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(54) **Packaging tray with overwrap**

(57) A tray (10) to support a plurality of containers (12) includes a base portion (18), a first pair of opposing side walls (20) extending upwardly from the base portion (18), and a second pair of opposing side walls (22) extending upwardly from the base portion (18) and interconnecting the first pair of opposing side walls (20) to

form a shallow tray body. The first and second pairs of opposing side walls (20,22) have non-linear profiles to conform to outer contours of the containers (12). A sheet (16) of plastic is wrapped around the containers (12) and tray body (10) to securely hold the containers within the

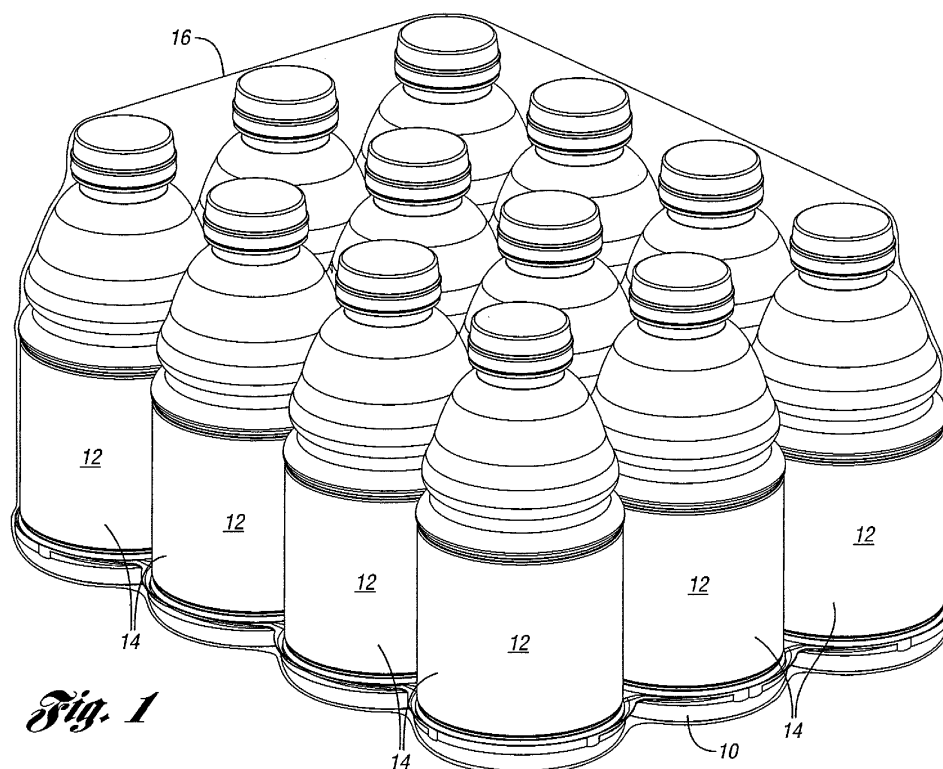


Fig. 1

Description

[0001] The present invention relates to a plastic pad tray that supports, stores, and transports beverage containers, such as bottles for example, in an overwrap configuration.

[0002] Plastic bottles are widely used as containers for beverages such as soft drinks, juice, water, etc. These bottles are often stored and transported in a shallow cardboard box with a plastic overwrap extending underneath the box and around the top of the bottles to securely hold the bottles in the box. The cardboard box includes a bottom surface and first and second pairs of opposing side walls that cooperate to form a shallow cavity. The bottles are placed with the cavity and then are wrapped by a plastic sheet of material to secure the bottles in place. While the cardboard box provides one known inexpensive packaging solution, even more inexpensive solutions are continually being sought.

[0003] It is however desirable to provide an improved tray to support a plurality of containers which addresses the above described problems and/or which more generally offers improvements or an alternative to existing arrangements.

[0004] According to the present invention there is therefore provided a tray as described in the accompanying claims.

[0005] In an embodiment of the invention there is provided a tray to support a plurality of containers includes a base portion, a first pair of opposing side walls extending upwardly from the base portion, and a second pair of opposing side walls extending upwardly from the base portion and interconnecting the first pair of opposing side walls to form a shallow tray body. The first and second pairs of opposing side walls have non-linear profiles to conform to outer contours of the containers.

[0006] In one example, the base portion and first and second pairs of opposing side walls are comprised of a single sheet of material. In one example, the single sheet of material comprises a molded plastic body.

[0007] The base portion includes a plurality of pockets where each pocket is to receive one container. In one example, each pocket includes a locating feature to locate the container within the pocket. A sheet of plastic material is wrapped around the containers and tray body to securely hold the containers within the pockets.

[0008] These and other features of the present invention can be best understood from the following specification and drawings, the following of which is a brief description.

[0009] The present invention will now therefore be described by way of example only with reference to the following figures in which:

Figure 1 is a perspective view of a pad tray with bottles according to an embodiment of the present invention;

Figure 2 is top iso view of the pad tray of Figure 1;

Figure 3 is a bottom iso view of the pad tray of Figure 1;

Figure 4 is a bottom view of the pad tray of Figure 1 as viewed from one end;

Figure 5a is a side section of the pad tray of Figure 1; Figure 5b is a magnified view of a portion of the side section of the pad tray as indicated in Figure 5a;

Figure 6a is an enlarged section view of one portion of the pad tray of Figure 1;

Figure 6b is a magnified view of a portion of the pad tray as indicated in Figure 6a;

Figure 7 is a top iso view of another example of a pad tray according to another embodiment of the present invention;

Figure 8 is a bottom iso view of the pad tray of Figure 7;

Figure 9 is an enlarged bottom iso view of a portion of the pad tray of Figure 7;

Figure 10 is a top iso view of another example of a pad tray according to another embodiment of the present invention;

Figure 11 is a bottom iso view of the pad tray of Figure 10; and

Figure 12 is an enlarged bottom iso view of a portion of the pad tray of Figure 10.

[0010] A pad tray 10 according to the present invention is shown in Figure 1. The pad tray 10 supports a plurality of beverage containers 12, such as plastic or glass bottles, for transport and storage. The pad tray 10 comprises a very thin plastic sheet that is molded to provide locating and positioning features to securely hold bottoms 14 of the beverage containers 12 in place. A sheet of plastic material, schematically shown at 16, is then tightly drawn over a top of the beverage containers 12 and underneath the pad tray 10 such that the beverage containers 12 are securely held in place for storage and/or transport. The attachment of the sheet of plastic material is a known process and will not be discussed in detail.

[0011] A top perspective view of the pad tray 10 is shown in Figure 2. The pad tray 10 includes a base portion 18 that forms a bottom support surface, and includes first 20 and second 22 sets of opposing side walls that extend upwardly from the base portion 18 to form a shallow tray body. The side walls 20, 22 provide non-linear profiles and are shaped to correspond to an outer contour of the beverage containers 12. In other words, the side walls 20, 22 include discretely spaced curved side wall portions 20a, 22a that match the outer shape of the beverage container 12. In the example shown, there are three (3) curved side wall portions 20a for each side wall 20 and four (4) curved side wall portions 22a for each side wall 22 such that twelve beverage containers 12 can be supported by a single pad support. The configuration is especially useful for 32 oz bottles, which are typically arranged in groups of twelve for transport and storage; however, bottles that are larger or smaller could also be supported by the pad tray 10. Further, the pad tray could

be configured to support more or less than twelve bottles at a time.

[0012] The base portion 18 is configured to include a plurality of shallow pockets 24 that are discretely located relative to each other. Each pocket 24 defines a location for one beverage container 12. Each pocket 24 includes a flat surface portion 26 and a curved wall portion that extends upwardly around the flat surface portion 26 to form the respective pocket 24. The curved wall portions include the opposing side walls for side and corner pockets. The flat surface portion 26 includes a raised circular disc portion 26a extending upwardly from the flat surface portion 26. The raised circular disc portions 26a provide support for the bottle sitting within the associated pocket 24 and reduce the possibility of the containers bouncing relative to the pad tray 10, which could occur during transport. The circular disc portions 26a also provide locating features such that each beverage container 12 is properly located and retained within an associated pocket 24.

[0013] In between adjacent rows of pockets 24, a plurality of supports 28 are formed as part of the pad tray 10. In the example shown, six supports 28 are formed as part of the pad tray 10. The supports 28 help to prevent the pad tray 10 from flexing near the center where less structural support is provided by the side walls 20, 22. The supports 28 are comprised of a raised boss portion 30 that extends upwardly from the base portion 18 at a center location between groups of four pockets 24. The raised boss portion 30 includes curved side walls that form a portion of pocket walls for the centrally located pockets.

[0014] The raised boss portion 30 includes an upper surface 32 having a recess 34 (Figure 2) extending downwardly from the upper surface toward the base portion 18. This recess 34 in the upper surface 32 of the boss portion 30 forms a protruding support leg 36 (Figure 3) that extends downwardly underneath the pad tray 10 to provide increased support for the pad tray 10 as the pad tray 10 rests on the ground or on top of another group of containers supported by another pad tray 10.

[0015] Also as shown in Figure 3, each pocket 24 includes a bottom surface 40 that faces opposite of the flat surface portion 26. Each bottom surface 40 includes a recess 42 that corresponds to the circular disc portions 26a that extend upwardly from flat surface portions 26. Further, each pocket 24 that has a portion that is located along one of the side walls 20, 22 includes a protruding rib or lip portion 44 that extends downwardly from the bottom surface 40.

[0016] For the pockets 24 at the corners, this protruding lip portion 44 extends around a significant portion of the outer circumference of the pocket 24, i.e. extends around more than 50% of the outer circumference. For the remaining pockets along the side walls 20, 22, the protruding lip portion extends less than 50% around the outer circumference. Further, in the example shown, the protruding lip portions 44 for these remaining pockets are positioned radially inward and closer to a center of the

respective pocket 24 (as indicated at 48) in comparison to the protruding lip portions 44 for the corner pockets 24, which is best shown in Figure 4.

[0017] Figures 5a and 5b show that the distal tips 50 of the protruding legs 36 extend down to touch a ground surface. The outer edges of the pad tray 10 are supported by the protruding lip portions 44 as shown.

[0018] Also as shown in Figures 2-4, each pair of adjacent pockets 24 is connected by an additional wall portion 46 to provide further increased support. The wall portions 46 are configured to include flat linear surface portions that are in alignment with each other in a row and column relationship.

Figures 6a and 6b show the circular disc portions 26a in greater detail. As described above, these disc portions 26a are raised upwardly from the flat surface portion 26 of the pockets 24 and form an arcuate surface 52. This raised arcuate surface 52 is received within a corresponding recess 54 formed in a bottom surface of the beverage containers 12. This serves to locate the containers 12 within the pockets 24 as well as preventing shifting and bouncing movement of the containers relative to the pad tray 10 during transport.

Figures 7-9 show another example of a pad tray 10' similar to that described above, but which does not include the protruding support legs 36. In this configuration, in between adjacent rows of pockets 24', a plurality of raised bosses 60 are formed as part of the pad tray 10'. In the example shown, six raised bosses 60 are formed as part of the pad tray 10'. The raised bosses 60 include flat surfaces 62 that do not include any recesses or protrusions such that a more rigid support structure is provided. The raised bosses 60 extend upwardly from the base portion 18' at a center location between groups of four pockets 24'.

[0019] In this example, the centrally located pockets 24' include protruding ribs or lip portions 64 (Figure 8) that extend downwardly away from the flat surface portions 26 forming recesses 66 (Figure 7) in the pockets 24'. These lip portions 64 provide a contact surface for contact with a structure underneath the tray to increase the stability at the center of the pad tray 10' by preventing flexing/bending at this location.

[0020] Figure 9 shows one example of the protruding lip portions 64. In this example, four lip portions 64 are discretely and equally spaced apart from each other about an outer circumference of the centrally located pockets 24'. It should be understood that fewer ribs or additional ribs could be used, or that one continuous rib may be formed about the circumference.

[0021] In this example, the side pockets 24' also include protruding lip portions 44' that are similar to those described above with regard to Figures 2-6. The lip portions 44' at the corners extend around a significant portion

of the outer circumference of the pocket 24, i.e. extends around more than 50% of the outer circumference. For the remaining pockets 24' along the side walls 20', 22', the protruding lip portion 44' extends less than 50% around the outer circumference. Further, in the example shown, the protruding lip portions 44' for these remaining pockets are positioned radially inward and closer to a center of the respective pocket 24' (as indicated at 48') in comparison to the protruding lip portions 44' for the corner pockets 24', which is best shown in Figure 8.

[0022] Also, as shown in Figure 7-9, each pair of adjacent pockets 24' is connected by a wall portion 46' to provide further increased support. The wall portions 46' are configured to include flat linear surface portions that are in alignment with each other in a row and column relationship.

[0023] Figures 10-12 show another example of a pad tray 10" similar to that described above with regard to Figures 7-9, but which includes a different protruding lip configuration near a center of the pad tray 10". Between adjacent rows of pockets 24", a plurality of raised bosses 60 are formed as part of the pad tray 10" similar to those shown in Figure 7.

[0024] In this example, a bottom surface of the pad tray 10" includes protruding ribs 70 (Figure 11) that extend downwardly underneath the pad tray 10". These ribs 70 increase the stability at the center of the pad tray 10" to prevent flexing/bending at this location.

[0025] Figure 12 shows one example of the protruding ribs 70. The ribs 70 extend between each center located pocket 24" (indicated by arrow Pc) and the adjacent side pockets at a location where the center wall portions 46' of Figure 9 are located. In this example, each of the two center pockets Pc, which do not form any part of the side walls 20", 22", is associated with four (4) ribs 70 that extend radially outward from a center of the respective center pocket toward a center of the adjacent pocket. Side wall center pockets P20 of side walls 20" each include one rib 70 that extends toward a respective one of the center pockets Pc. Side wall center pockets P22 of the side walls 22" also include one rib 70 that extends toward a respective one of the center pockets Pc.

[0026] Each of the ribs 70, which extend downwardly from a bottom surface of the pad tray 10" as shown in Figure 11, forms a corresponding recess 72 (as shown in Figure 10) where the flat wall portion 46' of Figure 7 was previously located.

[0027] The pockets 24" along the side walls 20, 22 also include protruding lip portions 44" that are similar to those described above with regard to Figures 7-9. The lip portions 44" at the corners extend around a significant portion of the outer circumference of the pocket 24" (more than 50% of the outer circumference) while the remaining pockets 24" along the side walls 20", 22" have protruding lip portions 44" that extend less than 50% around the outer circumference.

[0028] Also, as shown in Figure 10-12, each pair of adjacent pockets 24" along the side walls 20", 22" is con-

nected by a wall portion 46" to provide further increased support. The wall portions 46" are configured to include flat linear surface portions that are in alignment with each other in a row and column relationship along the edges.

[0029] In one example, the pad trays 10, 10', 10" comprise a plastic or other similar material that is molded as a very thin sheet of material into any of the configurations described above. Any type of molding process can be used to form the pad tray, such as by injection molding for example. The result is a very thin, plastic pad tray that provides a cost savings over cardboard boxes previously utilized to transport and store beverage containers, while still providing adequate strength and stiffness for supporting the containers.

[0030] In accordance with the provisions of the patent statutes and jurisprudence, exemplary configurations described above are considered to represent a preferred embodiment of the invention. However, it should be noted that the invention can be practiced otherwise than as specifically illustrated and described without departing from its spirit or scope.

[0031] Further, although a preferred embodiment of this invention has been disclosed, a worker of ordinary skill in this art would recognize that certain modifications would come within the scope of this invention. For that reason, the following claims should be studied to determine the true scope and content of this invention.

Claims

1. A tray (10) to support a plurality of containers (12) comprising:
 - a base portion (18);
 - a first pair of opposing side walls (20) extending upwardly from the base portion (18); and
 - a second pair of opposing side walls (22) extending upwardly from the base portion (18) and interconnecting the first pair of opposing side walls (20) to form a shallow tray body, wherein the first and second pairs of opposing side walls (20,22) have non-linear profiles.
2. The tray (10) according to claim 1 wherein the base portion (18) and first and second pairs of opposing side walls (20,22) are comprised of a single sheet of material.
3. The tray (10) according to claim 2 wherein the single sheet of material comprises a molded plastic body.
4. The tray (10) according to any preceding claim wherein the first and second pairs of opposing side walls (20,22) are shaped to conform to an outer contour of at least one container (12).
5. The tray (10) according to claim 4 wherein the first

and second pairs of opposing side walls (20,22) are shaped to conform to an outer contour of a plurality of containers (12).

6. The tray (10) according to any preceding claim wherein the non-linear profiles comprise a plurality of curved wall portions (20a,22a) that are axially spaced apart from each other along each of the first and second pairs of opposing side walls (20,22). 5
7. The tray (10) according to any preceding claim wherein the base portion (18) includes a plurality of pockets (24) separated from each other by at least one wall portion (46), where each pocket is to receive one container (12). 10
8. The tray (10) according to claim 7 wherein each pocket (24) comprises a generally flat bottom surface (26) and includes a raised disc portion (26a) extending upwardly from the flat bottom surface (26), the raised disc portion (26a) comprising a locating feature for a container (12); and 15
wherein the pockets (24) are arranged in a series of rows, and wherein between adjacent rows of pockets (24), a plurality of supports (28) are formed as part of the base portion (18) with each support (28) comprising a raised boss portion (30) that extends upwardly from the base portion (18) at a center location between a group of four adjacent pockets (24). 20
9. The tray (10) according to claim 7 or 8 wherein each pocket (24) that has a portion associated with one of the first and second pairs of opposing sides walls (20,22) includes at least one protruding rib (44) that extends downwardly from a bottom surface of the base portion (18) to contact a structure underneath the tray body. 25
10. The tray (10) according to claim 9 wherein each pocket (24) that has a portion associated with one of the first and second pairs of opposing sides walls (20,22) comprises one of a corner pocket or a center side pocket, and wherein the protruding rib (44) extends around more than 50% of an outer peripheral dimension of each of the corner pockets (24), and wherein the protruding rib (44) extends around less than 50% of an outer peripheral dimension of each of the center side pockets. 30
11. The tray (10) according to any of claims 7 to 10 wherein the plurality of pockets (24) comprise a set of corner pockets, a set of center side pockets located between the corner pockets and having a portion formed as part of one of the first and second pairs of opposing side walls (20,22), and a set of center pockets that are not associated with either of the first and second pairs of opposing side walls (20,22); wherein at least one of the center pockets includes 35

a plurality of protruding lip portions (64) that extend downward from a bottom surface of the pocket to contact a structure underneath the tray body; and wherein the plurality of protruding lip portions (64) that are circumferentially spaced apart from each other about the center pocket (24').

12. The tray (10) according to any of claims 7 to 11 wherein the plurality of pockets (24) comprise a set of corner pockets, a set of center side pockets located between the corner pockets and having a portion formed as part of one of the first and second pairs of opposing side walls, and a set of center pockets that are not associated with either of the first and second pairs of opposing side walls; wherein each of the center pockets is connected to adjacent pockets via a protruding rib (70) that extends downwardly from a bottom surface of the base portion (18); and 40
wherein the corner pockets and center side pockets are connected to each other via at least one wall portion (46) comprising flat linear surfaces that are non-coplanar with a bottom surface of the protruding ribs (70).
13. The tray (10) according to any of claims 7 to 12 including a sheet of plastic (16) wrapped around the containers (12) and tray body (10) to securely hold the containers (12) within the pockets (24). 45
14. The tray (10) according to claim 7 or 8 wherein the plurality of pockets (24) comprise a set of corner pockets, a set of center side pockets located between the corner pockets and having a portion formed as part of one of the first and second pairs of opposing side walls (20,22), and a set of center pockets that are not associated with either of the first and second pairs of opposing side walls (20,22), and wherein at least one of the center pockets is connected to each adjacent pocket with a rib (70) that extends downwardly to contact a structure underneath the tray body. 50
15. The tray (10) according to any of claims 7 to 14 wherein each pocket (24) includes a bottom surface with the at least one wall portion comprising a curved wall that, extends upwardly around a perimeter of the bottom surface, wherein the curved wall is shaped to conform to an outer contour of a container and is discontinuous at a connection (46) location to each adjacent pocket (24). 55

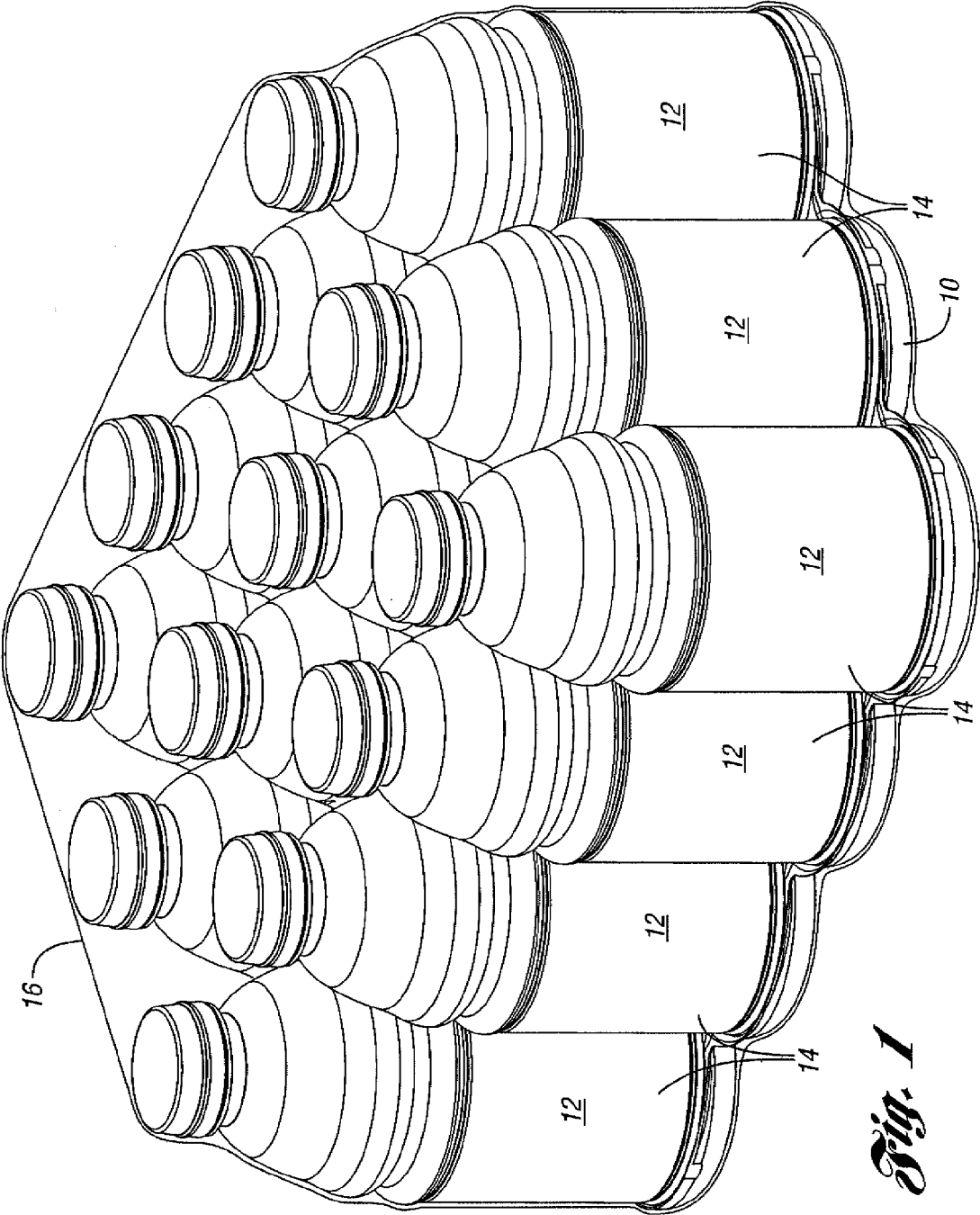
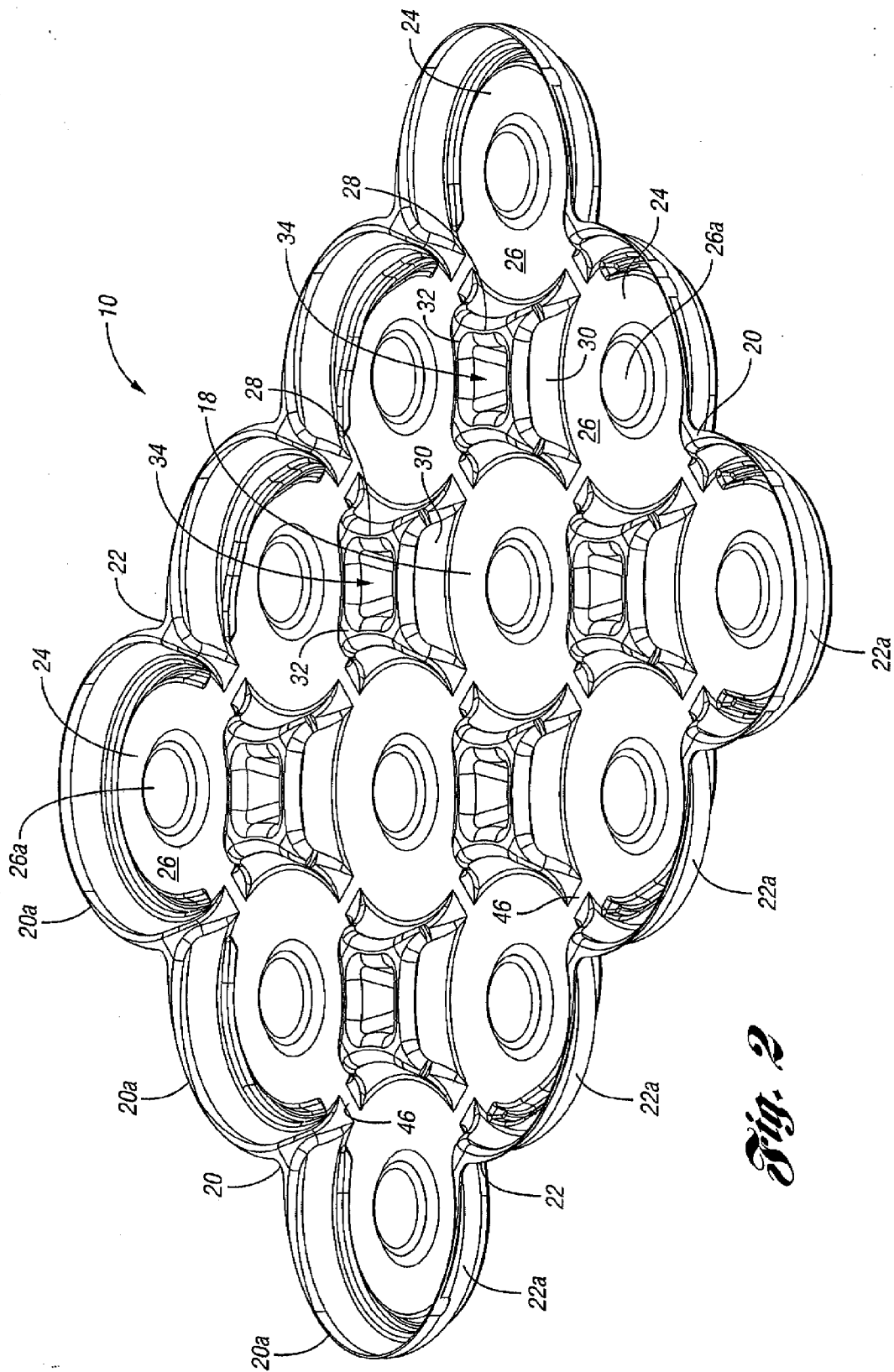


Fig. 1



2
Fig.

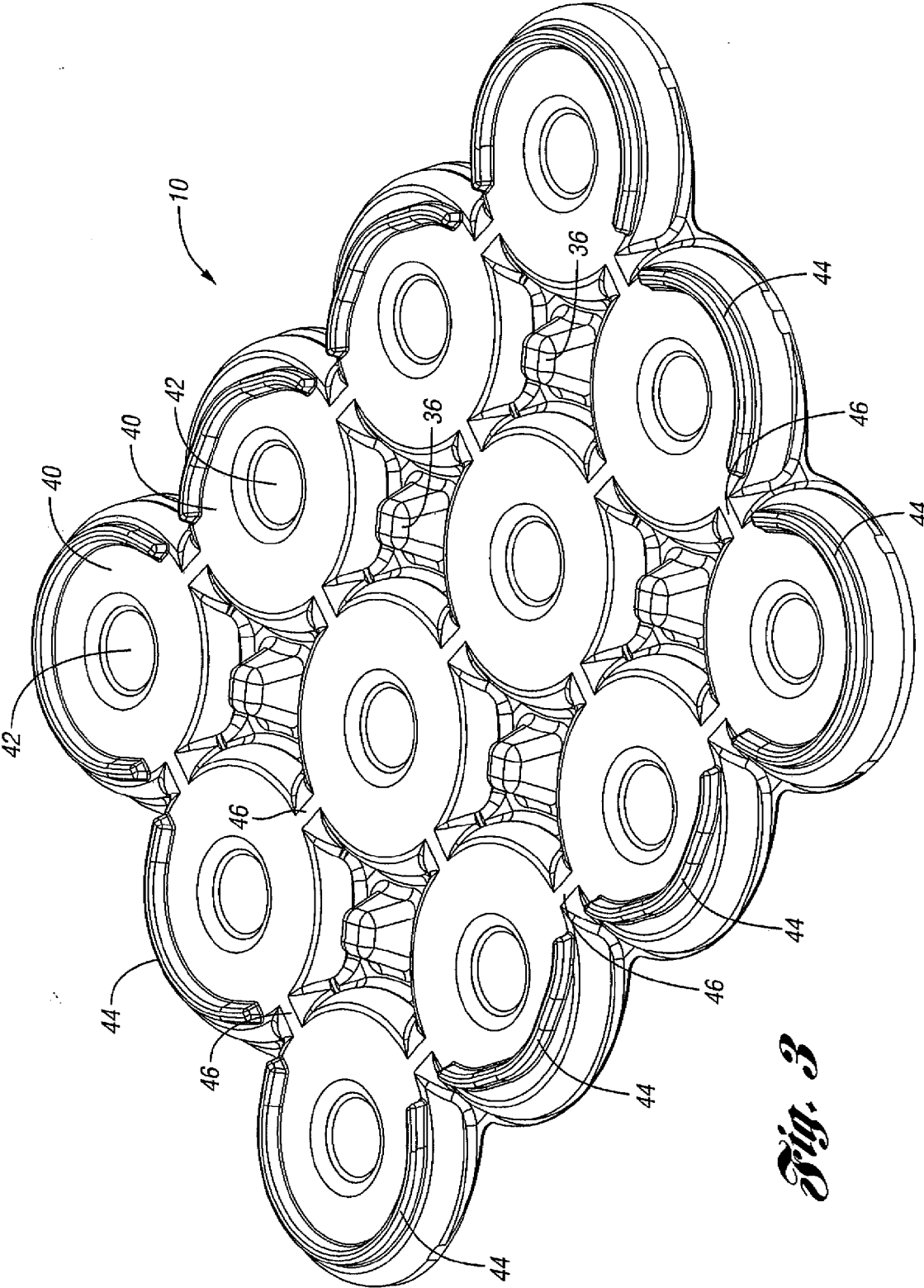


Fig. 3

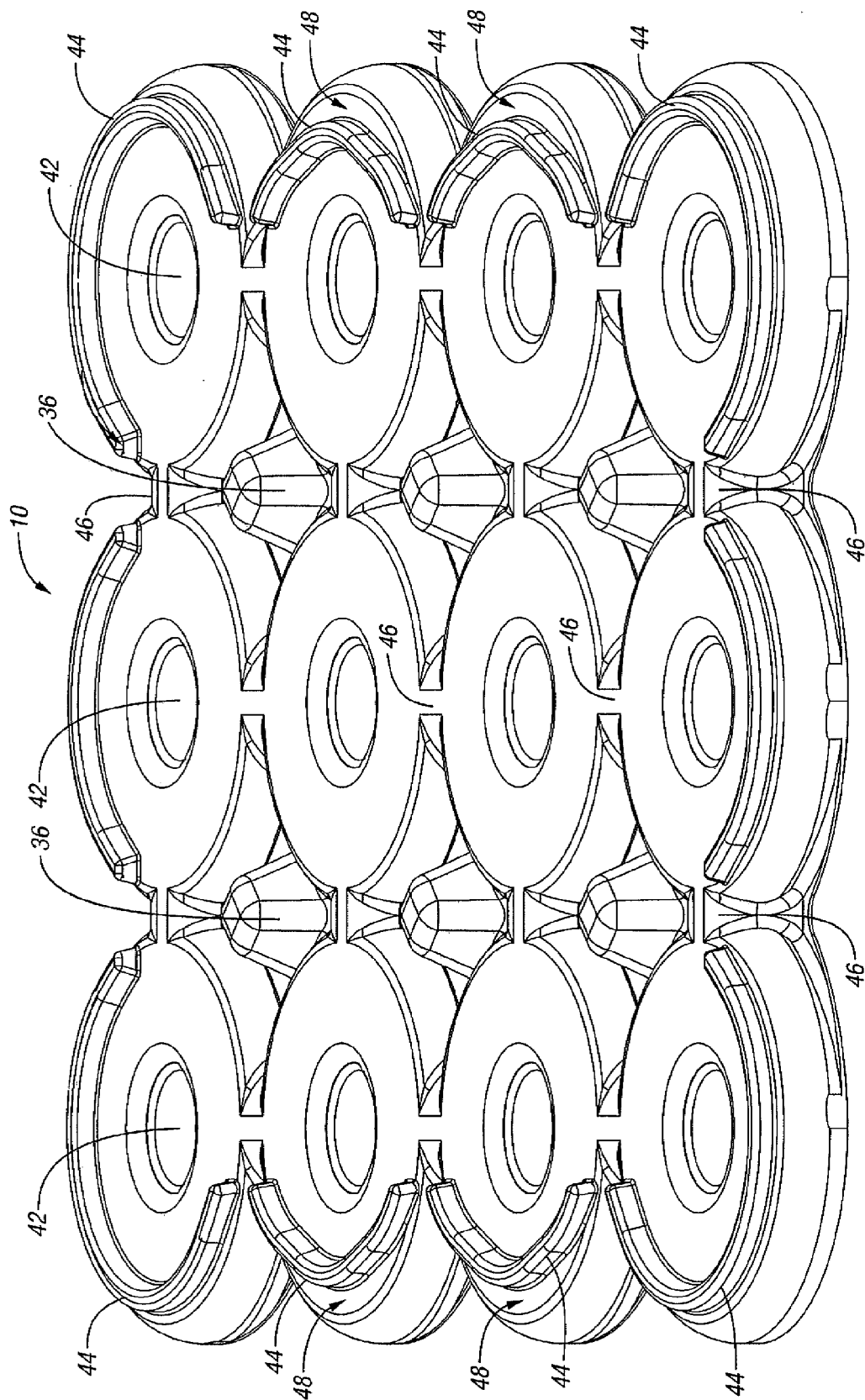


Fig. 4

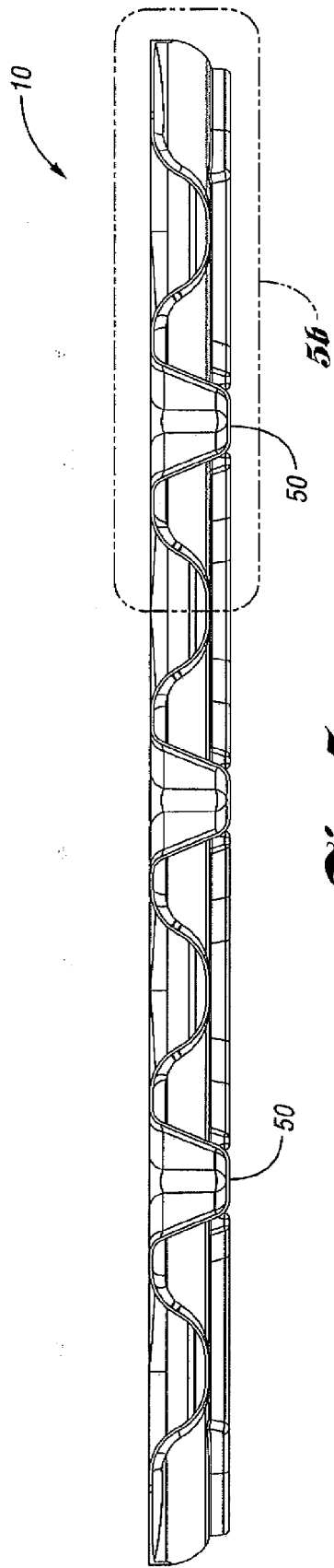


Fig. 5a

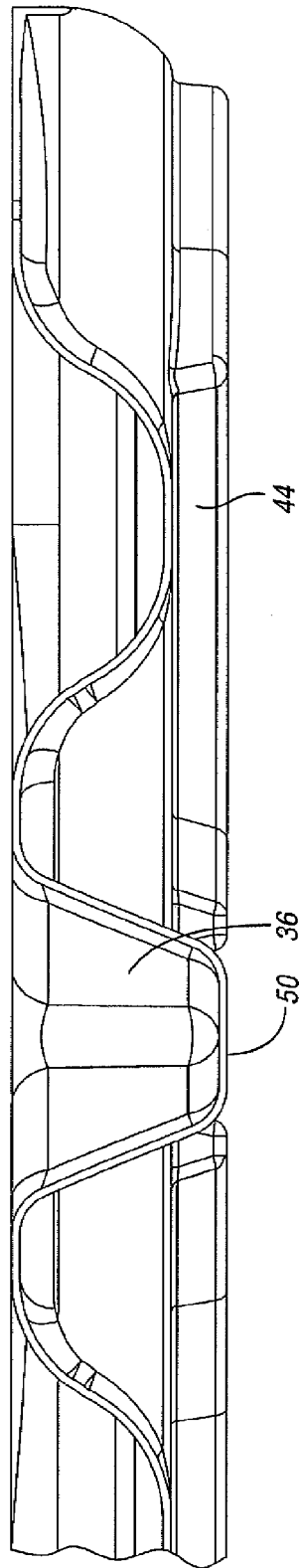
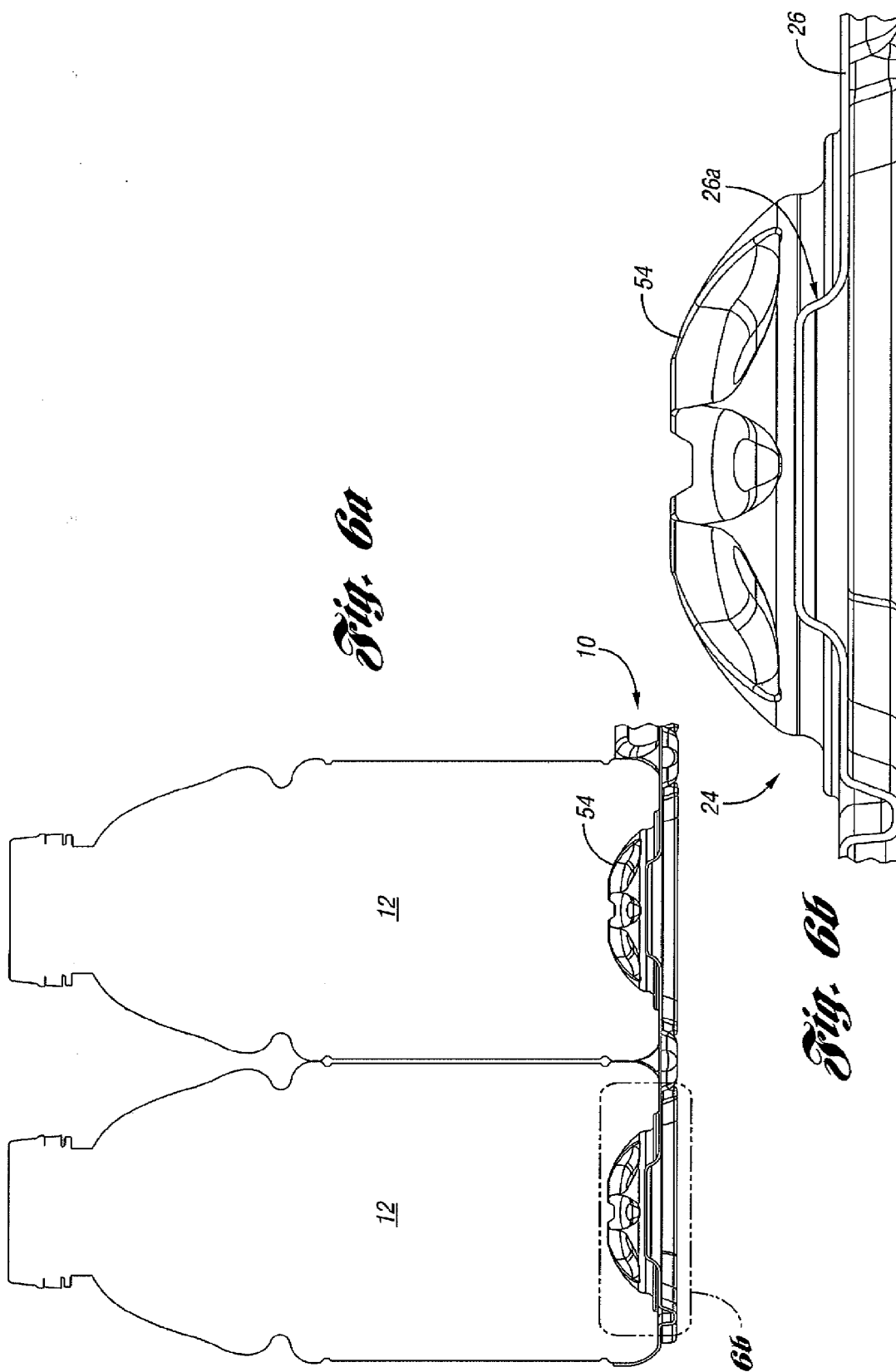


Fig. 5b



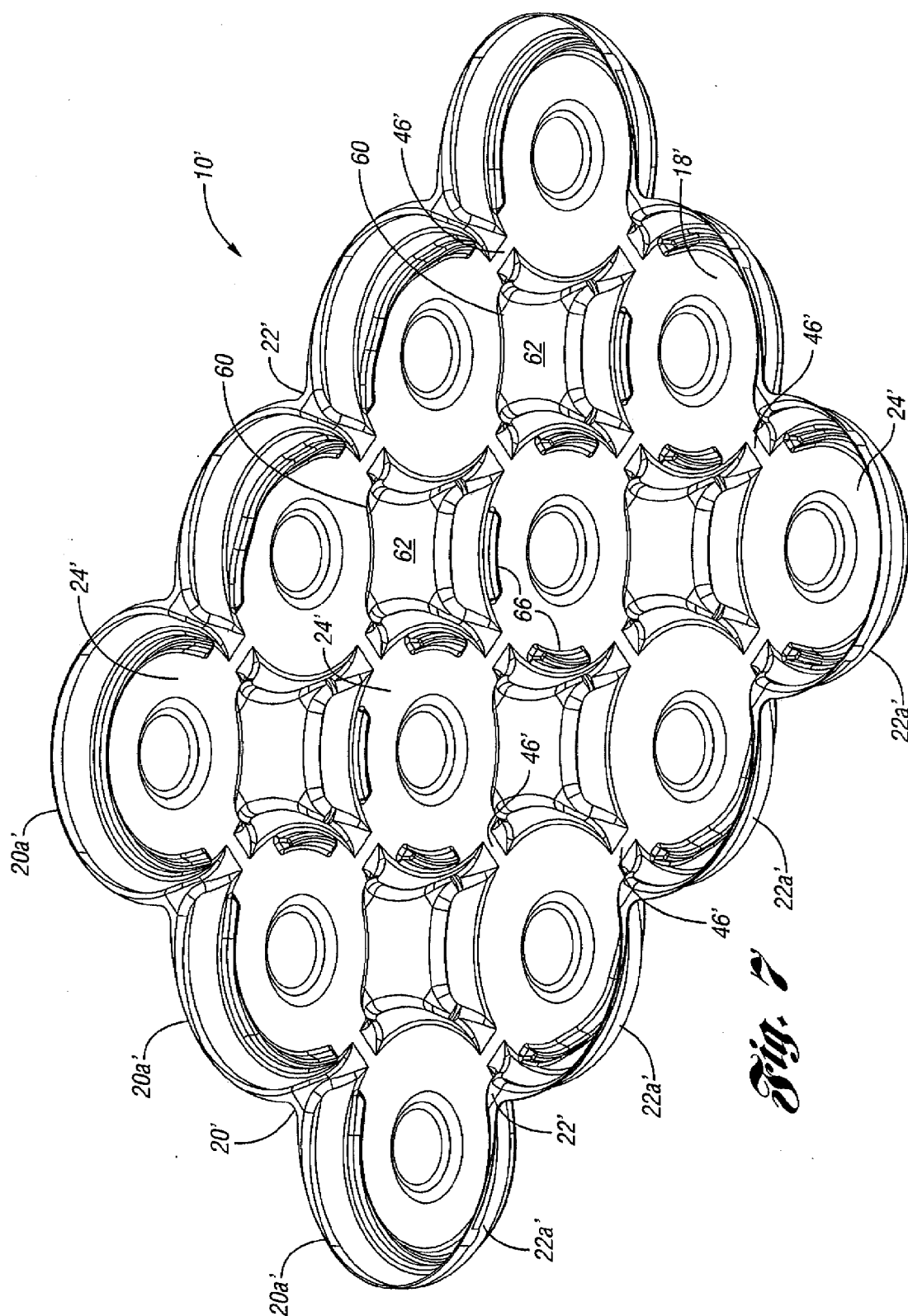


Fig. 7

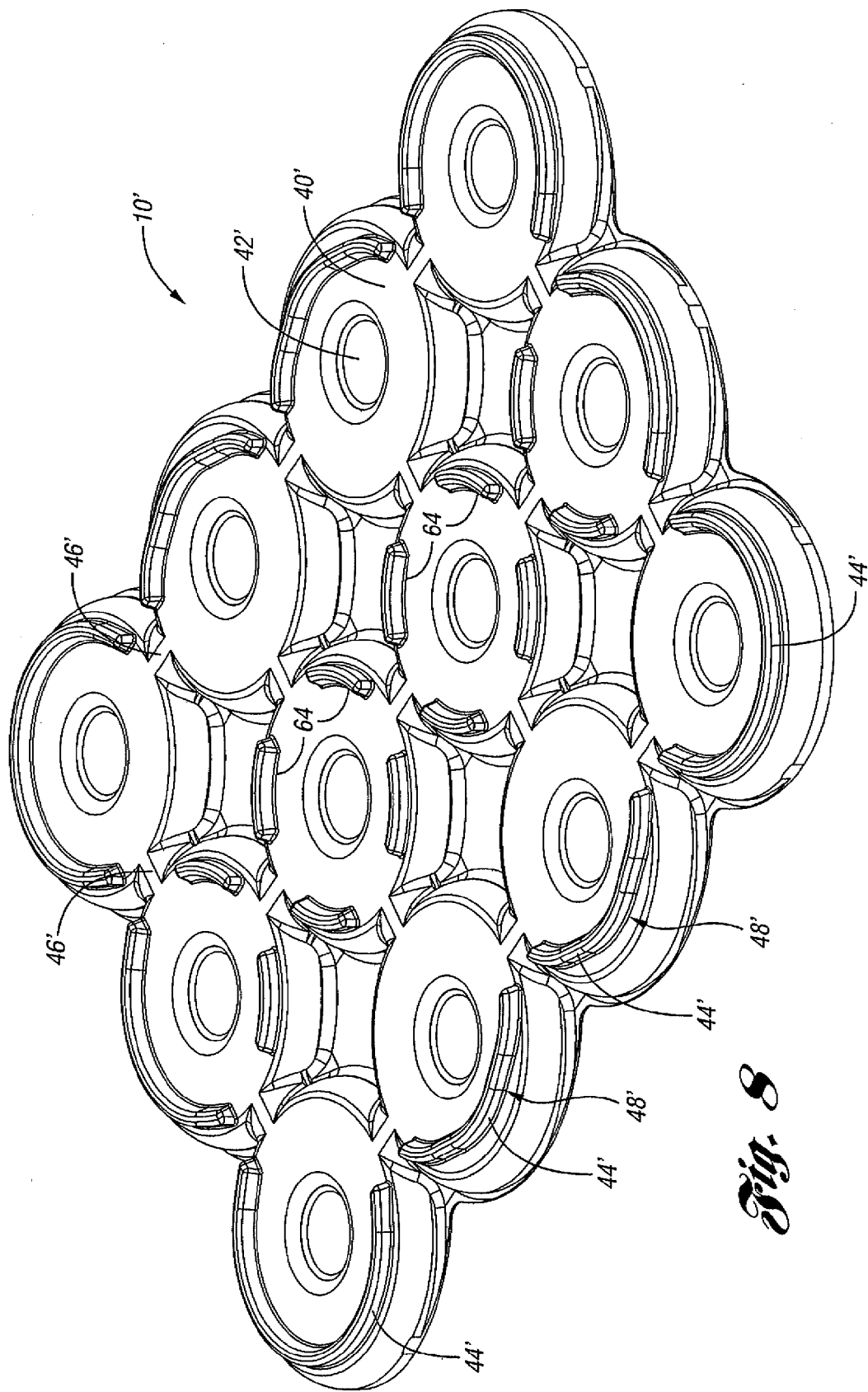


Fig. 8

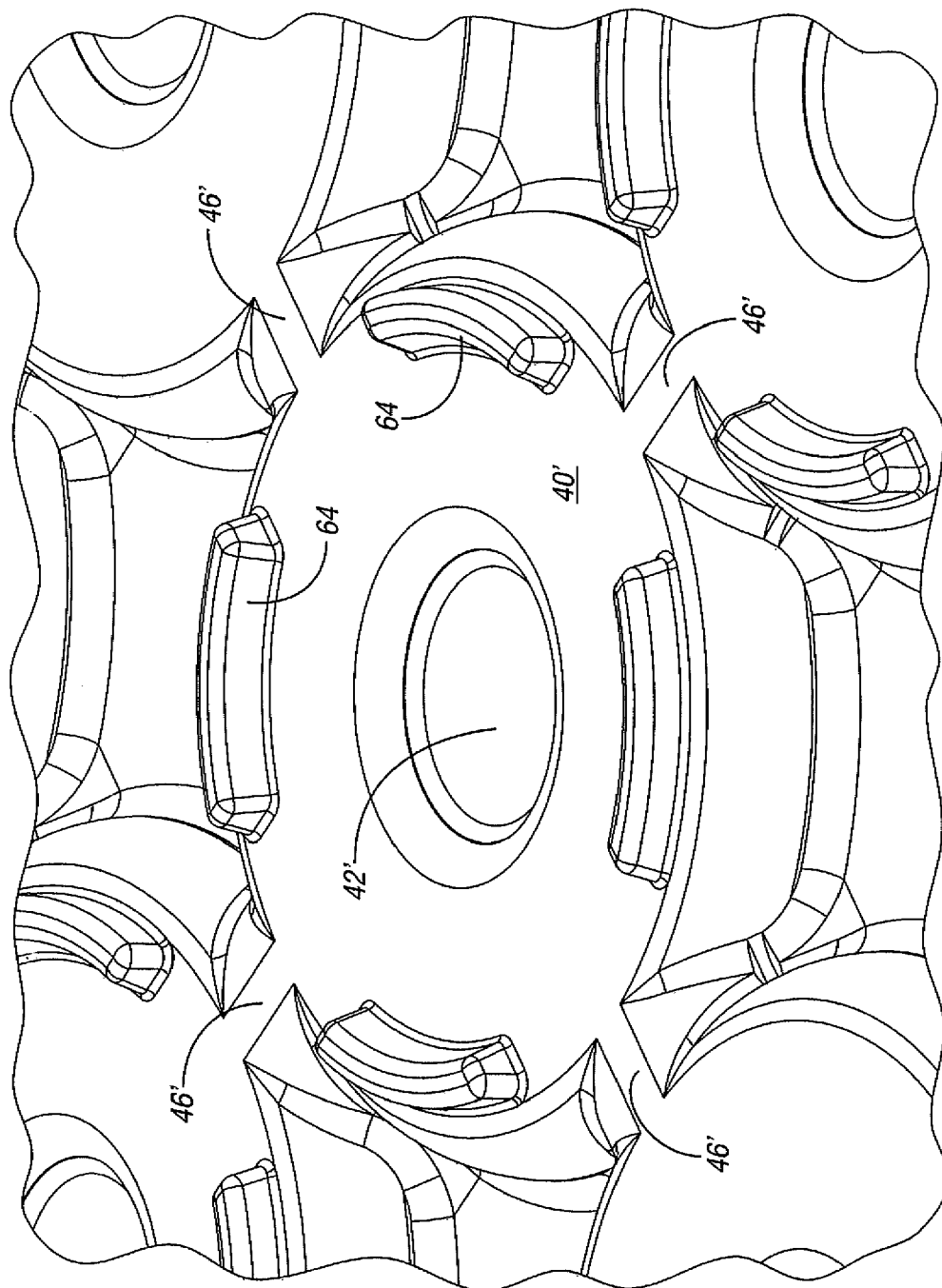


Fig. 9

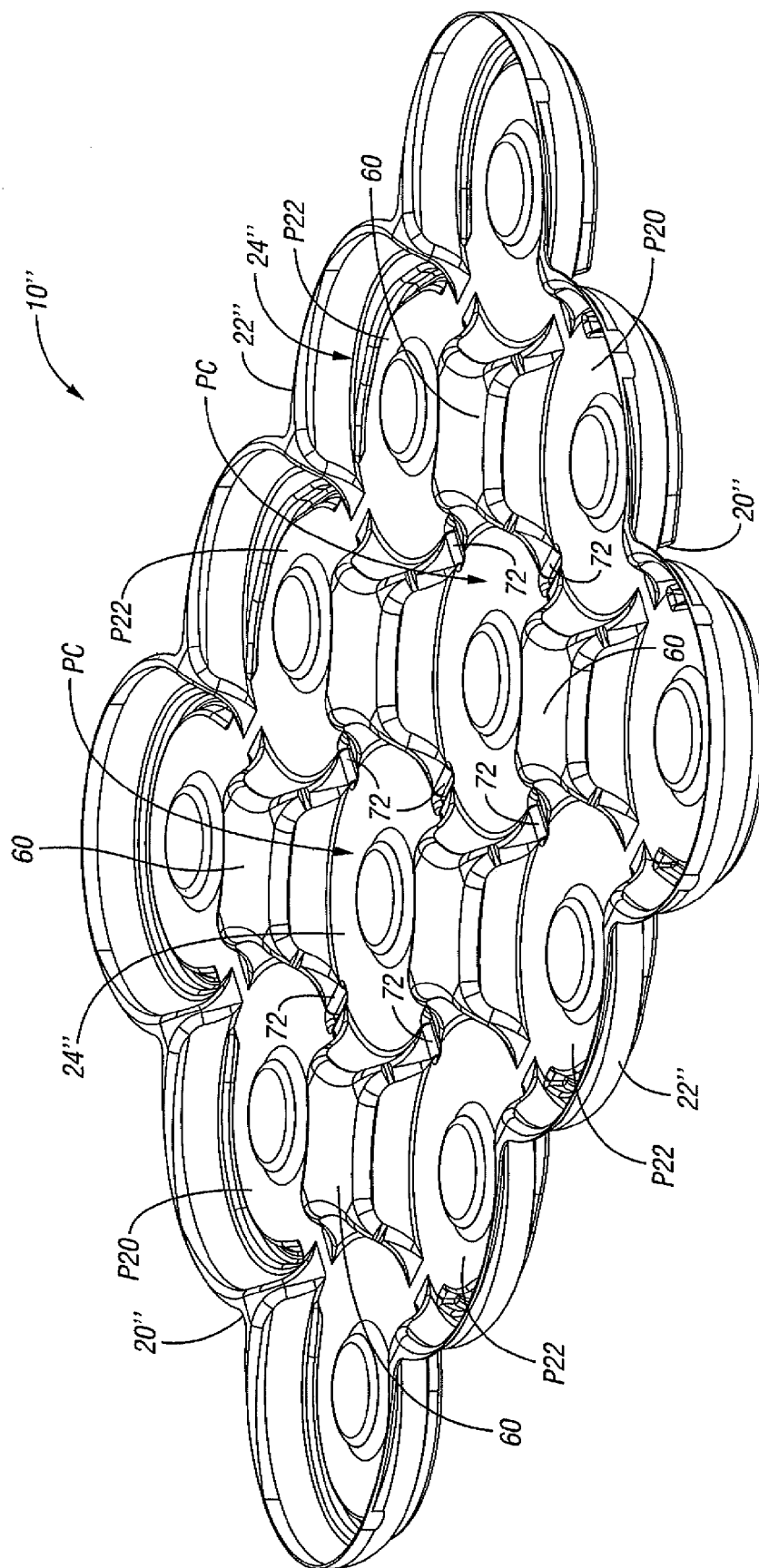


Fig. 10

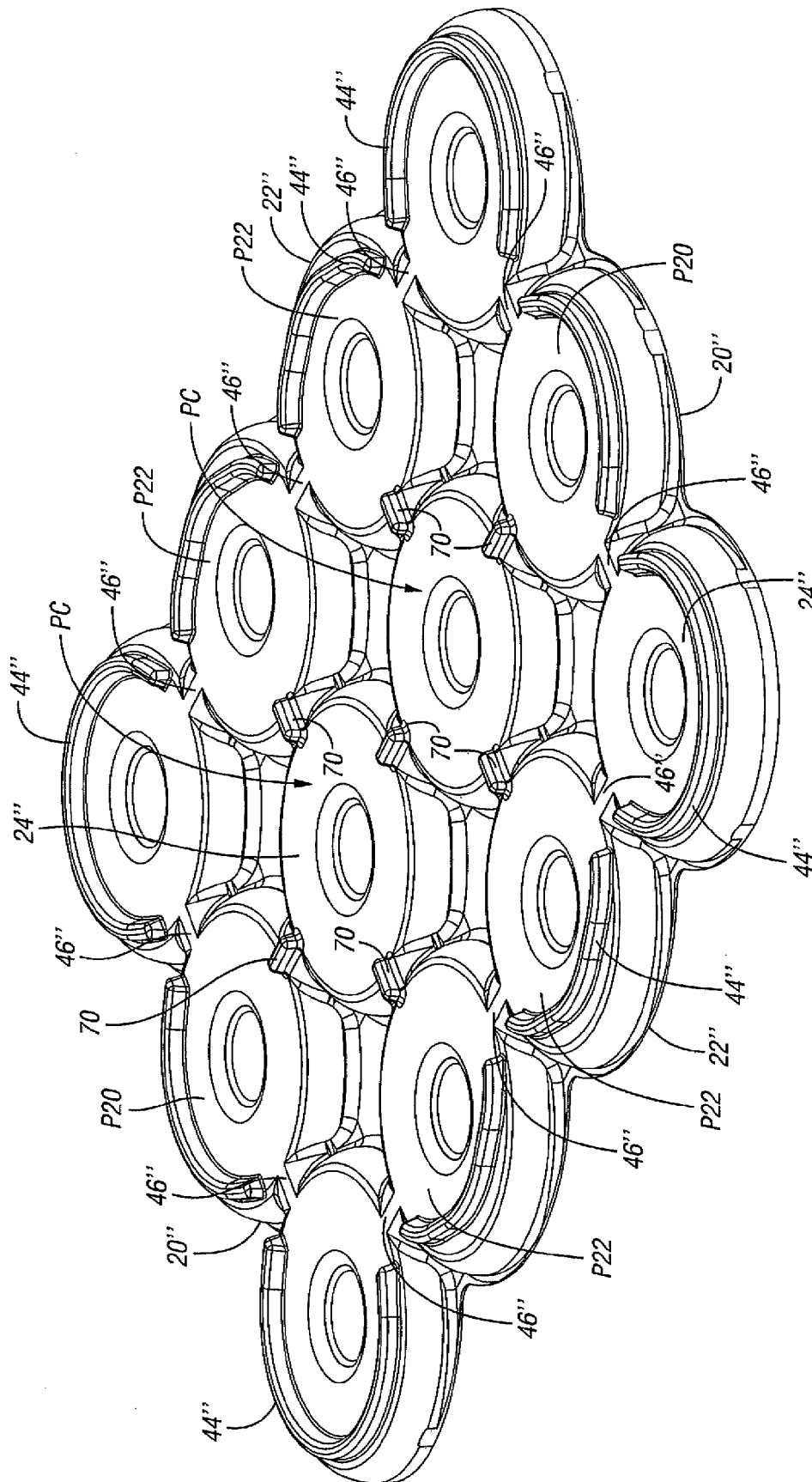


Fig. 11

