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(54) **Assembly for a packaging of a liquid, frame and container for a liquid**

(57) The present invention relates to an assembly for forming a packaging for a liquid. The invention also relates to a frame (1,2) for holding a container for a liquid. The invention further relates to a container (3) for holding a liquid.

The invention provides a packaging having a frame which can be folded in and outward and inside which a container for a liquid can be placed. The container can itself also be foldable inward in a transverse direction.

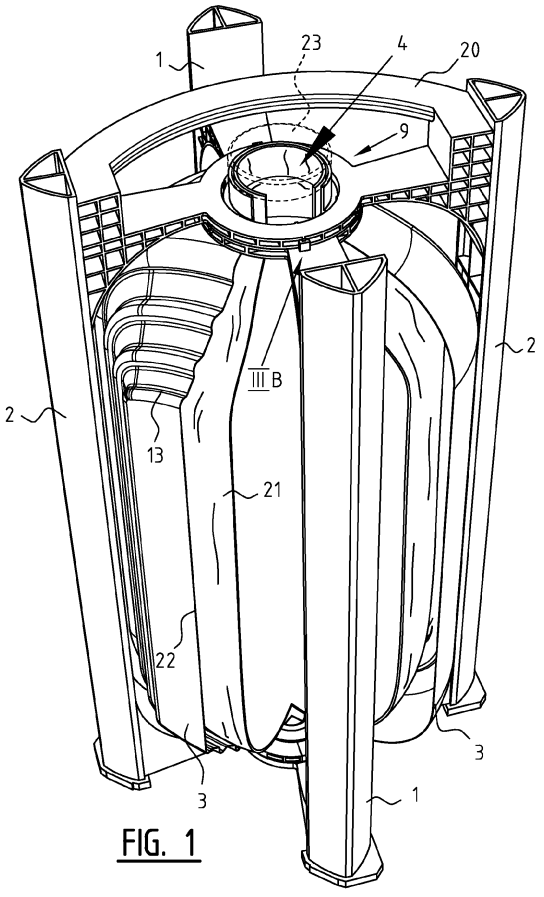


FIG. 1

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Description

[0001] The present invention relates to an assembly for forming a packaging for a liquid. The invention also relates to a frame for holding a container for a liquid. The invention further relates to a container for holding a liquid.

[0002] For transporting liquids use can be made of bottles or of containers for liquids in general. The requirements set for such containers are diverse. It is for instance desirable that the containers can be made small after being emptied of their content. This simplifies transport to the filling plant where the container is refilled. The same requirement applies before the container is first filled. If the distance to be travelled between filling plant and manufacturer of the container is great, for instance transatlantic, the space taken up by the container during transport must be minimal in order to remain economically cost-effective.

[0003] Other requirements apply after filling. It must thus be possible to stack different containers in a close packaging. The containers must further be able to withstand the mechanical influences during transport while the containers are filled with liquid.

[0004] Inward foldable bottles are known. These are generally made from a plastic and can be folded inward in longitudinal direction. An example hereof is the inward foldable PET bottle for soft drinks.

[0005] The existing inward foldable bottles do not however provide an adequate solution to the above stated requirements. It is thus difficult to readily fold the inward foldable PET bottle outward without losing strength. This bottle must further be placed in a crate to enable stacking thereof. In addition, it is not practical to use this solution for larger volumes such as more than 20 litres.

[0006] It is therefore an object of the present invention to provide a solution which can satisfy one or more of the above stated requirements.

[0007] According to a first aspect of the present invention, this object is achieved with an assembly as defined in claim 1.

[0008] The assembly according to the invention is adapted to form a packaging for a liquid and comprises a first frame part which can be coupled to a second frame part so as to form a frame. After coupling the first and second frame parts are pivotable relative to each other along a rotation axis for the purpose of folding the frame inward and outward. The assembly further comprises a container for a liquid which is provided with a filling opening. In the outward folded position the frame defines a space in which the container can be received and in which position the first and/or the second frame part is provided with a recess in which the filling opening of the container can be placed.

[0009] It is not essential for the first and second frame parts to be marketed or used as a coupled element. It is thus also possible to transport the components of the assembly, the container and the two frame parts, separately and to assemble them into a packaging at the location of for instance a filling plant.

[0010] By making use of a frame which can be folded inward and outward the container can be strengthened, for instance for the purpose of stacking thereof or withstanding the mechanical forces occurring during transport. Because the frame is inward foldable, it can be transported compactly and independently of the container.

[0011] In the outward folded position of the frame the recess for the filling opening preferably lies substantially on the rotation axis. This achieves that the frame rotates around the container during inward and outward folding.

[0012] It is recommended that the container comprises preformed folding or bending lines along which the container can be folded inward and/or outward. In this case both the container and the frame are inward foldable, whereby they can be transported in compact manner.

[0013] The container is usually elongate and extends from an underside to an upper side along a longitudinal axis. The folding or bending lines are preferably adapted to fold the container inward in a direction perpendicularly of the longitudinal axis. This in contrast to known inward foldable bottles, which are foldable inward in a vertical direction.

[0014] Further advantages can be gained if, after placing of the container in the frame, the rotation axis runs parallel to the longitudinal axis of the container. This results in a packaging which is foldable inward in the transverse direction. In a particularly advantageous embodiment the container and the frame can be folded inward and/or outward while the container is placed in the frame. Provision can be made here that as the frame folds inward and/or outward it engages the container such that this latter will itself also fold inward and/or outward due to the frame parts being rotated. It is however also possible that inward folding of the container requires a separate action by a user.

[0015] A highly symmetrical structure is obtained by placing the filling opening in the centre of the top side of the container. This simplifies stacking, and the placing of the filling opening on the upper side is usually a requirement for use of the container, for instance for the purpose of connection to a tap installation.

[0016] The container is at least partially supported on the upper side in that the filling opening is placed in a recess. For full support the first and second frame parts can comprise structures which can co-act after coupling for the purpose of supporting a container placed in the frame. These structures can for instance comprise transverse beams.

[0017] In an advantageous embodiment the first and second frame parts comprise elongate frame elements which extend parallel to the rotation axis and which are rotatably coupled along the rotation axis. On the upper side these frame elements are provided with the above stated recess for receiving the filling opening of the container. Because the two parts are coupled along the rotation axis, the underside of the frame forms a cross-like

support for the container to be placed.

[0018] In an embodiment of the frame the first frame part comprises a profile which can co-act with a profile on the second frame part such that, after coupling of the first and second frame parts, the two profiles form a hinge for the purpose of said in and outward folding of the frame. It is thus possible to define an inner and outer frame part, wherein the inner frame part is placed in the outer frame part.

[0019] The first and second frame parts can comprise structures on both sides of the rotation axis for repeated stacking of the assembly in the direction of the rotation axis. An example hereof is a projection on the upper side of the frame which engages in a recess in an underside of a subsequent frame placed at a higher position. It hereby becomes easy to stack the packages. A further or other measure entails the first and second frame parts comprising spacer elements in order to prevent containers of adjacent assemblies coming into contact with each other. This is particularly important when the filled containers extend outside the outer periphery of the frame. The use of spacer elements enlarges this outer periphery.

[0020] It is easy when the first and second frame parts comprise means for fixing the frame in the inward folded and/or outward folded position. Examples hereof are protrusions or projections which engage in recesses. The first frame part can thus be provided with a protrusion and the second frame part with two recesses which can co-act with the protrusion. A first recess corresponds to the inward folded position while a second recess corresponds to the outward folded position. It is possible to obtain locking by manufacturing the first and second frame parts from a slightly elastic material such as a plastic.

[0021] According to a second aspect, the object of the invention is achieved by means of a frame for holding a container for a liquid, comprising a first frame part coupled to a second frame part so as to form the frame, wherein the first and second frame parts are pivotable relative to each other along a rotation axis for the purpose of folding the frame in and outward, wherein in the outward folded position the frame defines a space in which the container can be received and in which position the first and/or the second frame part is provided with a recess in which the filling opening of the container can be placed. Such a frame can therefore be manufactured, marketed and used separately. The frame can further have characteristics as already mentioned above.

[0022] According to a third aspect, the object of the invention is achieved with a container for holding a liquid, wherein the container is elongate and extends from an underside to an upper side along a longitudinal axis and wherein the folding or bending lines are adapted to fold the container inward in a direction perpendicularly of the longitudinal axis. Compared to a bottle which is foldable inward in vertical direction, this bottle can be filled easily and retains its strength during use because, in contrast to the known bottle, it does not change dimension in vertical direction. This latter dimension usually corresponds to the distance between a connection to a tap installation and a ground surface.

[0023] It must be noted that the use of the words underside and upper side refer to the usual orientation of the container during normal use.

[0024] The invention will be discussed in more detail hereinbelow using the accompanying figures. The same reference numerals will be used here to designate the same or similar components. Different embodiments will be shown in the figures, in which:

Figure 1 is a schematic view of a preferred embodiment of the invention;
Figure 2 shows the individual components of the frame of figure 1 separately of each other;
Figures 3A-3C show the hinges of the frame of figure 1;
Figures 4A and 4B show respectively a schematic view and top view of the embodiment of figure 1 in inward folded position; and
Figures 5A-5C show a stacking of the embodiment of figure 1.

[0025] Figure 1 is a schematic view of an assembly according to the invention in the assembled state. Shown are frame parts 1, 2 which are coupled to form a frame. This frame defines a space in which a container 3 is received. Container 3 can be filled with a liquid such as wine, beer or soft drink by means of a filling opening 4. Figure 1 shows container 3 partially cut-away in order to indicate that container 3 can be provided with an inner bag 21 and outer bag 22, as will be discussed below.

[0026] Already known techniques can be applied to filling opening 4 to enable filling and emptying of the content of container 3. It is possible here to envisage separate connections or passages for air and liquid. Filling opening 4 can further be closed with a cap 23 which is shown with broken lines in figure 1.

[0027] Figure 2 shows the separate components of the frame. Recesses 5, 6 are shown here in respective frame parts 1, 2, through which filling opening 4 can be placed. Also shown are profiles 7, 8 in respective frame parts 1, 2, which after coupling can co-act to form a hinge 9, see also figures 3A-3C. The shown embodiment comprises such a hinge on the upper side and underside. Use is made on the underside of a locking ring 24. The terms upper side and underside are used in accordance with normal use of the assembly.

[0028] Both frame parts 1, 2 comprise structures, here in the form of curved structures 10, 11, for supporting a container 3 placed in the frame.

[0029] Frame parts 1, 2 are embodied in the form of elongate frame elements which after coupling are rotatable relative to each other along a shared rotation axis 12. In the shown embodiment filling opening 4 lies on this axis.

[0030] The operation of the assembly can be described as follows. The frame is first of all formed by coupling frame parts 1, 2. Container 3 is then placed in the frame by placing filling opening 4 into recesses 5, 6. Container 3 will then be supported by supporting structures 10, 11, preferably on both the upper side and the underside. After filling, container 3 can be closed with a cap 23 which fits on filling opening 4.

[0031] Once container 3 has been placed it can be filled with the desired liquid. In order to improve the shelf-life the container 3 preferably comprises an outer bag 22 having an inner bag 21 placed therein which is preferably covered with aluminium. Such an inner bag is known in the field and serves to isolate the liquid from oxygen.

[0032] Container 3 is provided with preformed folding or bending lines 13 along which the container can be folded inward and/or outward. These lines can be seen in, among others, figure 1, wherein it will be apparent that these lines serve to fold the container inward in a direction perpendicularly of rotation axis 12.

[0033] Because container 3 is flexible in the direction perpendicularly of rotation axis 12, it is easy to place container 3 in the frame. Frame parts 1, 2 and container 3 can be adapted to each other such that it is possible to place container 3 while the frame parts are in outward folded or inward folded position. It is likewise possible to embody frame parts 1, 2 and container 3 such that during rotation between an outward folded position and an inward folded position container 3 folds inward because frame parts 1, 2 engage container 3 in a direction perpendicularly of rotation axis 12. The opposite movement is also possible if a coupling is arranged between container 3 and frame parts 1, 2. During outward folding of the frame the frame parts 1, 2 could exert sufficient force on container 3 by means of the coupling in order to fold it outward.

[0034] Frame part 2 is provided with protrusions 17 which can engage in recesses 18 in frame part 1. It is possible by means of these structures to fix frame parts 1, 2 relative to each other in the outward folded position. Further protrusions can be provided in order to also fix the inward folded position.

[0035] Figures 4A and 4B show the embodiment of figure 1 in inward folded position. This results in the space-saving made possible with the assembly according to the invention. In addition to this advantage, there is also the option that the assembly according to the invention can be stacked with similar assemblies. This is related to the fact that rotation axis 12 and the associated inward folding direction of container 3, which lies perpendicularly of this axis, do not result in a weakening effect in the stacking direction corresponding to rotation axis 12.

[0036] Frame parts 1, 2 can be provided with structures on both sides of rotation axis 12 for repeated stacking of the assembly in the direction of rotation axis 12. In figures 5A-5C these structures are shown in the form of complementary protrusions 14 and recesses 15. The shown assembly also comprises spacer elements 16 to prevent containers of adjacent assemblies coming into contact with each other. By precisely adapting spacer elements 16, frame parts 1, 2 and container 3 to each other a maximum stacking can be obtained in both the height and width.

[0037] Container 3 is generally moulded from a suitable plastic such as polypropylene (PP). The inner bag present in container 3 is generally manufactured from polyethylene terephthalate (PET) and is provided with an aluminium cover layer on the side facing toward the liquid. The filling opening can be made from PP. This is also the case for frame parts 1, 2, which can be obtained by means of a known injection-moulding process.

[0038] Existing connecting systems can be applied for the purpose of filling and emptying container 3. Emptying and filling are carried out here such that the content is filled and emptied to the maximum.

[0039] The dimensions of frame parts 1, 2 are preferably adapted to the dimensions of the pallet on which they have to be transported. Such pallets usually have dimensions of 80 x 120 cm and 100 x 120 cm. Frame parts 1, 2 can further be provided with a handgrip 20 for gripping the assembly, see figure 1.

[0040] The present invention is discussed above with reference to inter alia embodiments thereof. It will be apparent to the skilled person that the invention is not limited thereto and that modifications are possible without departing from the scope of protection as defined by the appended claims.

Claims

1. Assembly for forming a packaging for a liquid, comprising:

   a first frame part which can be coupled to a second frame part so as to form a frame, wherein after coupling the first and second frame parts are pivotable relative to each other along a rotation axis for the purpose of folding the frame in and outward;
   a container for a liquid which is provided with a filling opening;
   wherein in the outward folded position the frame defines a space in which the container can be received and in which position the first and/or the second frame part is provided with a recess in which the filling opening of the container can be placed;
   wherein the container is elongate and extends from an underside to an upper side along a longitudinal axis, and wherein the folding or bending lines are adapted to fold the container inward and/or outward in a direction perpendicularly of the longitudinal axis.

2. Assembly as claimed in claim 1, wherein in the out-

ward folded position of the frame the recess for the filling opening lies substantially on the rotation axis.

3. Assembly as claimed in claim 1 or 2, wherein the container comprises preformed folding or bending lines along which the container can be folded inward and/or folded outward.

4. Assembly as claimed in any of the foregoing claims, wherein, after placing of the container in the frame, the rotation axis runs parallel to the longitudinal axis of the container.

5. Assembly as claimed in claim 4, wherein the container and the frame can be folded inward and/or outward while the container is placed in the frame.

6. Assembly as claimed in claim 4 or 5, wherein the filling opening is placed in the centre of the top side of the container.

7. Assembly as claimed in any of the foregoing claims, wherein the first and second frame parts comprise structures which can co-act after coupling for the purpose of supporting a container placed in the frame.

8. Assembly as claimed in any of the foregoing claims, wherein the first and second frame parts are elongate frame elements which extend parallel to the rotation axis and which are rotatably coupled along the rotation axis.

9. Assembly as claimed in any of the foregoing claims, wherein the first frame part comprises a profile which can co-act with a profile on the second frame part such that, after coupling of the first and second frame parts, the two profiles form a hinge for the purpose of said folding in and outward.

10. Assembly as claimed in any of the foregoing claims, wherein the first and second frame parts comprise structures on both sides of the rotation axis for repeated stacking of the assembly in the direction of the rotation axis.

11. Assembly as claimed in any of the foregoing claims, wherein the first and second frame parts comprise spacer elements in order to prevent containers of adjacent assemblies coming into contact with each other.

12. Assembly as claimed in any of the foregoing claims, wherein the first and second frame parts comprise means for fixing the frame in the inward folded and/or outward folded position.

13. Frame for holding a container for a liquid, comprising a first frame part coupled to a second frame part so as to form the frame, wherein the first and second frame parts are pivotable relative to each other along a rotation axis for the purpose of folding the frame in and outward, wherein in the outward folded position the frame defines a space in which the container can be received and in which position the first and/or the second frame part is provided with a recess in which the filling opening of the container can be placed,
wherein the frame is further **characterized by** a feature of any of the claims 1-12.

14. Container for holding a liquid as defined in claim 1.

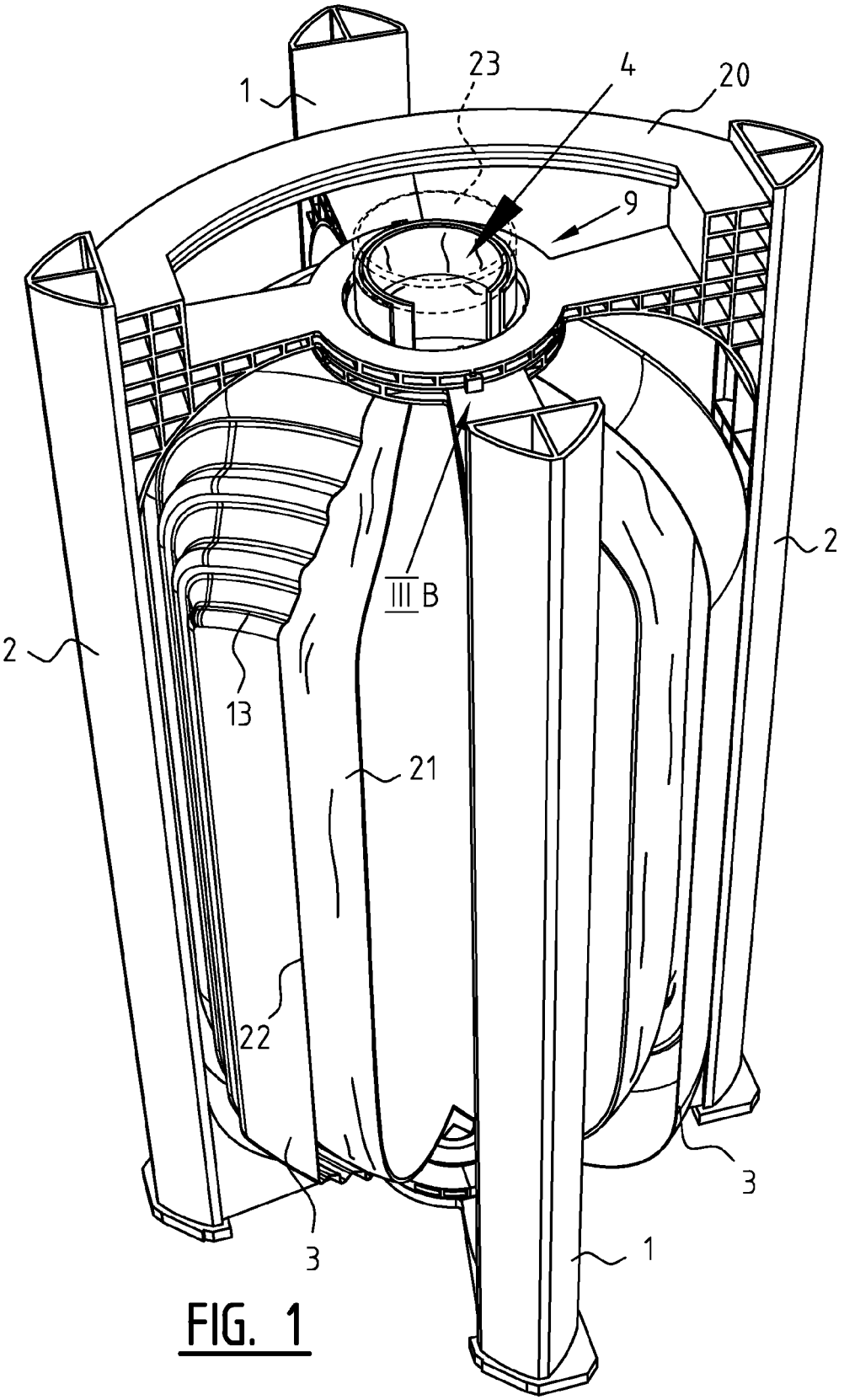


FIG. 1

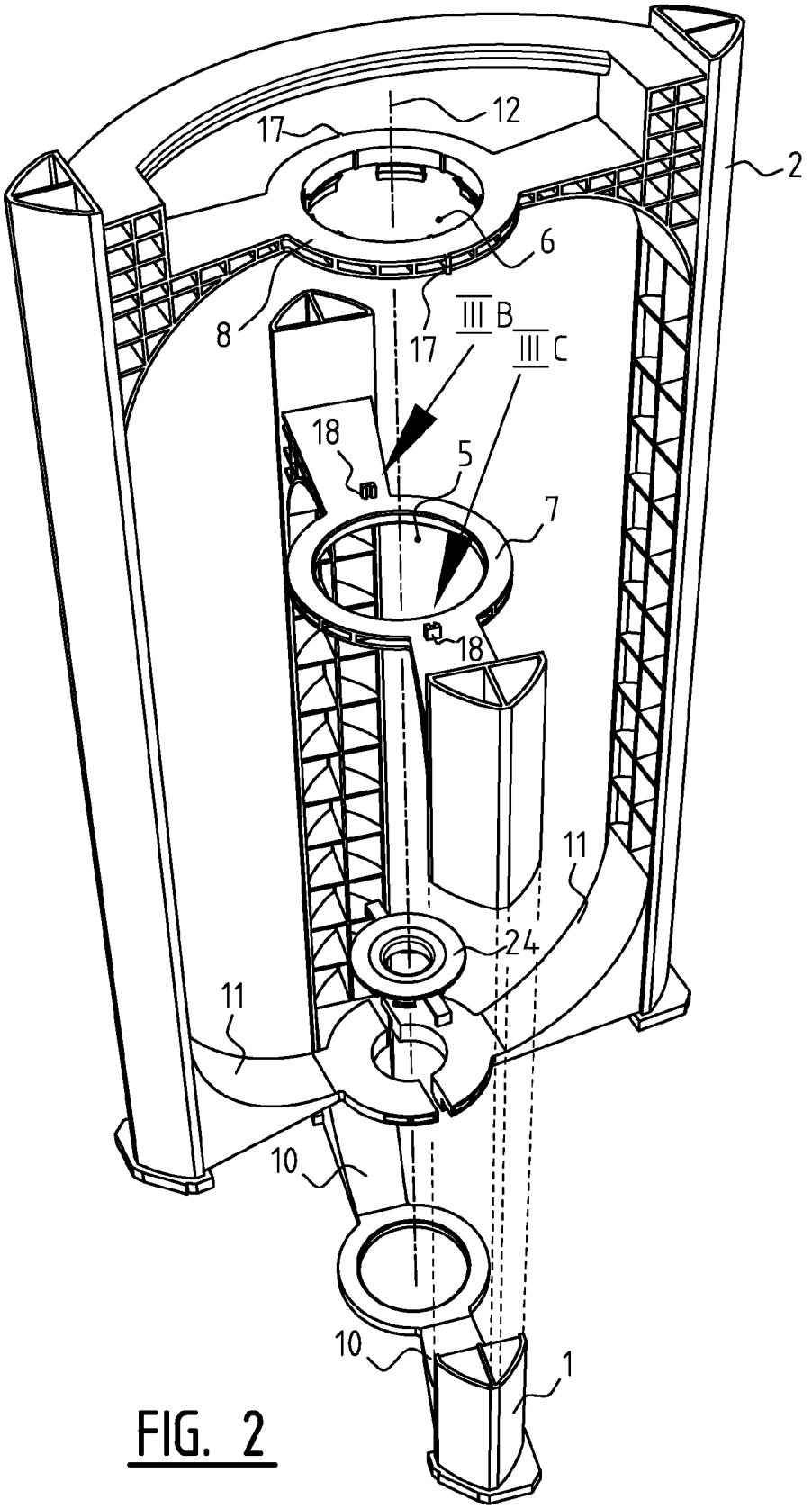


FIG. 2

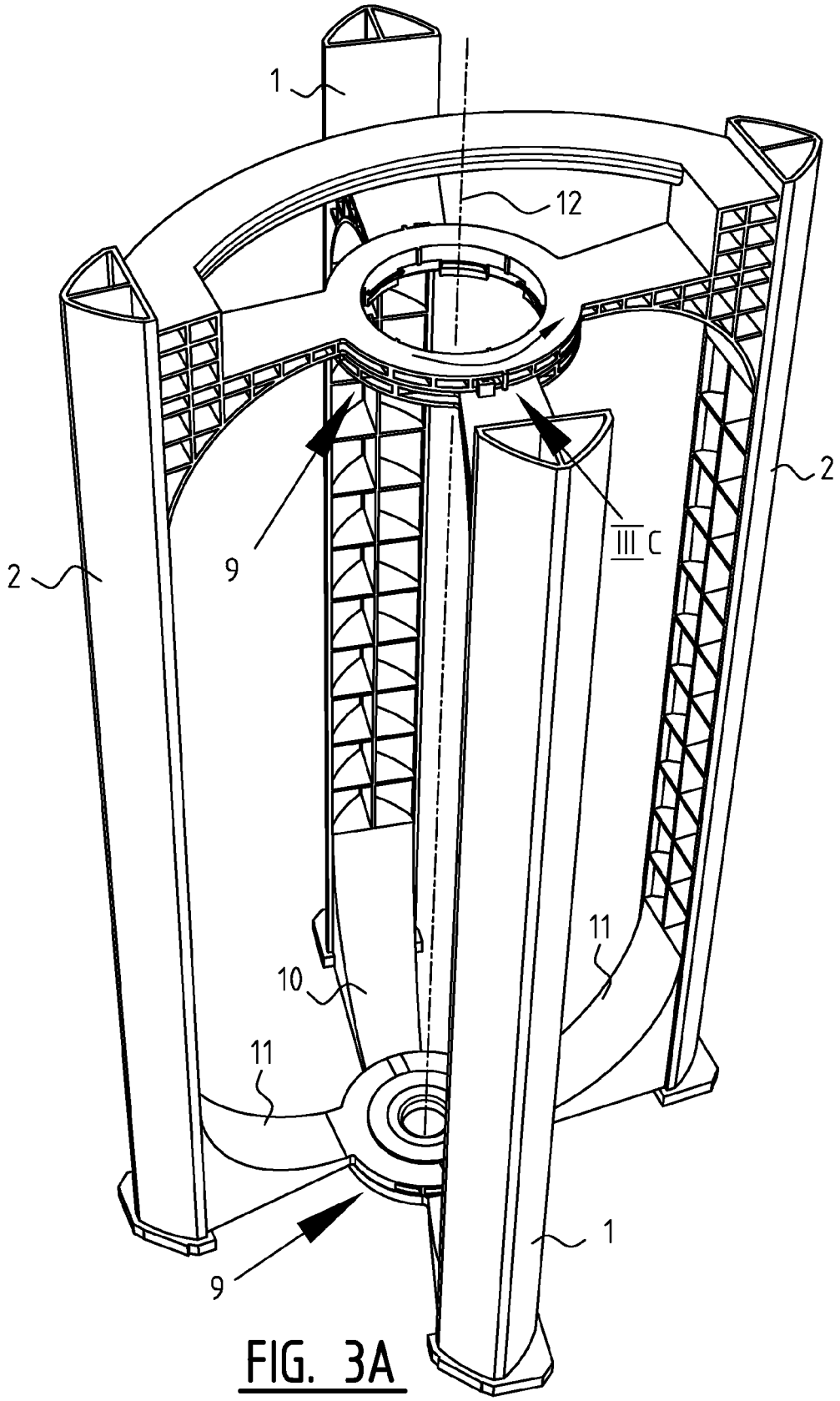


FIG. 3A

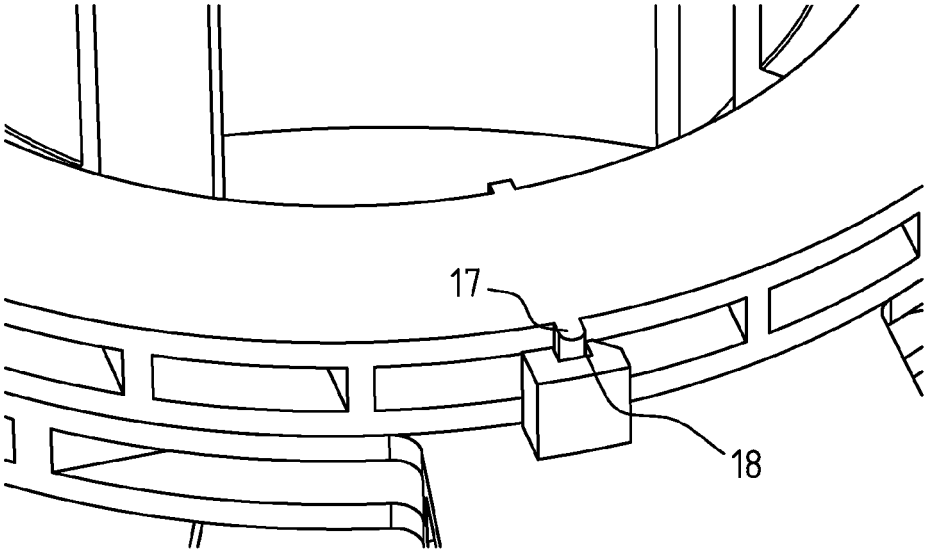


FIG. 3B

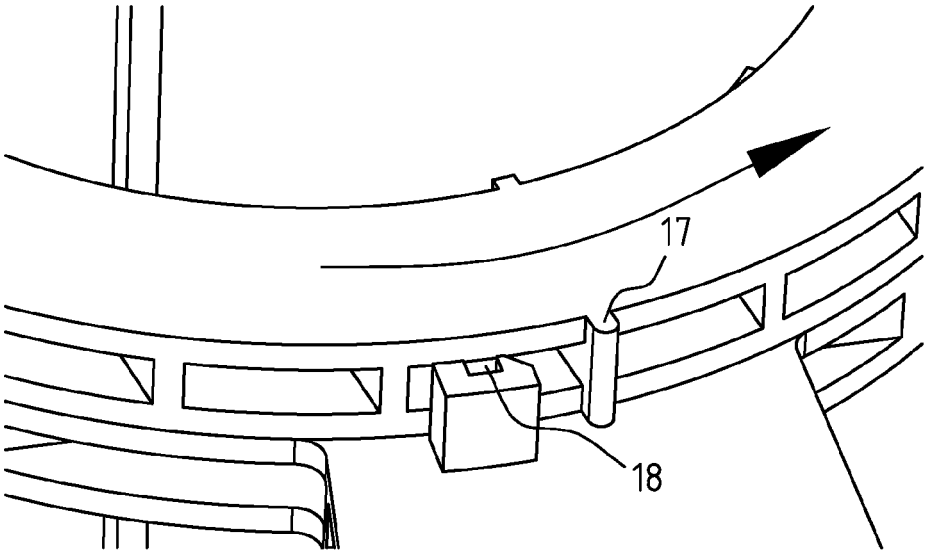


FIG. 3C

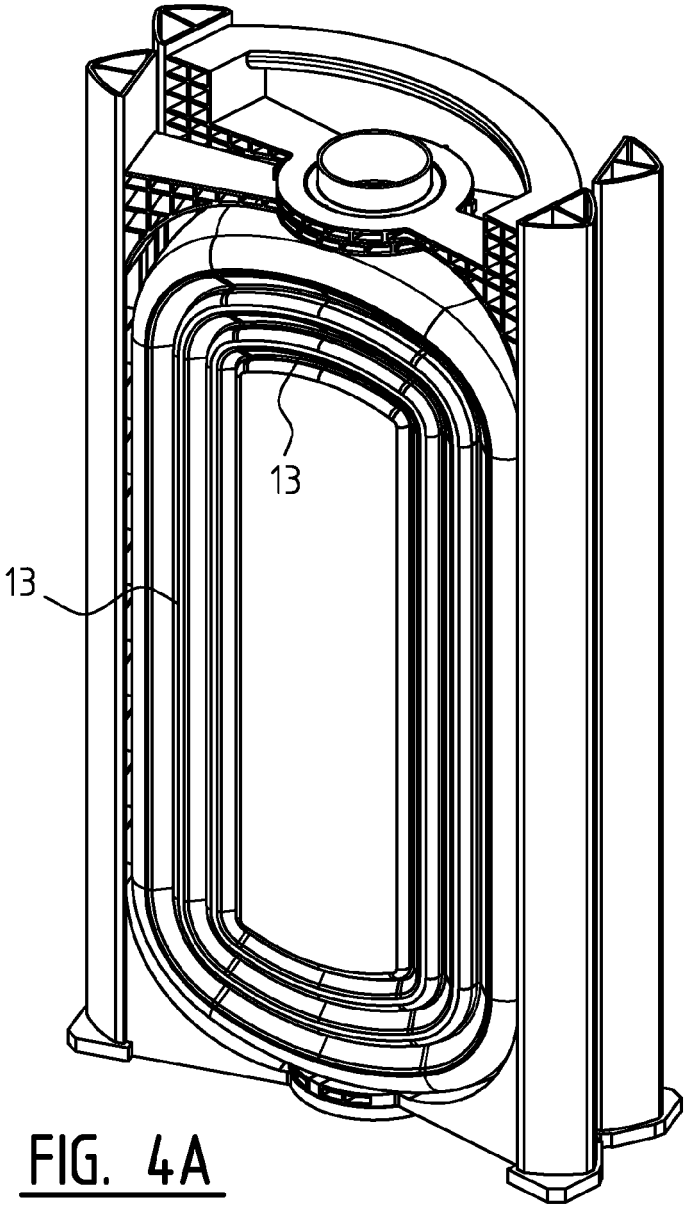


FIG. 4A

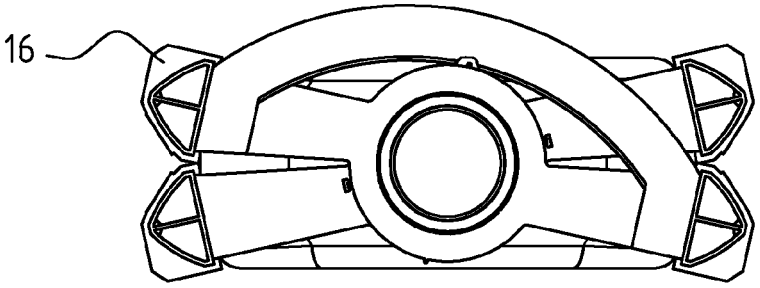


FIG. 4B

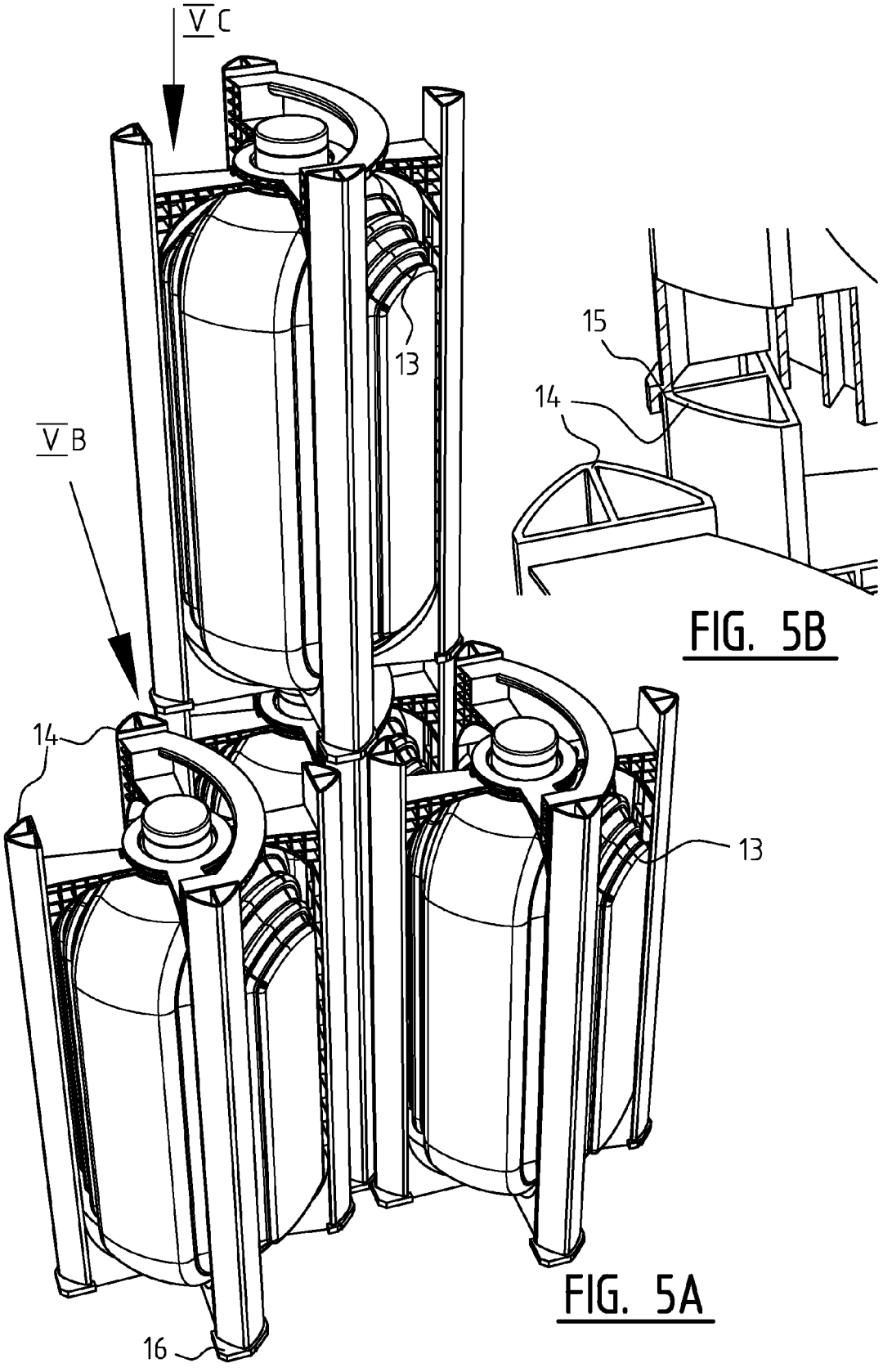


FIG. 5B

FIG. 5A

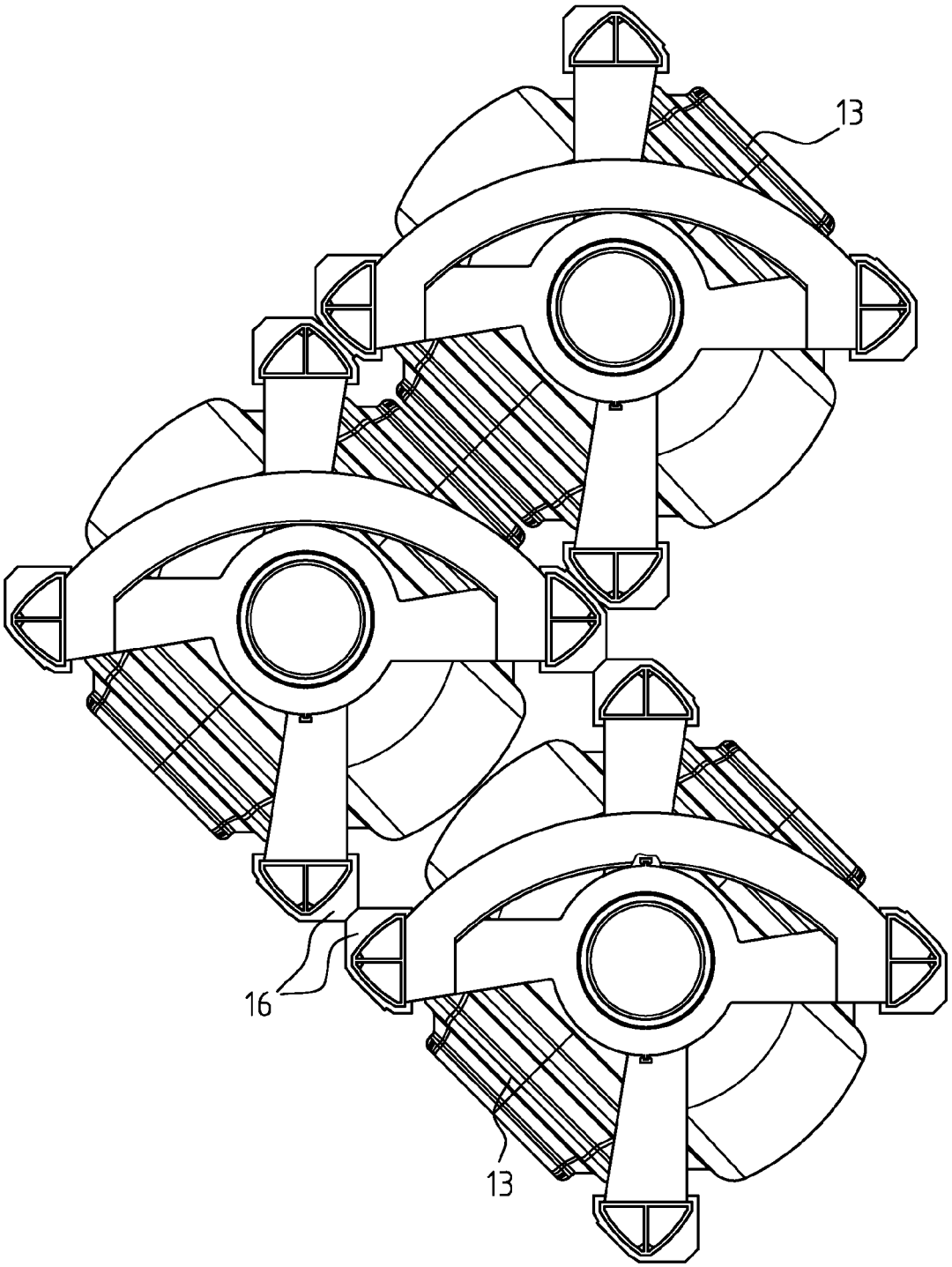


FIG. 5C