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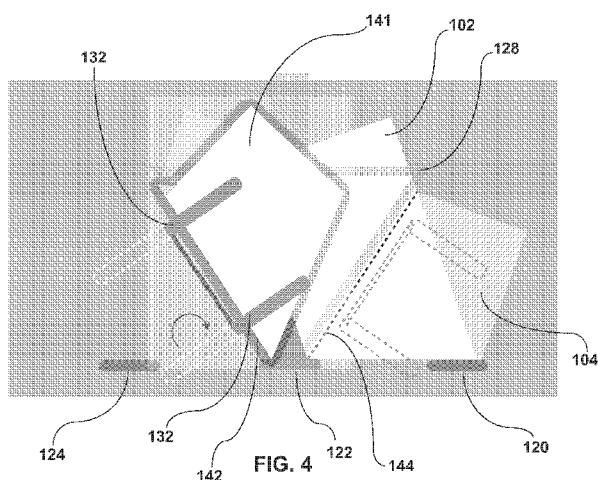
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(54) Title: METHOD AND SYSTEM FOR MAKING PRE-FOLDED AND PRE-SECURED FLOWER WRAPPING SHEETS



(57) Abstract: A method and system for making pre-folded and pre-secured flower wrapping sheets from first and second sheet portions. The method includes the steps of: loading the first and second sheet portions on a support surface; aligning a side of the first sheet portion and a side of the second sheet portion substantially flush with an edge of a guide; placing a folding member over the first and second sheet portions; folding a first section of the first and second sheet portions over a first aligning side of the folding member by engaging a first set of fingers; applying a fastening element to the first section of the first and second sheet portions; folding a second section of the first and second sheet portions over a second aligning side of the folding member by engaging a second set of fingers; and securing the second section of the first and second sheet portions to the first section of the first and second sheet portions with the fastening element. The system includes the guide, the folding member, and the first and second sets of fingers.



METHOD AND SYSTEM FOR MAKING PRE-FOLDED AND PRE-SECURED FLOWER WRAPPING SHEETS

5 FIELD OF THE DISCLOSURE

The disclosure relates to a method and system for folding and securing sheets of material for wrapping flowers, floral arrangements and plants.

BACKGROUND

10 Floral arrangements may be covered with sleeves or hand-wrapped in sheets of paper or film for protection and ornamentation. To wrap said floral arrangements in sheets, single sheets of paper or film are folded by hand around the floral arrangement. This process of hand wrapping sheets around the flower arrangements is time consuming and costly for the producer and consumer. As a result, flower packers use flower sleeves as they are reasonably economical
15 and less time consuming than hand-wrapping the flower arrangements.

SUMMARY OF THE DISCLOSURE

In accordance with an embodiment of the disclosure, a method for making a pre-folded and pre-secured flower wrap comprises: loading at least one substantially flat sheet of material on a
20 support surface, the at least one substantially flat sheet of material includes a first sheet portion and a second sheet portion; aligning a side of the first sheet portion and a side of the second sheet portion substantially flush with an edge of a guide disposed on the support surface; placing a folding member having a first aligning side and a second aligning side over the first and
25 second sheet portions; folding a first section of the first and second sheet portions over the first aligning side of the folding member by engaging a first plurality of fingers configured to be pivotably rotatable about an axis; applying a fastening element to the first section of the first and second sheet portions; folding a second section of the first and second sheet portions over the
30 second aligning side of the folding member by engaging a second plurality of fingers configured to be pivotably rotatable about an axis; securing the second section of the first and second sheet portions to the first section of the first and second sheet portions with the fastening element; and withdrawing the folding member and the first and second plurality of fingers away from the first and second sheet portions of material.

The system according to the disclosure comprises: at least one guide removably disposed on a support surface, the at least one guide having an substantially straight alignment surface for
35 aligning a side of the first sheet portion and a side of the second sheet portion; a folding member

having a first aligning side and a second aligning side; a first plurality of fingers engageable with a first section of the first and second sheet portions and configured to be pivotably rotatable about an axis; and a second plurality of fingers engageable with a second section of the first and second sheet portions and configured to be pivotably rotatable about an axis. Rotation of the first plurality of fingers folds the first section of the first and second sheet portions over the first aligning side of the folding member and rotation of the second plurality of fingers folds the second section of the first and second sheet portions over the second aligning side of the folding member.

The first and second sheet portions can be portions of a single unitary piece of the material. In this case, the single unitary piece of the material is folded along a width of the single unitary piece of the material prior to the aligning step. Alternatively, the first and second sheet portions are two separate sheets. In this case, the first sheet portion is stacked on top of the second sheet portion. The stacking can be done manually or by a machine or with the aid of a machine.

In some embodiments, the method also includes the step of securing the first and second sheet portions to one another along by applying a fastening element near the aligned sides of the first and second sheet portions. The securing step can be performed prior to the folding steps.

In some embodiments, the guide has a peaked portion opposite the edge of the guide. The guide can include a plurality of guide members, each of the plurality of guide members having an substantially straight alignment surface.

In some embodiments, the folding member is generally triangular in shape with a truncated apex and wherein the truncated apex rests substantially flush against the guide or one of the plurality of guide members.

The fastening element can be an adhesive, double-sided tape, mechanical fasteners, direct bonds or combinations thereof. The system can include an applicator for applying the fastening element.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the present disclosure, and the attendant advantages and features thereof, will be more readily understood by reference to the following detailed description when considered in conjunction with the accompanying drawings wherein:

FIG. 1 illustrates sheets of material to be used as wrapping in a first position in accordance with the disclosure;

FIG. 2 illustrates the sheets of material of FIG. 1 secured to one another in accordance with the disclosure;

FIG. 3 illustrates a generally triangular-shaped folding member placed over the sheets of material in accordance with the disclosure;

FIG. 4 illustrates an exemplary embodiment wherein a first section of the sheets of material is folded into a second, folded position by the plurality of fingers in accordance with the disclosure;

FIG. 5 illustrates the exemplary embodiment of FIG. 4 wherein fastening means is applied to the first section of the sheets of material as the sheets of material are in a second, folded position in accordance with the disclosure;

FIG. 6 illustrates the exemplary embodiment of FIG. 4 wherein a second section of the sheets of material is folded into a third, folded position by the plurality of fingers in accordance with the disclosure;

FIG. 7 illustrates the exemplary embodiment of FIG. 4 wherein the generally triangular-shaped member and the plurality of fingers are withdrawn from the sheets of material in accordance with the disclosure;

FIG. 8 illustrates the sheets of material secured in a third folded position--the final shape and appearance of the pre-folded and pre-secured flower wrapping sheets in accordance with the disclosure; and

FIG. 9 is a front view of a pre-folded and pre-secured flower wrapping sheet in accordance with the disclosure.

DETAILED DESCRIPTION OF THE DISCLOSURE

As required, detailed embodiments are disclosed herein; however, it is to be understood that the disclosed embodiments are merely examples and that the systems and methods described below can be embodied in various forms. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the present subject matter in virtually any appropriately detailed structure and function. Further, the terms and phrases used herein are not intended to be limiting, but rather, to provide an understandable description of the concepts.

The terms "a" or "an", as used herein, are defined as one or more than one. The term plurality, as used herein, is defined as two or more than two. The term another, as used herein, is defined as at least a second or more. The terms "including" and "having," as used herein, are defined as comprising (i.e., open language). The term "coupled," as used herein, is defined as "connected," although not necessarily directly, and not necessarily mechanically.

The method and system disclosed herein relates to the inventor's prior work, such as that set forth in U.S. Patent No. 7,396,320, the contents of which are herein incorporated in their entirety by reference.

The method for forming the first and second sheet of material 102, 104 into a flower wrapping is illustrated in FIGS. 1-7. This method facilitates the efficient manufacture of pre-folded and pre-secured wrapping sheets that may be used for flowers, flower arrangements, and plants. The pre-determined shape of the pre-folded and pre-secured wrapping sheets in the illustrated embodiments is generally conical in shape with overlapping layers of wrap, with an open top, an open bottom, a plurality of peaked or pointed sections. However, it is understood that other shapes and configurations of the pre-folded and pre-secured wrapping sheets are contemplated, for instance, a generally tubular, cylindrical, or prismatic shaped wrapping.

With reference to FIG. 1, a first sheet of material 102 and a second sheet of material 104 are illustrated in accordance with the present disclosure. The present disclosure contemplates that first and second sheets of material 102, 104 can be two separate sheets or that first and second sheets 102, 104 can be a single sheet of material, so that first sheet 102 is a first sheet portion of the single sheet of material and second sheet 104 is a second sheet portion of the single sheet of material.

The first and second sheet of material 102, 104 may be formed of any material which may be mutually adhered, and is selected with consideration given to the object(s)/item(s) to be contained, the conditions of the containment, and the cost of the object(s)/item(s). For containing living plants, for example flowers, it is advantageous if the first and second sheet of material 102, 104 are resistant to degradation due to moisture, and have sufficient strength to offer protection to delicate living structures. The first and second sheet of material 102, 104 may be formed of opaque or transparent material, and may be decorated by printing, embossing, reliefs, or perforations, on one or both sides of a sheet. Non-limiting examples of suitable materials include polymeric materials, including but not limited to polypropylene, BOPP (Biaxially Oriented Polypropylene), polystyrene, nylon, mylar, tyvek, cellophane, fabric, woven material, fibrous material, webbed material, paper, cardboard, metalized material, foil, metallic foil, foam, open cell foam, closed cell foam, and multilayer materials comprising any combination of materials. One or both of the first and second sheet of material 102, 104 may be formed of a biodegradable material, for example a polylactide (PLA) material. The first and second sheet of material 102, 104 may be printed with an arbitrary, repeating, or representational predetermined pattern, or any image or indicia.

As shown in FIG. 1, the first and second sheets of material 102, 104 have the same (or similar) shape. One exemplary shape is a bottom that is straight with first and second sides that

extend perpendicular from opposite ends of the bottom. As the first side is longer than the second side, the top angles down toward the bottom from opposite ends.

In accordance with the method according to the disclosure, the first and second sheet of material 102, 104 are placed on a substantially flat (and preferably horizontal) work surface such as a workbench or a table. As illustrated in FIG. 1, the first and second sheet of material 102, 104 may be manually stacked on top of one another in a first position wherein both sheets are substantially flat. In the embodiment in which first sheet portion 102 and second sheet portion 104 of a single sheet of material is used, the single sheet of material is folded (rather than stacked) as shown in FIG. 1. In all embodiments, the bottom portions of the first and second sheet of material 102, 104 are aligned flush with a set of guide members 120, 122, 124 while the first and second sheet of material 102, 104 are in the first position.

Although the portion opposite the aligning surface (substantially straight) of guide members 120, 122, 124 may comprise a plurality of peaked or pointed sections for creating an irregular shape on the top portion of the flower wrapping, it is understood that alternate geometric shapes and patterns are possible. Further, although FIG. 2 shows guide members 120, 122, 124 as having the same shape, the present disclosure contemplates that guide members 120, 122, 124 can have different shapes. In another embodiment, the first and second sheet of material 102, 104 may be mechanically fed and mechanically aligned with the set of guide members 120, 122, 124. In this regard, any known mechanical automated (or user activated) means for handling first and second sheets of material 102, 104 can be used. Non-limiting examples include a robotic or haptic arm and suction devices capable of picking up the first and second sheets of material 102, 104.

As illustrated in FIG. 2, while the first and second sheet of material 102, 104 are in the first position, they are secured to one another by fastening means 140. The fastening means 140 may be applied between and along the bottom portion of the first and second sheet of material 102, 104 as illustrated in FIG. 2. Any fastening means capable of bonding the two sheets of material 102, 104 may be used, for instance: ultrasonic welding, adhesives, double-sided tape, mechanical fasteners, direct bonds and combinations thereof.

As illustrated in FIG. 3, a folding member 128, generally triangular in shape is placed over the first and second sheet of material 102, 104. The apex of generally triangular shaped folding member 128 is truncated so that a top portion of folding member 128 can rest substantially flush against guide member 122. The folding member 128 prevents shifting of the first and second sheet of material 102, 104 on the work surface and further provides a template for folding said sheets 102, 104 into a generally conical shape. In this regard, FIG. 3 illustrates the first fold line 142 along a first side of the folding member 128 and the second fold line 144 along a second

side of the folding member 128. Use of folding member 128 means that it is not necessary to score or otherwise provide indicia on sheets 102, 104 to show where the folding should occur. With folding member 128, reproducible and consistent folds can be made without scoring or any indicia. Although the folding member 128 is generally triangular in shape, it is to be understood
5 that other shapes and sizes are contemplated herein and generally depend upon the desired final size and shape of the wrapping. In other embodiments, the folding member 128 may be configured to be interchangeable with other folding members (not shown).

Referring now to FIG. 4, a first section of the first and second sheet of material 102, 104 is folded along the first fold line 142 defined by the triangular folding member 128 into a second,
10 folded position. In the embodiment of FIG. 4, a first section 141 of the first and second sheet of material 102, 104 is folded from the first position to the second, folded position by a first plurality of fingers 132. It is understood, however, that in other embodiments of the disclosure the first and second sheet of material 102, 104 may be folded along the first fold line 142 without the plurality of fingers 132. The plurality of fingers 132 are configured to be pivotably
15 rotatable about an axis from a first position to a second position. In one embodiment, the rotation from the first position to the second position is 180 degrees. The plurality of fingers 132 may be further configured to be independently adjustable so that the fingers can be held at different angles. In yet other embodiments, the plurality of fingers 132 may further be independently manipulated over the work surface and positionable as desired by the user. In this
20 regard, FIG. 7 illustrates the plurality of fingers 132 configured to be slidable along a forward and back sliding direction in relation to the first and second sheet of material 102, 104. In other embodiments, the plurality of fingers 132 may be configured to have an adjustable length or be of varying lengths to accommodate different sizes of sheets of material.

A fastening means 146 is thereafter applied to the first section 141 of the first and second
25 sheet of material 102, 104 as the sheets of material are in a second, folded position. The fastening means 146 may be generally applied along the center of the first section 141 as illustrated in FIG. 5. As previously stated, any fastening means capable of bonding the sheets of material may be used, for instance: ultrasonic welding, adhesives, double-sided tape, mechanical fasteners, direct bonds and combinations thereof.

In a like manner, a second section 143 of the first and second sheet of material 102, 104 is folded along the second fold line 144 defined by the triangular folding member 128 into a third
30 and final, folded position. In the embodiment of FIG. 6, a second section 143 of the first and second sheet of material 102, 104 is folded from a second, folded position to a third, folded position by a second plurality of fingers 133. As previously stated, the fingers 133 are pivotably
35 rotated about an axis from a first position to a second position. In the third, folded position, as

the first section 141 and the second section 143 of the first and second sheet of material 102, 104 overlap, the fastening means 146 applied to the first section 141 secures the first and second section 143 of the first and second sheet of material to one another.

As was the case with the first plurality of fingers 132, it is understood, however, that in
5 other embodiments of the disclosure the first and second sheet of material 102, 104 may be folded along the second fold line 144 without the second plurality of fingers 133. In one embodiment, the rotation of the second plurality of fingers 133 from the first position to the second position is 180 degrees. The plurality of fingers 133 may be further configured to be independently adjustable so that the fingers can be held at different angles. In yet other
10 embodiments, the plurality of fingers 133 may further be independently manipulated over the work surface and positionable as desired by the user. In this regard, the plurality of fingers 133 can be configured to be slidable along a forward and back sliding direction in relation to the first and second sheet of material 102, 104. In other embodiments, the plurality of fingers 133 may be configured to have an adjustable length or be of varying lengths to accommodate different sizes
15 of sheets of material.

Although two independent plurality of fingers 132, 133 are shown, the disclosure contemplates that the plurality of fingers can be coupled together. The disclosure also contemplates that a single set of plurality of fingers can be used, first moving the plurality of fingers to one side of the folding member 128 and then moving the plurality of fingers to the
20 other side of the folding member 128.

As shown in FIG. 7, the triangular-shaped folding member 128 and the plurality of fingers 132, 133 may be then withdrawn from the folded and secured first and second sheet of material 102, 104. An embodiment of the final shape and appearance of the pre-folded and pre-secured wrapping sheets 150 is illustrated in FIGS. 8 and 9.

As previously discussed, it is to be understood that the amount of sheets of material is not
25 limited to two sheets (i.e. the first and second sheet of material 102, 104) and may thus vary depending on the desired construction and appearance of the wrapping. More than two sheets of material may be used for a more elaborate wrapping, while as few as one single sheet of material may be used to create the flower wrapping. In this regard, although the wrapping appears as
30 comprising multiple overlapping layers of wrap, the wrapping may be of simpler design and comprise of a single sheet of material.

As the method of assembly described herein primarily comprises of a series of folding steps and a series of fastening steps, in an embodiment of the disclosure, the method of making the sheets of material 102, 104 into wrapping may be carried out in two separate processes. In
35 this regard, it is contemplated that the series of folding steps creates a bottleneck in the assembly

of the wrapping since a longer time period is contemplated for this series of steps. As such, in an embodiment of the disclosure, the method of assembly may be carried out in separate stations. In yet other embodiments, the method of assembly may be carried out in a plurality of separate stations wherein a greater number of stations are allocated to the series of folding steps. In yet
5 other embodiments, the method of assembly may be carried out at separate times, wherein the series of folding steps are carried out for the desired number of wrapping at a separate point in time than the series of fastening steps so as to reduce the bottleneck created in the assembly due to the series of folding steps.

It is contemplated that all of the folding and fastening steps can be done manually, with the
10 aid of guides 120, 122, 124, folding member 128, and plurality of fingers 133, 134. It is also contemplated that at least some of the folding and fastening steps can be done by a machine or with the assistance of a machine.

By using the method and system of the present disclosure, the production line assembly for wrapping flowers is facilitated and a large number of pre-folded and pre-secured flower
15 wrapping sheets can be produced having a similar appearance than that of the hand-wrapped flower arrangement. The present disclosure may be useful to flower packers during holidays that have high-demand for flowers as they may not have time to hand-wrap all ordered flower arrangements. Furthermore, the present disclosure allows to produce this product at a reasonable and cost-effective manner that is comparable to the cost of producing a flower sleeve.

20 All references cited herein are expressly incorporated by reference in their entirety. It will be appreciated by persons skilled in the art that the present disclosure is not limited to what has been particularly shown and described herein above. In addition, unless mention was made above to the contrary, it should be noted that all of the accompanying drawings are not to scale. There are many different features to the present disclosure and it is contemplated that these
25 features may be used together or separately. Thus, the disclosure should not be limited to any particular combination of features or to a particular application of the disclosure. Further, it should be understood that variations and modifications within the spirit and scope of the disclosure might occur to those skilled in the art to which the disclosure pertains. Accordingly, all expedient modifications readily attainable by one versed in the art from the disclosure set
30 forth herein that are within the scope and spirit of the present disclosure are to be included as further embodiments of the present disclosure.

THE CLAIMS

What is claimed is:

- 5 1. A method for making a pre-folded and pre-secured flower wrap, the method comprising the steps of:
 - loading at least one substantially flat sheet of material on a support surface, the at least one substantially flat sheet of material including a first sheet portion and a second sheet portion;
 - aligning a side of the first sheet portion and a side of the second sheet portion substantially
 - 10 flush with an edge of a guide disposed on the support surface;
 - placing a folding member having a first aligning side and a second aligning side over the first and second sheet portions;
 - folding a first section of the first and second sheet portions over the first aligning side of the folding member by engaging a first plurality of fingers configured to be pivotably rotatable
 - 15 about an axis;
 - applying a fastening element to the first section of the first and second sheet portions;
 - folding a second section of the first and second sheet portions over the second aligning side of the folding member by engaging a second plurality of fingers configured to be pivotably rotatable about an axis;
 - 20 securing the second section of the first and second sheet portions to the first section of the first and second sheet portions with the fastening element;
 - withdrawing the folding member and the first and second plurality of fingers away from the first and second sheet portions of material.
- 25 2. The method of claim 1, wherein the first and second sheet portions are portion of a single unitary piece of the material.
3. The method of claim 2, further comprising folding the single unitary piece of the material along a width of the single unitary piece of the material prior to the aligning step.
- 30 4. The method of claim 1, wherein the first and second sheet portions are two separate sheets.
5. The method of claim 4, wherein the first sheet portion is stacked on top of the second sheet portion.

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6. The method of claim 5, wherein the first sheet portion is manually stacked on top of the second sheet portion.
7. The method of any one of the previous claims, further comprising the step of securing the first and second sheet portions to one another along by applying a fastening element near the aligned sides of the first and second sheet portions.
8. The method of claim 7 wherein the securing step is performed prior to the folding steps.
9. The method of any one of the previous claims, wherein the guide has a peaked portion opposite the edge of the guide.
10. The method of any one of the previous claims, wherein the guide includes a plurality of guide members, each of the plurality of guide members having an substantially straight alignment surface.
11. The method of claim 10, wherein each of the guide members has a peaked portion opposite the substantially straight alignment surface.
12. The method of any one of the previous claims, wherein the folding member is generally triangular in shape with a truncated apex and wherein the truncated apex rests substantially flush against the guide or one of the plurality of guide members.
13. The method of any one of the previous claims, wherein the fastening element is adhesive, double-sided tape, mechanical fasteners, direct bonds or combinations thereof.
14. A system for making a pre-folded and pre-secured flower wrap from a first sheet portion and a second sheet portion, the system comprising:
- at least one guide removably disposed on a support surface, the at least one guide having an substantially straight alignment surface for aligning a side of the first sheet portion and a side of the second sheet portion;
 - a folding member having a first aligning side and a second aligning side;
 - a first plurality of fingers engageable with a first section of the first and second sheet portions and configured to be pivotably rotatable about an axis; and

a second plurality of fingers engageable with a second section of the first and second sheet portions and configured to be pivotably rotatable about an axis,
wherein rotation of the first plurality of fingers folds the first section of the first and second sheet portions over the first aligning side of the folding member and wherein rotation of the
5 second plurality of fingers folds the second section of the first and second sheet portions over the second aligning side of the folding member.

15 15. The system of claim 14, further comprising an applicator for applying a fastening element to the first section of the first and second sheet portions to thereby secure the second section of the first and second sheet portions to the first section of the first and second sheet portions after
10 folding the first section of the first and second sheet portions over the first aligning side of the folding member and after folding the second section of the first and second sheet portions over the second aligning side of the folding member.

15 16. The system of claim 14 or 15 further comprising a support surface for supporting the first and second sheet portions in a substantially flat position.

17. The system of any one of claims 14-16, wherein the first and second sheet portions are
20 portion of a single unitary piece of the material.

18. The system of any one of claims 14-16, wherein the first and second sheet portions are two separate sheets.

19. The system of any one of claims 14-18, wherein the at least one guide has a peaked portion
25 opposite the substantially straight alignment surface.

20. The system of any one of claims 14-18, wherein the at least one guide includes a plurality of guide members, each of the plurality of guide members having an substantially straight alignment surface.

30 21. The system of claim 20, wherein each of the guide members has a peaked portion opposite the substantially straight alignment surface.

22. The system of any one of claims 14-21, wherein the folding member is generally triangular in shape with a truncated apex and wherein the truncated apex rests substantially flush against the at least one guide or one of the plurality of guide members.

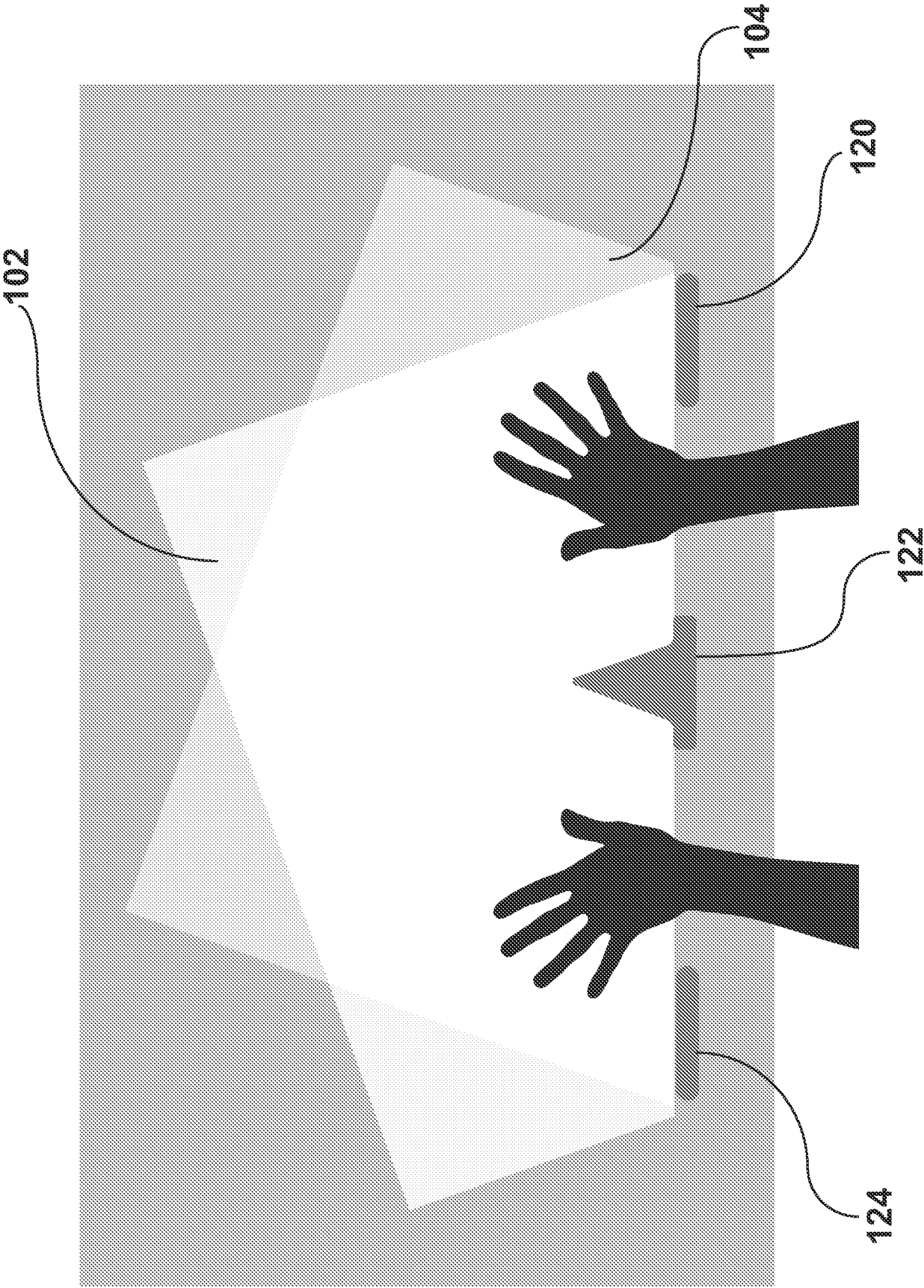


FIG. 1

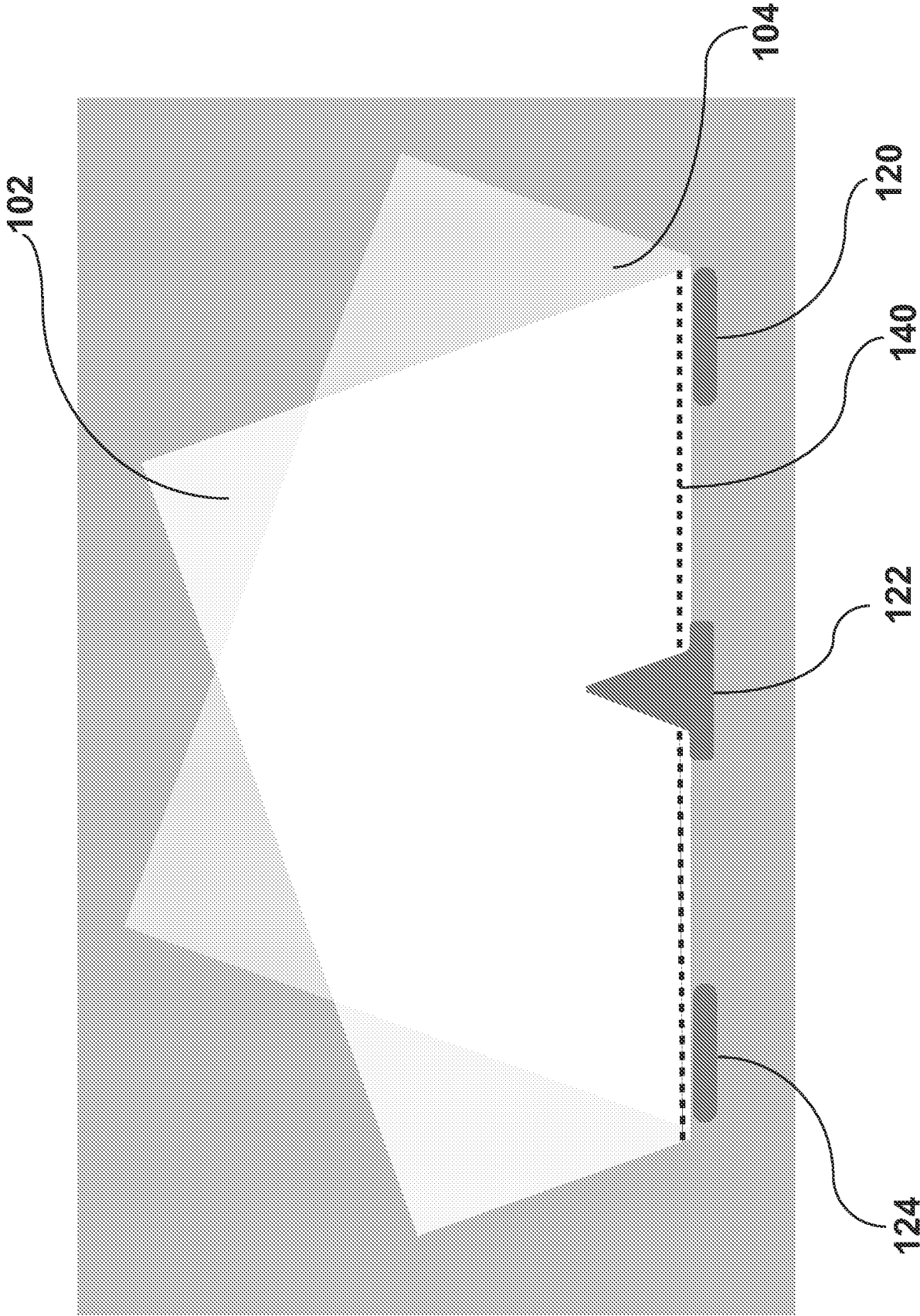
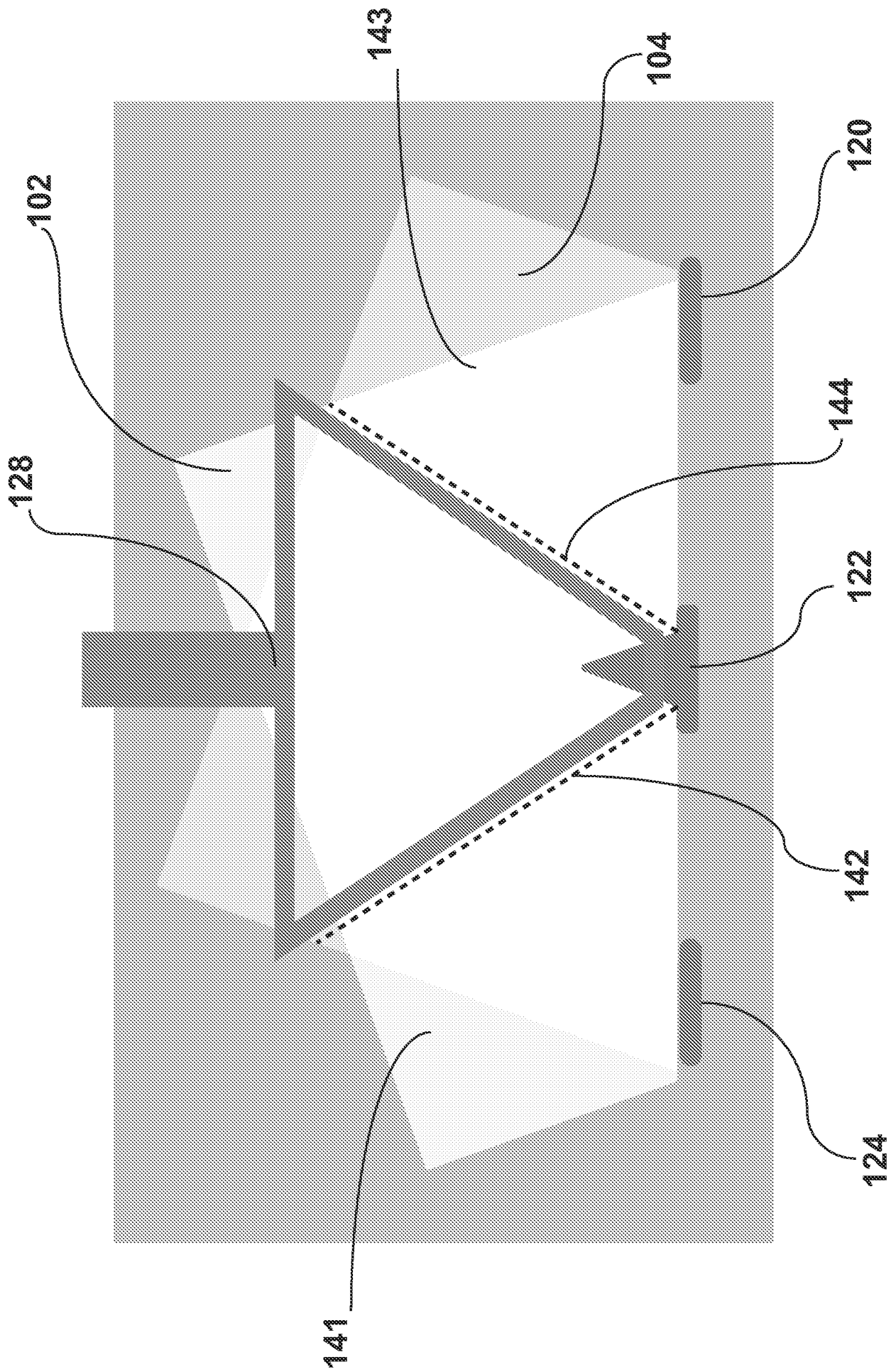
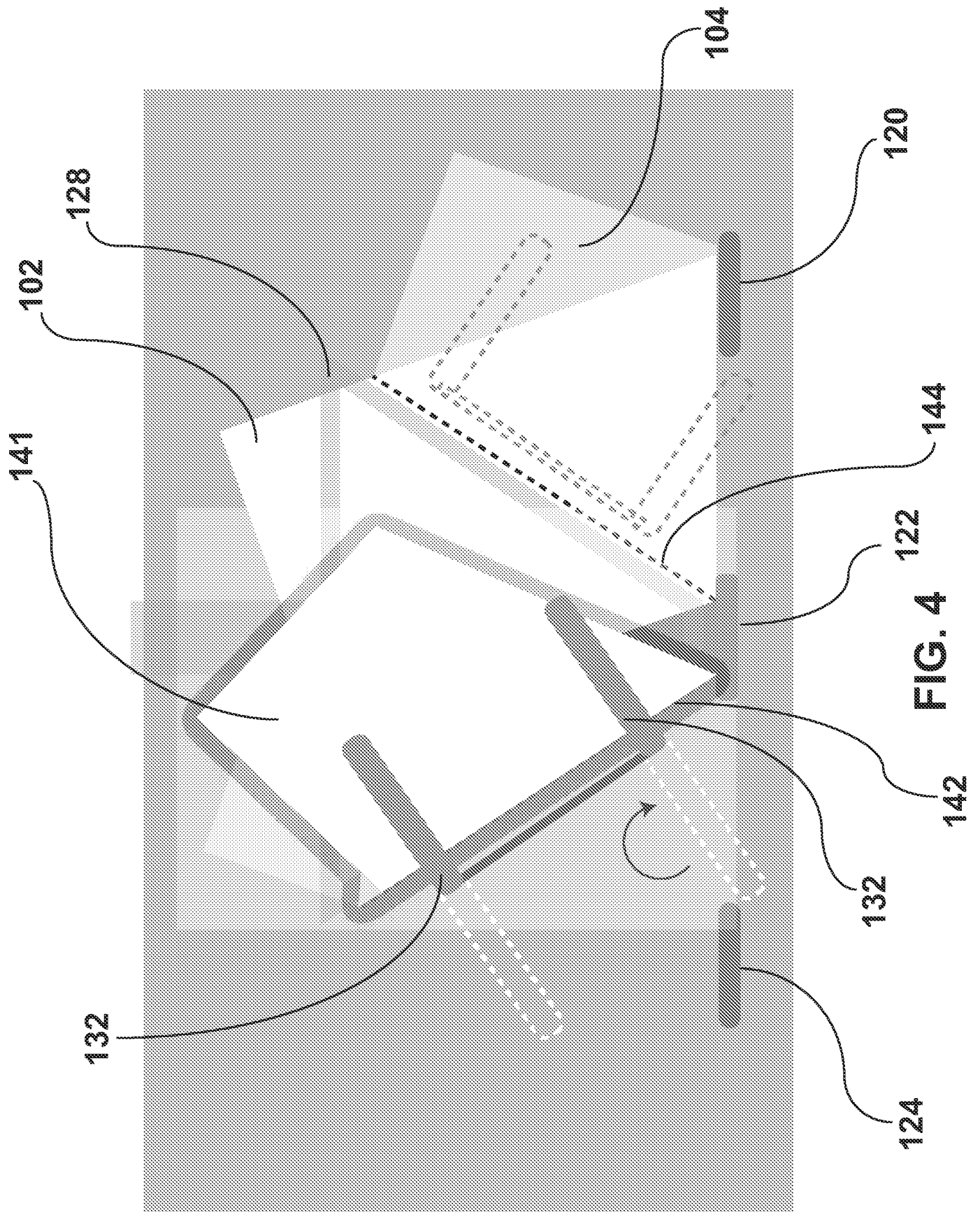
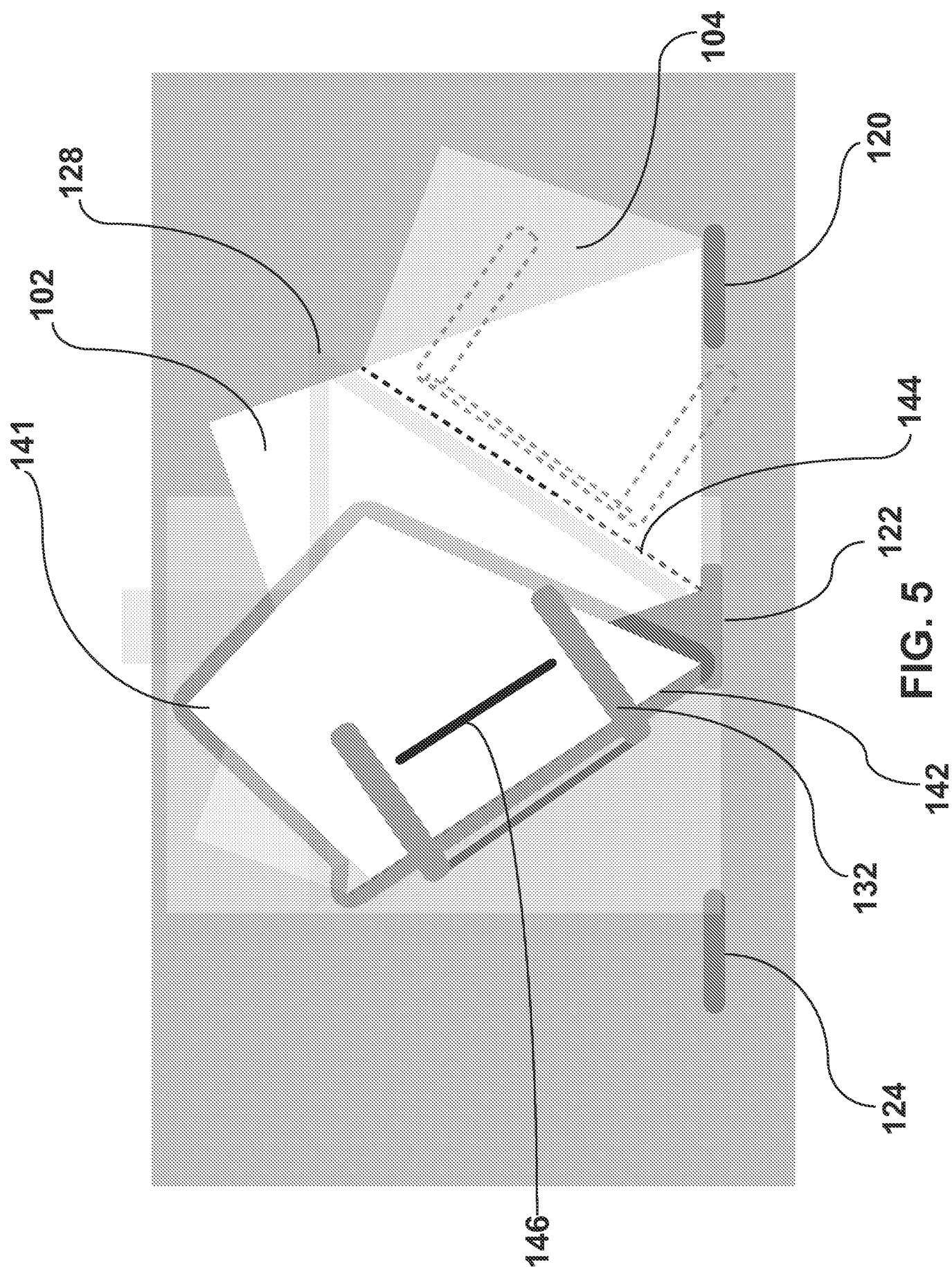


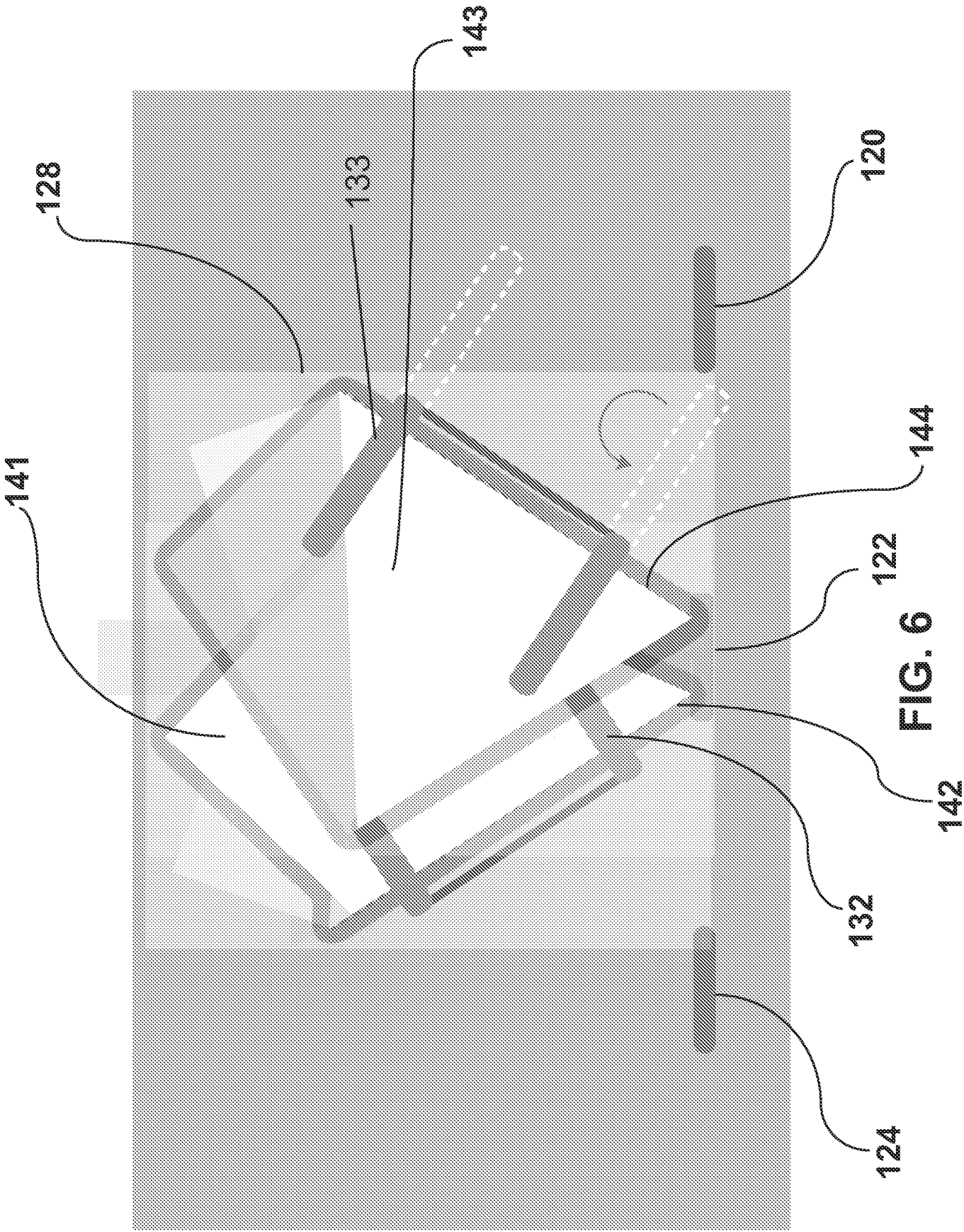
FIG. 2

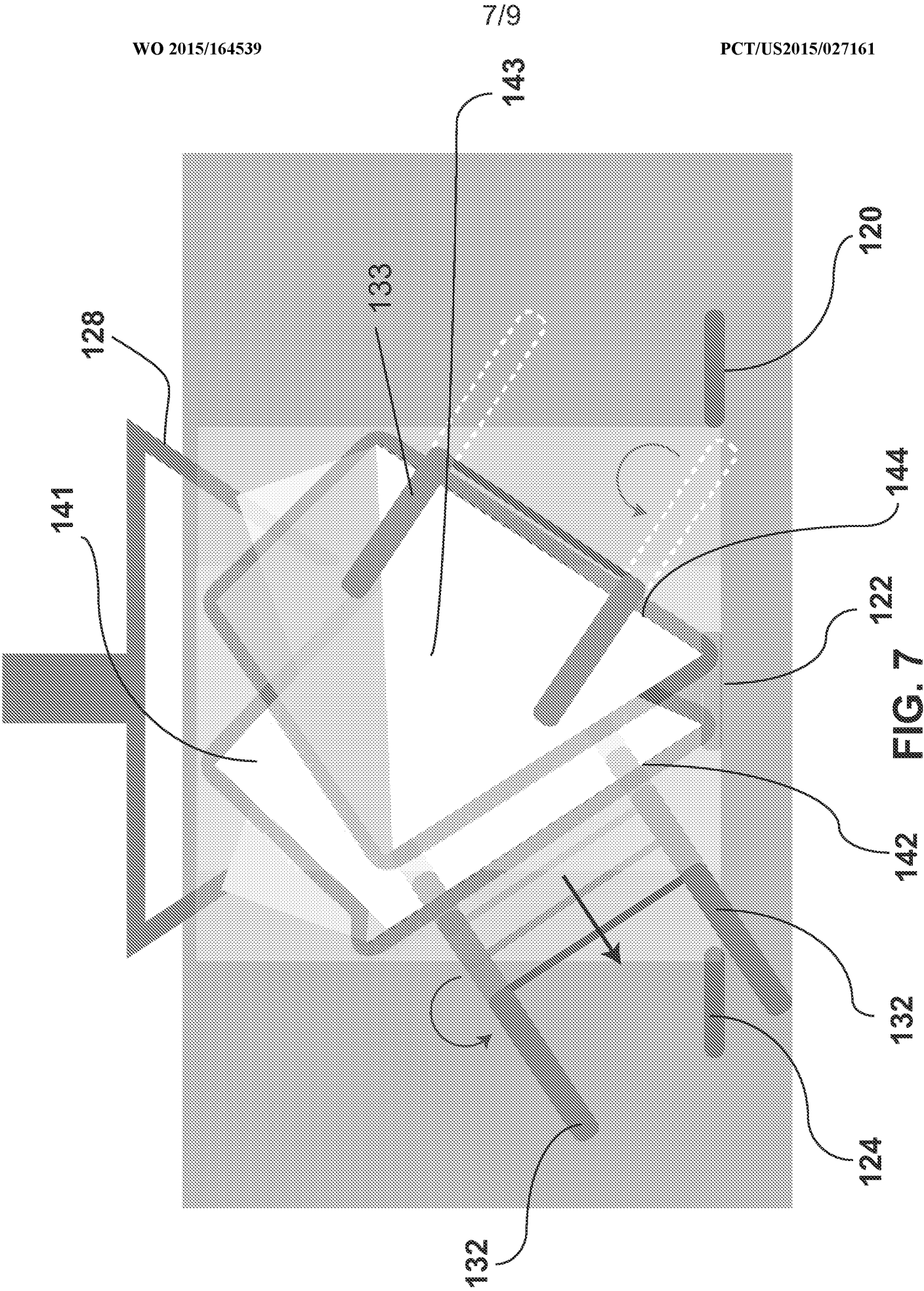


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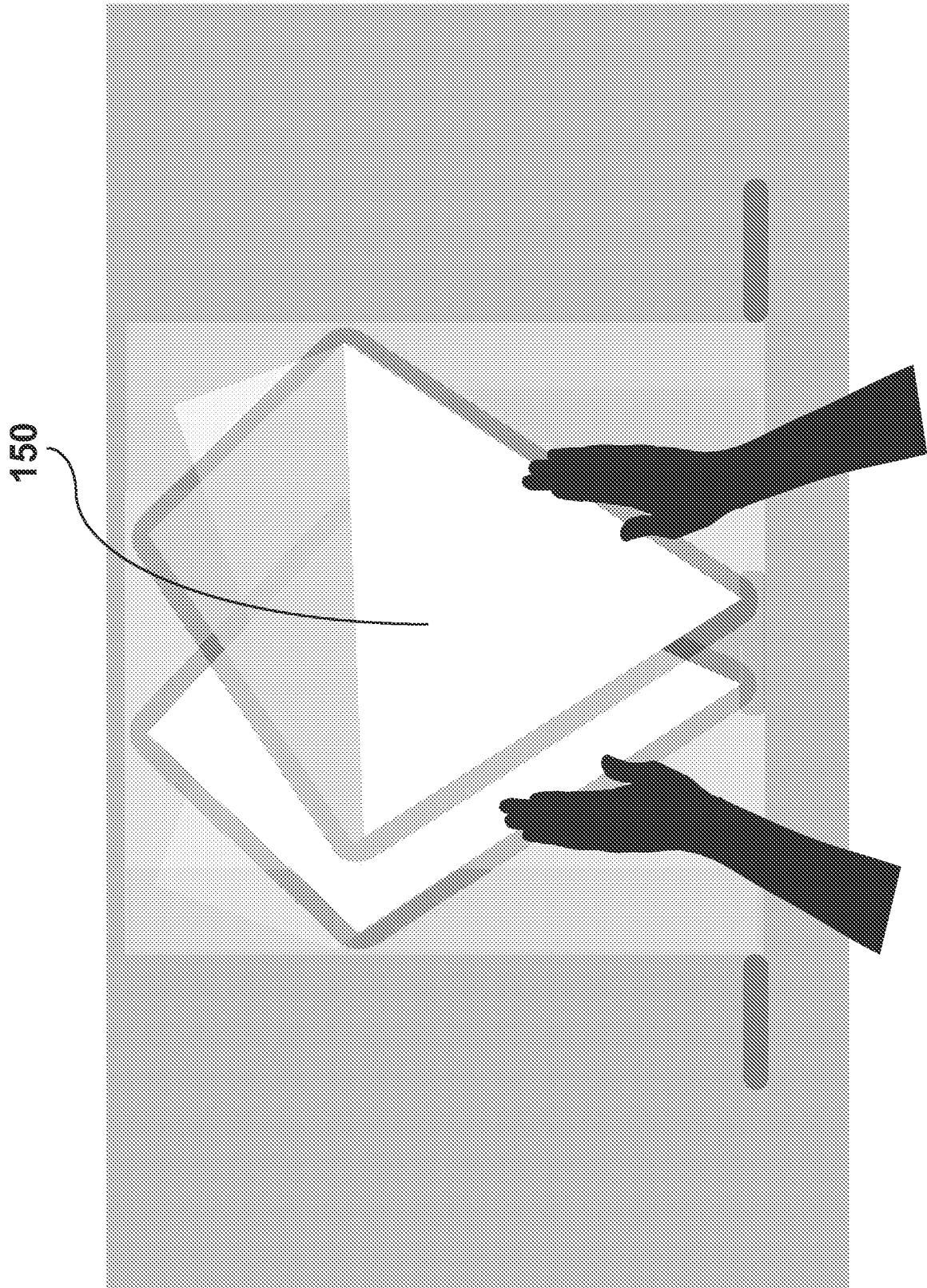
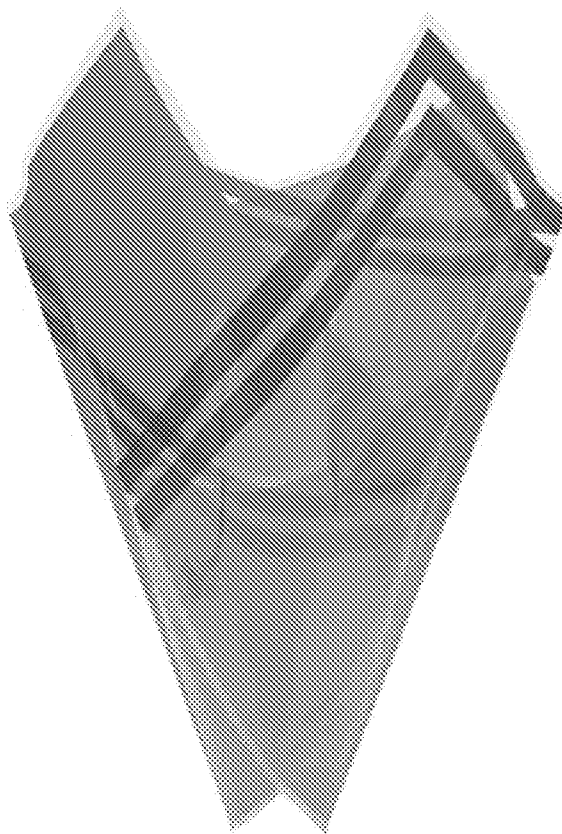


FIG. 8

**FIG. 9**