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(54) **ARTICULABLE TRAY DISPLAY SYSTEM**

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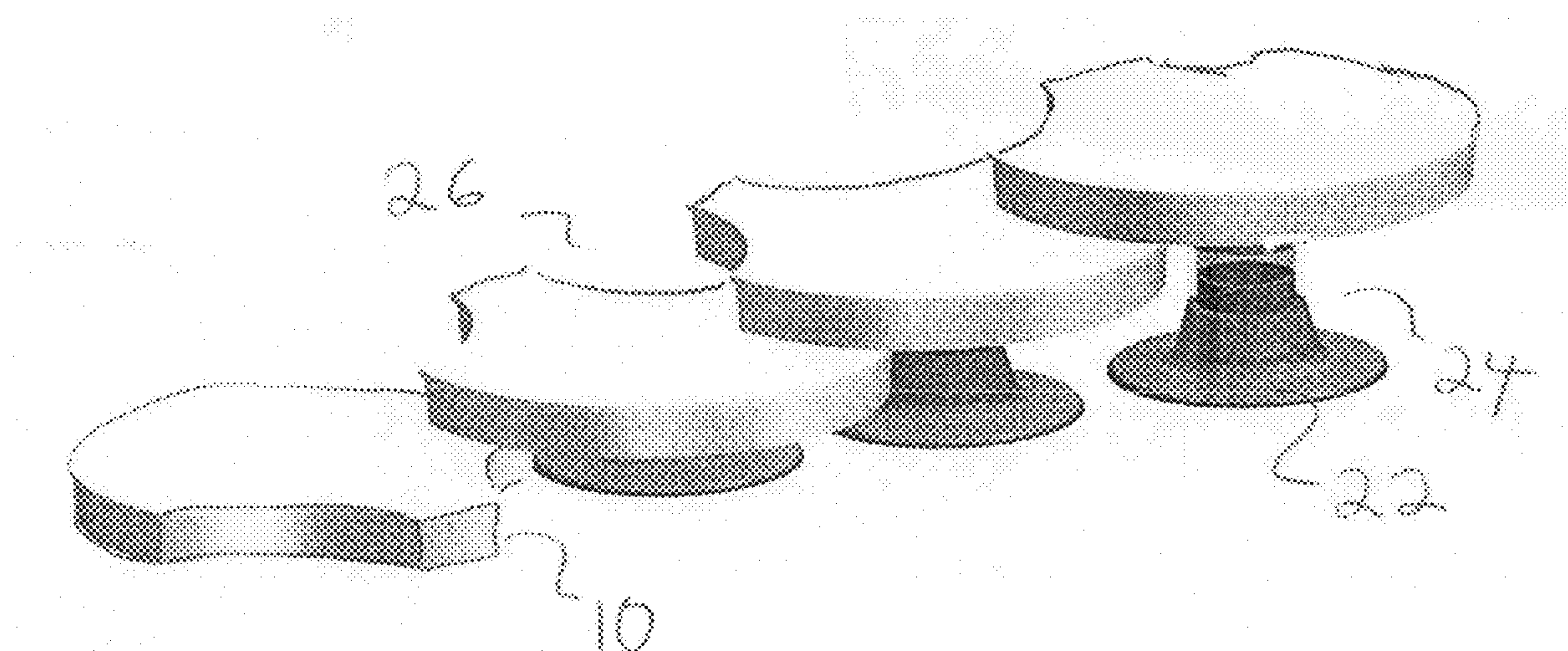
(52) **U.S. Cl. 206/558; 206/557**

(57) **ABSTRACT**

Related U.S. Application Data

(60) Provisional application No. 61/185,986, filed on Jun.
10, 2009.

A generally circular tray having an edge that is convex and concave, where the convex portion is complementary in size to the concave portion. When used in series multiple trays can be arranged to form various configurations of tray arrays for the display of articles such as foodstuffs.



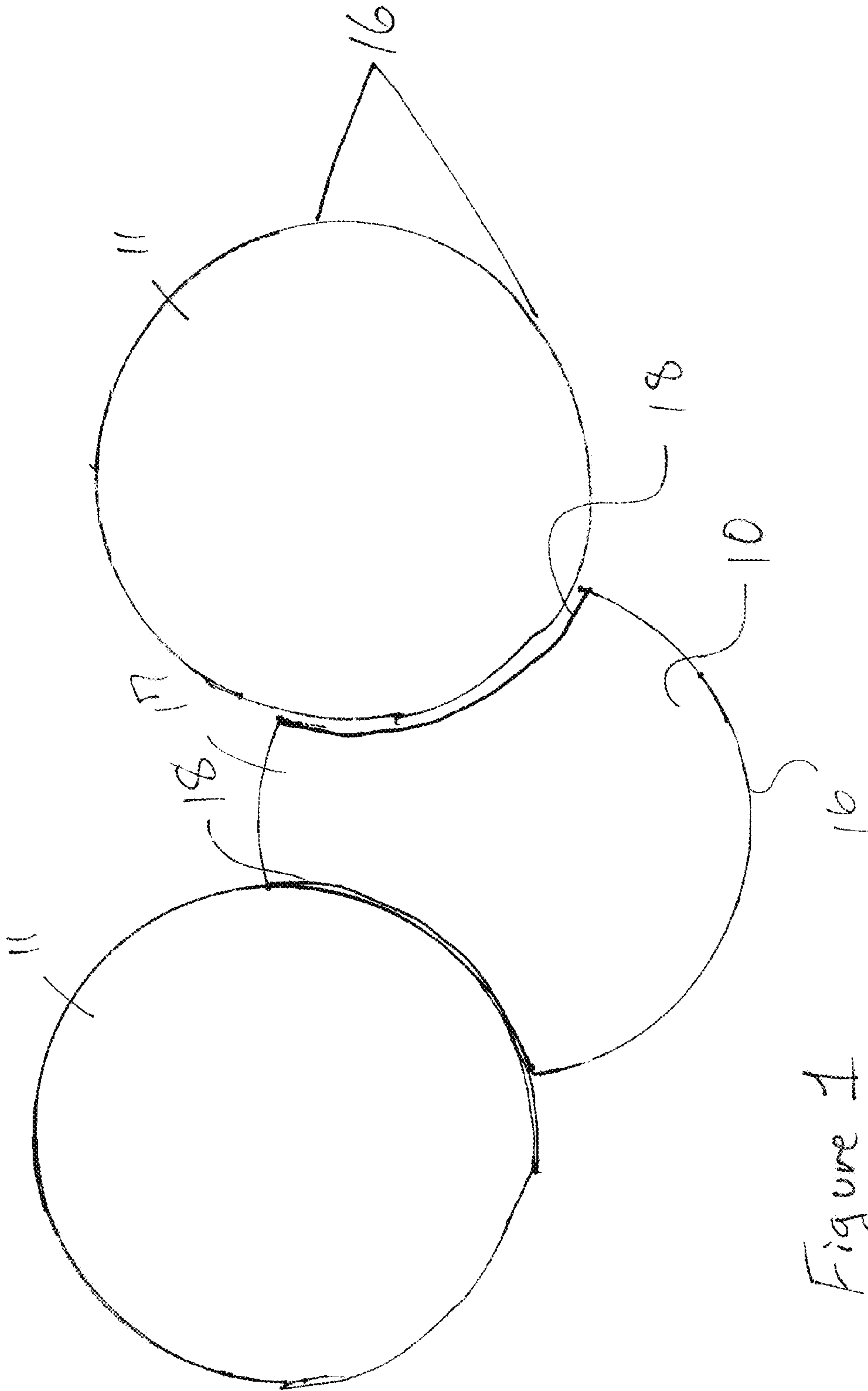
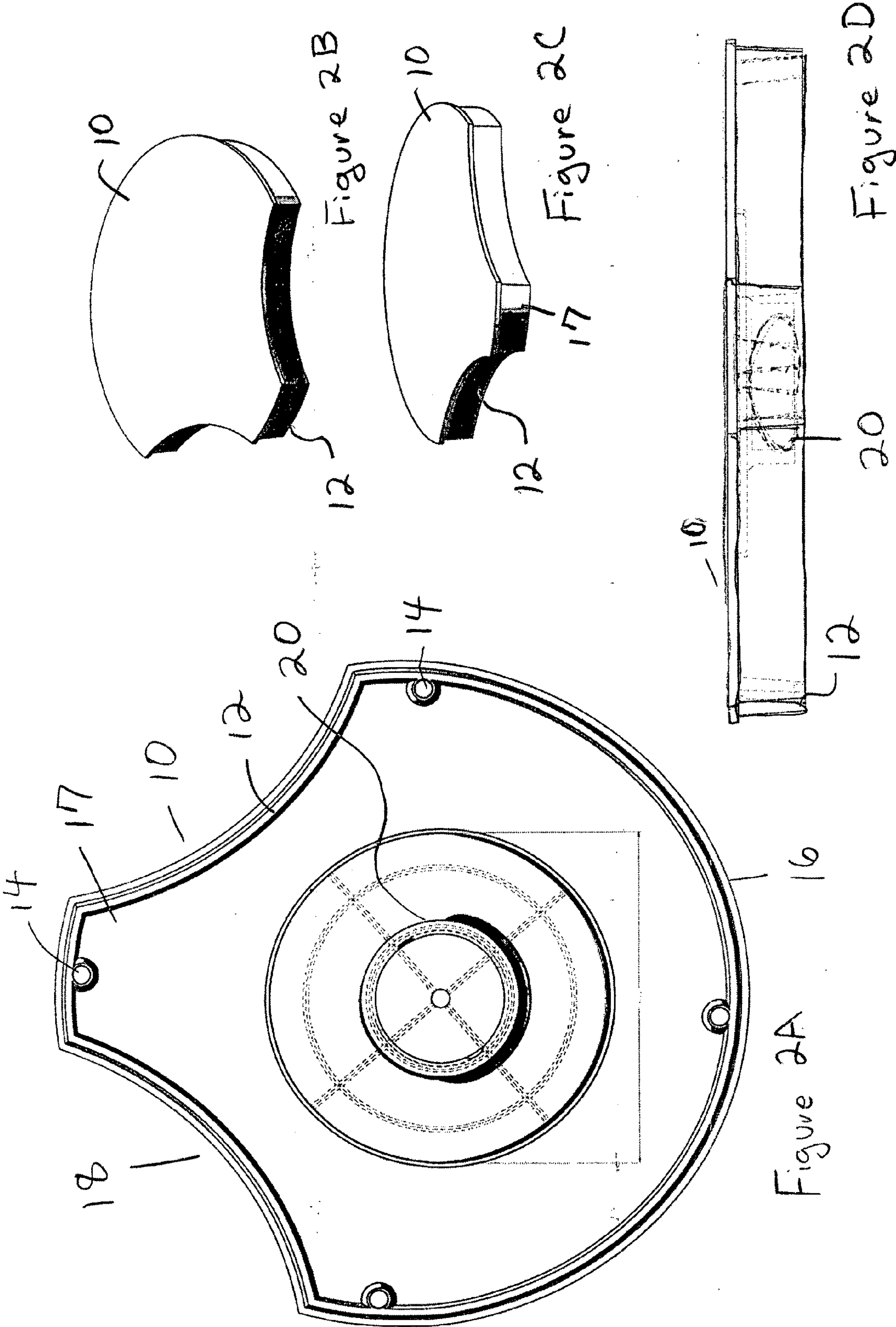
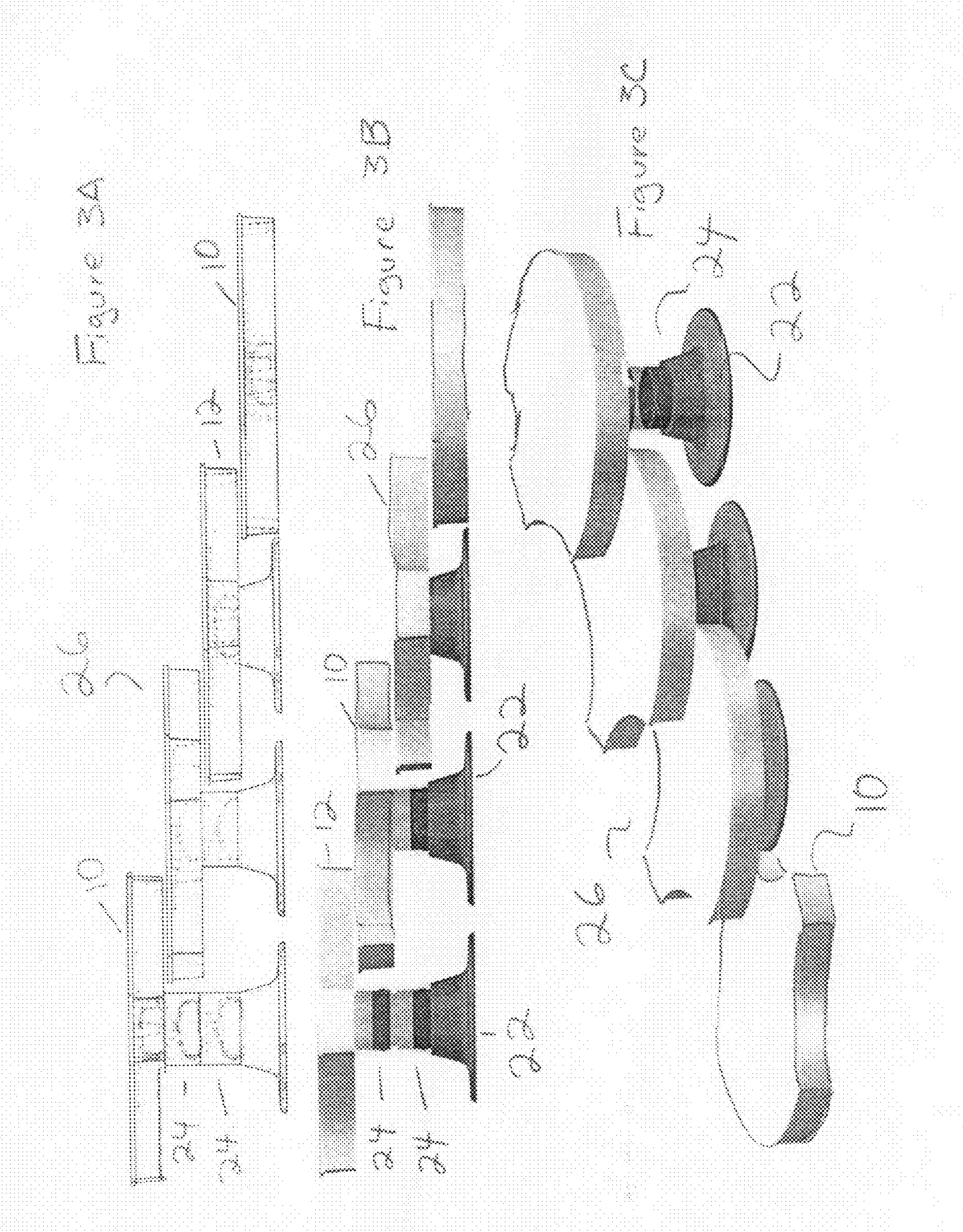


Figure 1





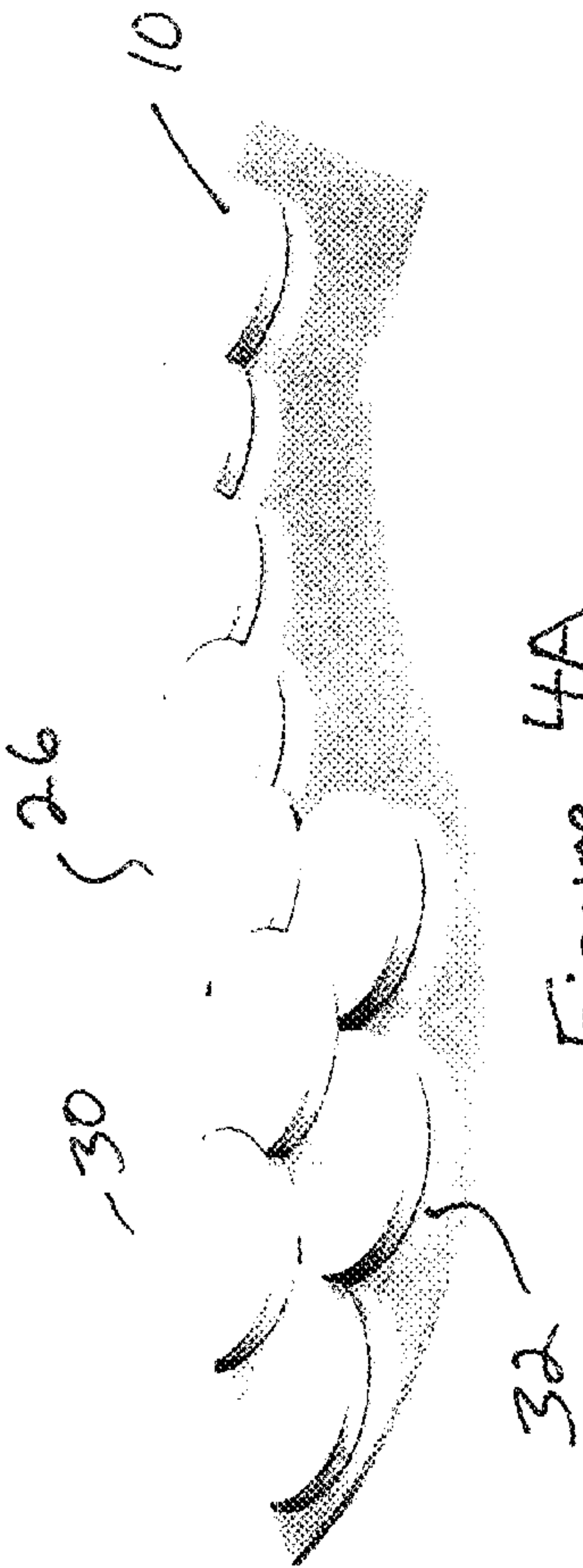


Figure 4A

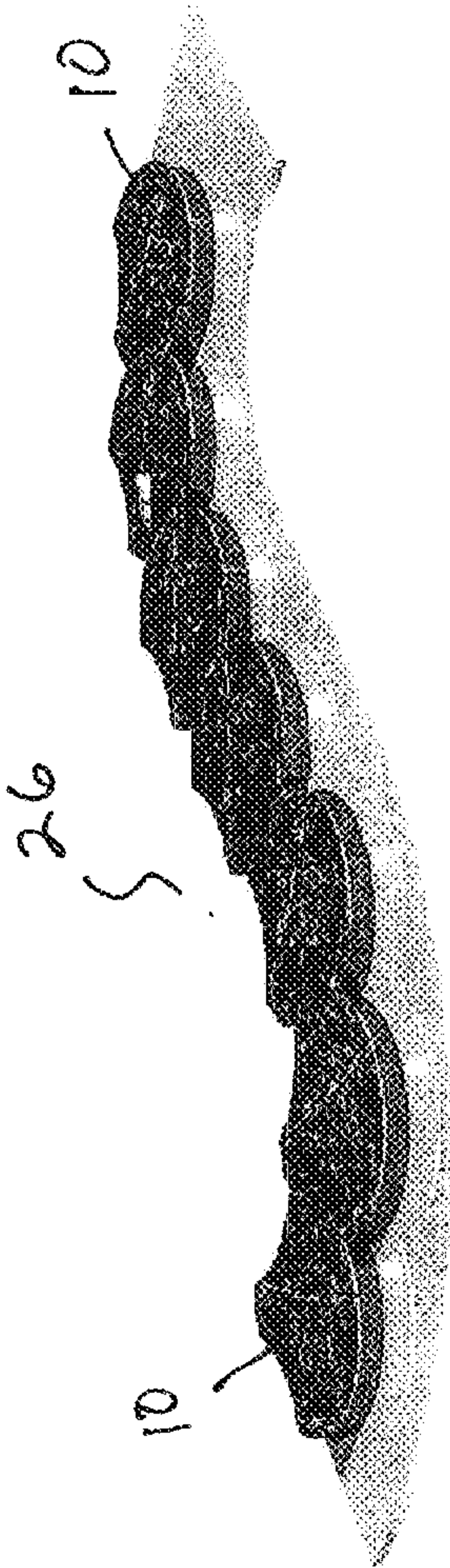


Figure 4B

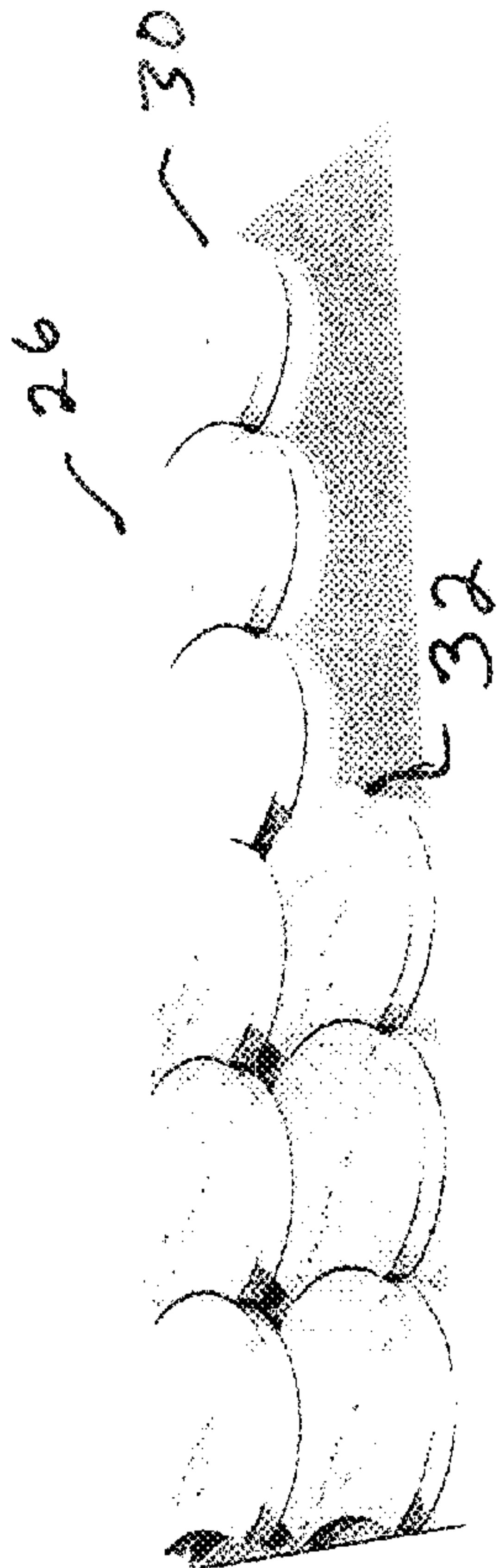


Figure 4C

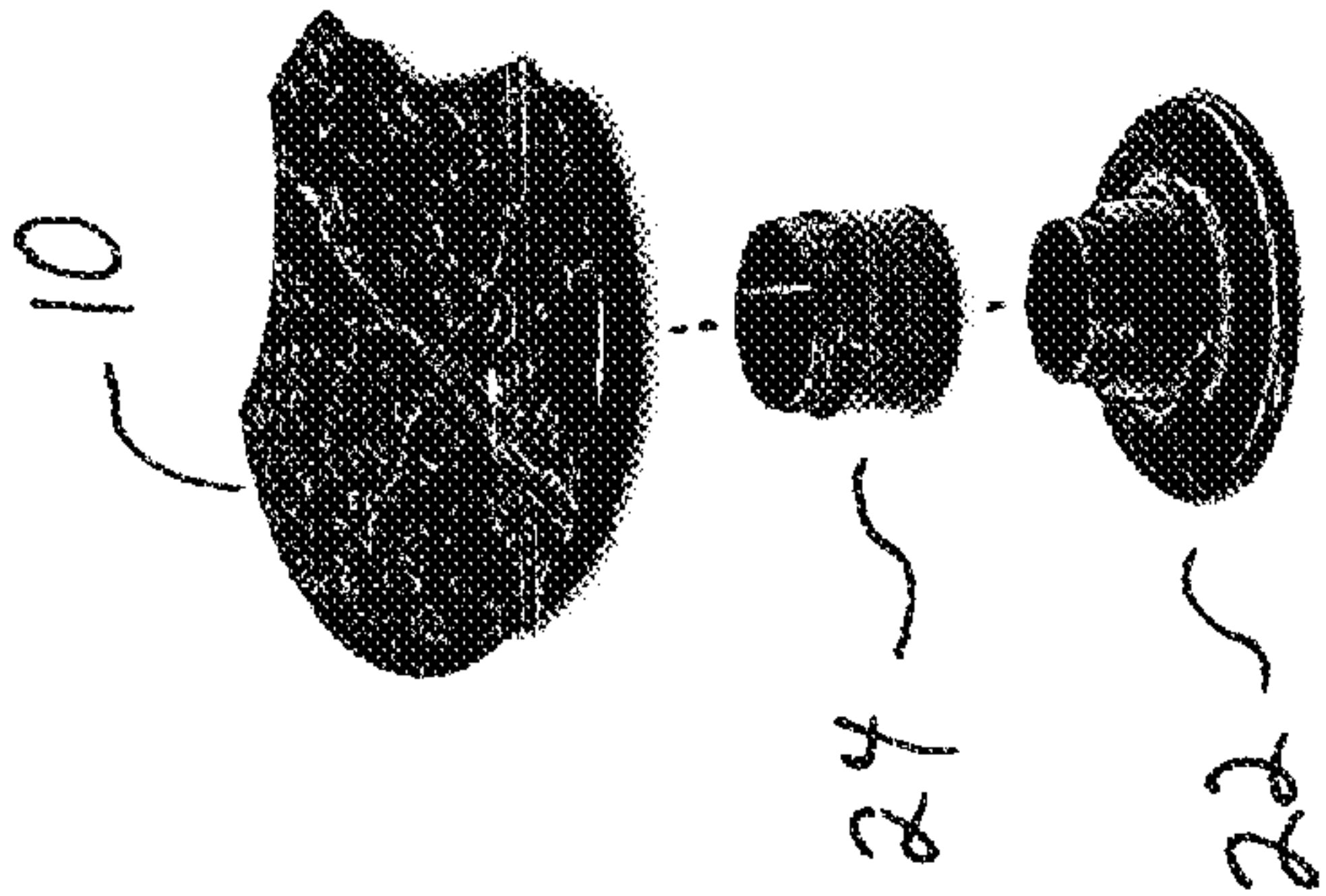


Figure 4D

Figure 5-1

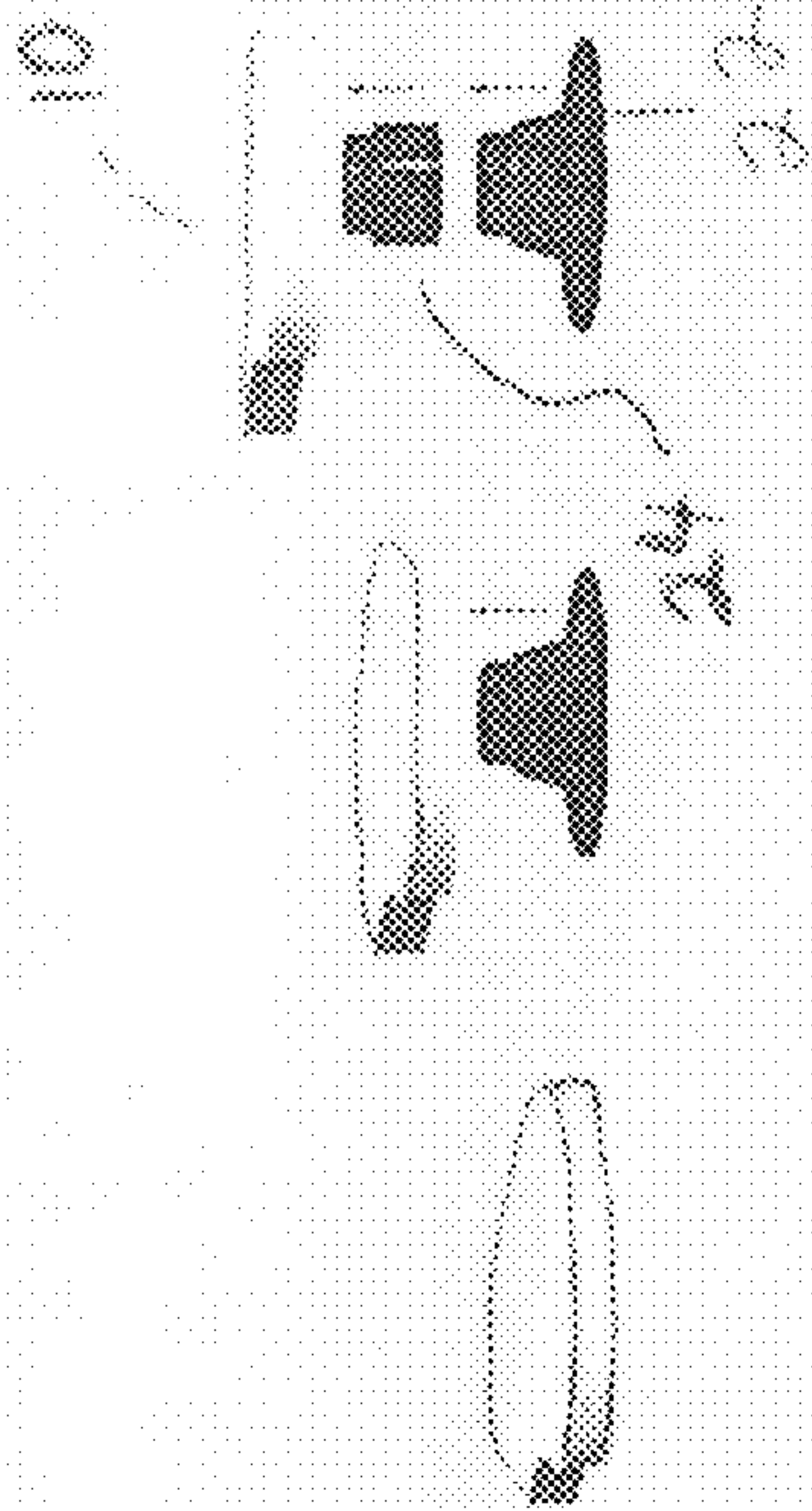


Figure 5-2

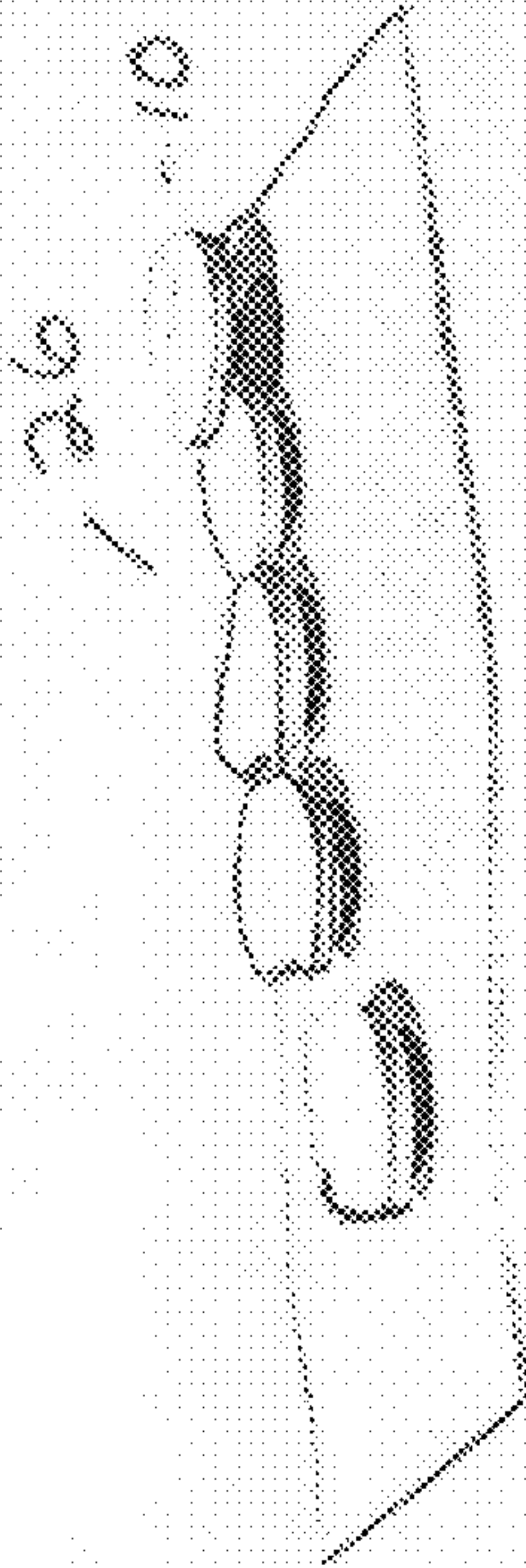


Figure 5-3A

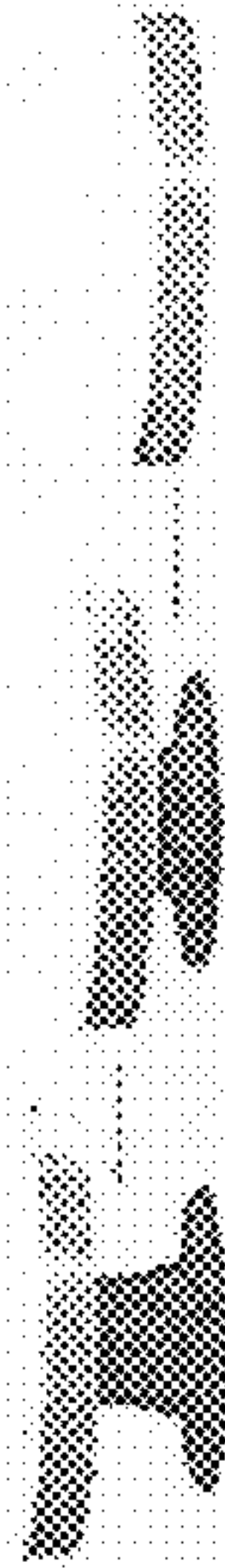


Figure 5-4

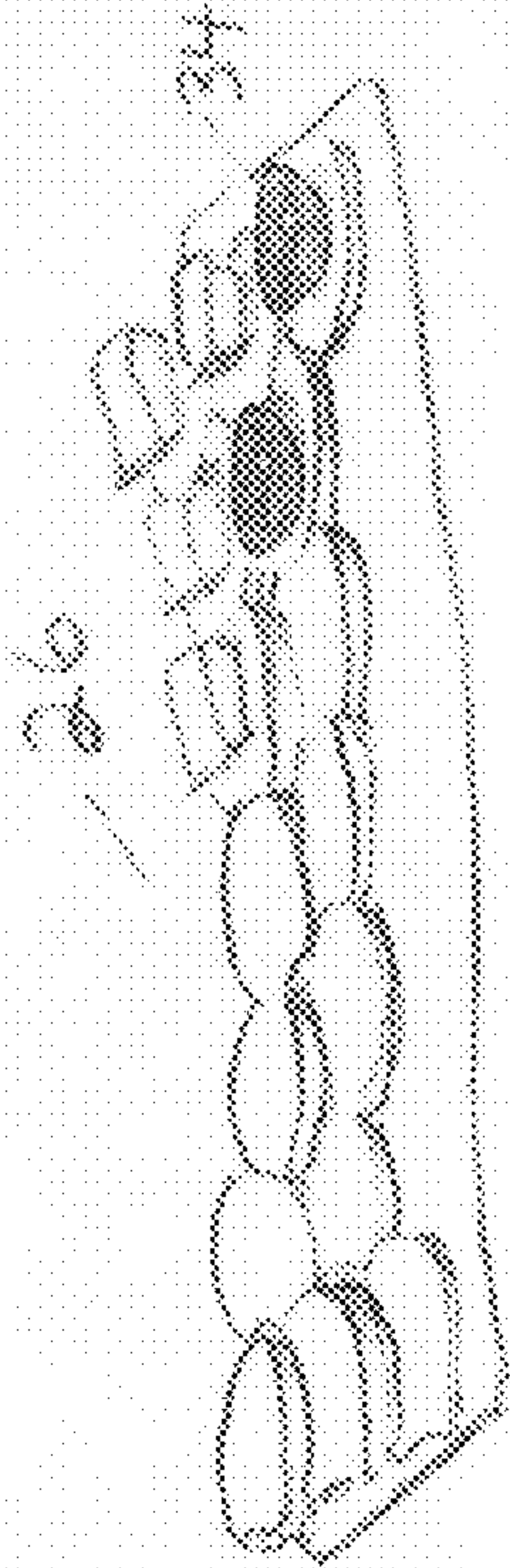
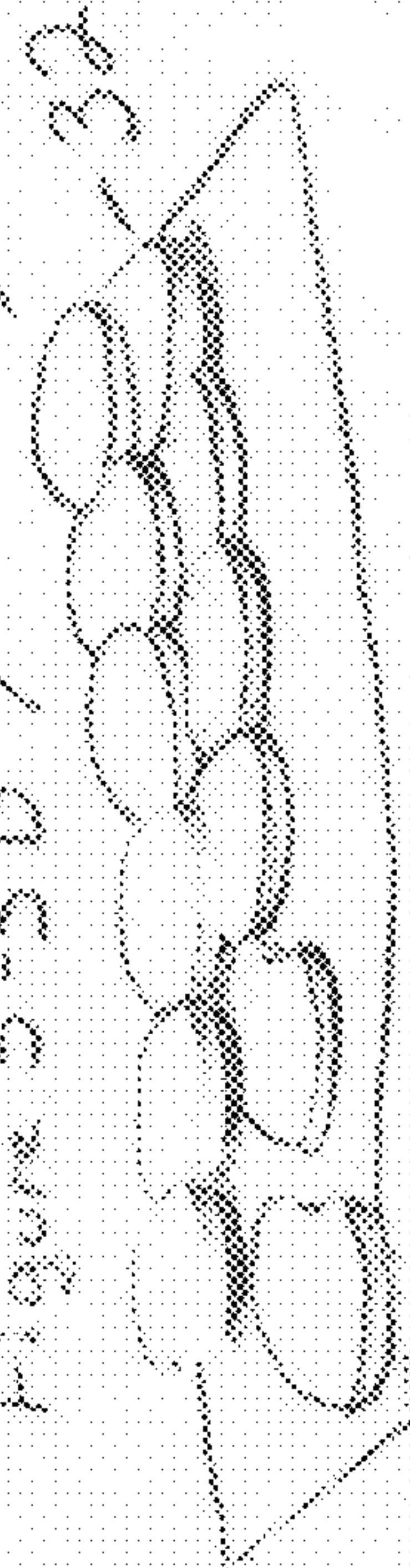
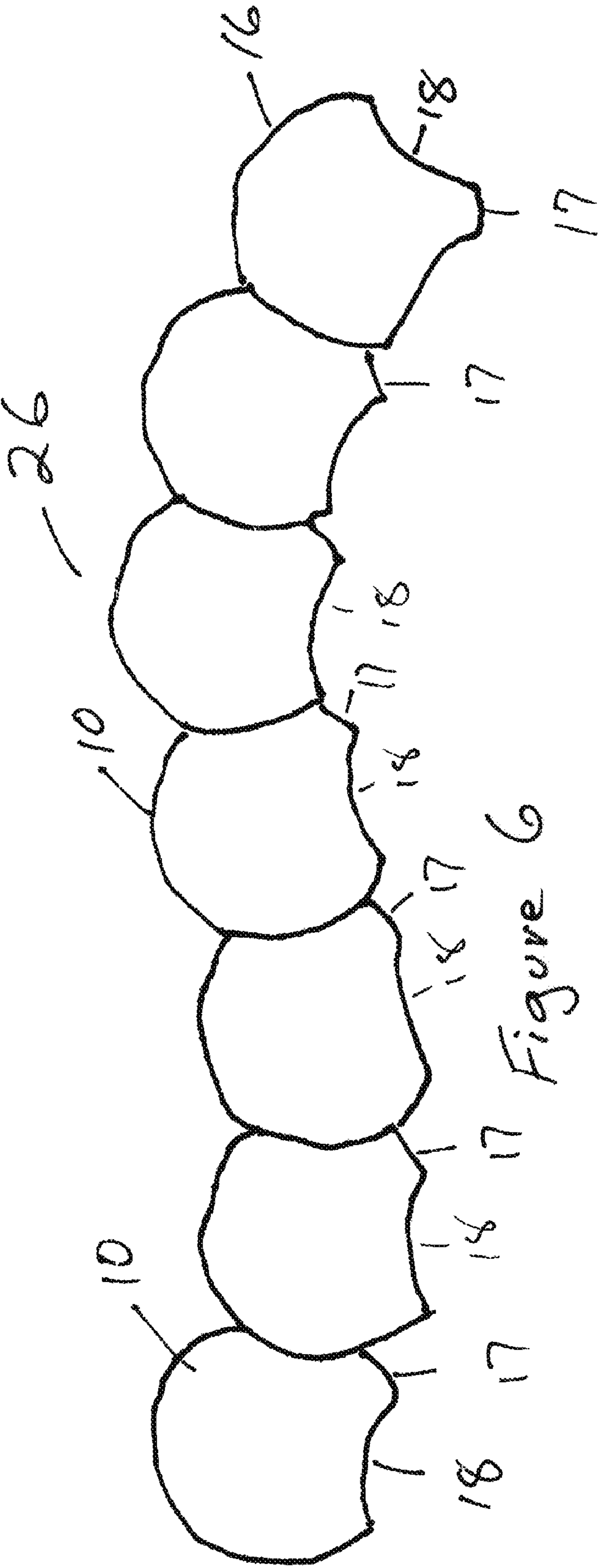


Figure 5-3B





ARTICULABLE TRAY DISPLAY SYSTEM**CROSS REFERENCE TO RELATED APPLICATION**

[0001] This application claims priority to U.S. Provisional Patent Application Ser. No. 61/185,986, filed Jun. 10, 2009 entitled ARTICULABLE TRAY DISPLAY SYSTEM, Iverson, Paul, which application is hereby incorporated by reference in its entirety.

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FIELD OF THE INVENTION

[0003] This invention relates to displaying products such as food or other small items on trays and more particularly to a system, method and apparatus for creating an array of trays displaying these items.

BACKGROUND OF THE INVENTION

[0004] Food and other items are often placed on trays for sale by a vendor. For example dishes of food that are placed in a glass-enclosed delicatessen display case or arranged on a table by a caterer frequently rest on display trays for viewing by consumers. These display cases and tables were usually rectangular or round in shape and only require that any display trays that placed on them be configurable in that linear orientation.

[0005] Recently however table and display cases that are curved have become more popular, sometimes even in an S-shaped serpentine configuration. A problem has arisen with use of square, round, ovoid or rectangular trays of the prior art because, when used with these curved surfaces adjoining trays leave voids between them, providing only a disjointed surface to place plates of food or other items for presentation.

[0006] What is needed then is a tray and system of trays that can be adjustably aligned to correspond to the straight or curved surface of a table of a given display case, presenting a continuous tray surface along the length a straight or curved display case or table, an array of display trays corresponding to that surface.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIG. 1 is a top view schematic diagram of a plate of the system of the present invention shown with round plates for illustration.

[0008] FIG. 2A is a bottom view diagram of a plate of the system of the present invention.

[0009] FIG. 2B is a top perspective view of a plate of the system of the present invention.

[0010] FIG. 2C is a top perspective view of a plate of the system of the present invention.

[0011] FIG. 2D is a cutaway side view of a plate of the system of the present invention.

[0012] FIG. 3A is a cutaway side view of a series of overhanging plates of the system of the present invention.

[0013] FIG. 3B is a side view of a series of overhanging plates of the system of the present invention.

[0014] FIG. 3C is a perspective view of a series of overhanging plates of the system of the present invention.

[0015] FIG. 4A is a perspective view of two series of plates forming an array of the system of the present invention aligned in another curved orientation, with one array overhanging another.

[0016] FIG. 4B is a perspective view of an array of plates of the system of the present invention aligned in a curved orientation.

[0017] FIG. 4C is a perspective view of two series of plates of an array of plates of the system of the present invention aligned in a straight or linear orientation.

[0018] FIG. 4D is an exploded view of a tray 10 to be mounted on a spacer 24 and a base 22

[0019] FIG. 5-1 are exploded side views of the components of the present invention being assembled to form an array of plates of the present invention.

[0020] FIG. 5-2 is a perspective view of an array of plates in a first configuration.

[0021] FIG. 5-3A are exploded side views of the components of the present invention being assembled to form an array of plates.

[0022] FIG. 5-3B is a perspective view of an array of plates in another configuration.

[0023] FIG. 5-4 is a perspective view of an array of plates in yet another configuration.

[0024] FIG. 6 is a diagram of a series of shapes of the tray of the present invention abutting each other at various angles to form a curved array of trays.

SUMMARY OF THE INVENTION

[0025] A solution to the above has been devised. A series of round trays of the same diameter but including convex voids are provided, where each tray has at least two arcuate voids at their perimeters. The arc of the arcuate voids are complementary to the convex rounded side of the tray, allowing multiple trays to rest adjoining abutting trays to complete a adjustably linear or curved line of trays, together forming a system of display trays that may be combined to form a continuous tray in a flexible number of patterns. A round plate or tray is formed with two arcuate concave voids in the otherwise circular shape formed by the edge of the plate, creating a plate that has both concave and convex sections of its edge. The concave arcuate portion of the edge is sized to receive the convex edge of an identical plate, or of a circular plate of the same size but without voids so the arc of the concave void of a tray is complementary to the convex arc. The voids in a tray act as a connecting junction for the adjoining trays to maintain substantial surface area between plates that would not be available by simply placing two circular trays or plates adjacent each other. A series of such trays may be nested and flexibly arranged into a multitude of configurations. A tray with two voids could for example be used as a juncture of two lines of trays, or used to form a continuous curved surface for placing bowls or foodstuffs.

[0026] The trays are also each individually adjustable in height. This difference in height allows having an array of plates configured in a stepped or overhanging manner, a first row of trays overhanging the a second TOW. The trays are formed with a central neck and feet. A tray may either rest directly on the feet, on a base connected to the neck, or on the base with one or more spacers between the base and the neck.

In other words the height of an individual plate may be adjusted by selecting different configurations of the neck, spacers and a base.

[0027] With this product shape and method of use a wide and flexible variety of configurations of arrays of trays may be achieved, both to accommodate the surfaces of curving shapes trays must rest on, and to achieve aesthetically-pleasing configurations.

DESCRIPTION OF THE INVENTION AND PREFERRED EMBODIMENT

[0028] The following description, and the figures to which it refers, are provided for the purpose of describing examples and specific embodiments of the invention only and are not intended to exhaustively describe all possible examples and embodiments of the invention.

[0029] Referring now to FIG. 1 a diagram of a tray 10 of the present system of invention is shown. Three trays 10 and 11 of the system of the present invention are shown. Round trays 11 of the same diameter are shown by way of example and the third tray 10 is of the same diameter except that tray 10 is formed with two concave voids 18 in the otherwise circular shape. The arc of the concave void 18 of the tray 10 is complementary to the convex arc 16 of the edge of the round trays 11 and of the circular convex edge 16 of tray 10, allowing the rounded edge of the round trays 11 or of another identical tray 10 (not shown) to fit within the void 18 area. There are two concave voids 18 in the preferred embodiment, spaced at about 120 degrees apart, forming a snout 17 portion therebetween. The tray 10 acts as a connecting junction for the adjoining trays 11 while maintaining substantial surface area that would not be available by simply placing two circular trays 11 adjacent each other. A tray 10 could be created with a single void 18 (as shown in FIG. 3C) to allow it to receive the convex edge of an adjoining tray, and a series of such trays may be nested. A tray with two voids 18 could also be used as a juncture of two lines of trays, as shown in FIG. 5-3B for example. Or a tray 10 could be formed with three voids (not shown) to create a third juncture, or further voids for further junctures.

[0030] The tray 10 may be of any size in diameter when used with other trays of the same size for the system of the present invention.

[0031] The tray can be formed from any suitably rigid material, such as plastic, metal, wood or similar materials that are known to those of skill in the art. In the preferred embodiment the tray is made of melamine resin and compression molded.

[0032] Referring additionally to FIGS. 2A-3C, in the preferred embodiment each individual tray 10 of the present invention includes a neck 20 on the bottom side adapted to join to stand to hold the tray away from a surface. A skirt 12 is included at the perimeter of the tray 10 both for aesthetic appeal and, referring additionally to FIGS. 3A-3C, showing a series of four adjoining trays overhanging each other in a stepped configuration, prevents items placed on a lower tray from falling between that tray's surface and that of the overhanging tray. In the preferred embodiment the skirts 12 of plates 10 and 11 are further formed with studs that extend or protrude slightly further than the skirt to act as feet 14 when the plate is placed directly on a surface, without a base 22 or base and spacer 24 combination.

[0033] The neck 20 is affixed to a base 22 or to one or more spacers 24 that are also connected to a base to elevate each

succeeding tray 10. FIG. 4D shows the plate 10, spacer 24 and base 22 in exploded view, with their parts aligned for joining (in direction of dotted line). The neck 20, base 22 and spacers 24 can be of any shape and affixed, for example with a bayonet, snap or screw attachments. In the preferred embodiment the neck 20 is cylindrical and has female screw threads and the base 24 is cylindrical of the same diameter as the neck and has complementary male helical screw threads (not shown). The spacers 24 are likewise cylindrical and formed with one threaded male end complementary to the neck 20 and the other end is a threaded female end complementary to the base. One or more spacers 24 can therefore be added to extend the height on a surface of a plates 10 as needed to allow a higher plate to overhang a lower second plate, as shown in FIGS. 3A-3C.

[0034] The height of an individual plate 10 then may be adjusted by selecting different configurations of the neck 22 an spacers 24. A plate 10 may be placed directly on a surface without a base 22 or spacer 24, resting on its feet 14; a plate may also be affixed to a base at its neck 20 to achieve a first higher elevation with the base resting on a surface; a plate may also be affixed to a spacer 24 at its neck and the spacer is affixed to the base, with the base resting on a surface, to achieve a second elevation higher than the first elevation. Additional spacers 24 may be incorporated to achieve further elevations, with two or more spacers be affixed together and to the neck 20 and base that rests on a surface.

[0035] Referring additionally now to FIGS. 4A-4D, an alternate configuration of the system of trays 10 is shown. Another advantage of the system of the present invention is that it allows the trays to be presented as an aesthetically-pleasing integrated scalloped appearance with the convex edge 16 of adjoining plates being presented to an observer.

[0036] FIGS. 4A and 4B show the trays 10 arrayed in a curved configuration, where the convex rounded side 16 of a tray has been sequentially oriented at differing angles to adjoining trays, within the concave voids 18 of those adjoining trays. FIG. 4C shows yet another configuration of series of trays 10 fitted within one another to form a substantially linear array 26 of trays. FIGS. 4A and 4C each show two rows of trays, with a first row of trays 32 overhanging second row of trays 30, to give an integrated cascading stepped appearance to the array 26 of trays 10. FIG. 4D is an exploded view of a tray 10 to be mounted on a spacer 24 and a base 22.

[0037] FIGS. 5-1 to 5-4 illustrate the method of assembling the system of the present invention. In FIG. 5-1 a user determines how many steps or rows of trays 10 is desired. For example if three rows of successively overhanging trays are desired, a user will have one row of trays 10 that rest on their feet 14. The trays 10 of a second row are each affixed to a base 22 to elevate that tray to a first elevation height of greater than the length of the skirt 12, allowing the bottom of the skirt to clear the top of the trays 10 first row. For the third row an intervening spacer 24 is added to further raise the skirt that much higher. Additional spacers 24 can be added for additional rows. FIG. 5-2 shows the assembly of the first elevation row of trays 10 fitted adjoining one another, the convex edge 16 of one plate 10 within the concave side 18 of a neighboring plate, the line of plates adjusted according to a curvature desired by a user. FIG. 5-3A shows the optional step of lower rows of trays 10 being fitted under higher rows (shown by arrows) and FIGS. 5-3B and 5-4 shows an additional optional individual row of various heights added for artistic effect, and further various containers 34 resting on the finished rows.

[0038] FIG. 6 is a diagram of a series of shapes of the tray **10** of the present invention abutting each other at various angles to form a curved array **26** of trays, illustrating the ability of a tray of the shape of the present invention to be adjustably aligned to form liner or curved arrays of display trays

[0039] It will be appreciated that the invention has been described hereabove with reference to certain examples or preferred embodiments as shown in the drawings. Various additions, deletions, changes and alterations may be made to the above-described embodiments and examples without departing from the intended spirit and scope of this invention. Accordingly, it is intended that all such additions, deletions, changes and alterations be included within the scope of the claims.

What is claimed is:

1. A tray for forming tray arrays, comprising: a tray of generally circular shape having an edge including a convex portion and a concave void portion, creating a plate that has both concave and convex sections of its edge, where the arc of the arc of the concave void is complementary to the convex arc.

2. The tray of claim **1** where the tray may be affixed to a base to increase its elevation from a surface the tray is placed on.

3. An array of the plates of claim **1** comprising a plurality of plates arranged to have their convex side nest within the concave side of an adjoining plate.

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