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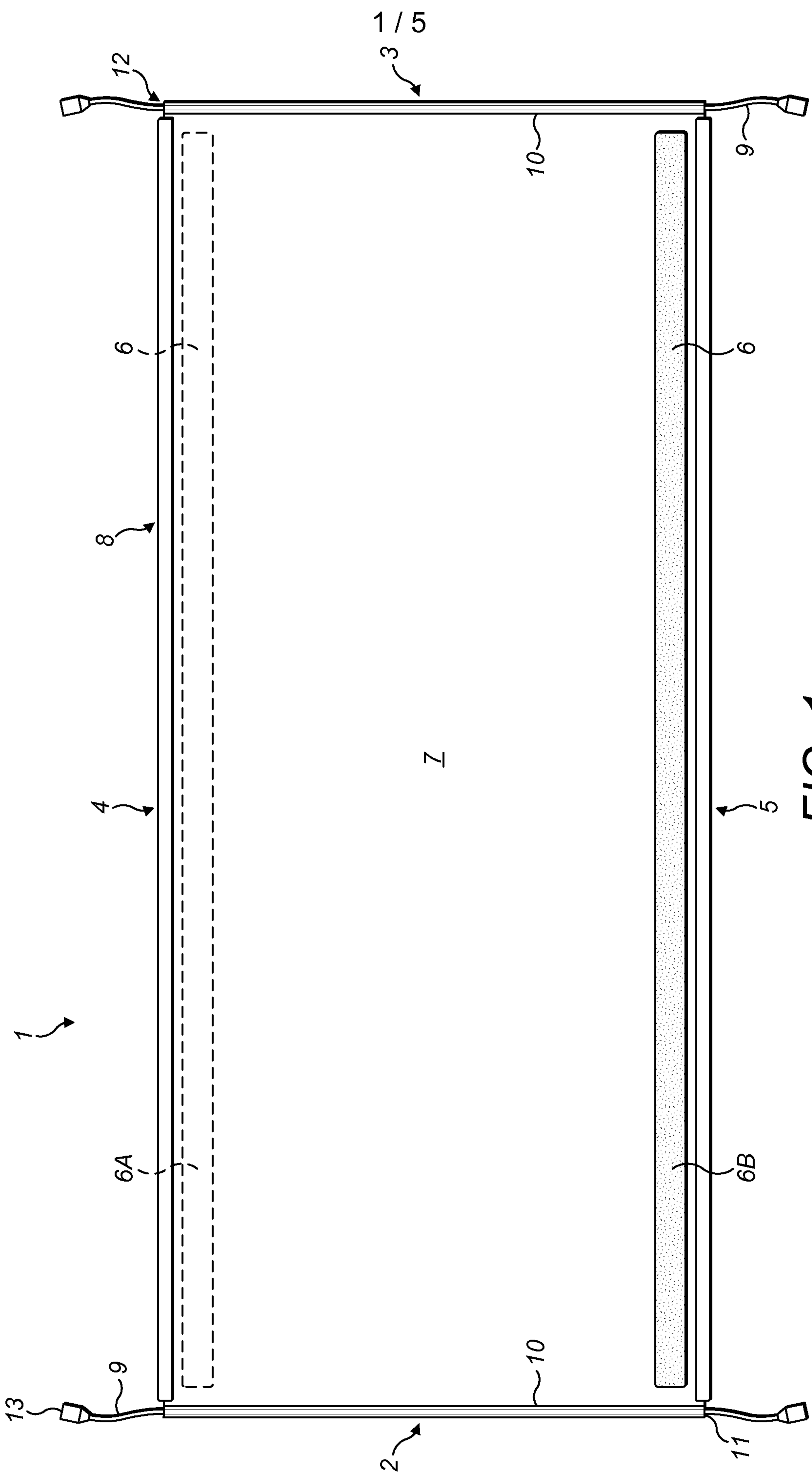


FIG. 1

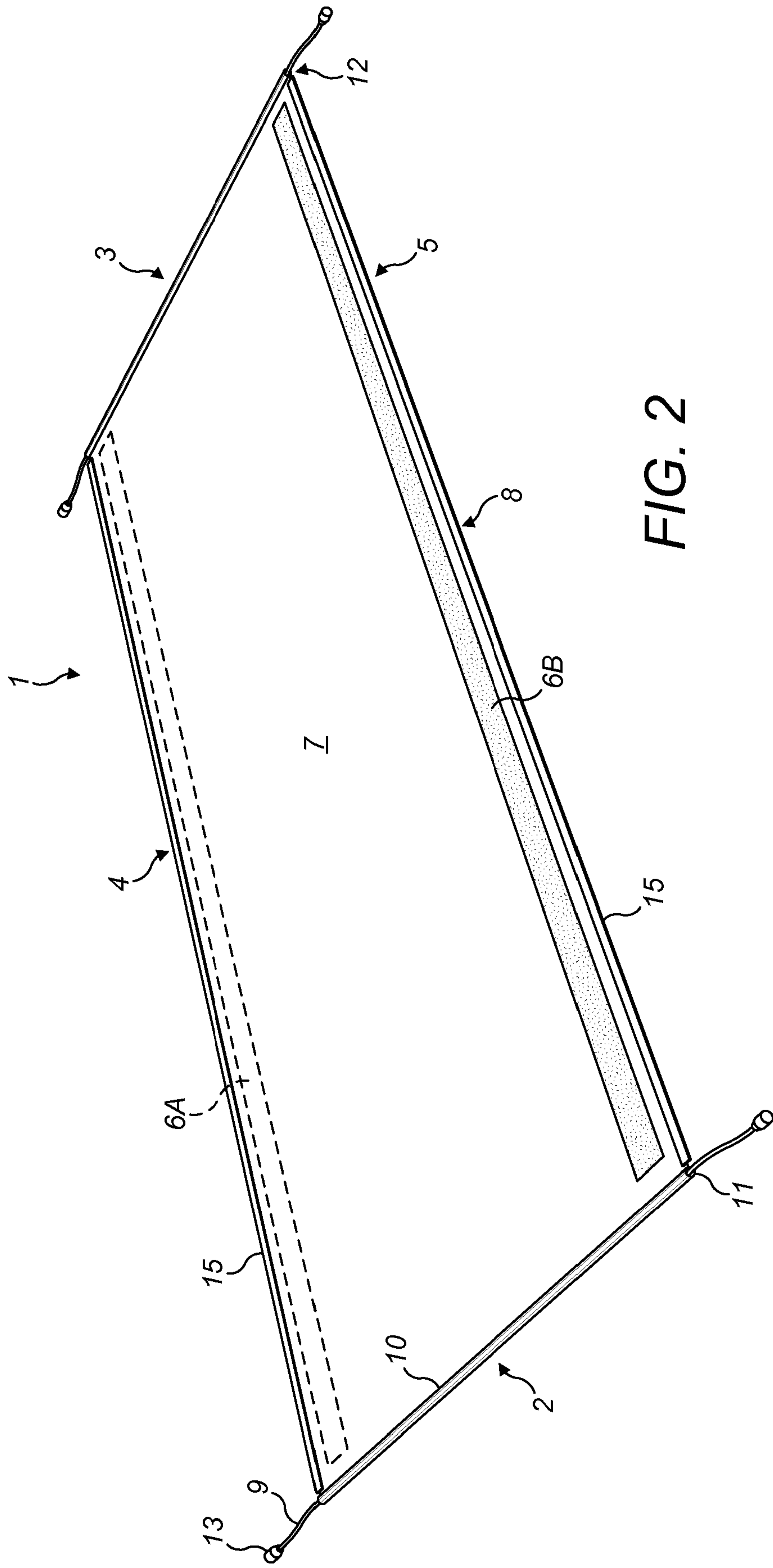


FIG. 2

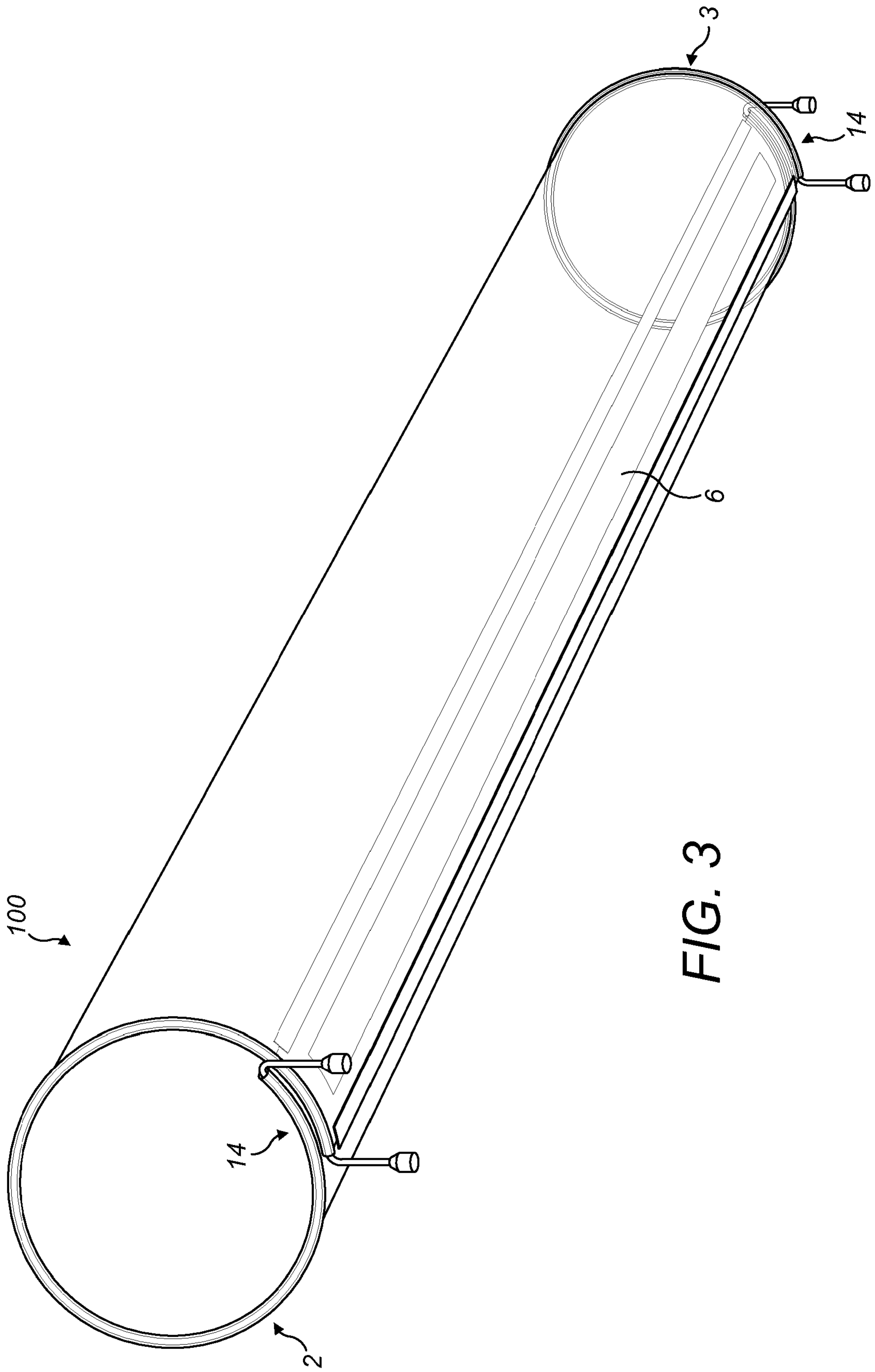


FIG. 3

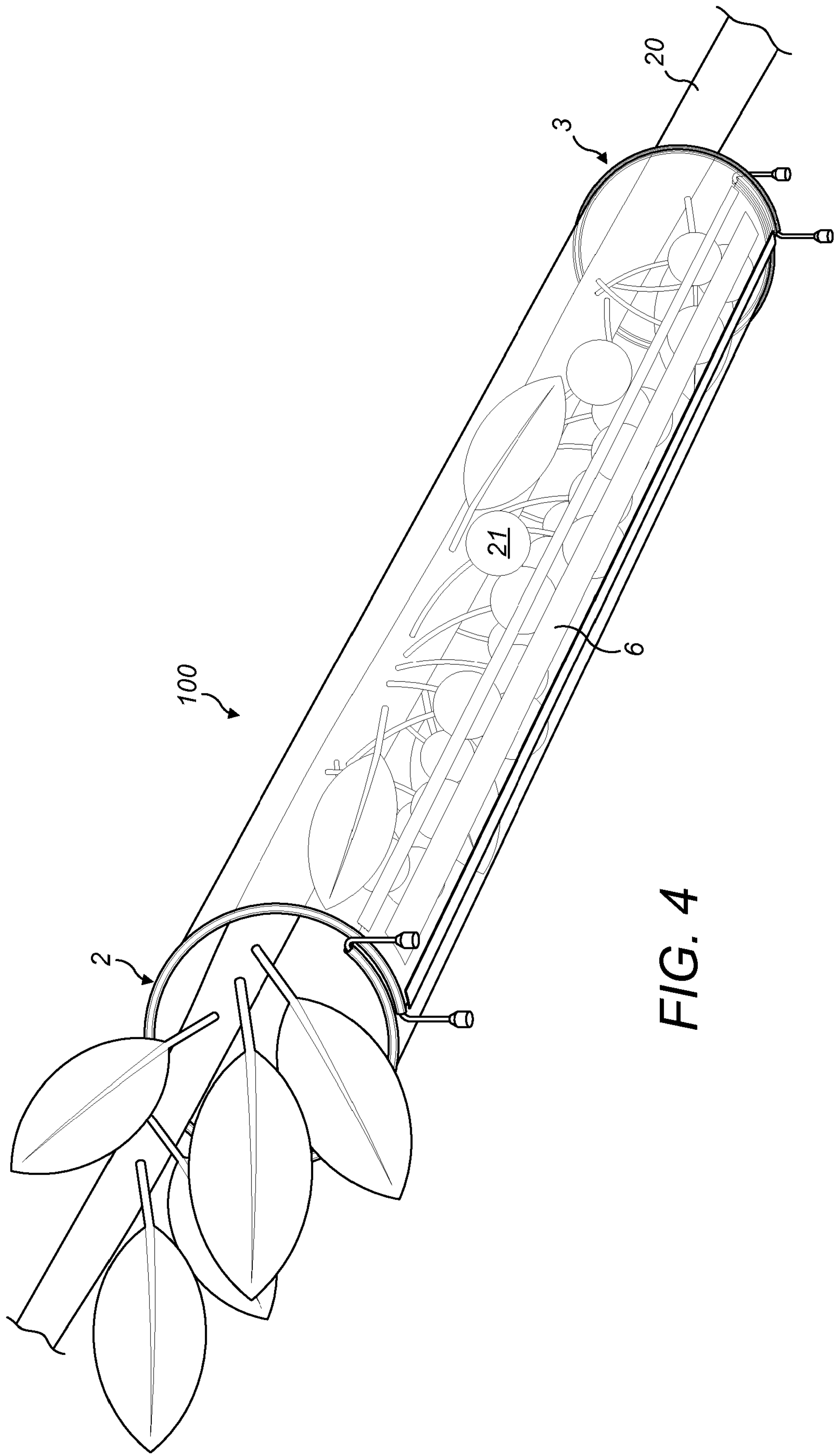


FIG. 4

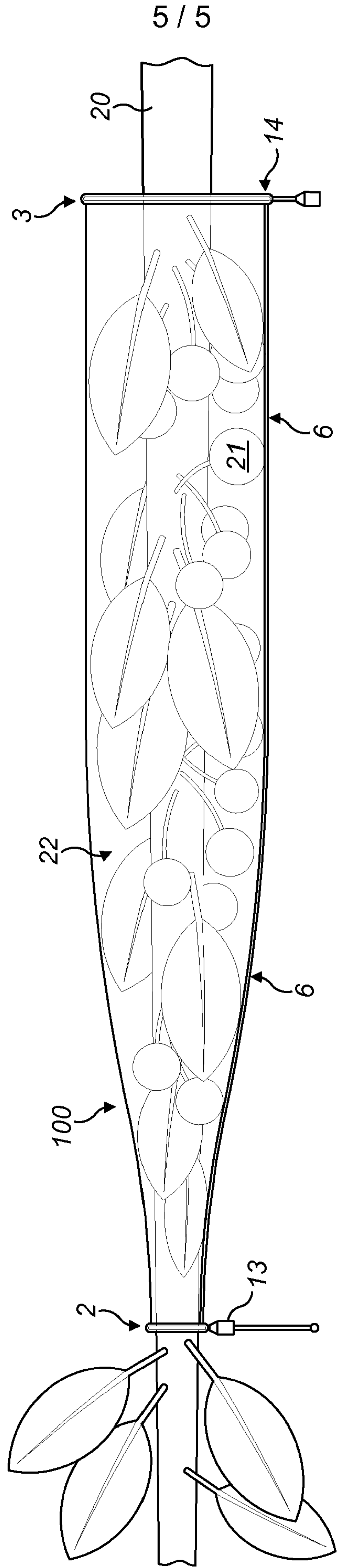


FIG. 5

An Apparatus for Protecting Fruit or Vegetable(s)

The present invention relates to an apparatus for protecting fruit or vegetable(s). The invention also relates to a method for manufacturing an apparatus
5 for protecting fruit or vegetable(s) and use of a tube-like protecting apparatus for protecting fruit or vegetable(s).

Presently, fruit and/or vegetables are very susceptible to damage from birds and/or insects. With particular reference to cherries, birds cause a lot of damage to ripe cherries before they can be picked and, often, many of the cherries are simply
10 eaten, or damaged and spoiled – for instance a flock of birds can strip a whole tree very quickly. Obviously, pesticides are known for control of insects. It is also known to use nets to prevent birds spoiling crops, etc. It is known to use nets over cherry trees (or other trees) and the net engulfs most, if not all of the tree. No selection is possible. Nets for preventing access to birds are not the same as nets for insects,
15 as insect control requires much smaller aperture size. No matter which nets are used, birds may be caught in the nets inadvertently, and this may cause death and/or distress. Further, pesticides have an impact on not only those insects which may cause damage to crops, but other non-damaging insects and, potentially, other wildlife. Neither pesticides nor existing nets provide an adequate solution.

20 DE202006002201 discloses an anti-larva net which has a mesh having holes whose diameter is smaller than 3mm. The net is mounted and overlapped around a fruit branch in an upper region thereof. Two open ends are tied around the fruit branch by means of binders. The overlapping part of the net is pegged with two or three laundry clips above or in the region of the branch. The net may take the shape
25 of a hose having two open ends which may be tied together by the binders around the fruit branch. A pressure catch strip or self-adhesive strip may also be appropriate. The disclosed invention incorporates various drawbacks in its design. The binders are separate from the net and do not secure ends / edges of the net. The overlapping part of the net in the main described embodiment is not secured
30 along its length, as only two or three clips are used. As the overlapping region is located approximately above the branch, it cannot function so as to enable checking or picking of the fruit.

The present invention is aimed at providing an improved non-pesticide way of controlling the effect of birds and/or insects on fruit or vegetable(s), in particular cherries.

5 According to a first aspect, the present invention provides an apparatus for protecting fruit or vegetable(s) on a plant from birds and/or insects, the apparatus comprises a panel arranged to be formable into a tube-like body, wherein the panel comprises an integrated fastener for securing the apparatus to said plant, around said fruit or vegetable(s), so as to protect said fruit or vegetable(s) from birds and/or
10 insects.

 Preferably, the integrated fastener is located so as to enable securing an end of said tube-like body of the apparatus to said plant.

 Preferably, an edge of the panel comprises an integrated fastener.

 Preferably, a lateral edge of the panel comprises an integrated fastener. The
15 integrated fastener may be at least partly secured within a seam of the panel. The integrated fastener may comprise a cord which may be tightened around said plant. Preferably, the cord further comprises a toggle for releasably securing the cord. Alternatively, the integrated fastener may comprise a strap and/or buckle
20 arrangement.

 Preferably, the panel comprises an integrated connecting strip or respective
25 parts thereof for forming the panel into said tube-like body. Most preferably, a longitudinal edge of the panel comprises an integrated connecting strip mounted thereon. The connecting strip may comprise a first and a second connection region mounted on opposed faces of the panel. Preferably, the connecting strip comprises
25 respective hook and loop fastener regions on opposed faces of the panel.

 Preferably, the panel is manufactured from a material comprising chiffon or voile. Most preferably, the chiffon or voile comprises polyester. Preferably, the panel comprises a synthetic mesh. Most preferably, the panel is translucent.

 Preferably, at least part of the integrated fastener is located in close proximity
30 to the connecting strip, so as to ensure a protected volume is bounded by the apparatus.

 The panel of material may comprises a Denier of about 100 to about 2000, preferably about 200 to about 1600 or about 200 to about 1000, where Denier is 1 gram per 9000 metres – which in tex is about 11.11 tex to about 222.22 tex. The

panel of material may be a mesh comprising about 12 holes per square centimetre to about 97 holes per square centimetre, preferably, about 20 holes per square centimetre to about 50 holes per square centimetre.

5 According to a further aspect, the present invention provides an apparatus for protecting fruit or vegetable(s) on a plant from birds and/or insects, the apparatus comprising a panel, wherein the panel comprises a fastener for securing the apparatus to said plant around said fruit or vegetable(s), so as to protect said fruit or vegetable(s) from birds and/or insects. This aspect of the invention may include one or more apparatus features as defined in relation to the first aspect.

10

According to a further aspect of the present invention, there is provided a method for manufacturing an apparatus for protecting fruit or vegetable(s) on a plant from birds and/or insects, the method comprising mounting a fastener for securing the apparatus to said plant, around said fruit or vegetable(s) to a panel arranged to be formable into a tube-like body.

15

Preferably, the method comprises mounting the fastener to an edge of the panel and, preferably, mounting the fastener to a lateral edge of the panel. Further preferably, the method comprises mounting the fastener at least partly within a seam of material. The method may include mounting an additional fastener to an opposing lateral edge of the panel.

20

The method comprises, preferably, mounting a connecting strip to a longitudinal edge of the panel. Most preferably, the method comprises mounting respective parts of a hook and loop connecting strip to opposing longitudinal edges of the panel and, may, further preferably comprise mounting respective parts of the hook and loop connecting strip to opposing faces of the panel.

25

The apparatus may include one or more apparatus features as defined in relation to the first aspect.

30 According to a further aspect of the present invention, there is provided a use of a tube-like protecting apparatus for protecting fruit or vegetable(s) on a plant from birds and/or insects, the use comprising:

locating the tube-like apparatus around the fruit or vegetable(s) on the plant;
and

securing the apparatus to the plant using a fastener integrated into the apparatus.

Preferably, the use comprises securing an end of the tube-like apparatus to the plant. Preferably, the use comprises securing another end of the tube-like apparatus to the plant.

Most preferably, the use comprises forming the tube-like apparatus around the plant and, further preferably, connecting longitudinal edges of a panel so as to form the tube-like apparatus.

The apparatus may include one or more apparatus features as defined in relation to the first aspect.

Advantageously, the arrangement of a connecting strip and parts of the integrated fastener beneath a branch provides both access to the inside of the apparatus from beneath the branch and the ability to secure the apparatus from beneath the branch. If properly sealed, the apparatus should pose a significant obstacle to insects gaining access to the fruit or vegetable(s). Panels made of synthetic fibres, especially polyester, have some degree of water repellence which aids to shield the fruit / vegetable(s) whilst maintaining the volume surrounding the fruit, which volume may otherwise collapse if the panel becomes waterlogged. The present invention provides a pesticide free solution to maximising the yield of cherries. An amount of translucency of the panel is perceived as advantageous. In particular, a white translucent panel is believed to provide good fruit. However, it can also be advantageous to manufacture the panel in other colours which may blend in more readily with the surroundings, for example light greens or light browns, or a leaf design may be used upon a white background. As specific branches of a tree or specific vegetable may be covered without covering the entire tree or plant in a net, sharing of the fruit or vegetable(s) between the grower and the birds can be accomplished. For example, with cherries, the grower could cover the majority of branches with an apparatus according to the invention but leave a couple of branches free for the birds. Nets have a tendency to catch birds and the bird can easily get tangled up in the net. By netting some branches of a tree and leaving others free, the birds are drawn towards the easy pickings and netted branches are left untouched. Advantageously, damage caused by blackfly, greenfly, wasps and birds is believed to be substantially reduced. Further, again, it is believed that rain

damage (splitting of the fruit) will be substantially reduced. It is further believed that cherries grown within nets of the present invention will be larger, heavier and/or sweeter; and have less insect, bird and/or rain damage. Further, it is believed that the incidence of less developed or poorly developed fruit will be reduced.

5 Additionally, fruit, for example cherries, once ripe may be picked as and when required, rather than having to harvest them all on the same day.

The invention will now be disclosed, by way of example only, with reference to the following drawings, in which:

10 Figure 1 is a plan view of a panel precursor of an apparatus for protecting fruit and/or vegetable(s);

Figure 2 is a perspective view of the panel of Figure 1;

Figure 3 is a perspective view of an apparatus for protecting fruit and/or vegetable(s);

15 Figure 4 is a perspective view of the apparatus of Figure 3 connected around a branch of a fruit tree; and

Figure 5 is a side elevation view of the apparatus of Figure 3 in a partly secured condition.

20 Figures 1 and 2 show a panel, identified generally by reference 1, which is a precursor and can be formed into a tube-like apparatus 100 for protecting fruit and/or vegetable(s) from birds and/or insects. The panel 1 is manufactured from polyester voile. The panel 1 is elongate having first and second lateral edges 2; 3, and first and second longitudinal edges 4; 5. The longitudinal edges 4; 5 are arranged so as
25 to be connected together to form the tube-like apparatus 100. As shown, the longitudinal edges 4; 5 include a connecting strip 6, in the form of respective hook fastener region 6A – provided towards edge 4 – and loop fastener region 6B – provided towards edge 5. As shown, the connecting strip 6 extends along the majority of the length of the edges 4; 5 so as to ensure a secure connection
30 therebetween. The loop fastener region 6B is provided on an upper-facing surface 7 of the panel 1 and the hook fastener region 6A is provided on a lower-facing surface 8 of the panel 1, facing away from the viewer in Figures 1 and 2 – although, obviously, this could be reversed. Each of the lateral edges 2; 3 includes a corded fastener 9 which is located within a seam 10 of the panel 1, at (or in the region of)

the edges 2; 3. The seam 10 extends across the width of the lateral edge 2; 3 such that apertures 11, providing access for the corded fastener 9 to the seam 10, are located in corner regions 12, where the lateral edges 2; 3 and the longitudinal edges 4; 5 intersect. Each of the apertures 11 are, therefore, located not far from the start of the connecting strip 6 so as to ensure a protected volume is provided in use. Each end of each corded fastener 9 includes a toggle 13. The toggle 13 is spring-loaded (not shown) and, upon depression against the spring, may be slid along the corded fastener 9 so as to enable securing an end of the panel 1 to a plant upon release of the spring. Alternatively, the ends of the corded fasteners 9 may be tied in a knot to achieve a similar effect; however, this is less preferred as knots may make removal harder, especially once weathered.

Further seams 15 may be provided along longitudinal edges 4; 5 so as to add strength and/or durability to the panel 1. The seams 15 may also provide the locality for alternative connecting strip(s), as described further below.

As shown in Figure 3, the panel 1, once rolled and connected along the connecting strip(s) 6; 6A; 6B, forms the tube-like apparatus 100. By connecting regions 6A and 6B together, a region of overlap 14 is formed which dictates the location of the apertures 11. As such, the corded fasteners 9 of each of the edges 2; 3 overlap beyond the regions 6A; 6B so as to provide a good seat for a knot or the toggles, and enable a strong connection of the end to the plant. Further, by reinforcing the region of the apertures 11 in this way, when the corded fastener 9 is tightened, less gathering of the material occurs in the region of the overlap 14 (when compared to a non-reinforced region), which helps maintain the orientation of the apparatus 100. The apparatus 100 may be formed as shown before location over a plant or *in situ*.

In use, as shown in Figures 4 and 5, the apparatus 100 is located around a branch 20 bearing fruit 21. Although the apparatus 100 may be formed in advance and then slid over the branch 20, it is preferable to form the apparatus 100 *in situ* around the branch 20. This is achieved by draping the panel of material over the branch 20 and connecting the fastener regions 6A; 6B together to form the tube-like apparatus 100 shown in Figure 4. The apparatus 100 extends along the length of the branch 20 bearing fruit 21 so as to, in principle, cover all of the fruit 21. As shown, the connecting strip 6 is oriented to lie beneath the fruit 21 and the branch 20, and so too are the toggles 13 and ends of the corded fasteners 9. This provides

easy access to the interior of the apparatus, to check the fruit or pick the fruit, etc., and also makes it easier for the corded fasteners 9 to be secured, as they are accessible from beneath the branch 20. Once the apparatus 100 is in the correct position covering the required fruit, it is secured to the branch 20 by sliding the
5 toggles 13 along each of the ends of the corded fasteners 9 to tighten them and gather the material of each of the lateral edges 2; 3 of the apparatus 100 together around their respective parts of the branch 20. Only lateral edge 2 is shown tightened around the branch 20, and this is shown as an example of how both edges 2 and 3 would be secured in use. The combination of secured edges 2; 3 and
10 connected longitudinal edges 4; 5 creates and defines an interior volume 22 within which is located part of the branch 20 and the fruit 21 to be protected, in which volume 22 the fruit is substantially protected from birds and/or insects. When a grower wishes to inspect their fruit 21 or pick the fruit 21, one needs only to pull apart the hook and loop regions 6A; 6B of the connecting strip 6 to gain access to the
15 protected volume 22. By doing this, the security of the edges 2; 3 is unaffected and the apparatus 100 remains securely fastened to the branch 20. After picking or checking, one may simply refasten the hook and loop regions 6A; 6B, so as to again provide a protected volume 22.

An apparatus for protecting fruit or vegetable(s) is believed to be best utilised
20 after pollination of the fruit / vegetable(s), although it does depend upon which fruit / vegetable(s) is/are to be protected. For instance, with cherries, the apparatus is believed to be best applied to a branch of the cherry tree after pollination and once the fruit has started to form, whilst small of, say, 1 centimetre in diameter.

The apparatus may be provided in various sizes and the following are
25 considered to be preferred sizes only. For instance, the panel may be around 0.5 metres to around 2.0 metres long, further preferably around 0.75 metres to around 1.5 metres long, and around 0.4 to around 0.5 metres wide before rolling. Preferably, the panel is approximately 1 metre long and approximately 0.45 metres wide.

30 By way of an alternative, before connecting the fastener regions 6A; 6B, one could secure the panel to the branch 20 using one of the corded fasteners 9. For more vertically oriented branches, this could be advantageous, especially if the uppermost corded fastener 9 is secured first, as one may then more easily connect

the fastener regions 6A; 6B and the opposing end without having to hold the panel 1 at the same time.

In a further alternative, instead of using regions of hook and loop fasteners, the seam 15 may include a form of zip or resealable plastics strip.

- 5 In a further alternative, instead of a corded fastener, a hook and loop assisted strap may be used, or a strap and buckle arrangement.

Claims:

1.) Use of an apparatus for protecting cherries on a cherry tree branch from birds and/or insects, the apparatus comprises a voile or chiffon panel of synthetic mesh having 20 holes per square centimetre to 50 holes per square centimetre, the panel arranged to be formable into a tube-like body, wherein the panel comprises:

a first integrated fastener for securing a first end of said tube-like body of the apparatus to the cherry tree branch;

a second integrated fastener for securing a second end of said tube-like body of the apparatus to the cherry tree branch; and

an integrated connecting strip or respective parts thereof for forming the panel into said tube-like body around the cherries, so as to protect, in use, the cherries from birds and/or insects,

wherein, the use comprises:

locating the tube-like body around the cherries on the branch;

securing a first end of the tube-like body to the branch; and

securing a second end of the tube-like body to the branch.

2.) Use as claimed in claim 1, wherein the chiffon or voile comprises polyester.

3.) Use as claimed in claim 1 or claim 2, wherein at least part of the first and/or second integrated fastener is located in close proximity to the connecting strip, so as to ensure a protected volume is bounded within the apparatus in use.

4.) Use as claimed in any preceding claim, wherein the first and/or second integrated fastener is at least partly secured within a seam of the panel.

5.) Use as claimed in claim 4, wherein the seam(s) extend(s) across the width of a lateral edge of the panel.

6.) Use as claimed in claim 5, wherein the seam(s) comprise apertures, for providing access for a cord to the seam, located in corner regions where lateral edges and longitudinal edges of the panel intersect.

7.) Use as claimed in any preceding claim, wherein the integrated fastener comprises a cord which may be tightened around the branch.

5 8.) Use as claimed in claim 7 wherein the cord further comprises a toggle for sliding along the cord and releasably securing the cord.

9.) Use as claimed in any preceding claim, wherein the connecting strip comprises a first and a second connection region mounted on opposed faces of the panel.

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10.) Use as claimed in claim 9, wherein the connecting strip comprises respective hook and loop fastener regions on opposed faces of the panel.

11.) Use as claimed in any preceding claim comprising either:
forming the panel into a tube-like body around the cherries, and then securing the first and second ends; or
forming the panel into the tube-like body before being slid over the cherries, and then securing the first and second ends.

15

12.) Use as claimed in any preceding claim comprising protecting the cherries after pollination, once the fruit has started to form.

13.) Use as claimed in any preceding claim comprising pulling apart the integrated connecting strip or respective parts thereof for inspecting or picking the cherries.

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14.) Use as claimed in any preceding claim comprising orientating the integrated connecting strip and the integrated fasteners to lie beneath the cherries and the branch for ease of access.

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