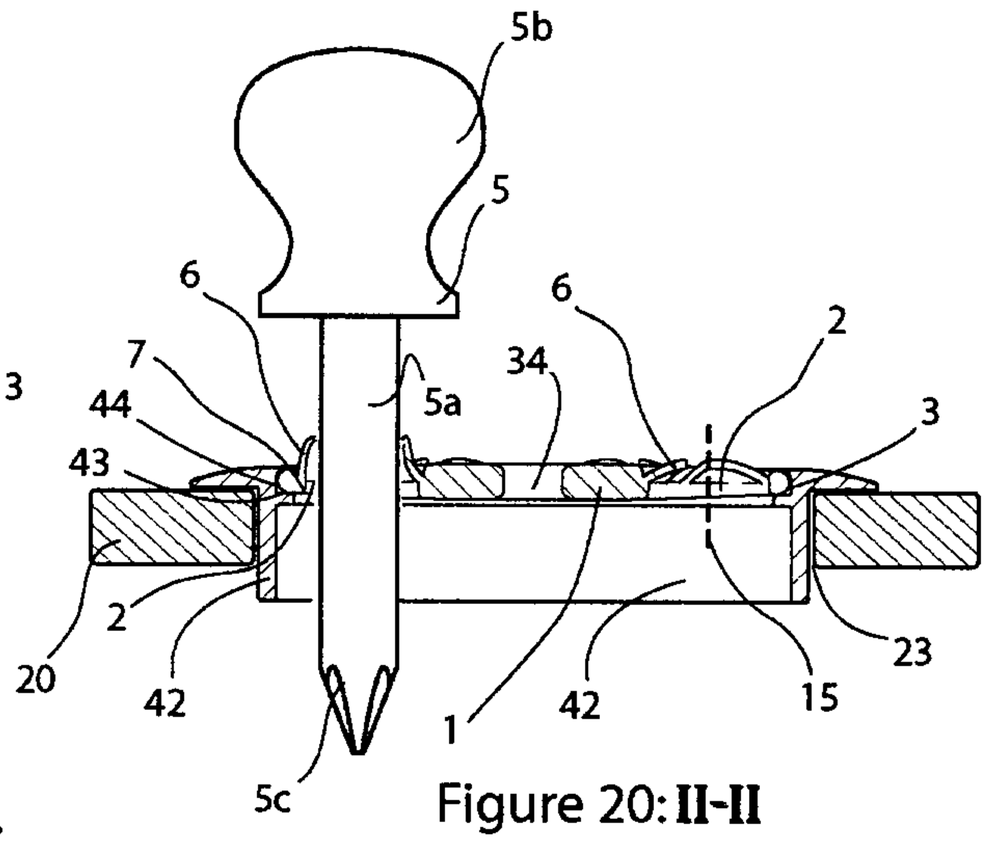


Figure 20: **II-II**

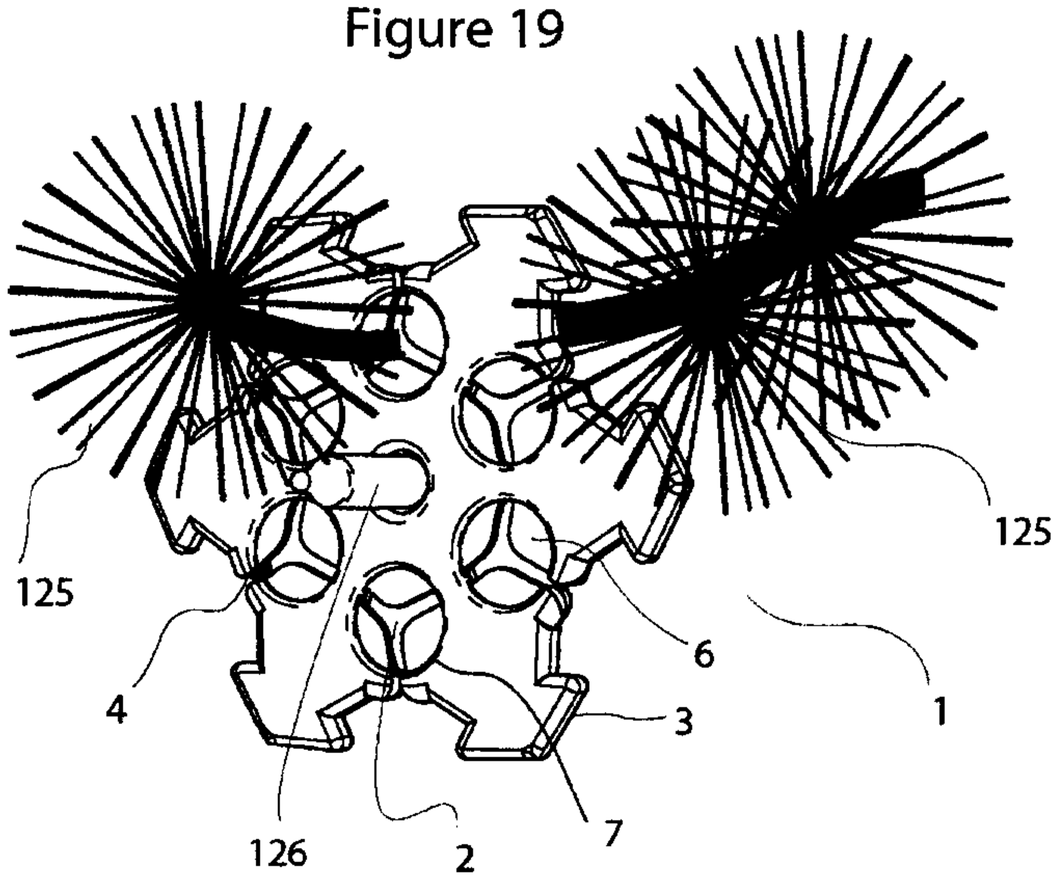


Figure 21

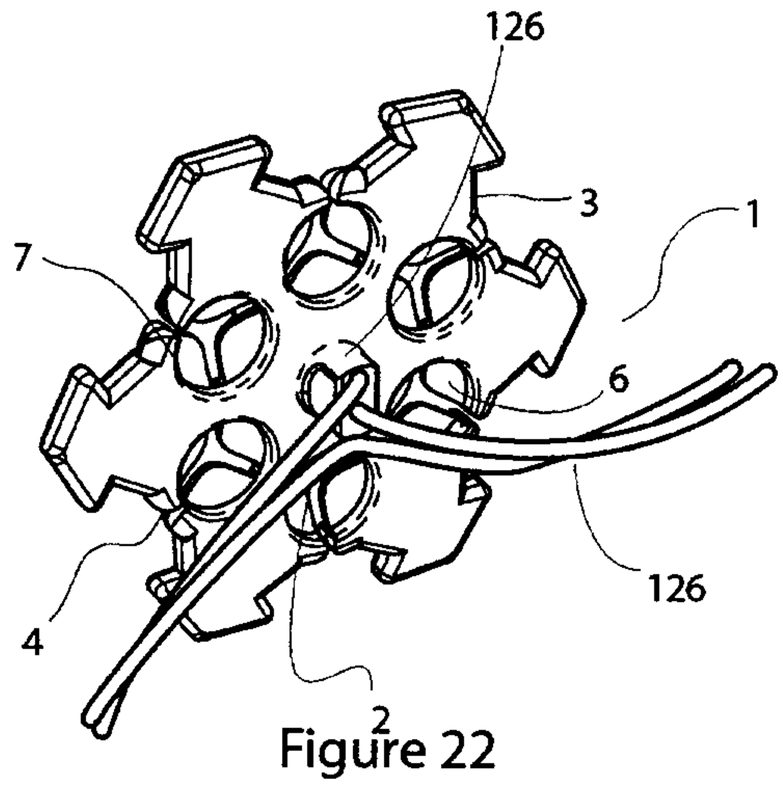


Figure 22

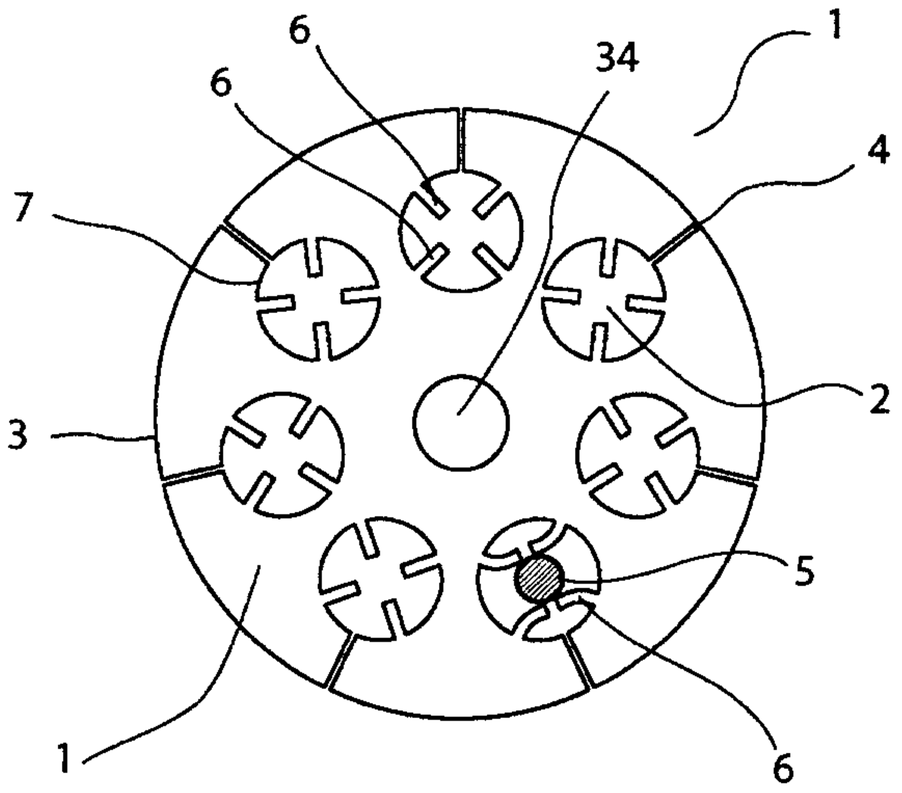


Figure 23

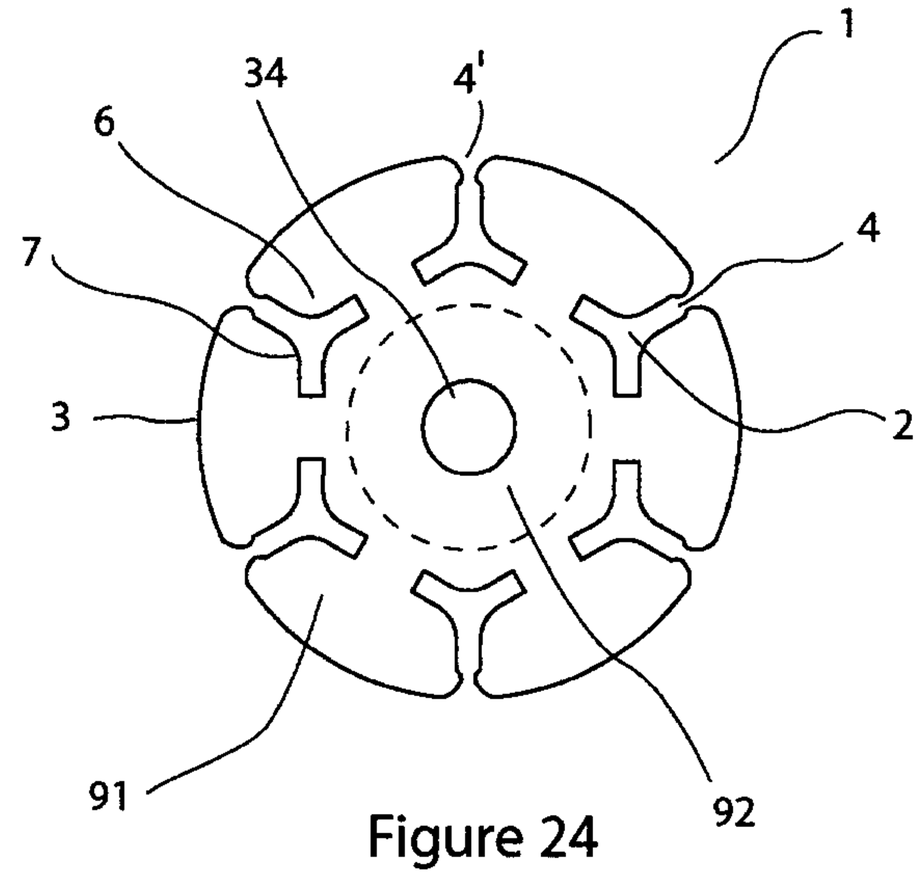


Figure 24

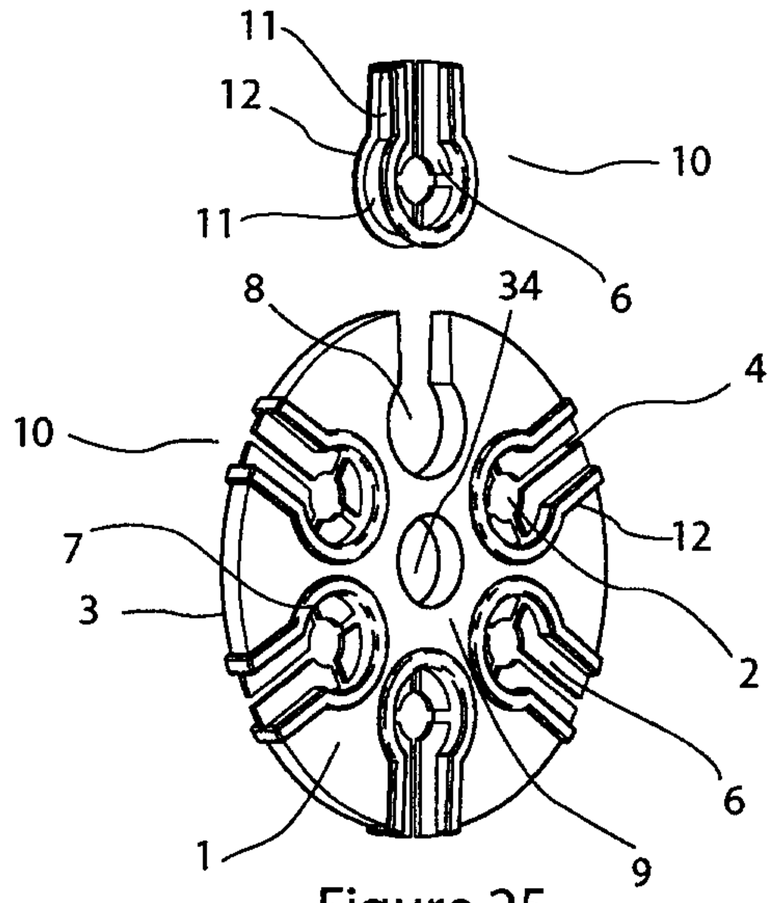


Figure 25

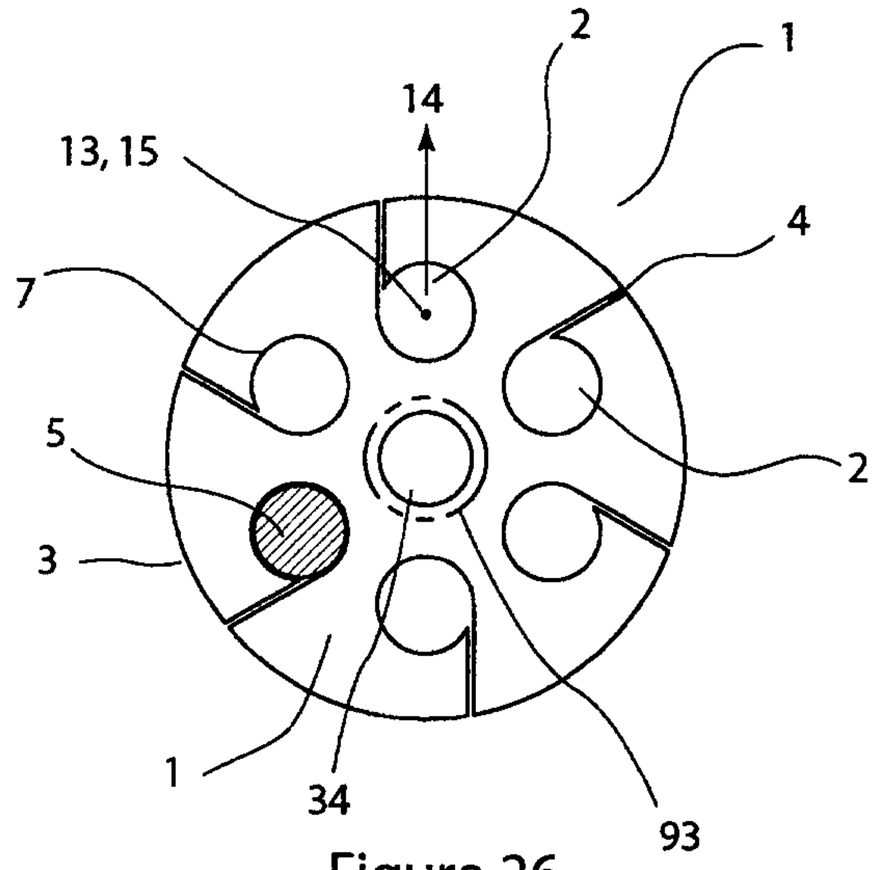


Figure 26

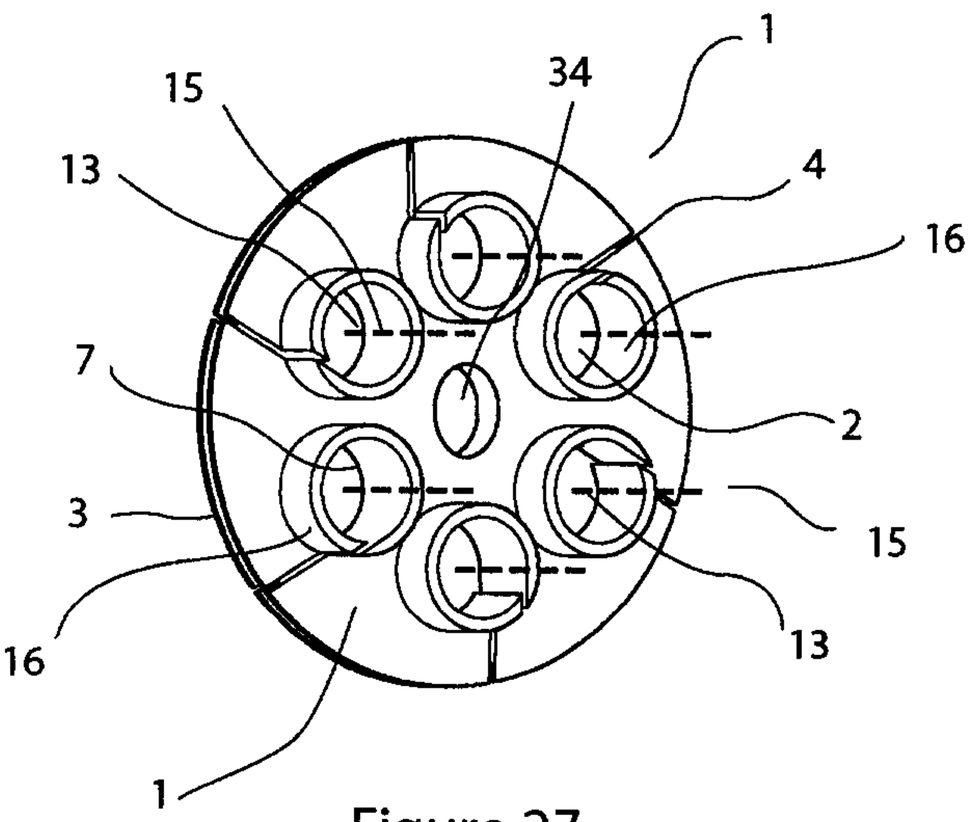


Figure 27

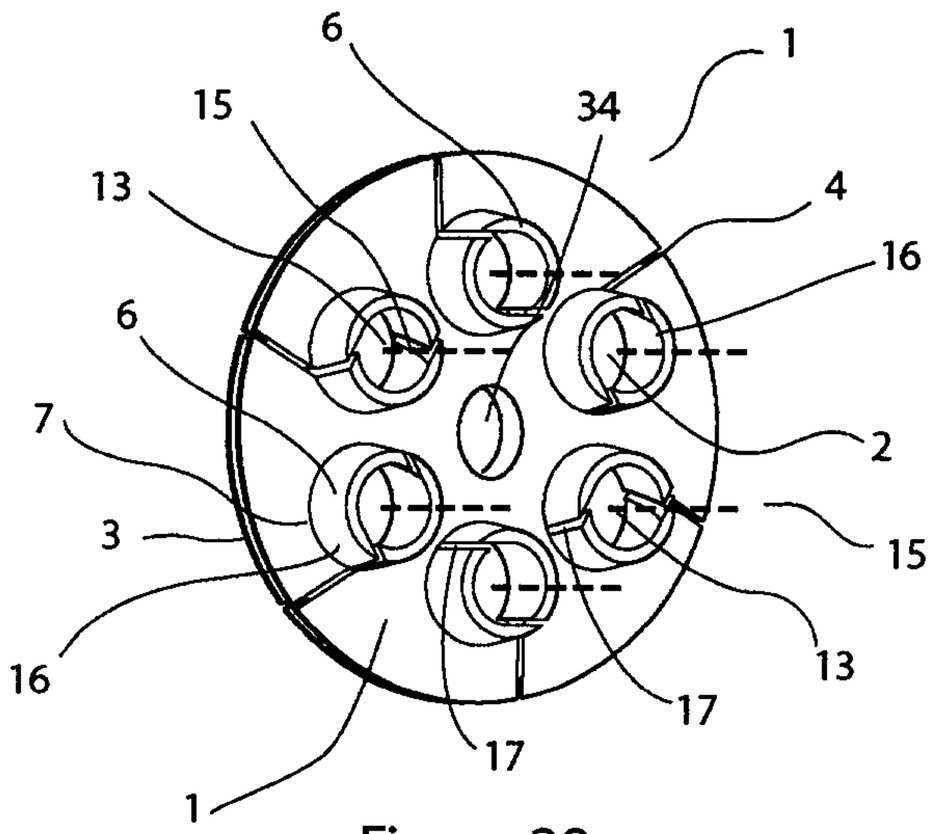


Figure 28

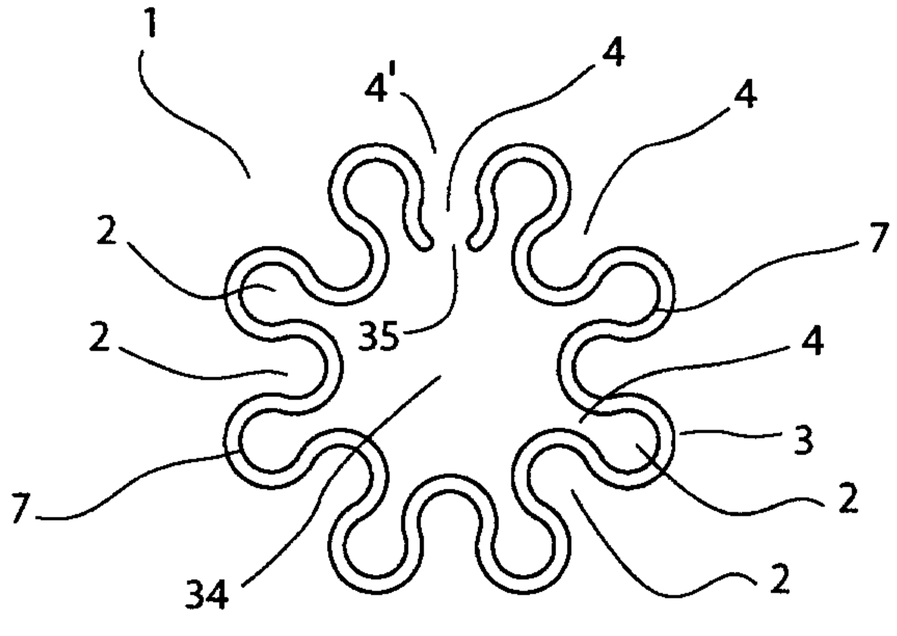


Figure 29

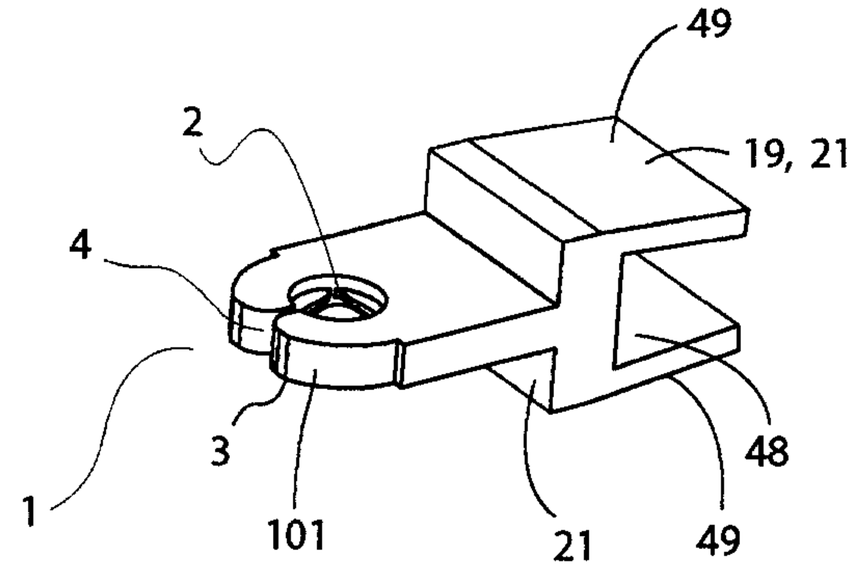


Figure 30

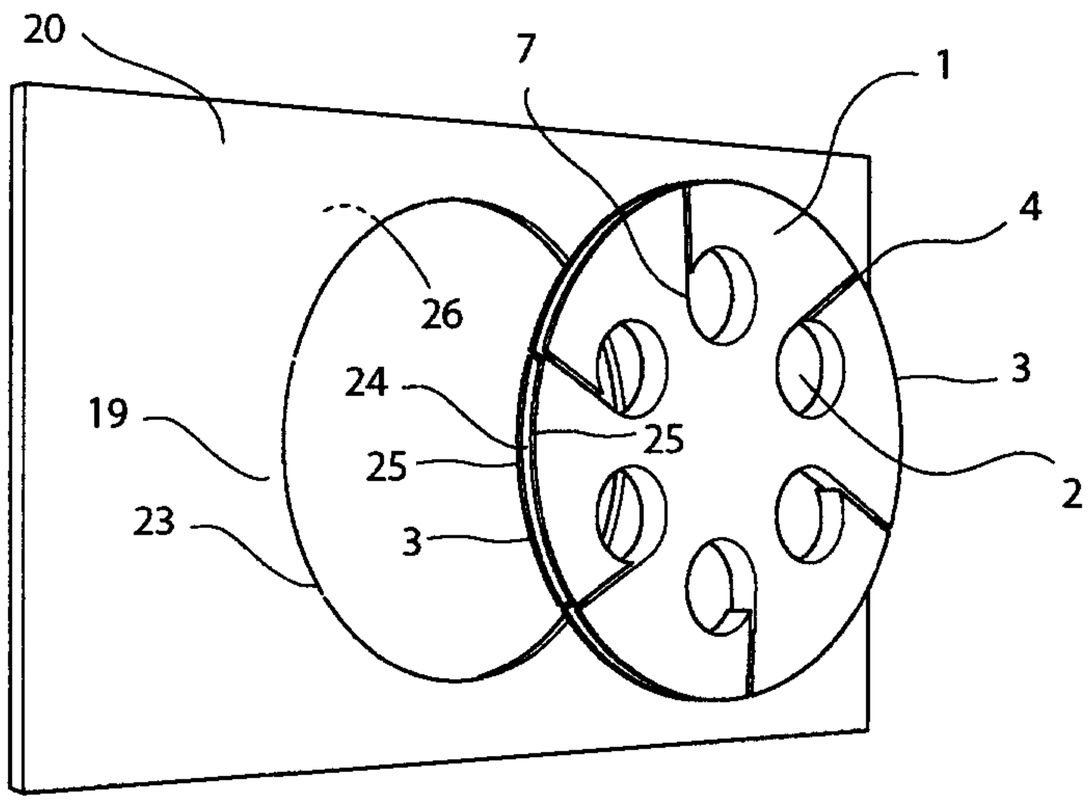


Figure 31

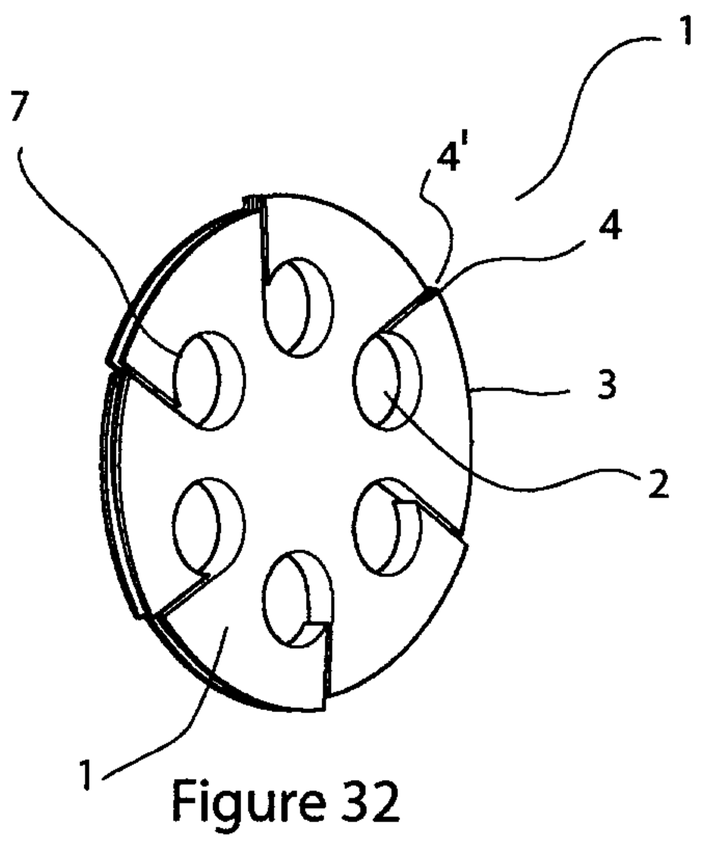


Figure 32

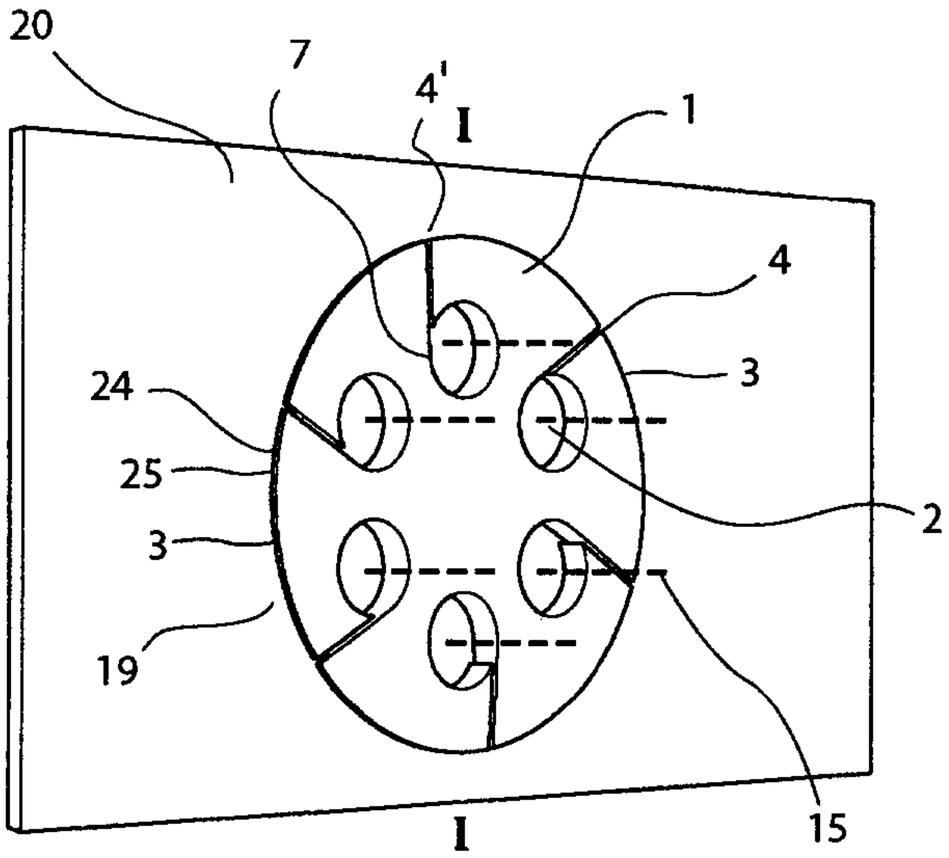


Figure 33

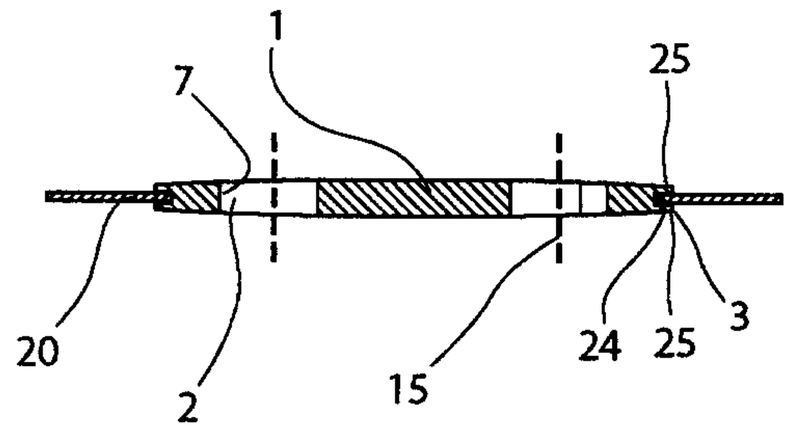


Figure 34: I-I

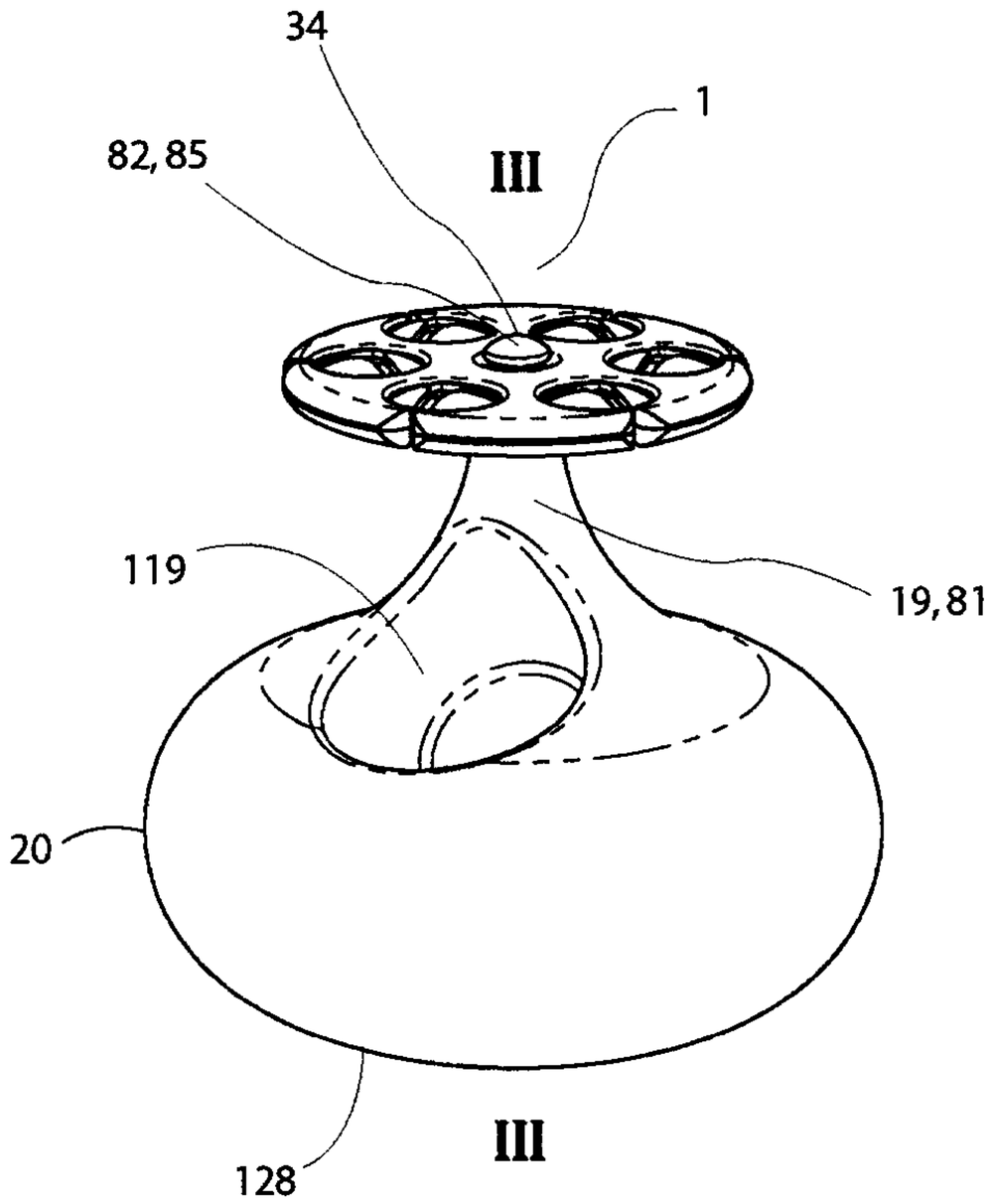


Figure 35

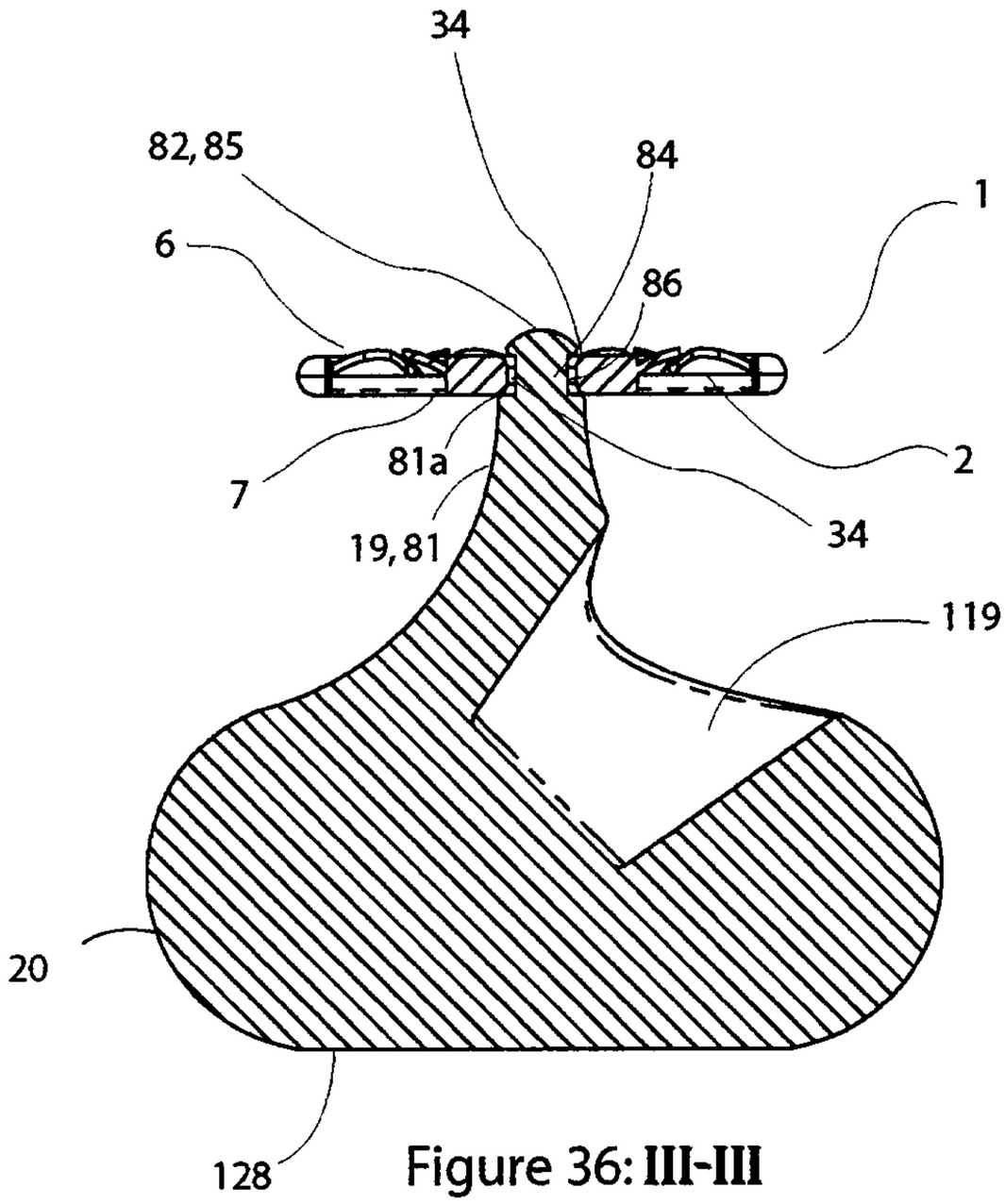


Figure 36: III-III

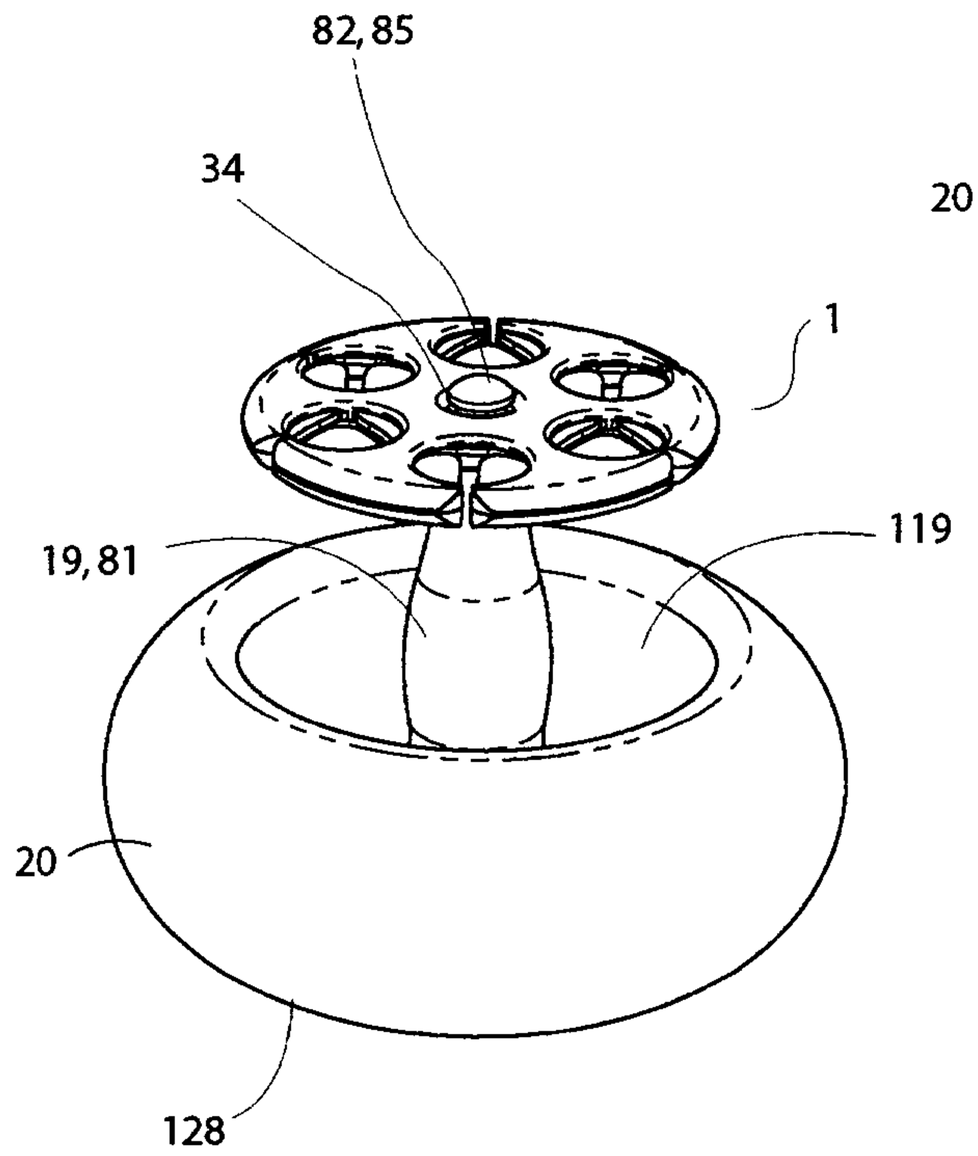


Figure 37

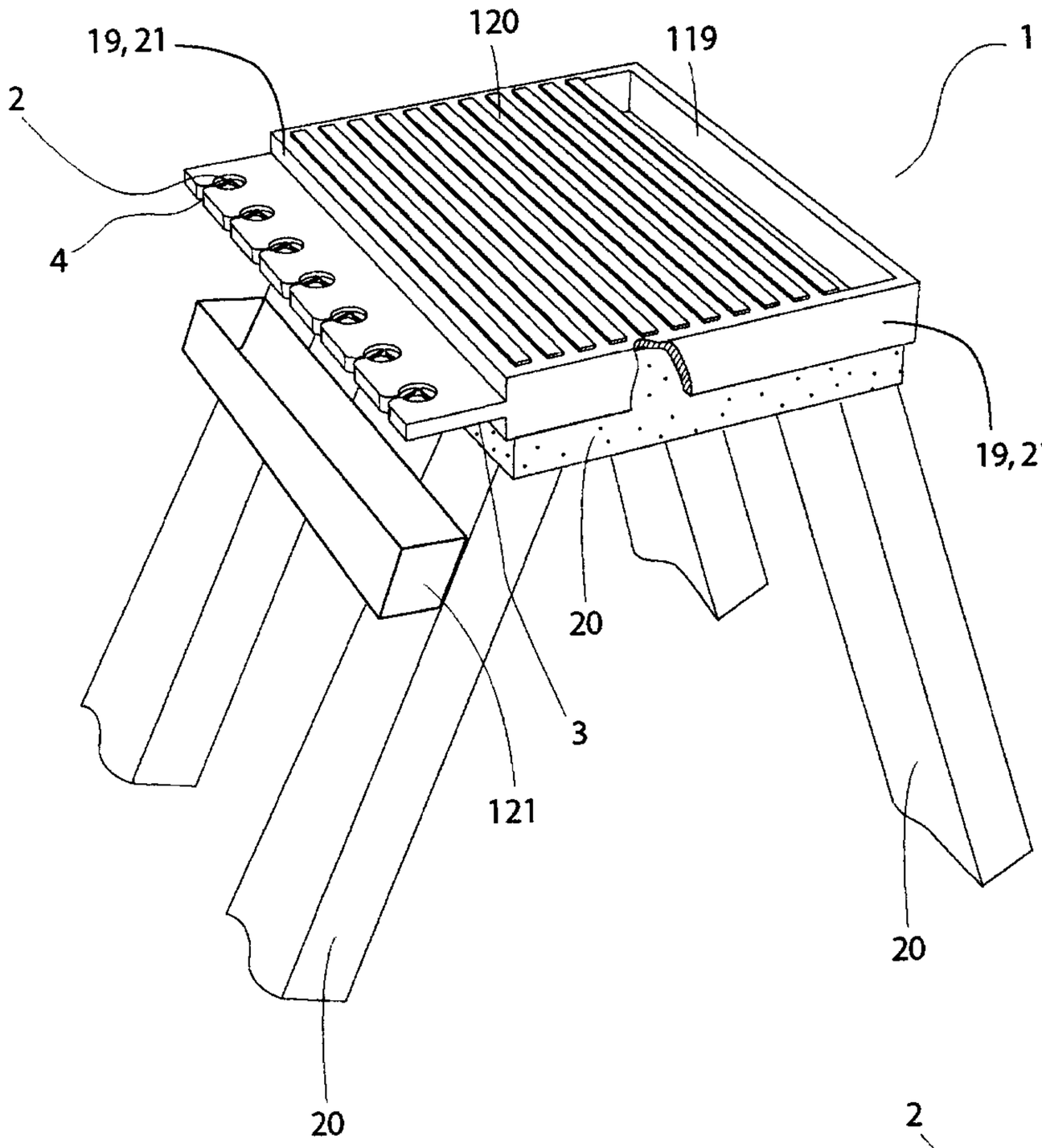


Figure 38

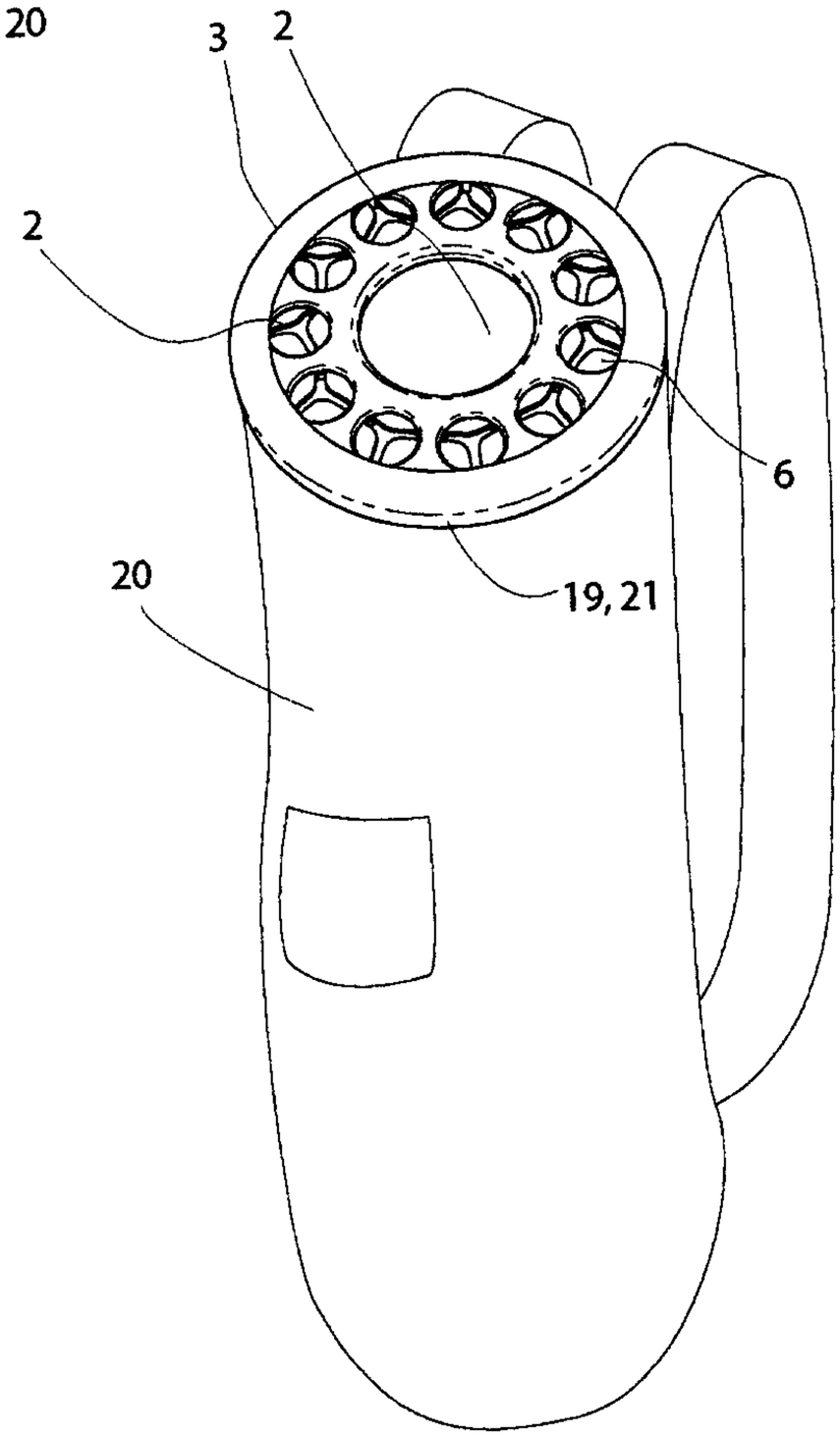
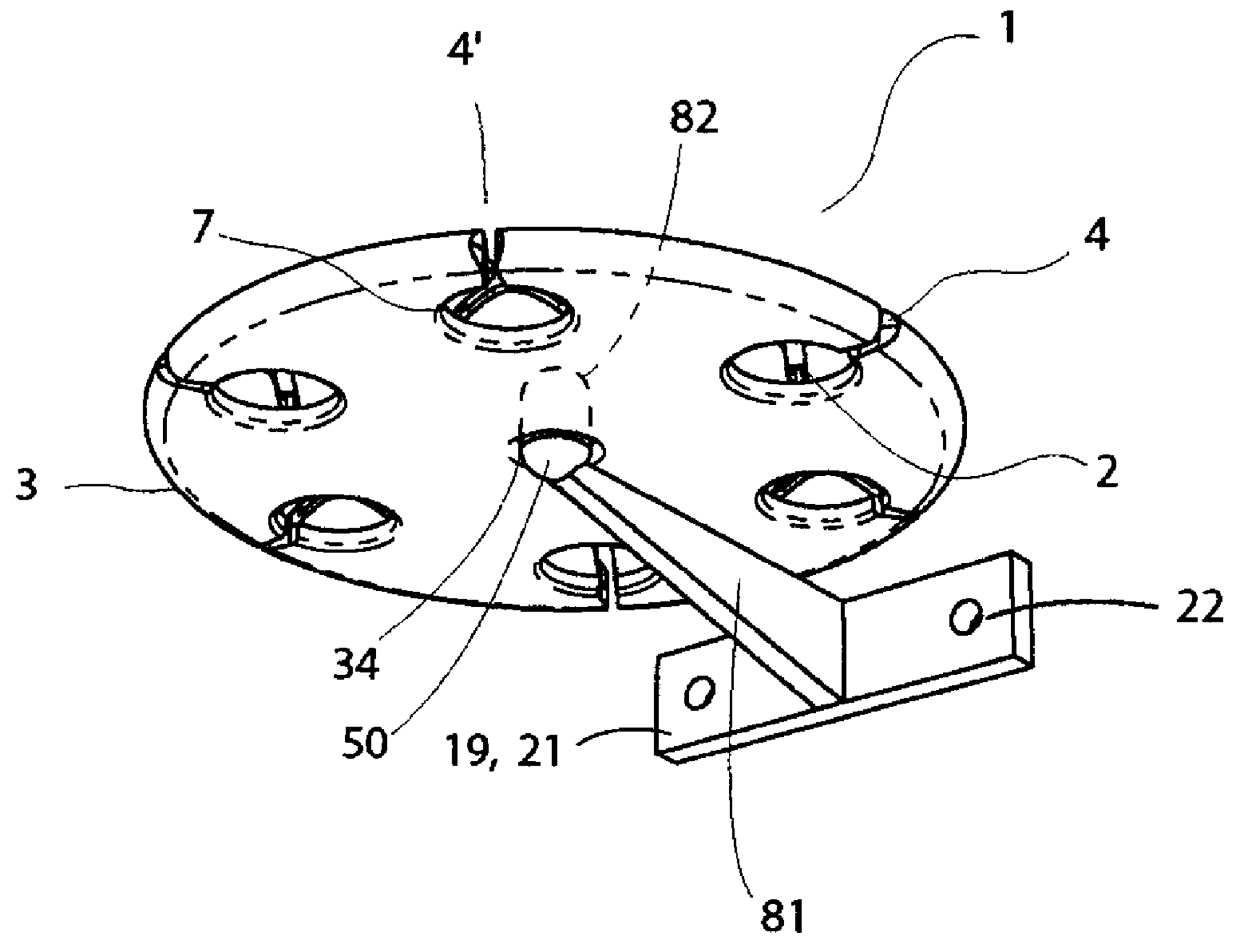


Figure 39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