US011072942B2

(12) **United States Patent**
Dotterweich et al.

(10) **Patent No.: US 11,072,942 B2**
(45) **Date of Patent: Jul. 27, 2021**

(54) **INSTANT CANOPY FRAME WITH BUILT-IN HUBS FOR AN ASSORTMENT OF ATTACHMENTS**

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(72) Inventors: **Martin Dotterweich**, Escondido, CA (US); **Charles Brewer**, Bentonville, AR (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **16/167,380**

(22) Filed: **Oct. 22, 2018**

(65) **Prior Publication Data**

US 2019/0292808 A1 Sep. 26, 2019

Related U.S. Application Data

(60) Provisional application No. 62/575,490, filed on Oct. 22, 2017.

(51) **Int. Cl.**

E04H 15/32	(2006.01)
E04H 15/02	(2006.01)
E04H 15/50	(2006.01)

(52) **U.S. Cl.**

CPC ***E04H 15/32*** (2013.01); ***E04H 15/02*** (2013.01); *E04H 15/50* (2013.01)

(58) **Field of Classification Search**

CPC . E04H 15/02; E04H 15/32; A45B 2200/1009; A45B 2200/1054; A45B 2200/1063

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,240,685 B2 * 7/2007 Seo E04H 15/50 135/120.3

FOREIGN PATENT DOCUMENTS

NL 1008036 C1 * 7/1999 ..... A45B 23/00

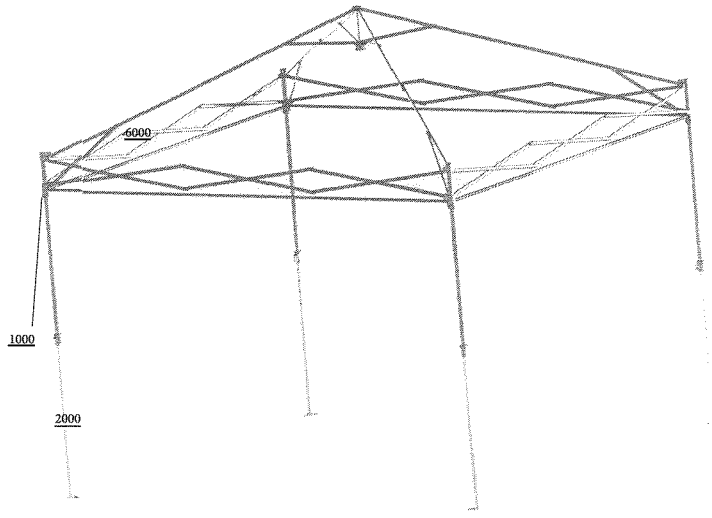
* cited by examiner

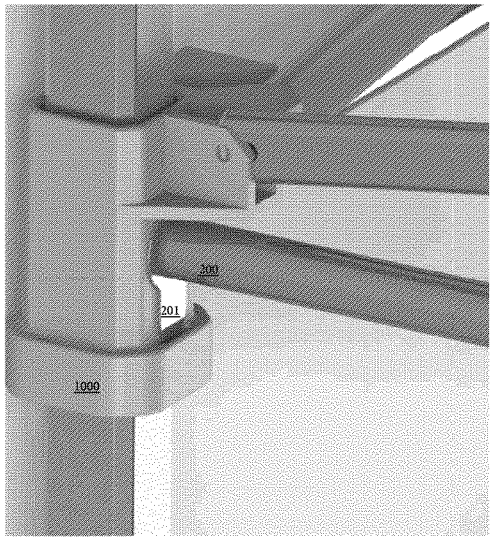
Primary Examiner — David R Dunn
Assistant Examiner — Danielle Jackson
(74) *Attorney, Agent, or Firm* — John K. Buche; Bryce A. Johnson; Buche & Associates, P.C.

(57) **ABSTRACT**

A novel canopy frame hub, or bracket, that features insert openings on all four sides to receive attachment pegs of outdoor accessories, such as flags, banners, awnings, racks, garbage bags, drink holders, tables, shelves, gutters, and tents. The frame hub encompass a leg of a traditional canopy frame and may be adjusted vertically to a desired height by sliding the bracket along the frame leg. The hub may then be fixated at the desired height via the twisting of a fixed screw inserted through an opening in one side of the hub.

1 Claim, 53 Drawing Sheets





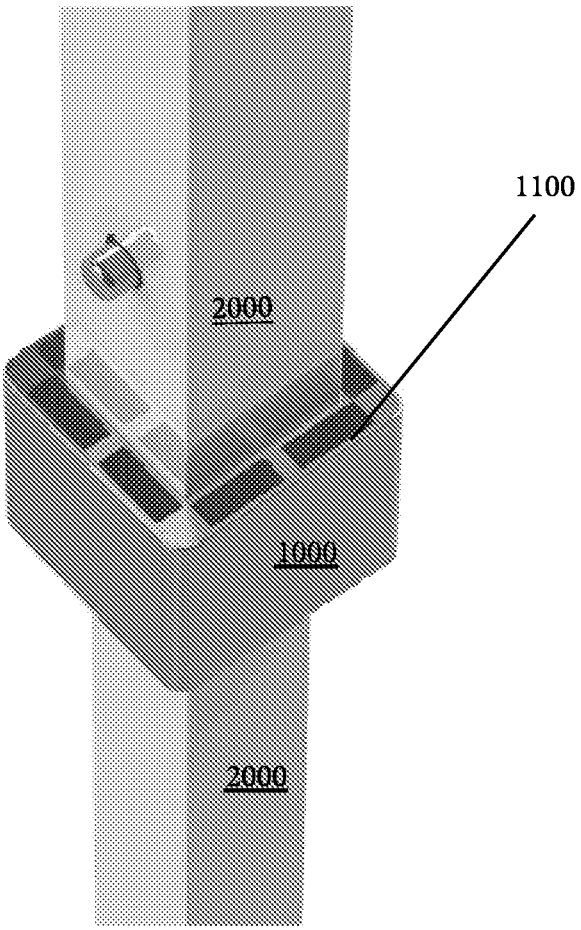


FIG. 1

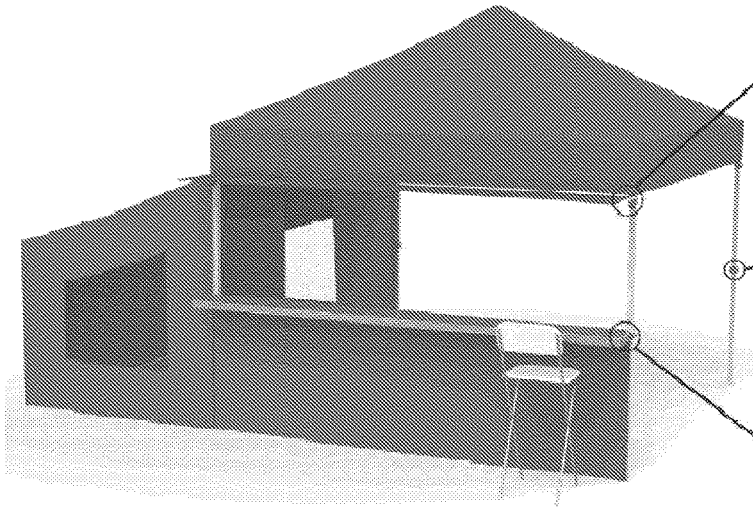


FIG. 2

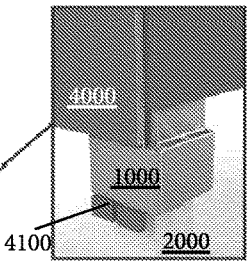


FIG. 2A

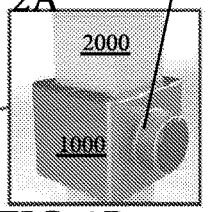


FIG. 2B

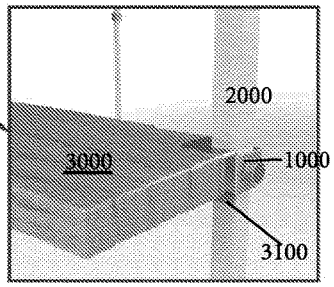


FIG. 2C

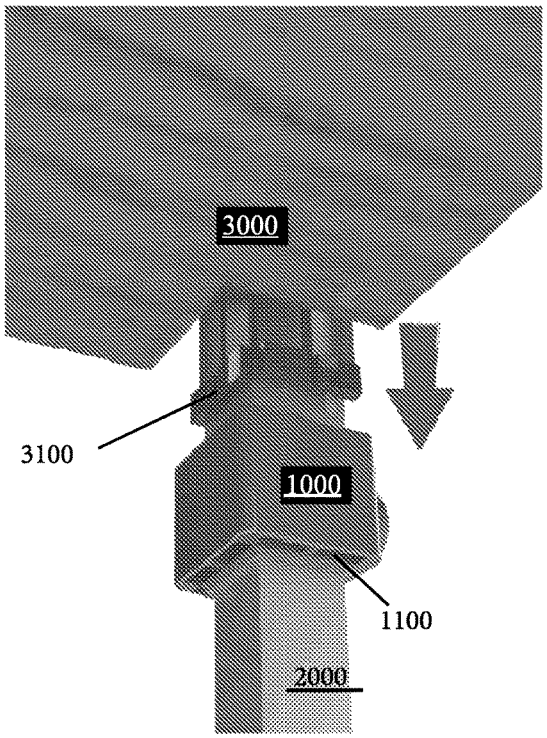
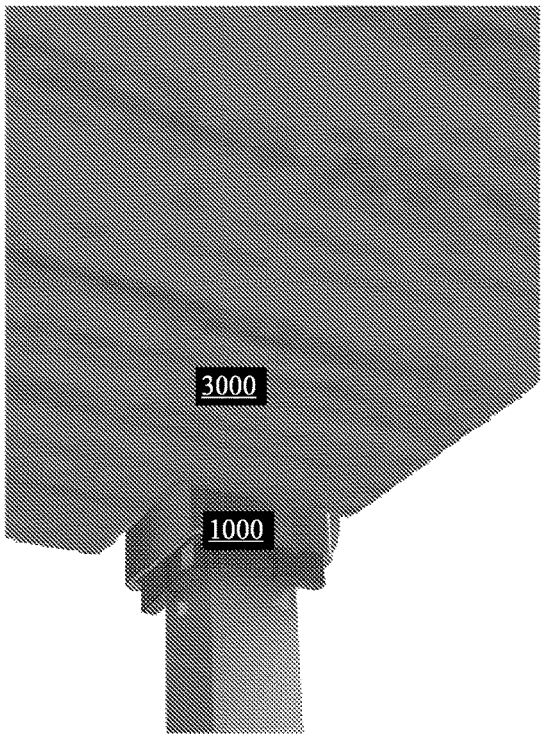


FIG. 3A



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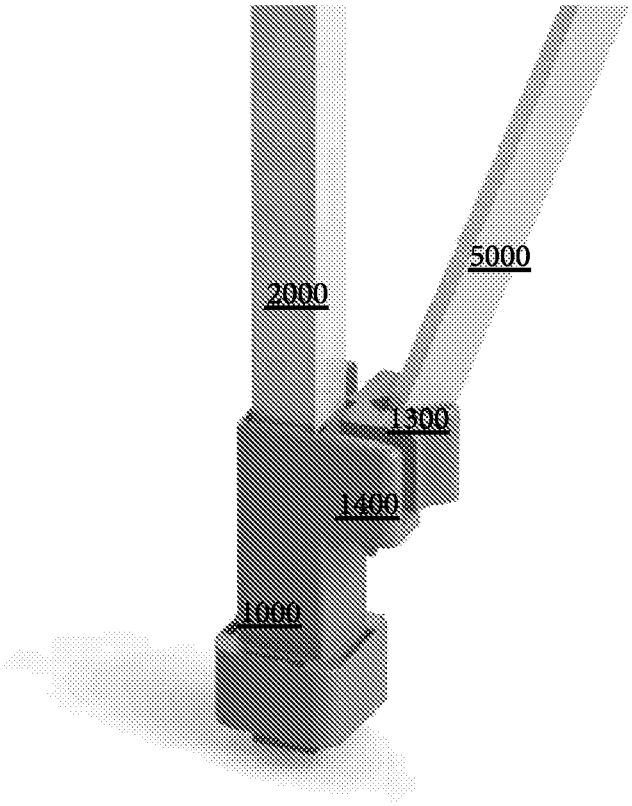

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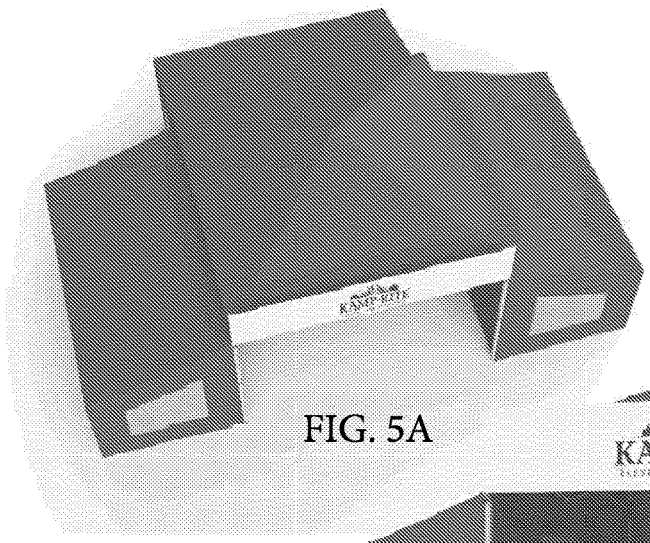
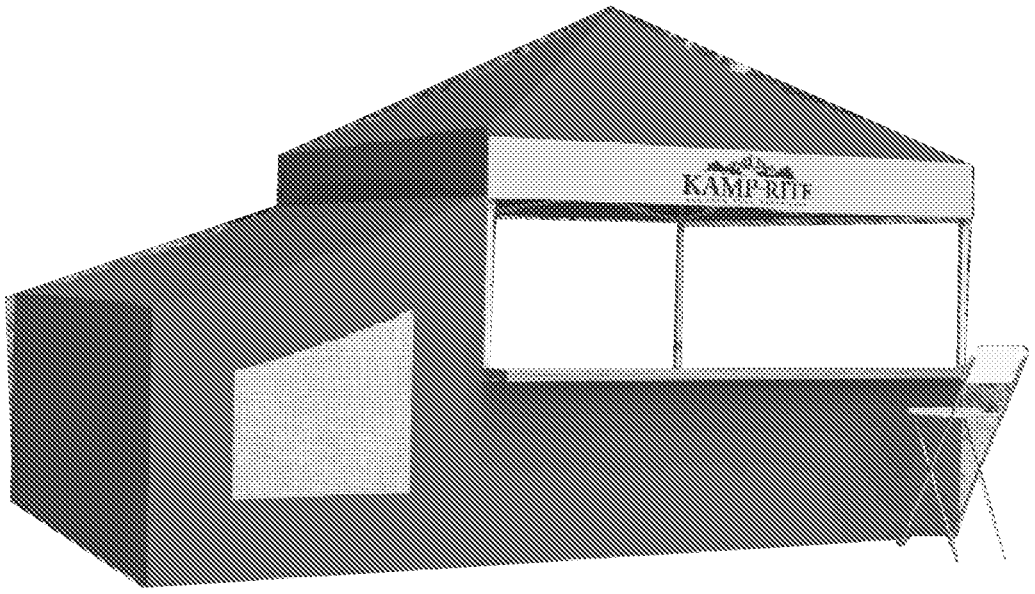


FIG. 5A

FIG. 5B

FIG. 6



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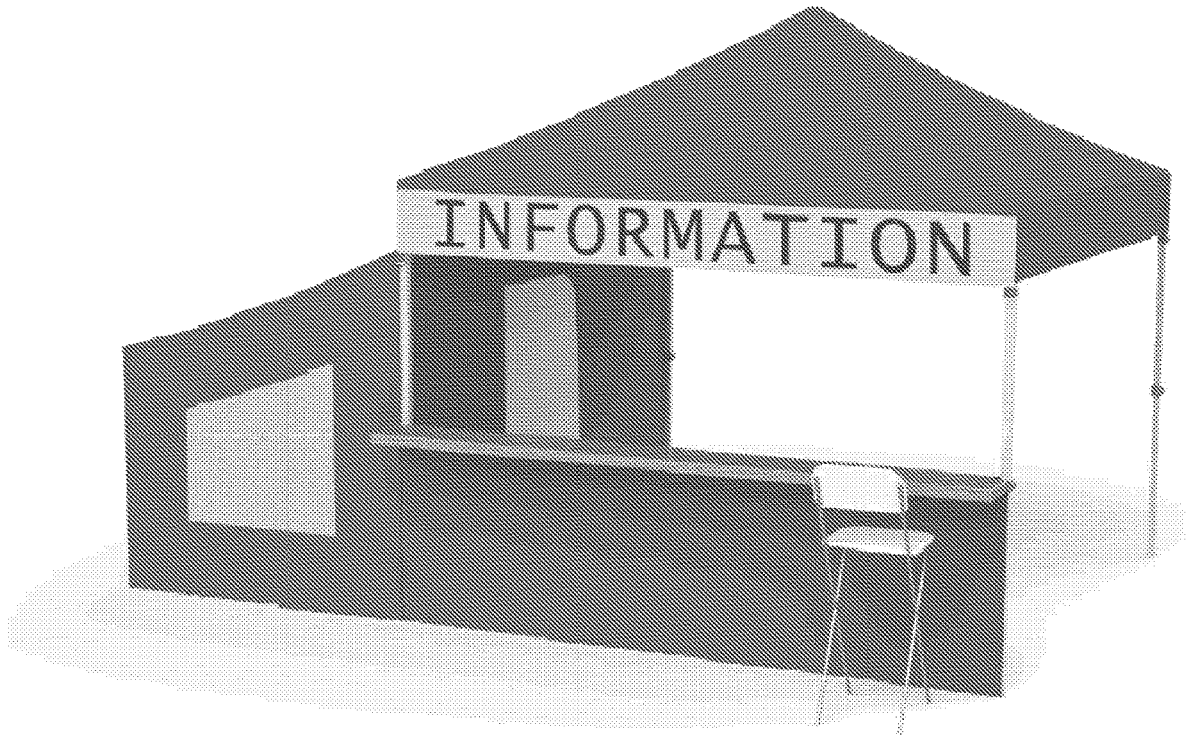

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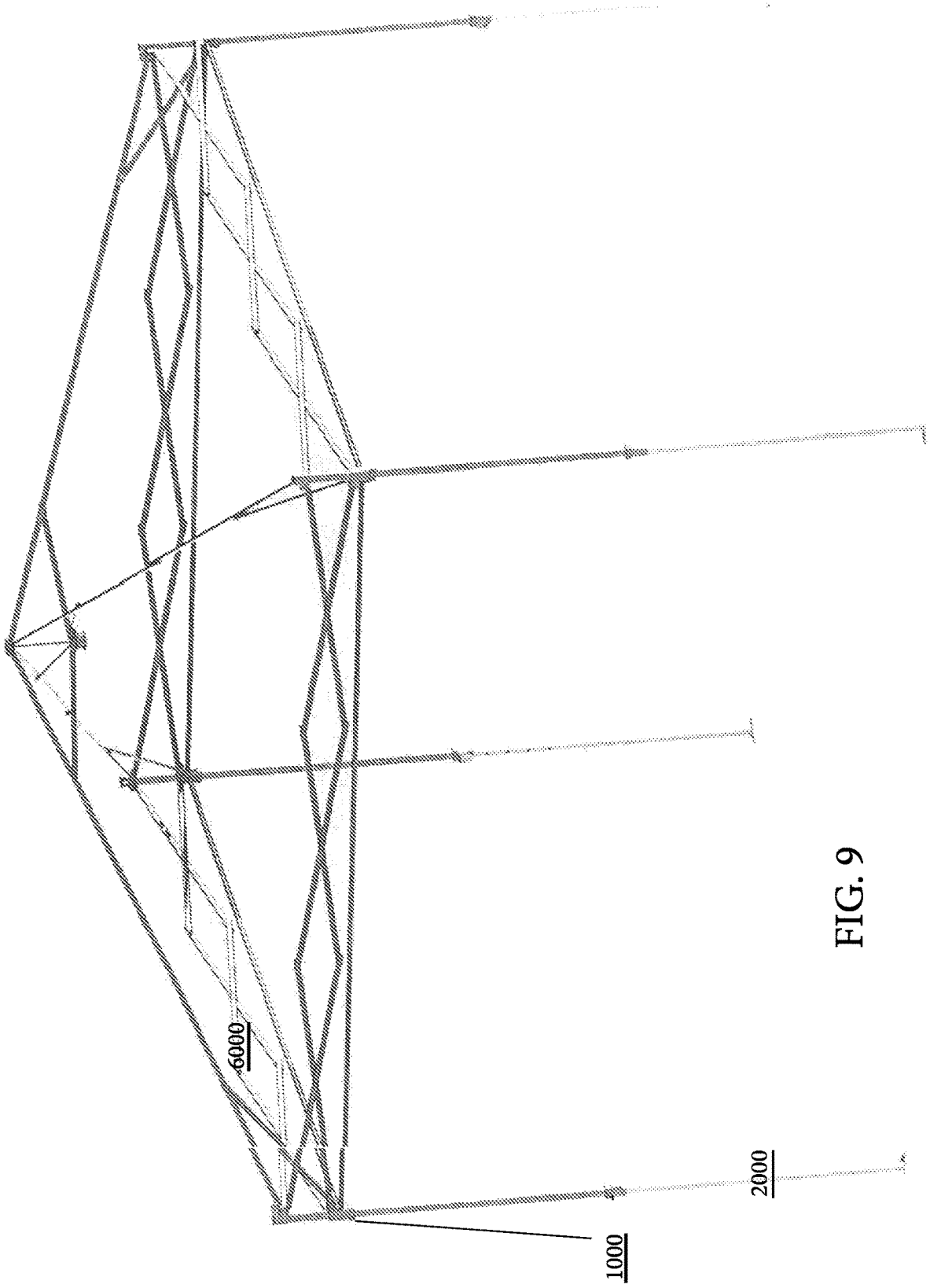
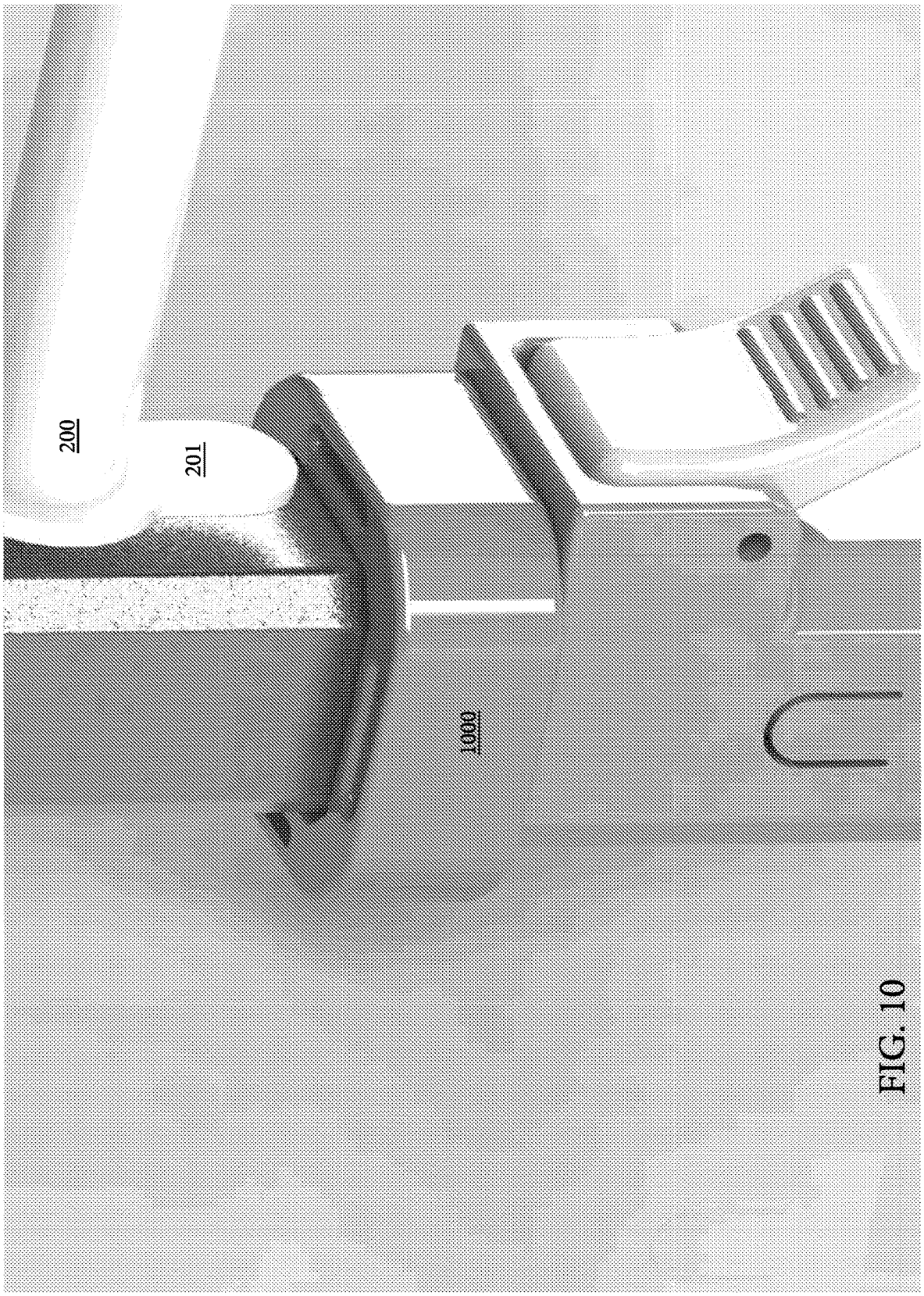


FIG. 9



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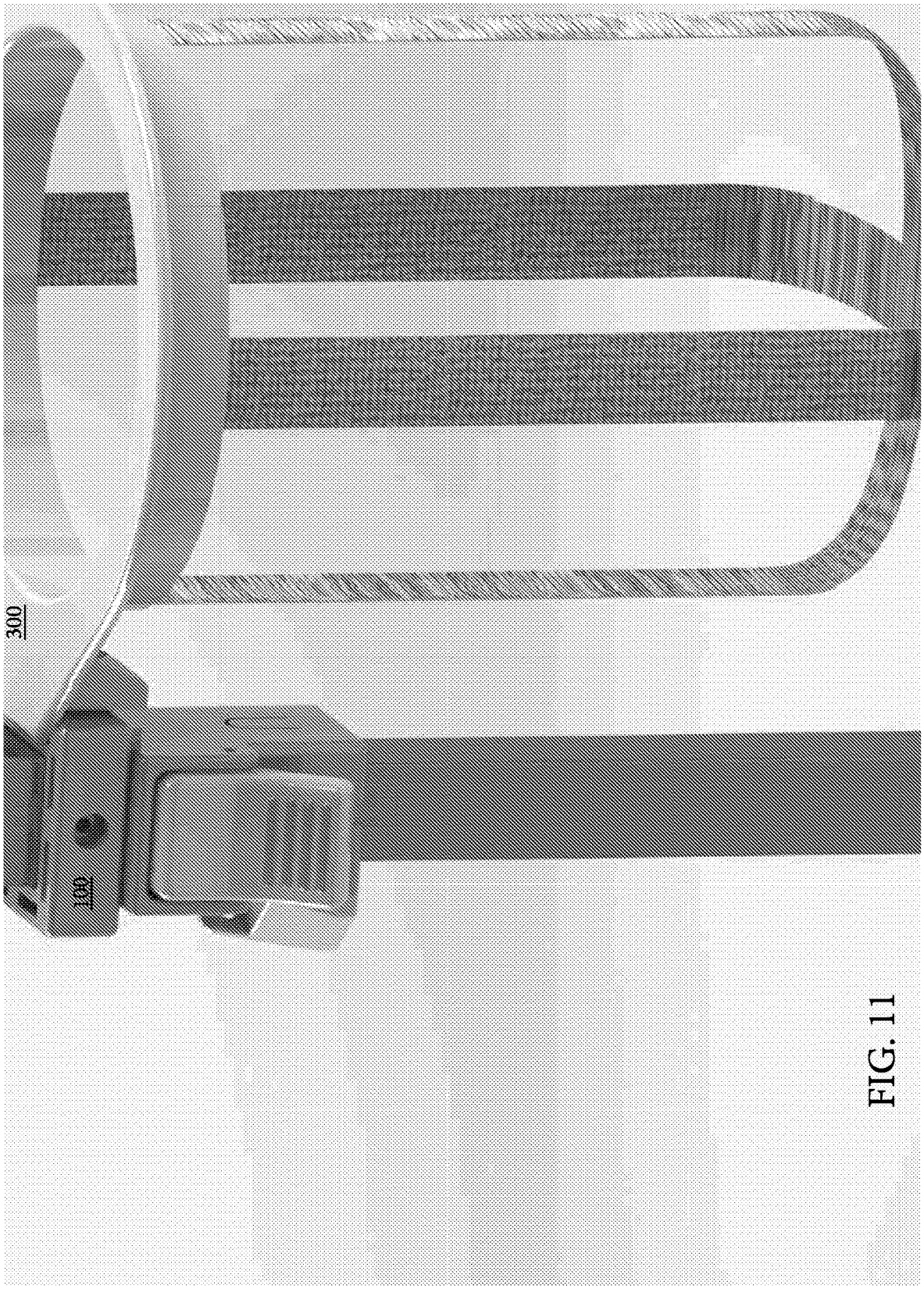


FIG. 11

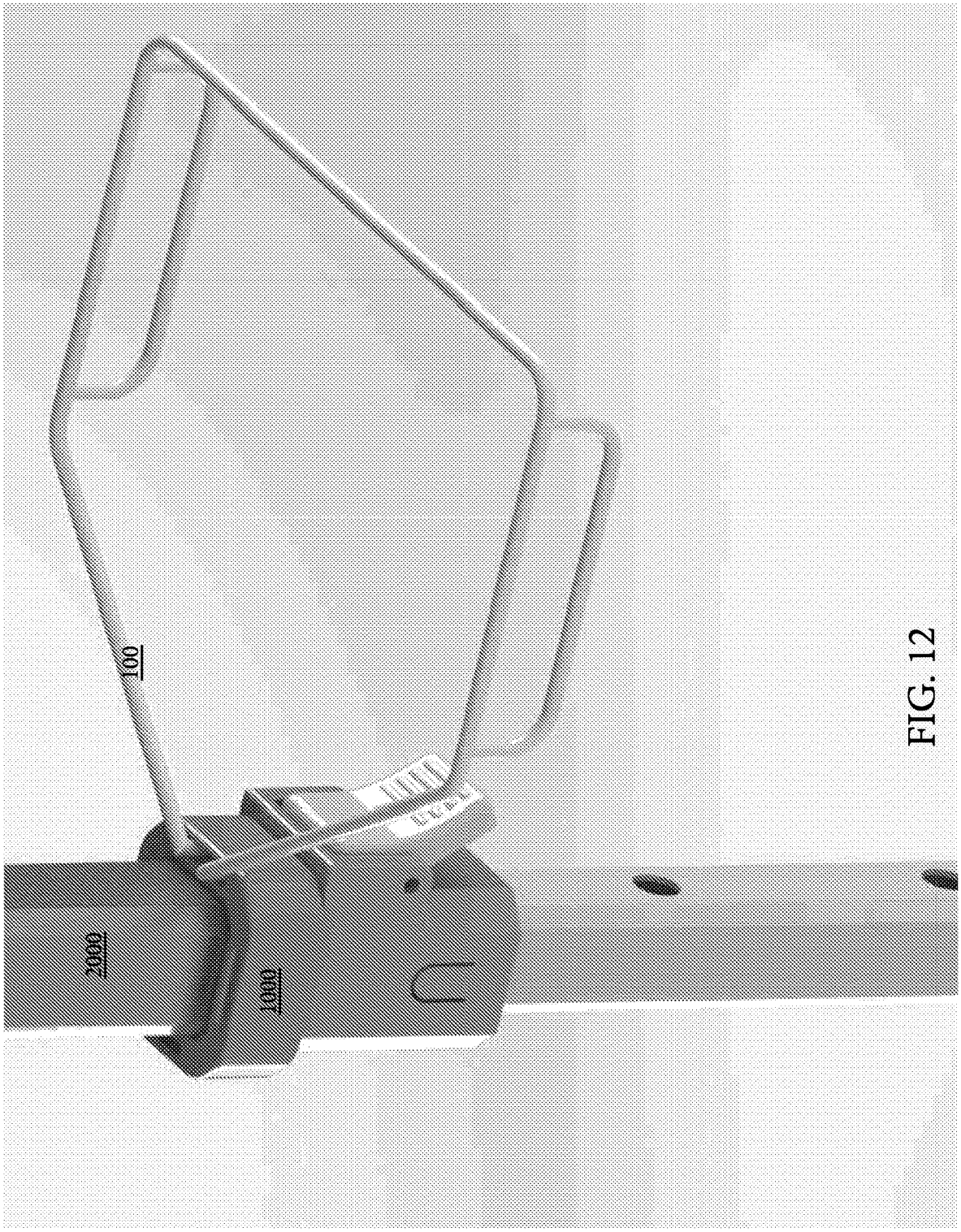
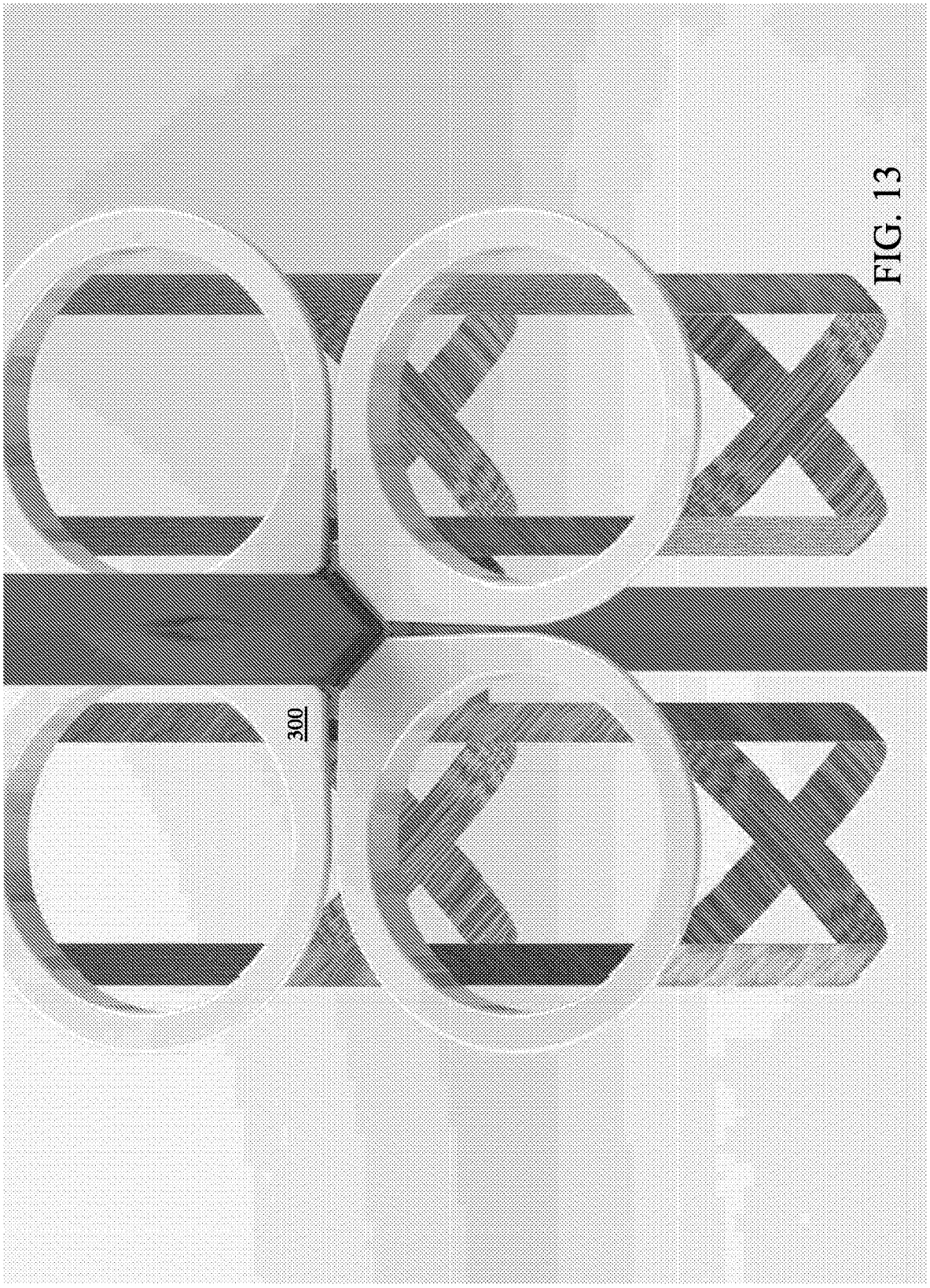


FIG. 12



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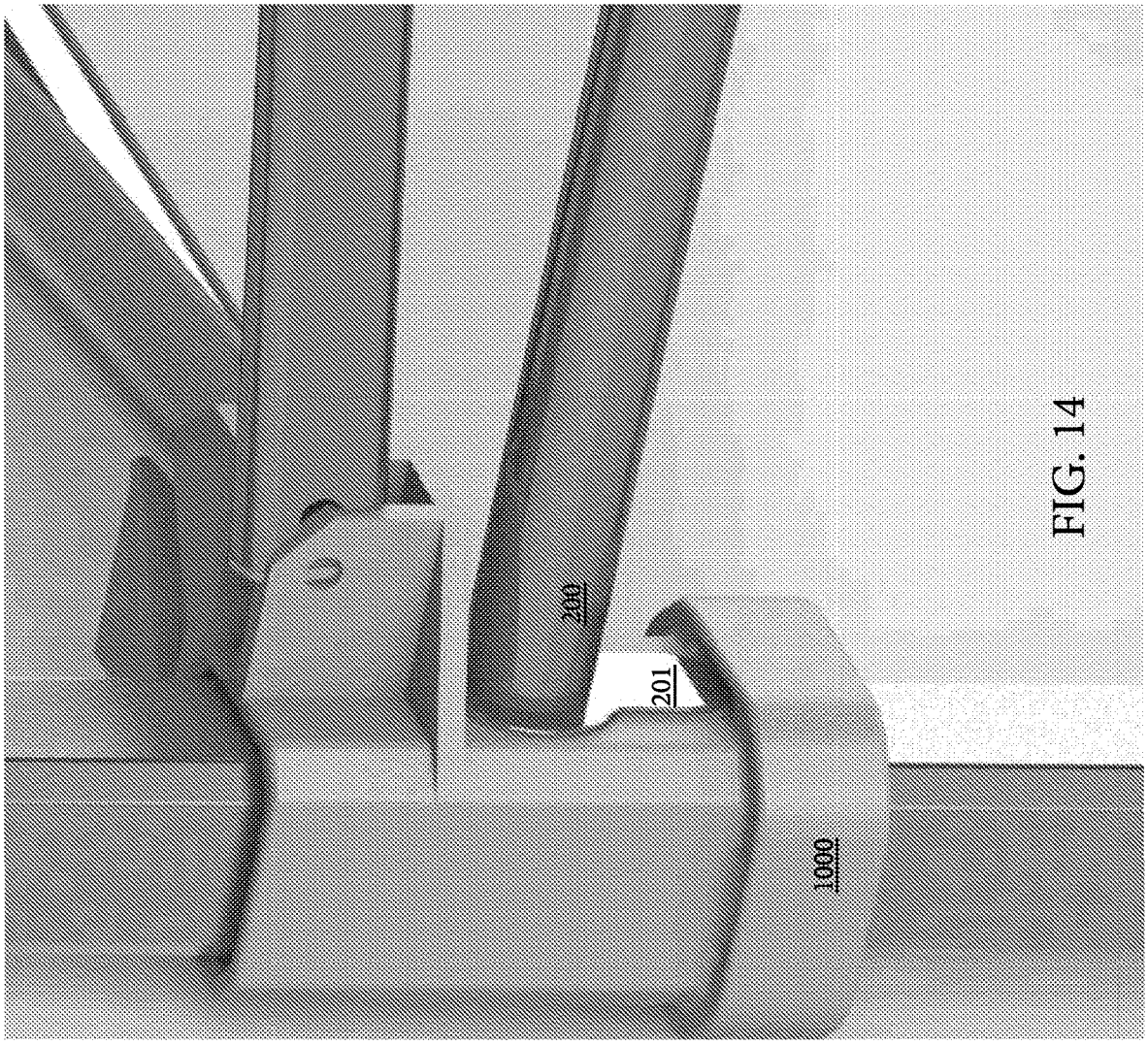

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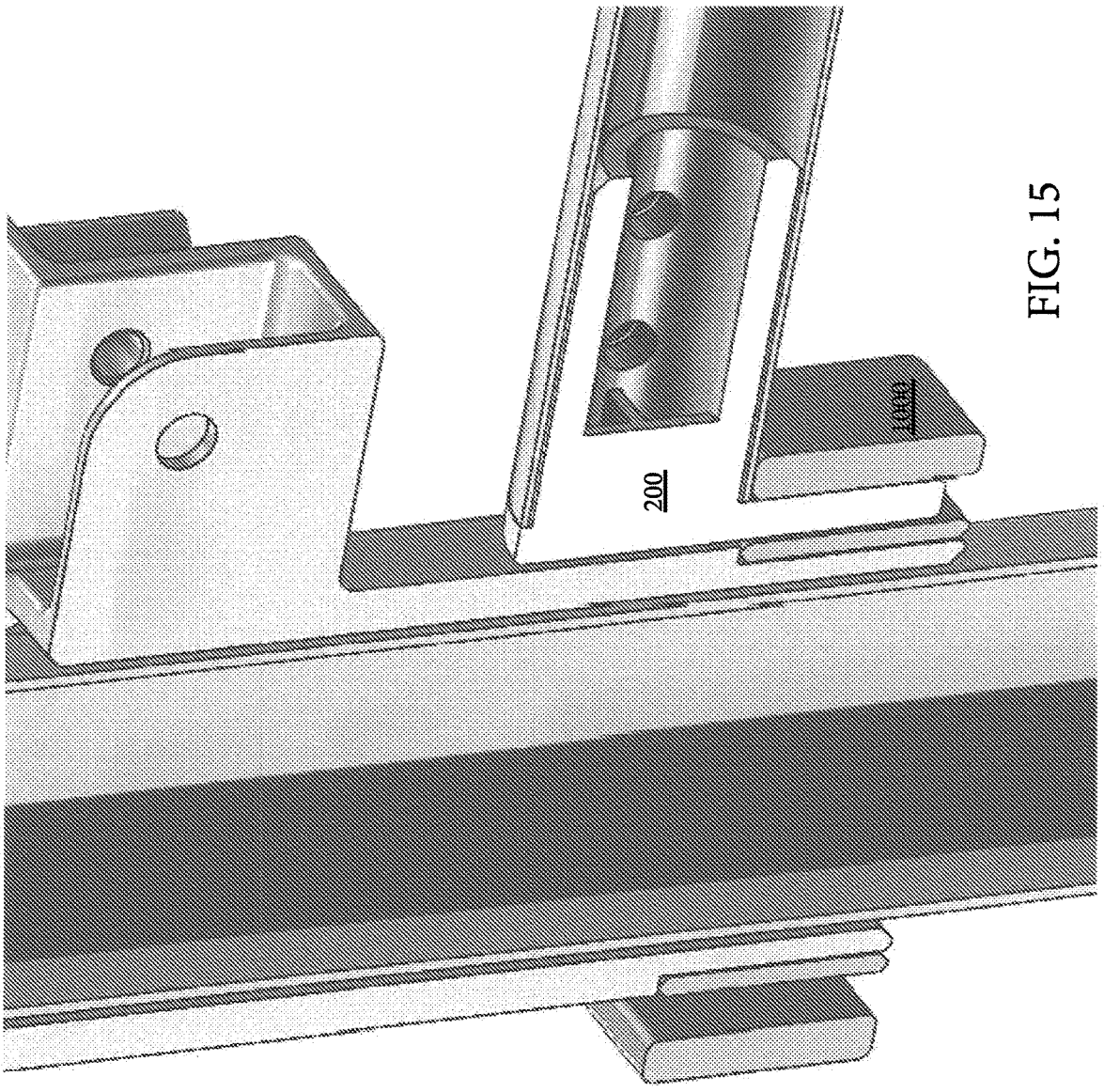

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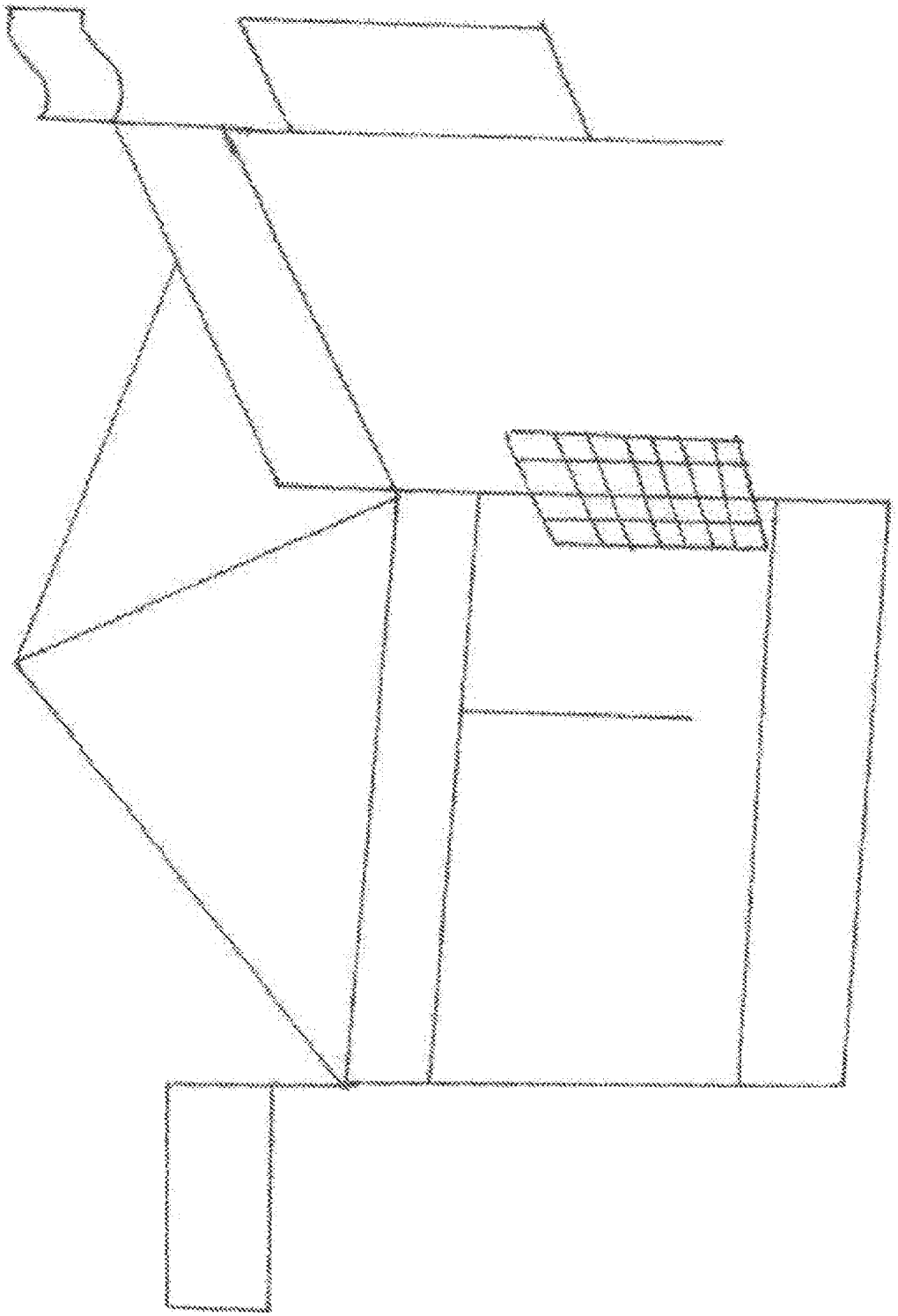

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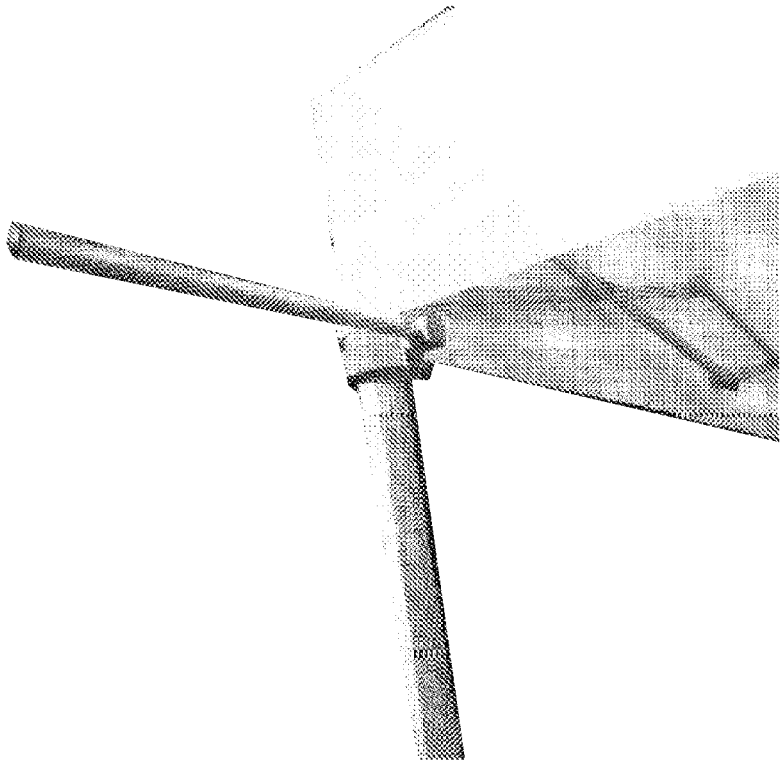
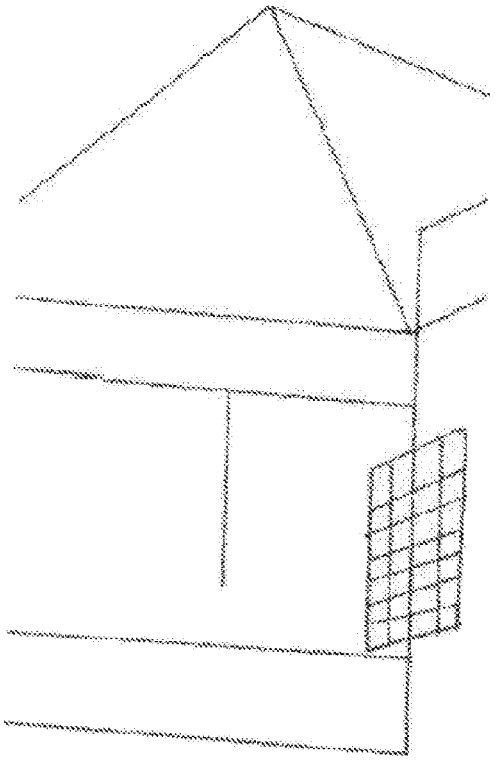


FIG. 17



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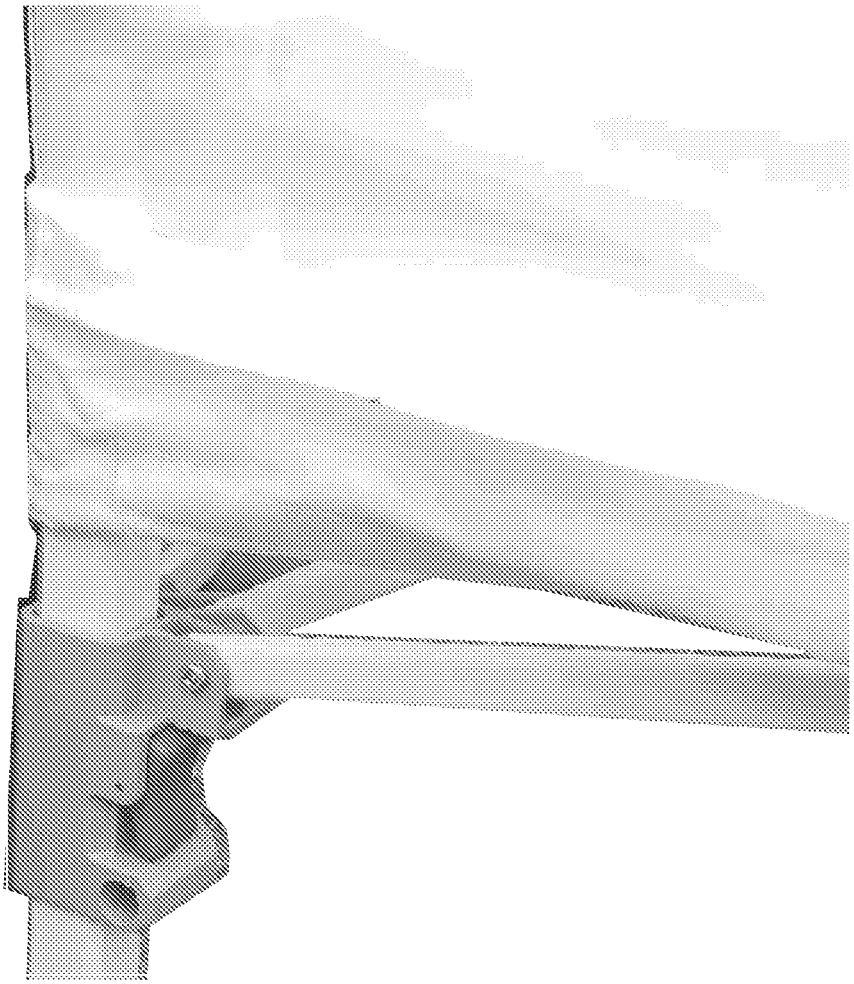

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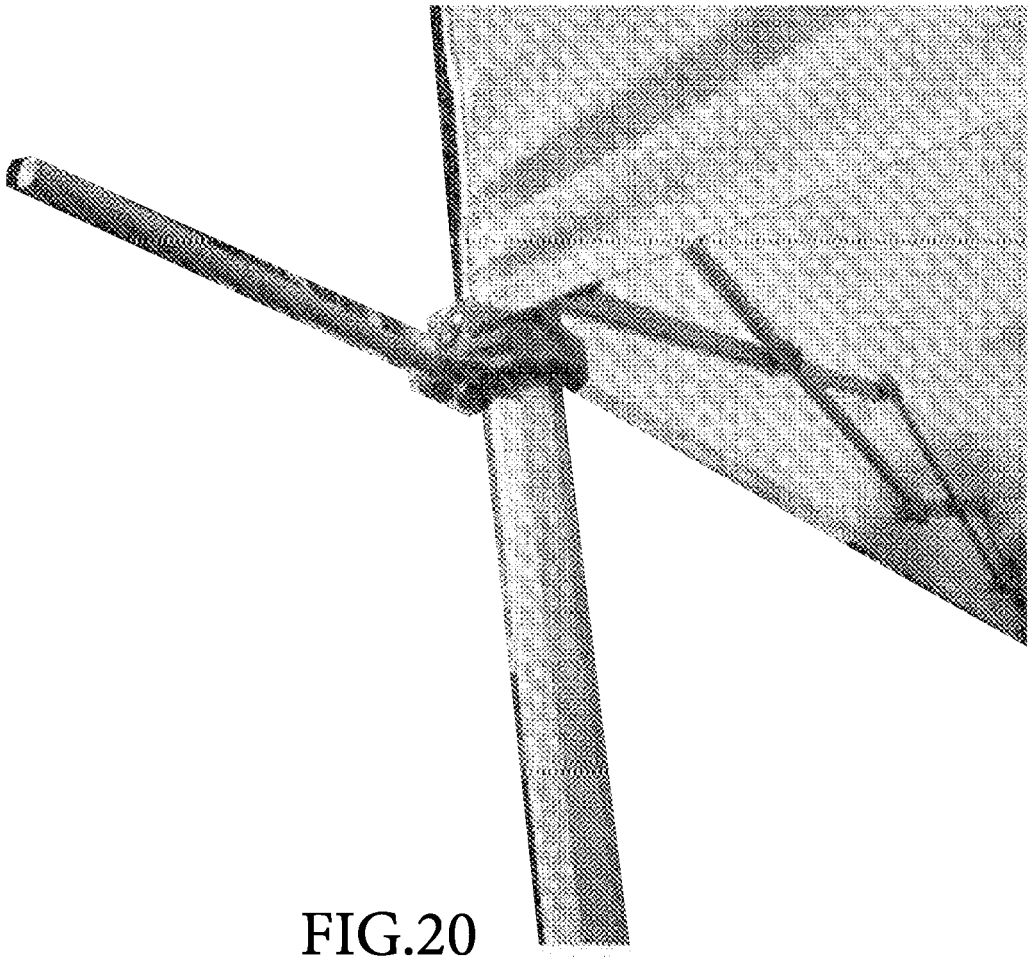
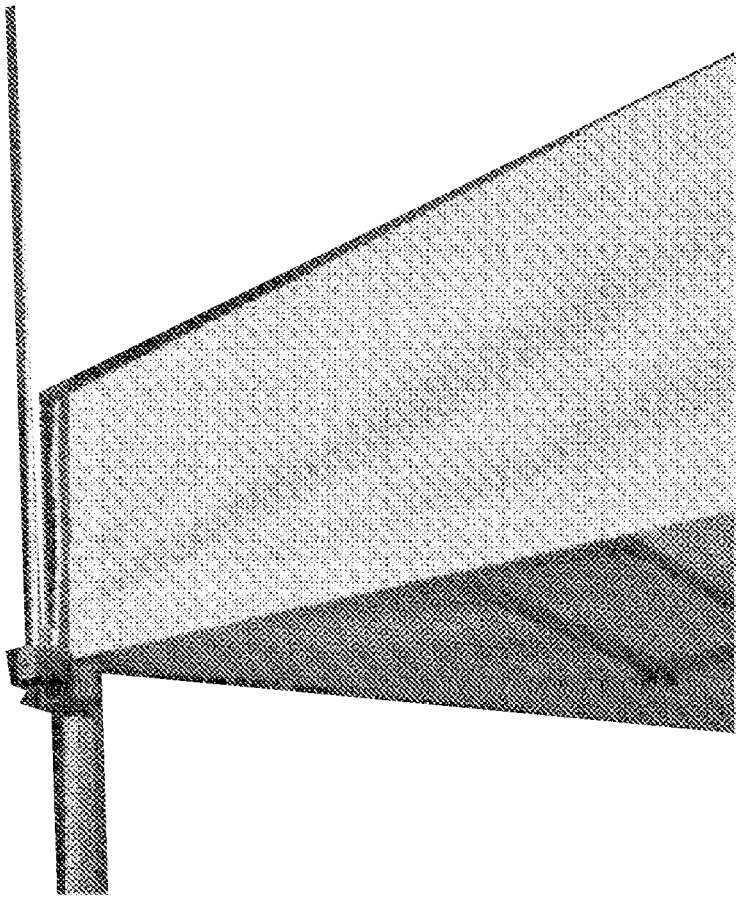


FIG.20



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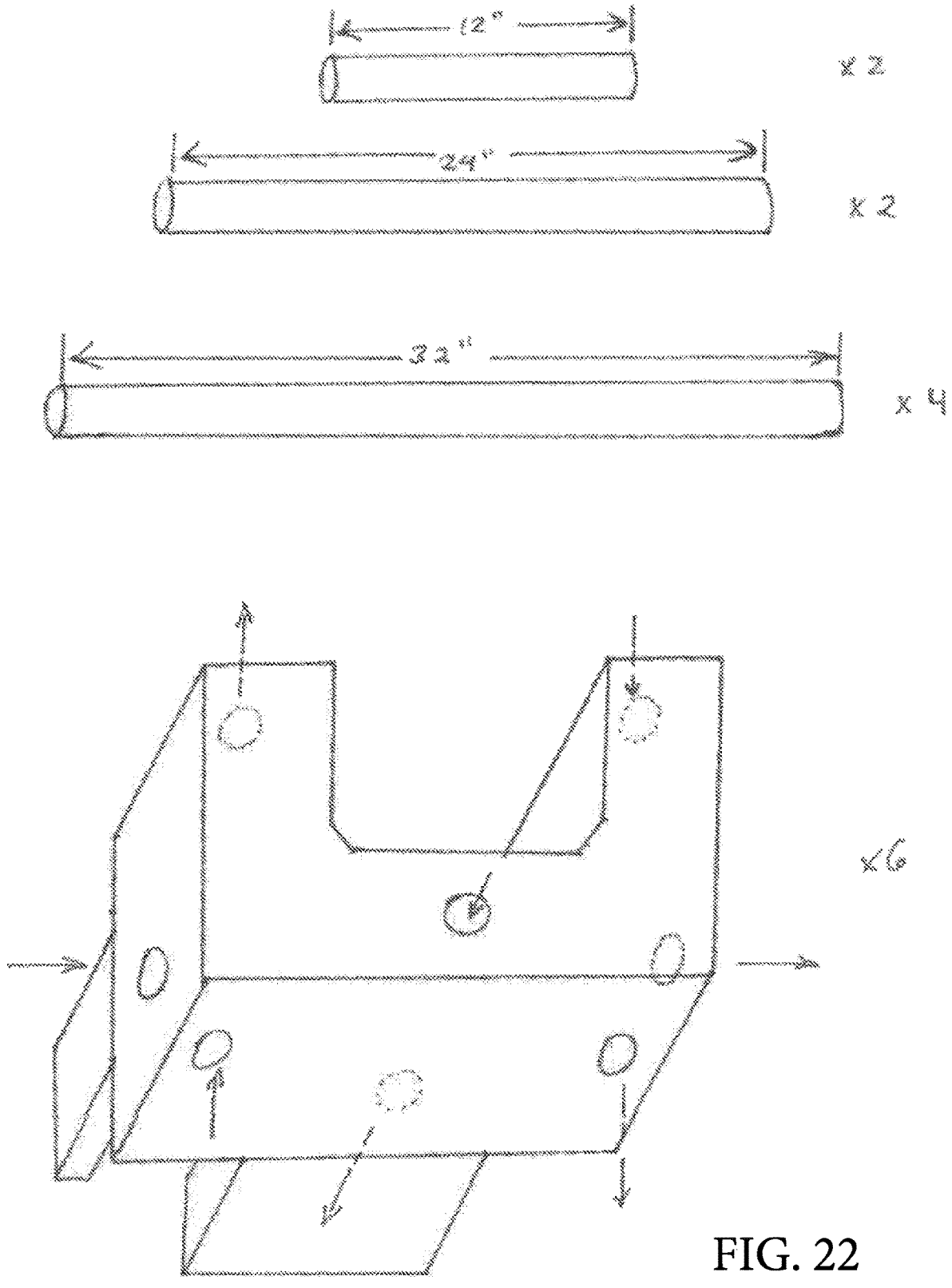

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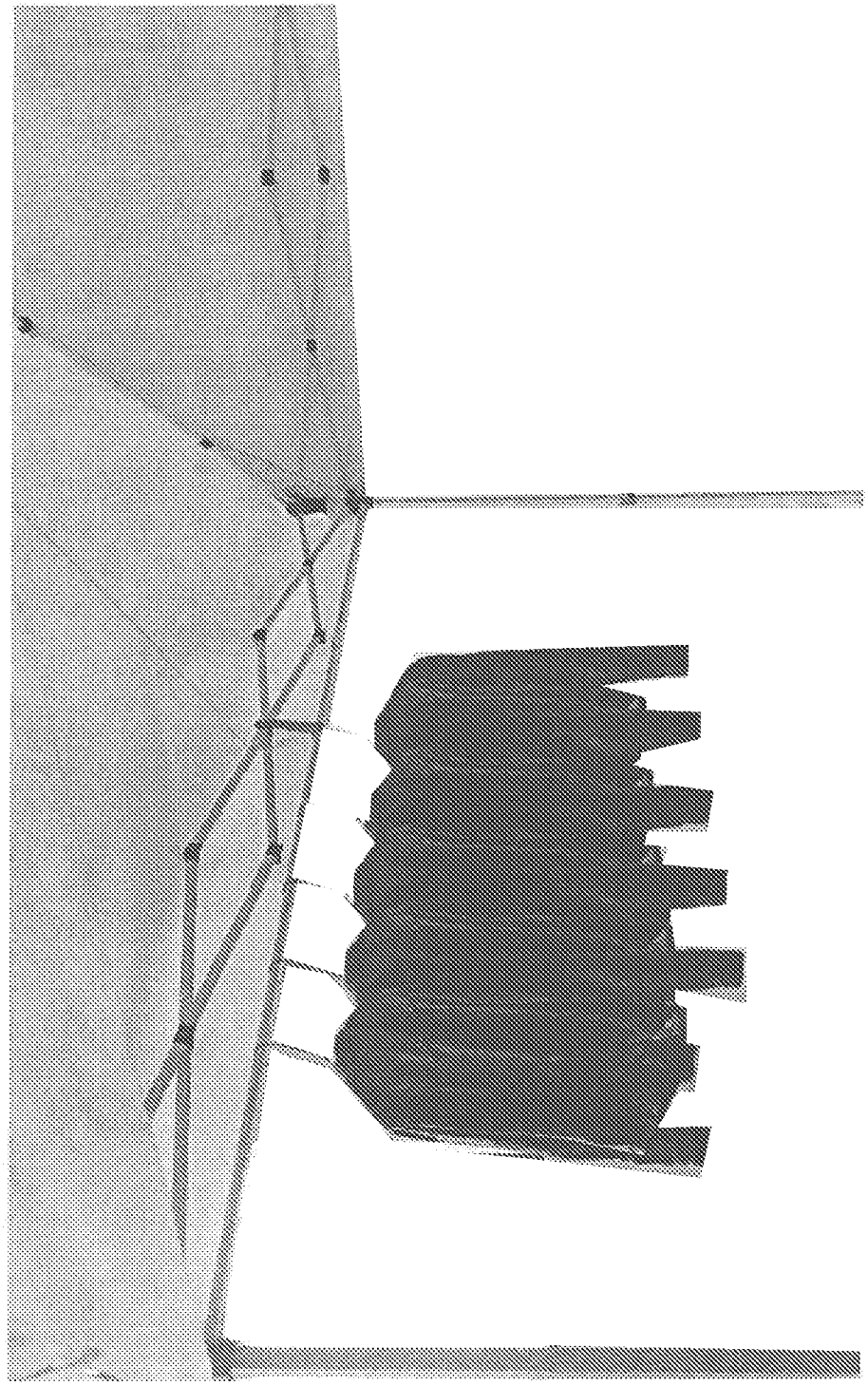

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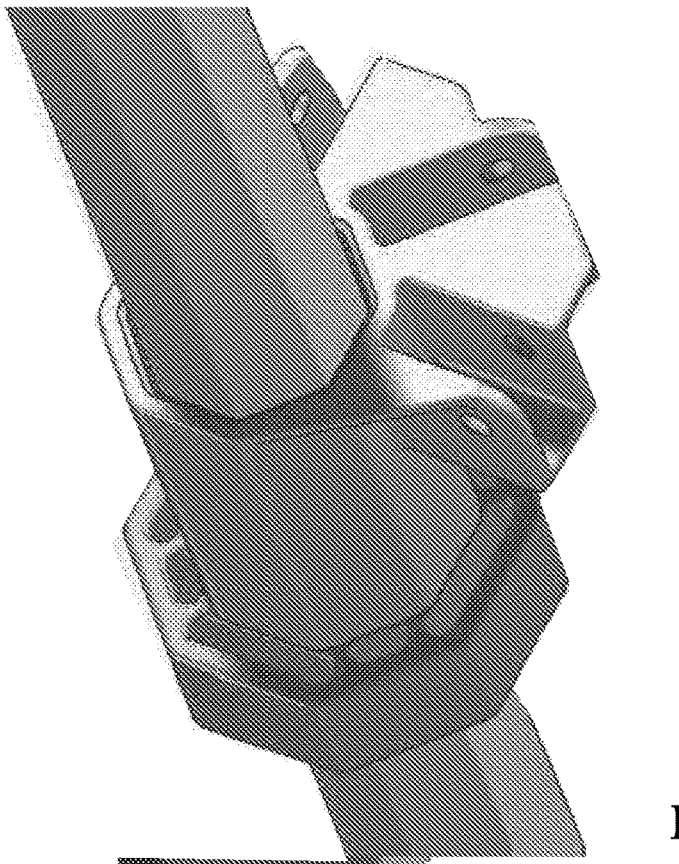


FIG. 24

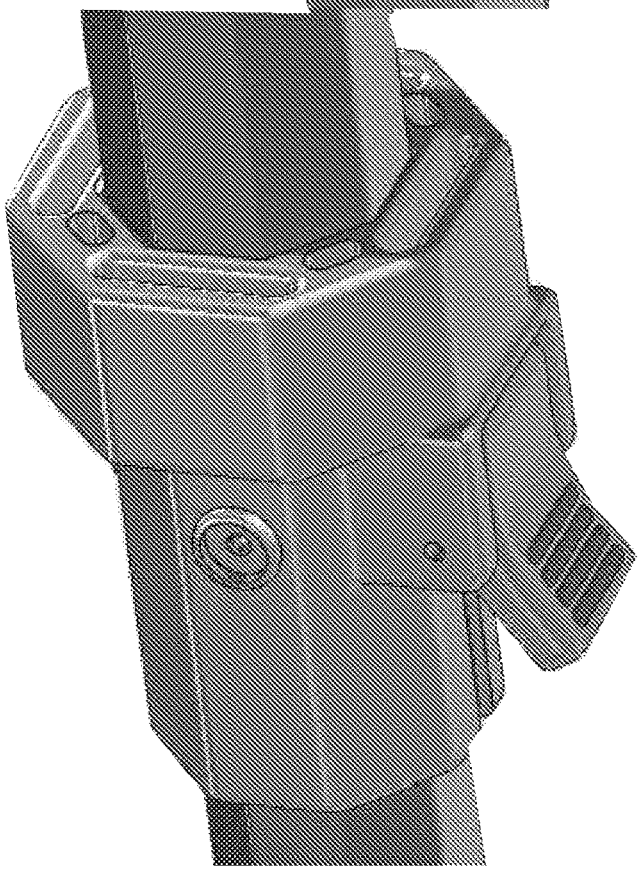


FIG. 25

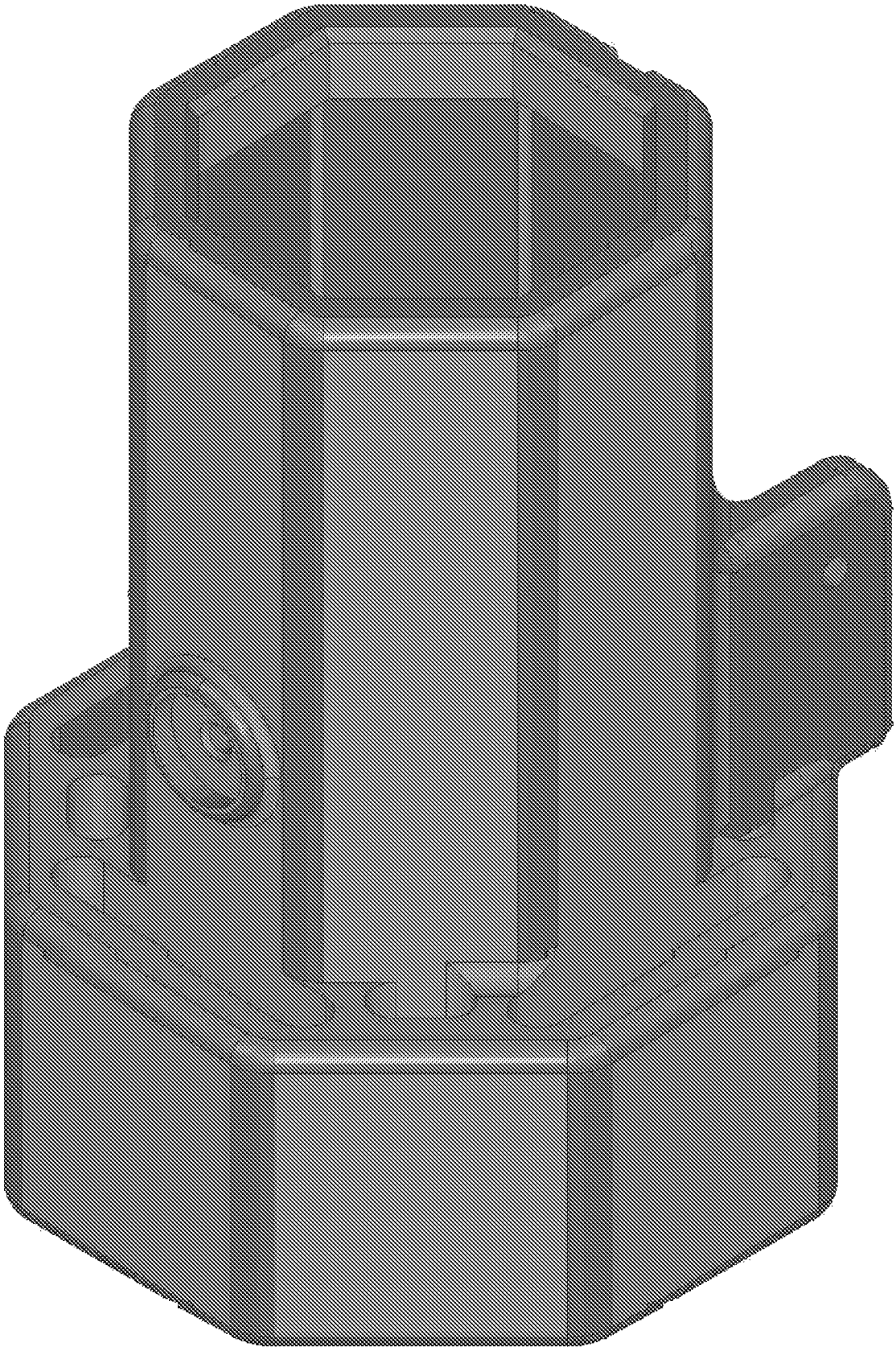


FIG. 26

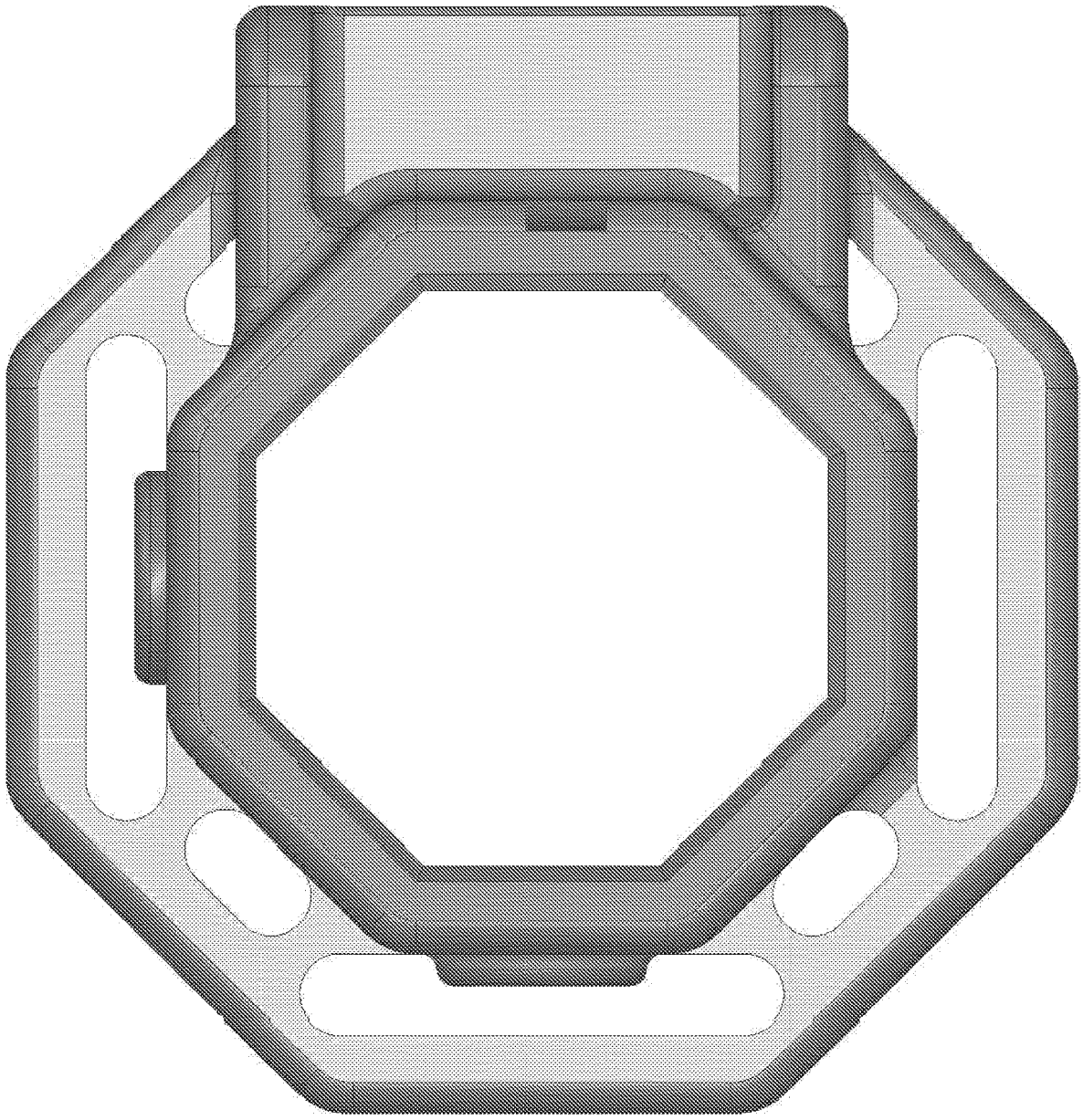
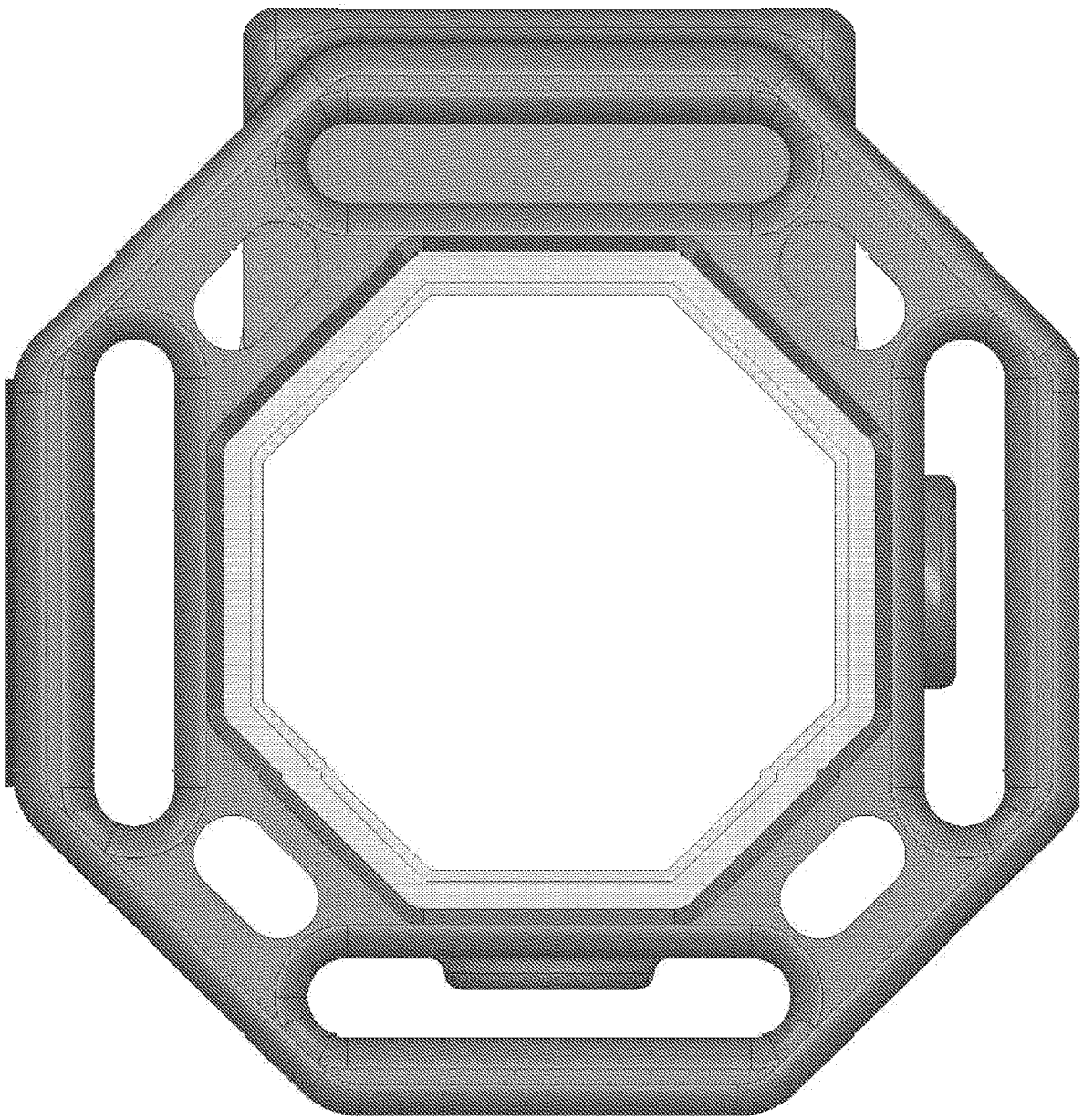


FIG. 27



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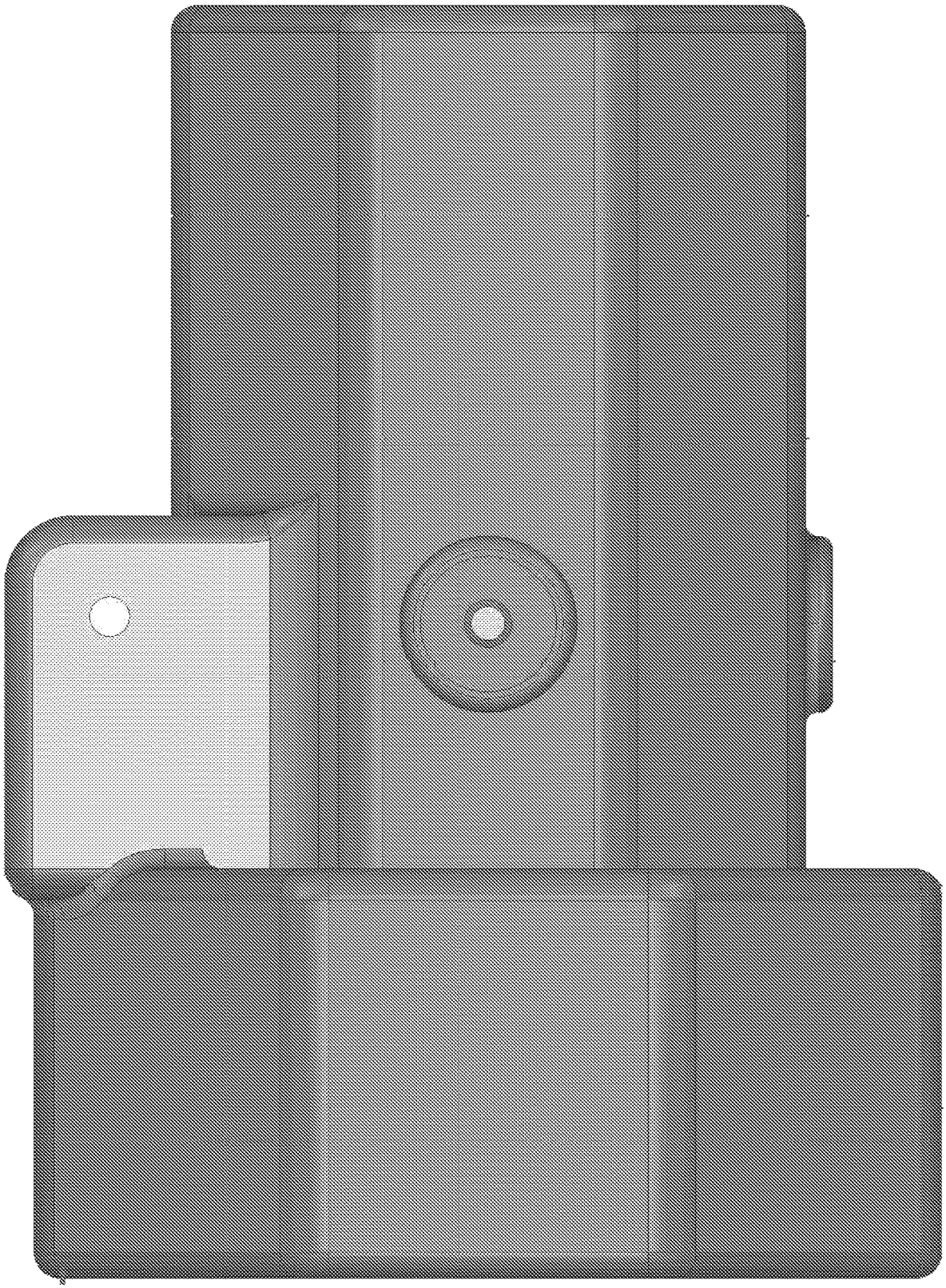

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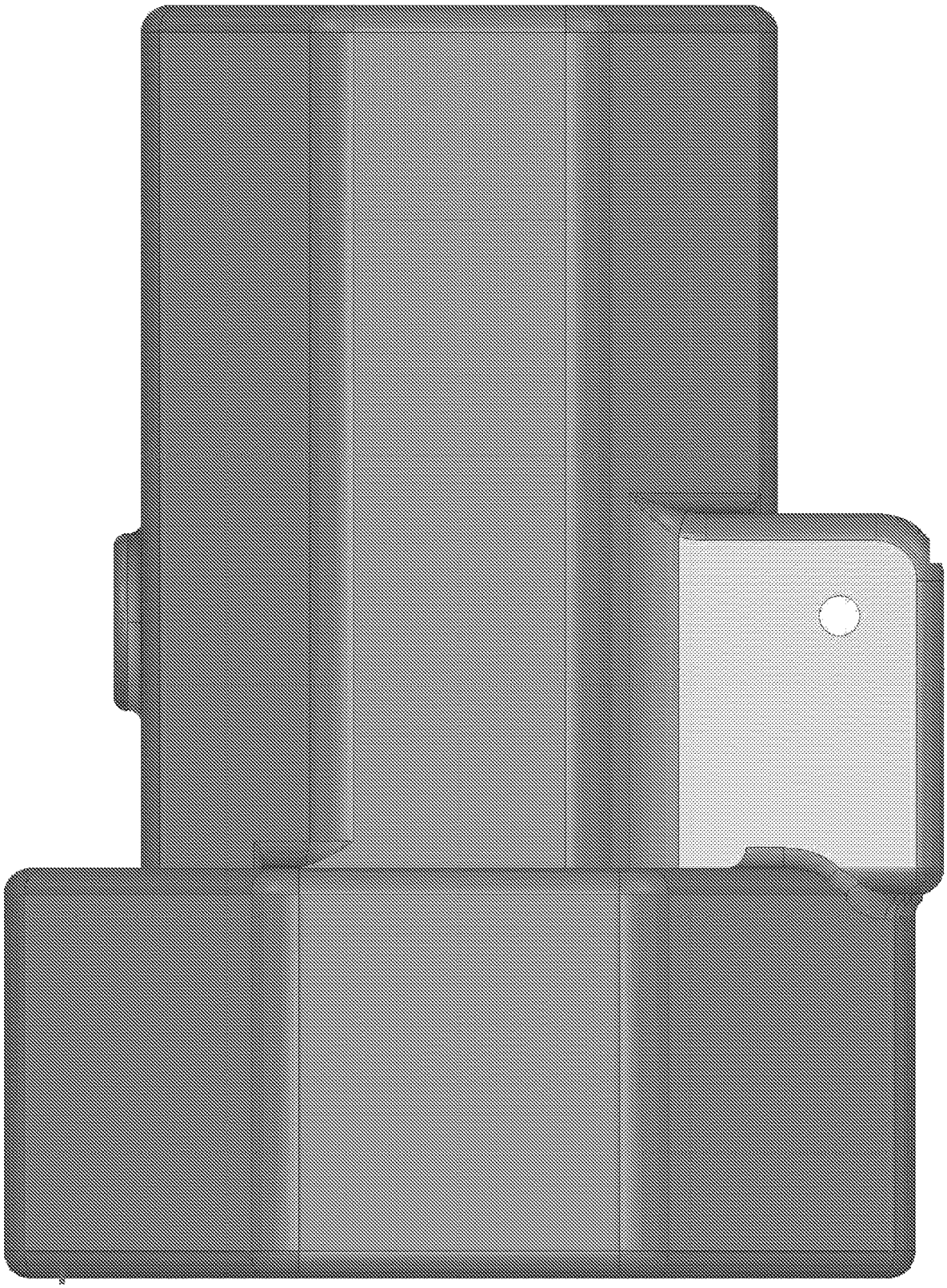

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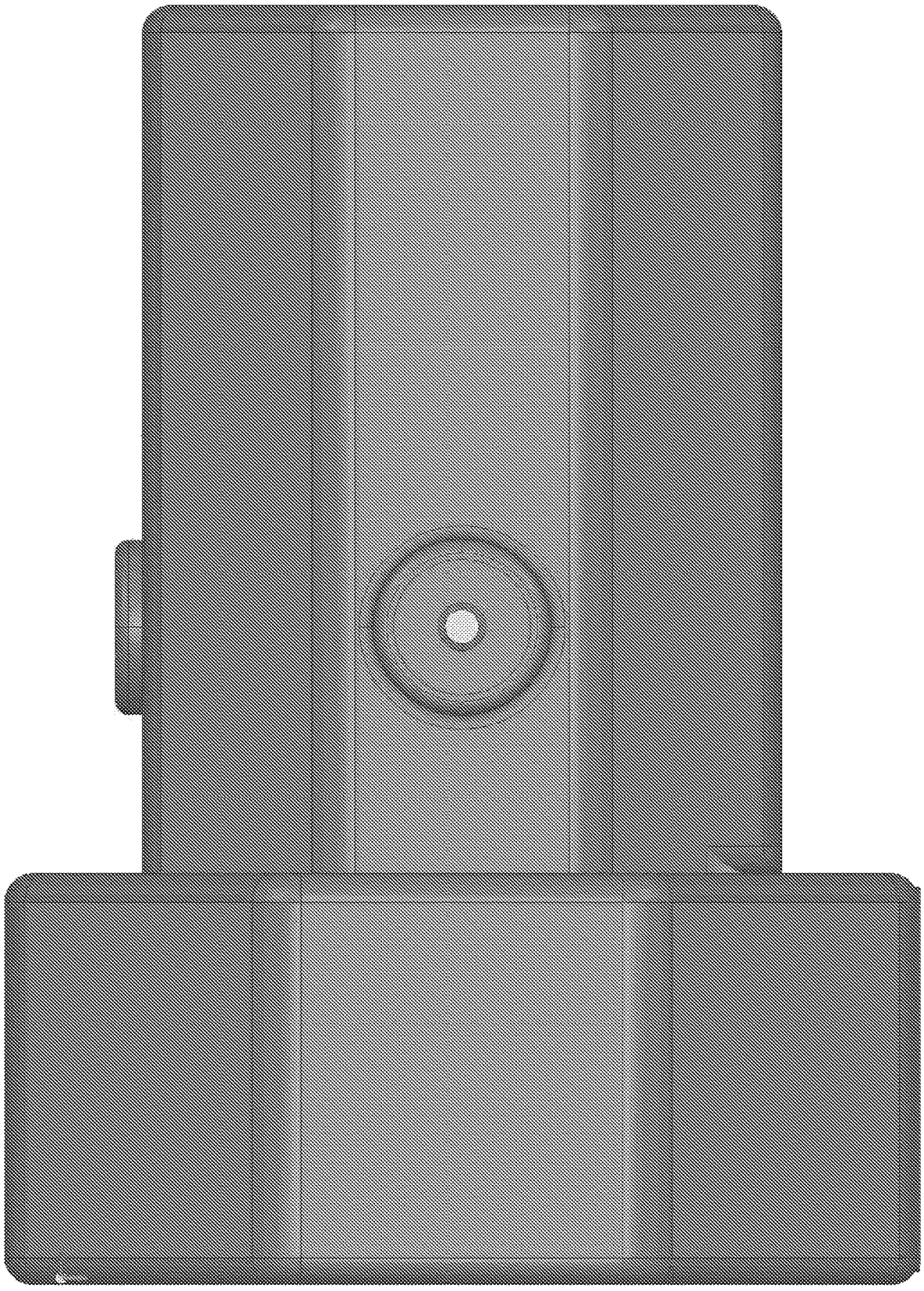

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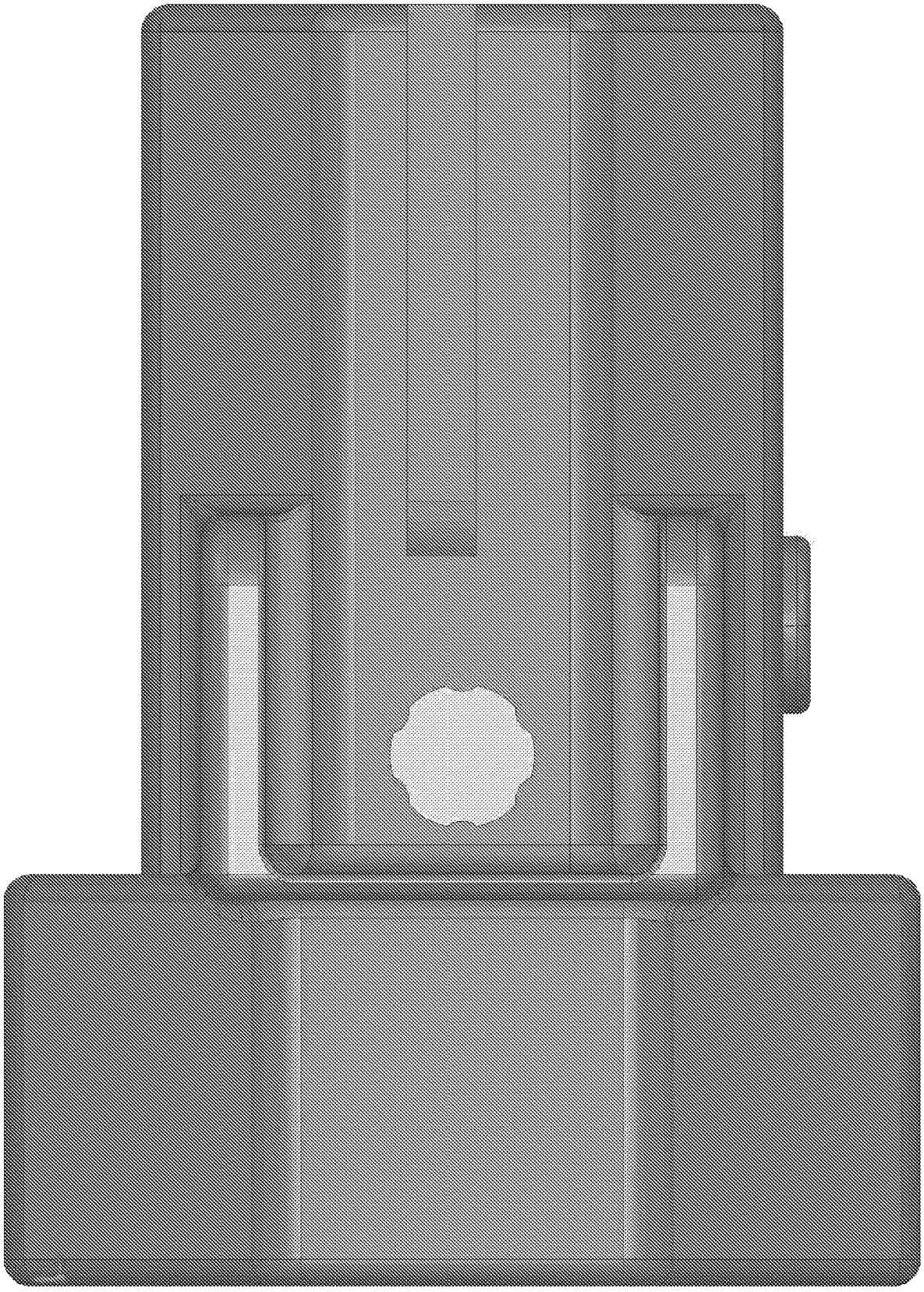

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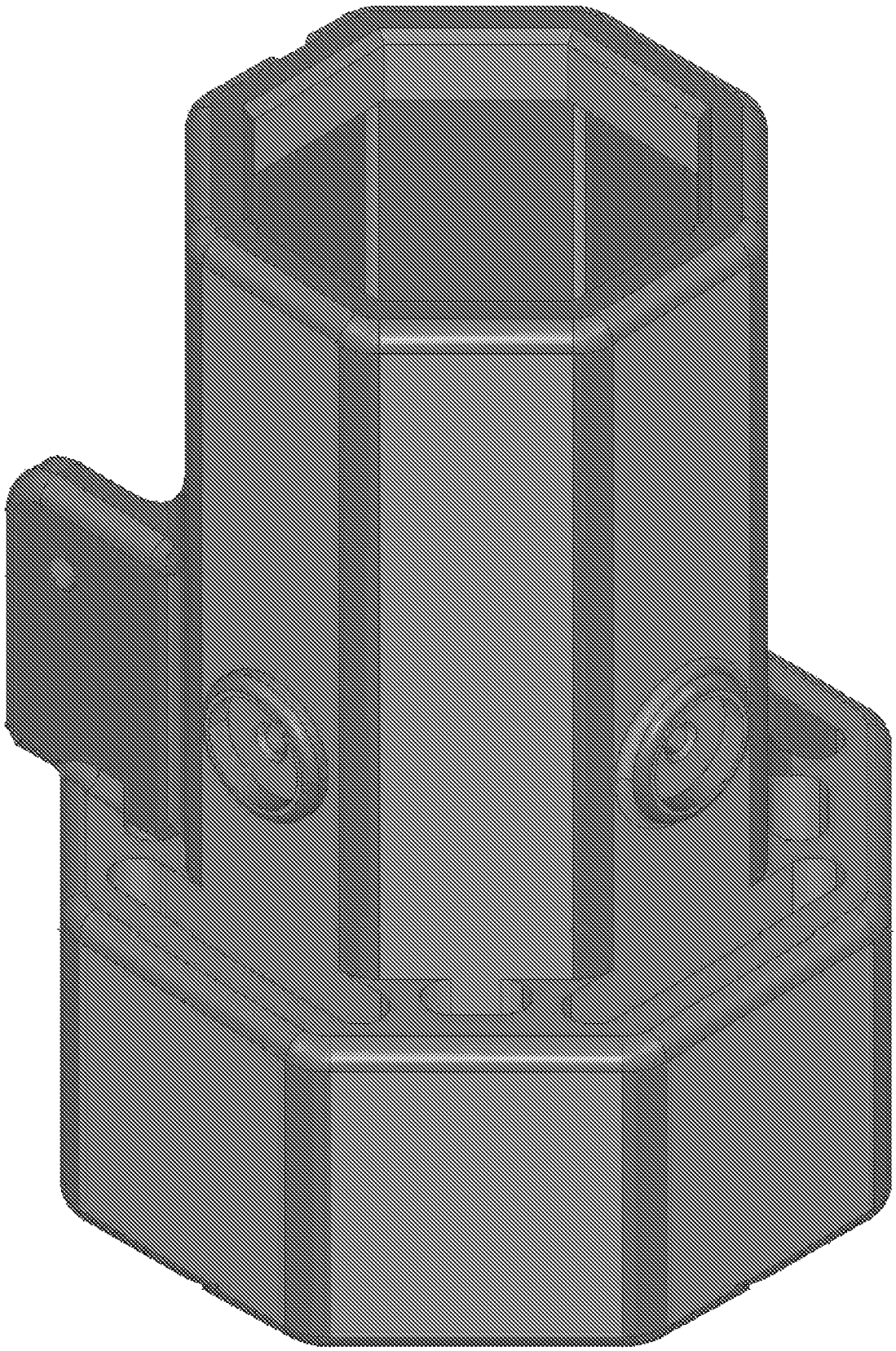

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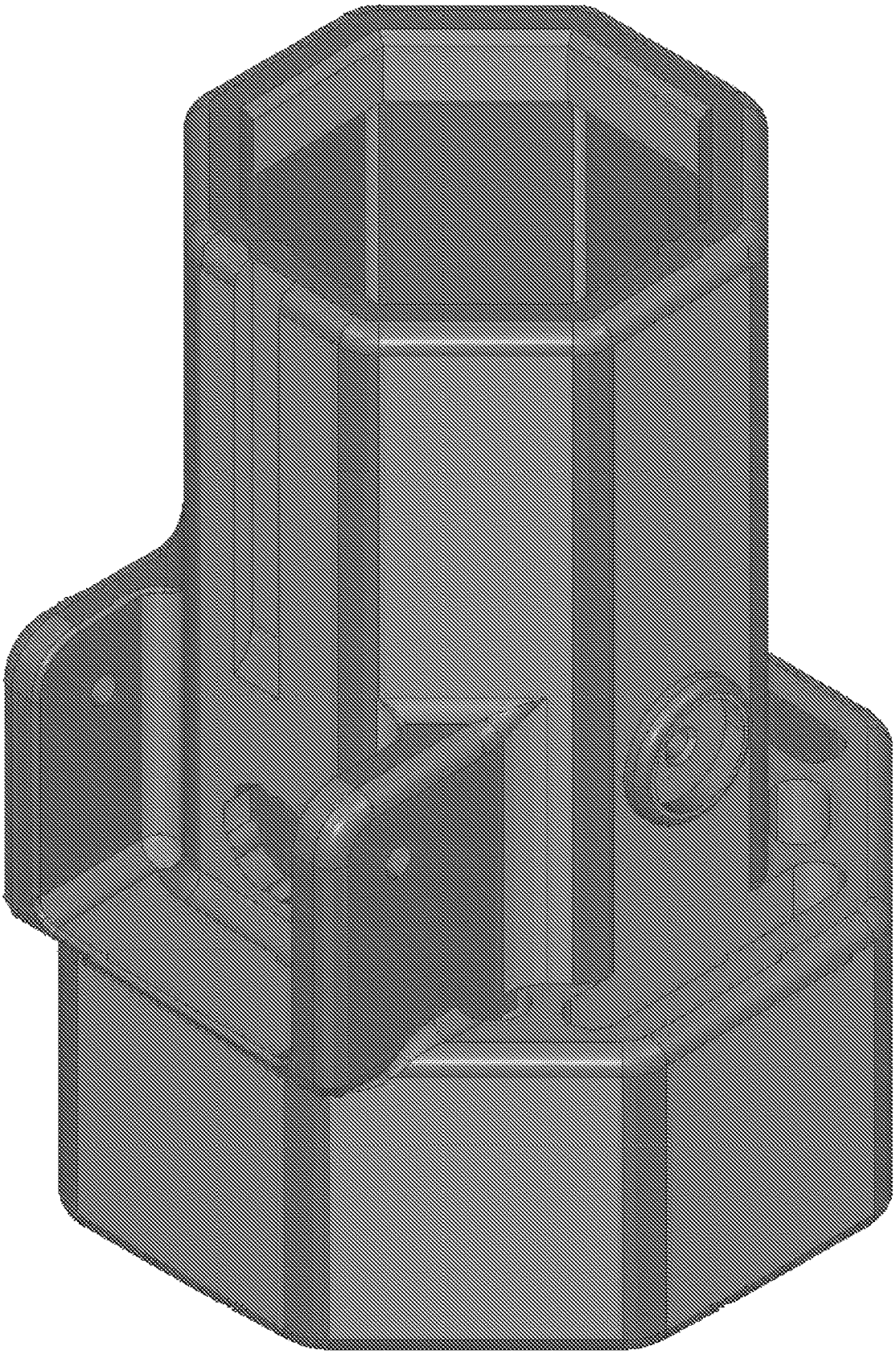

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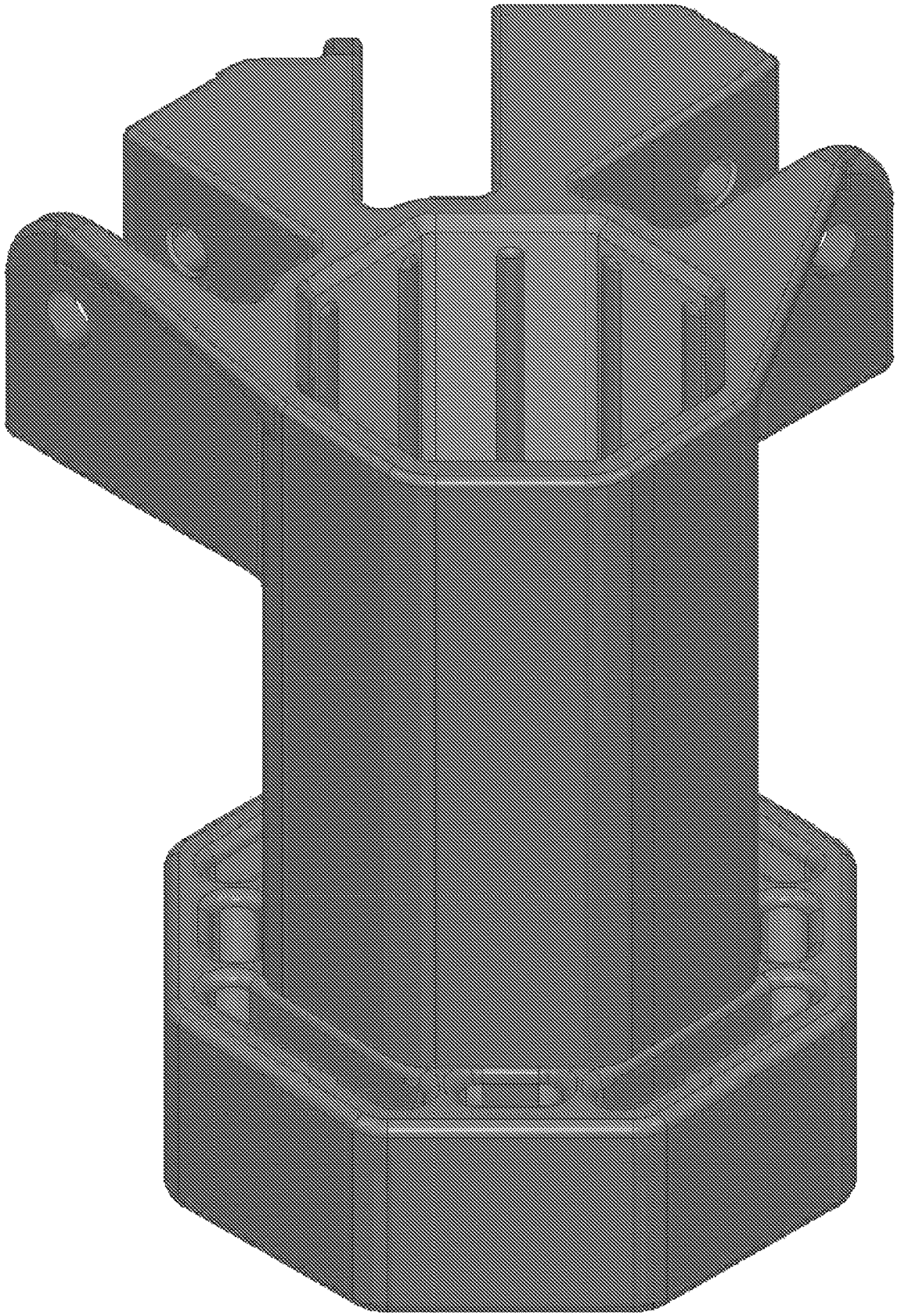

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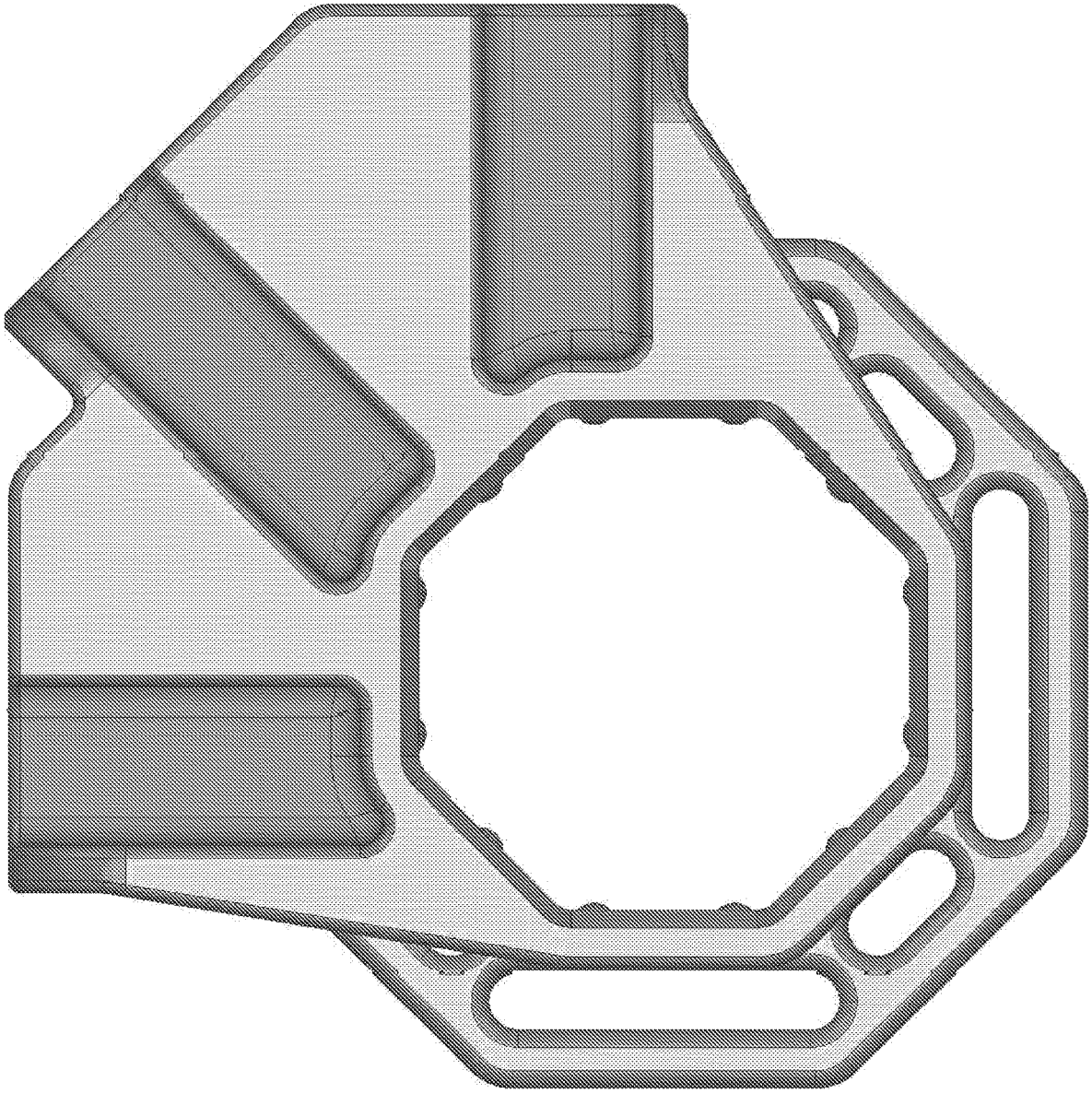

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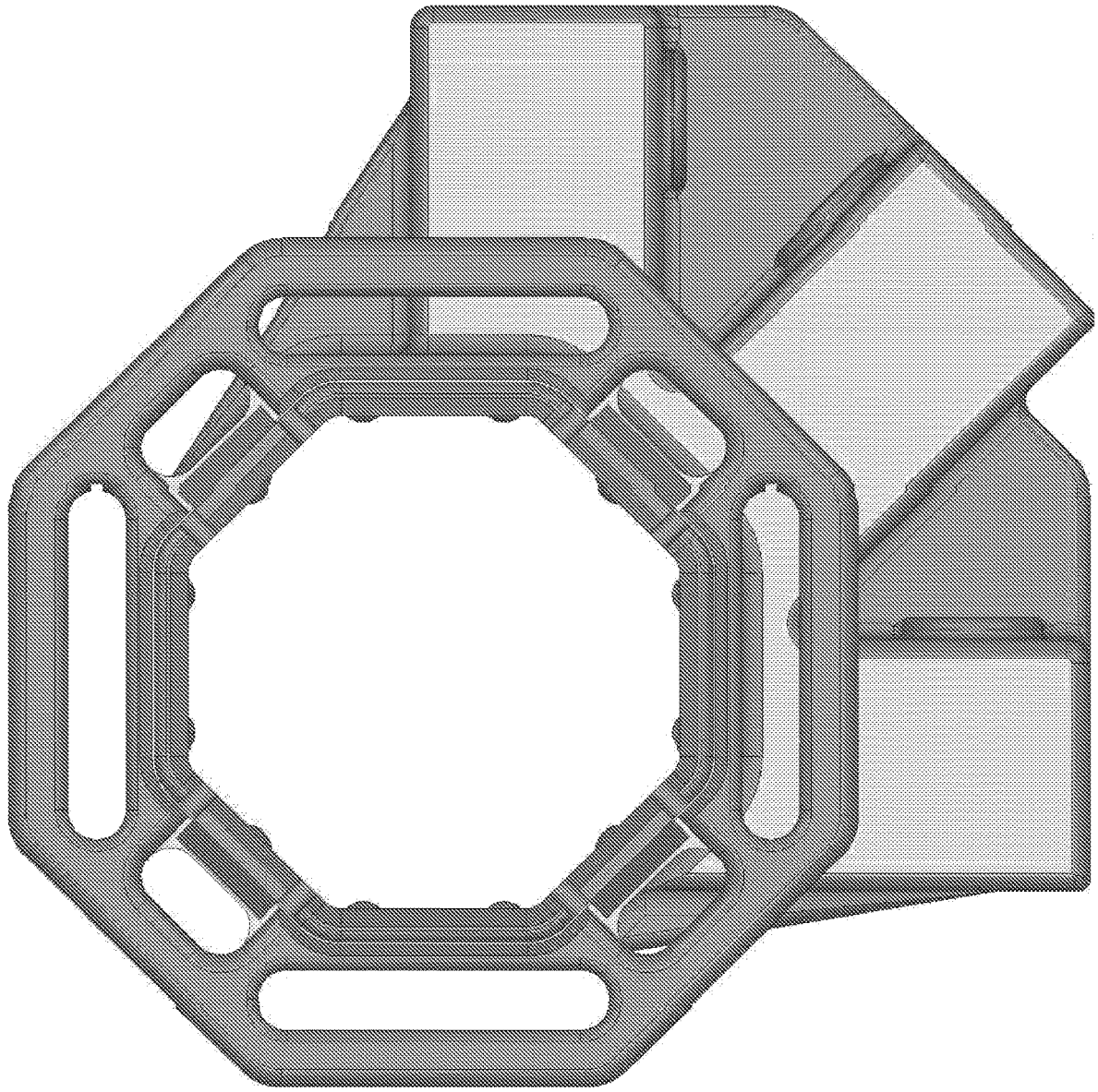

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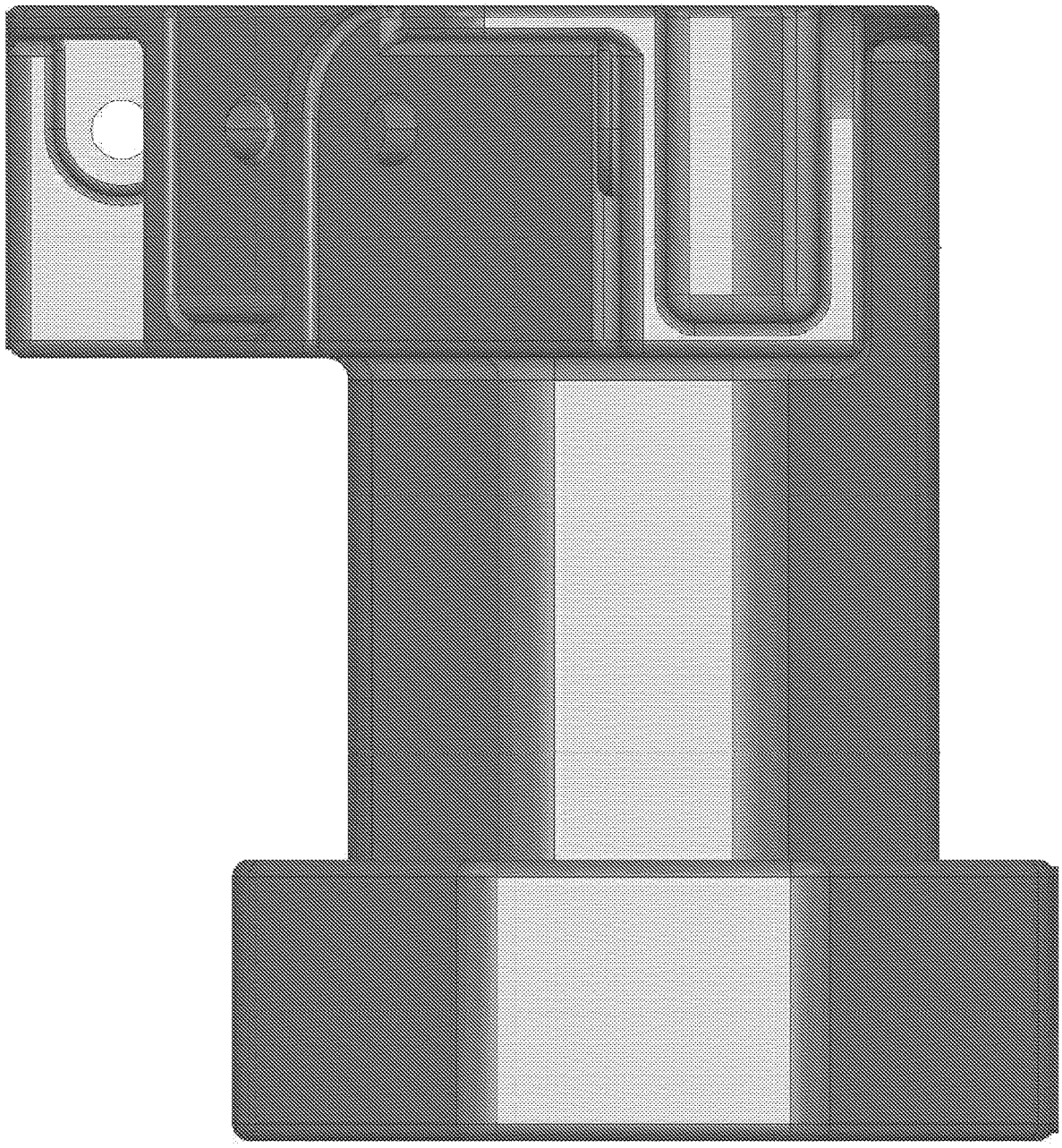

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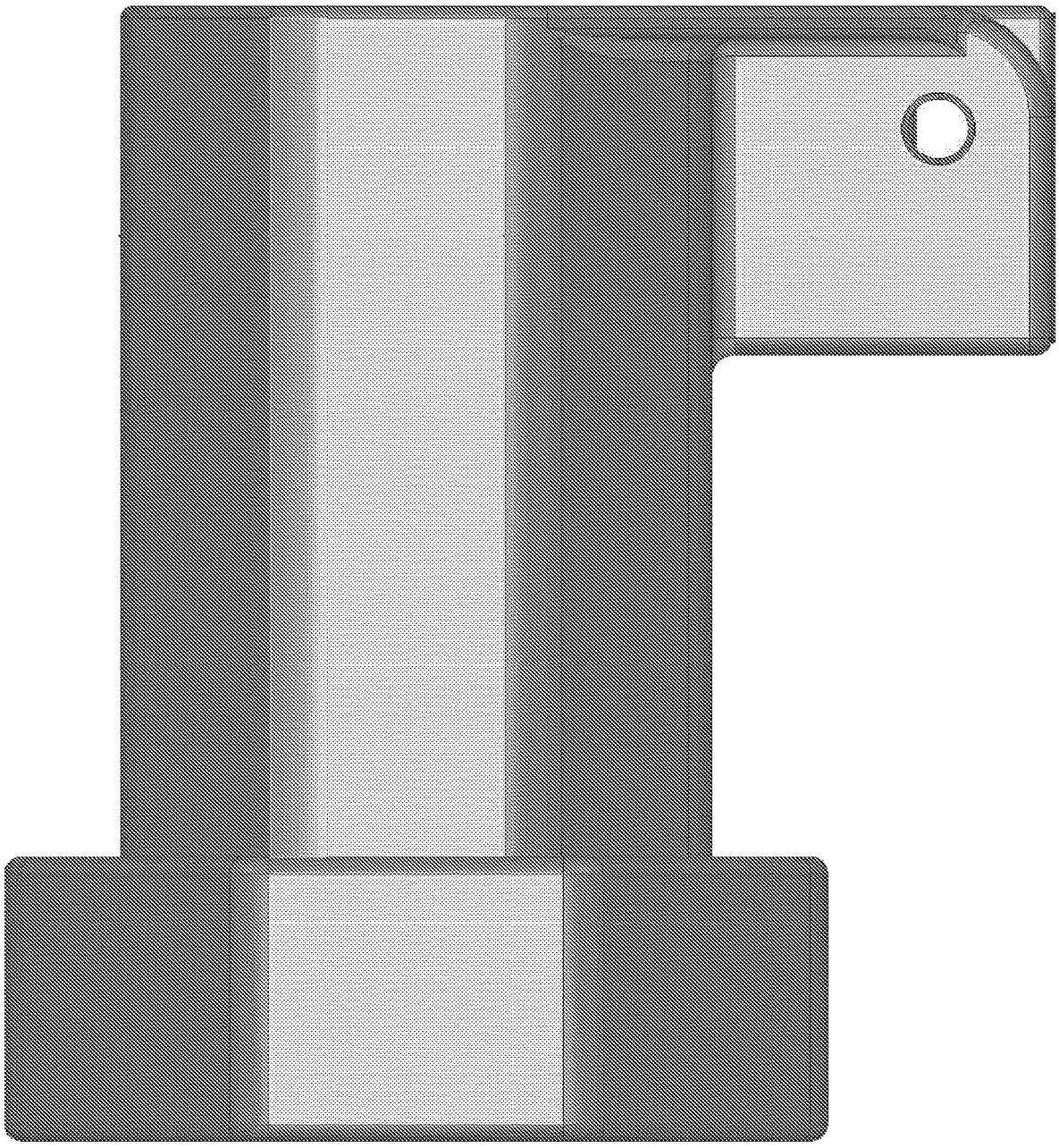

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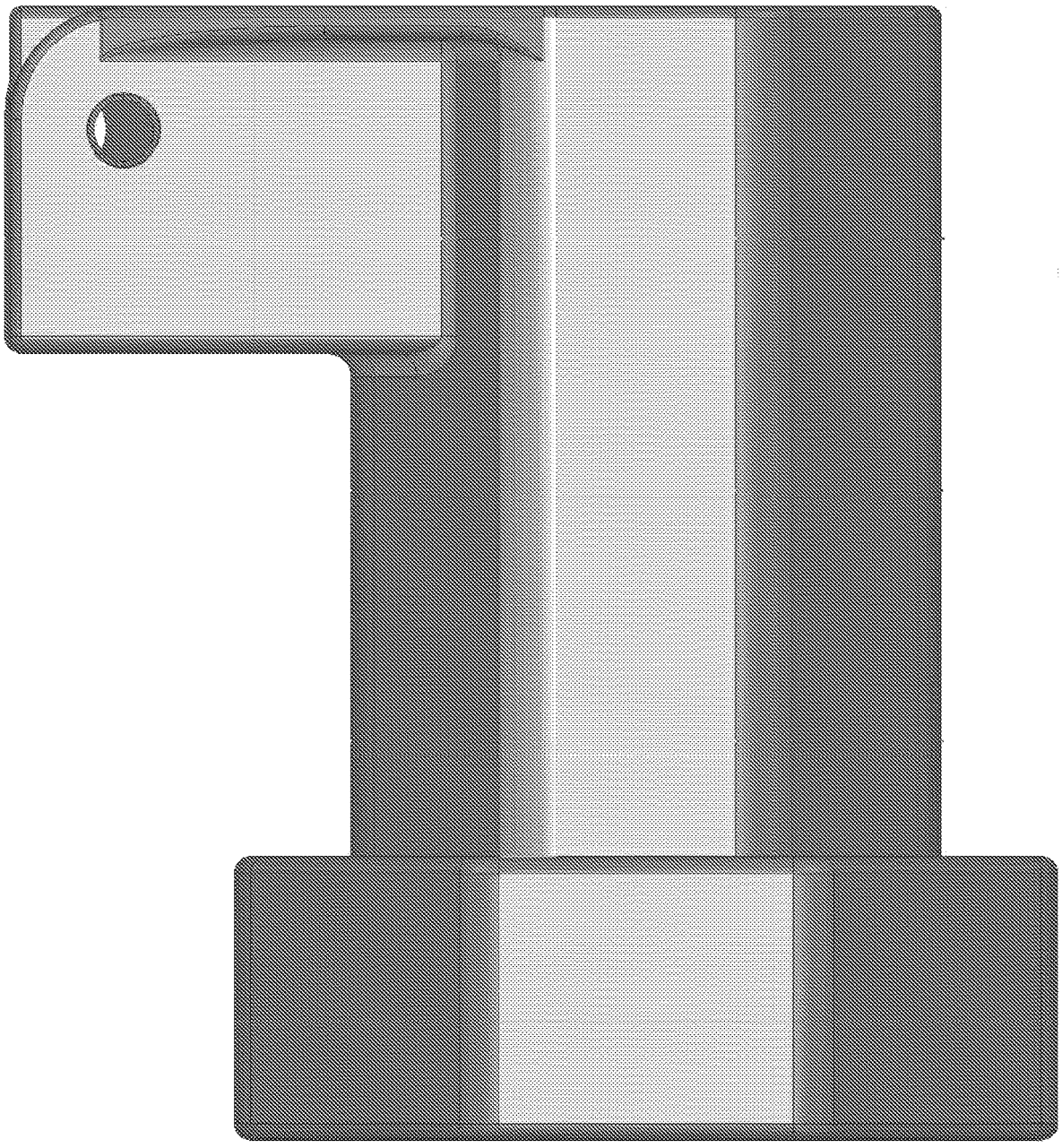

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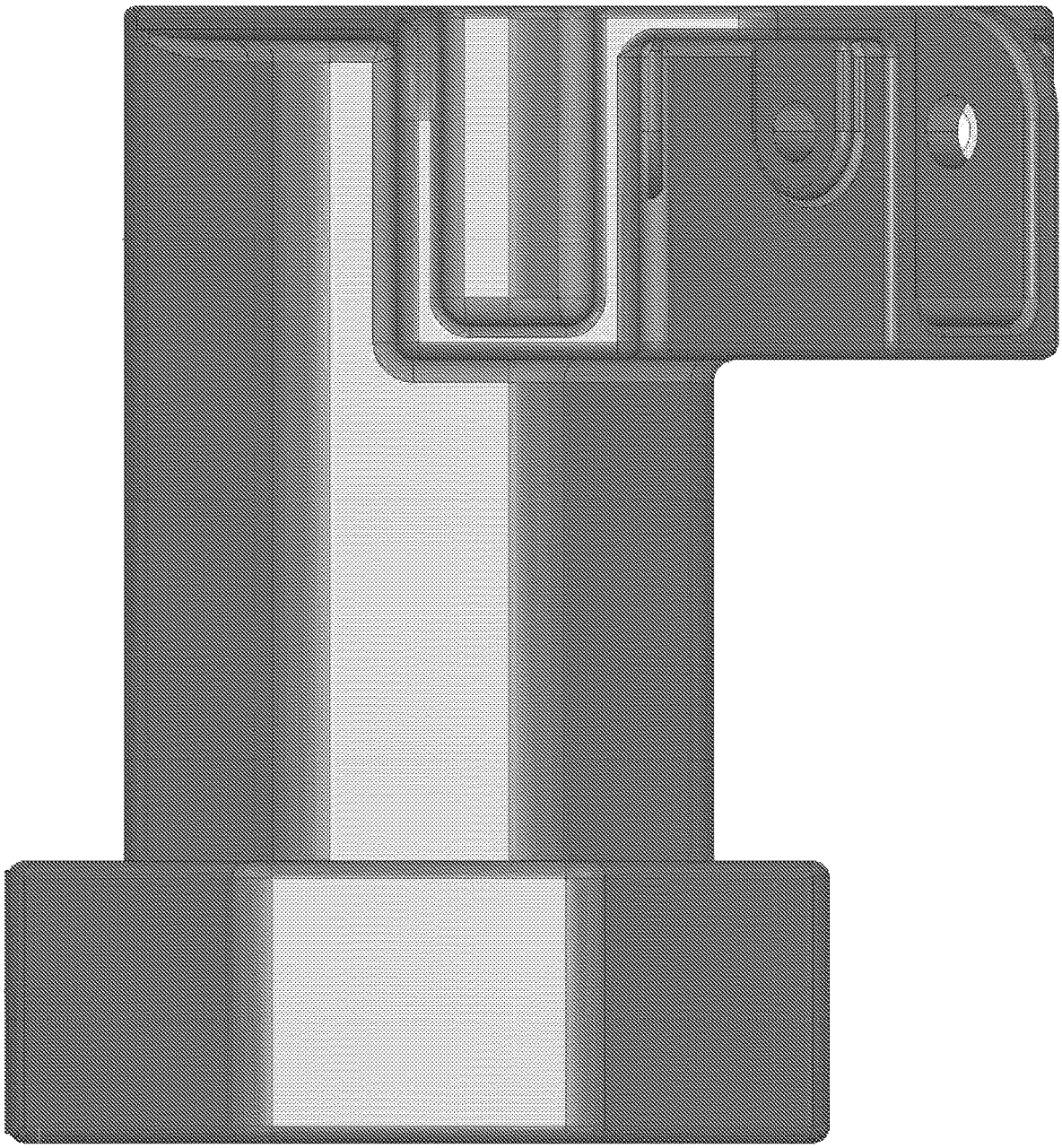

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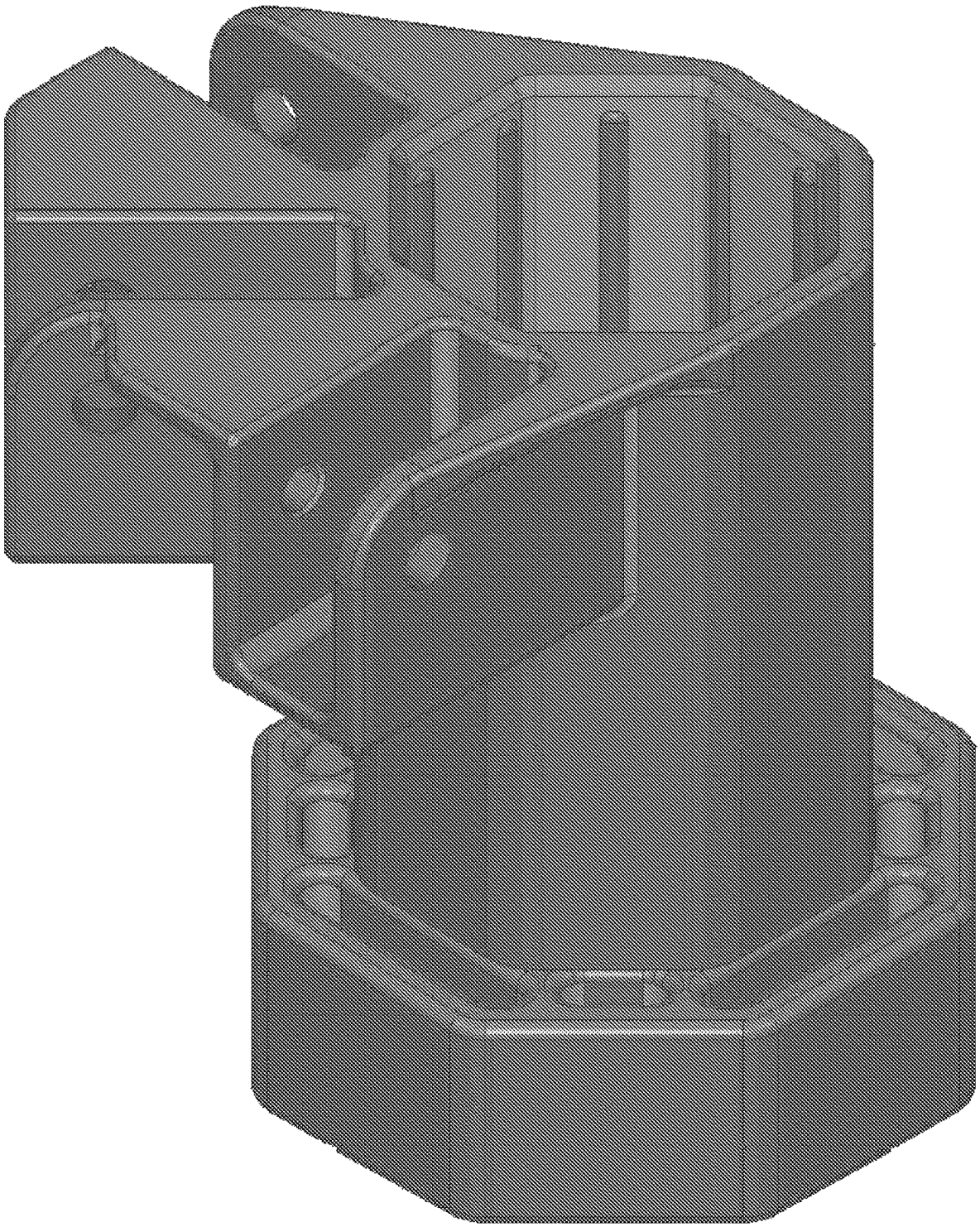

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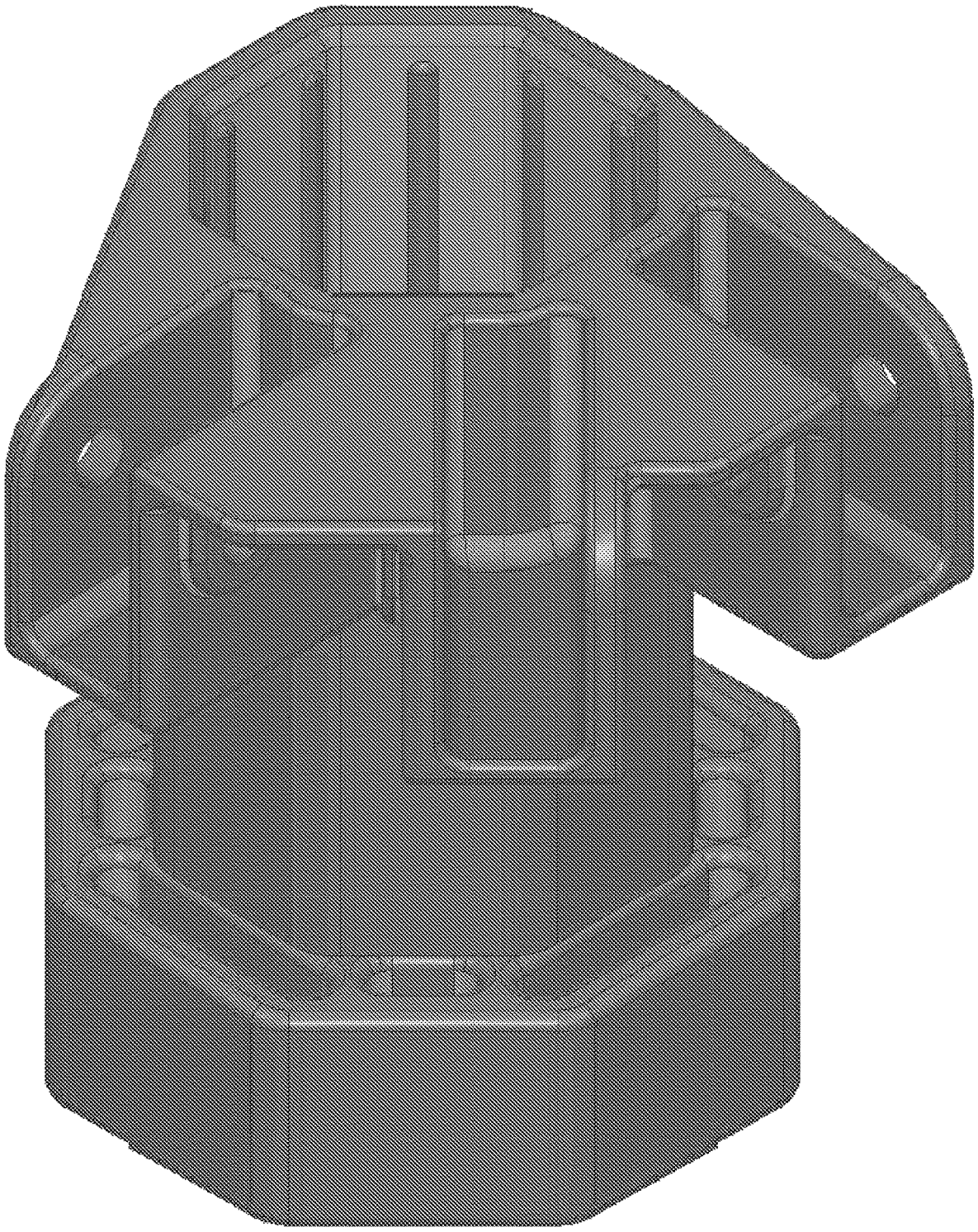


FIG. 43

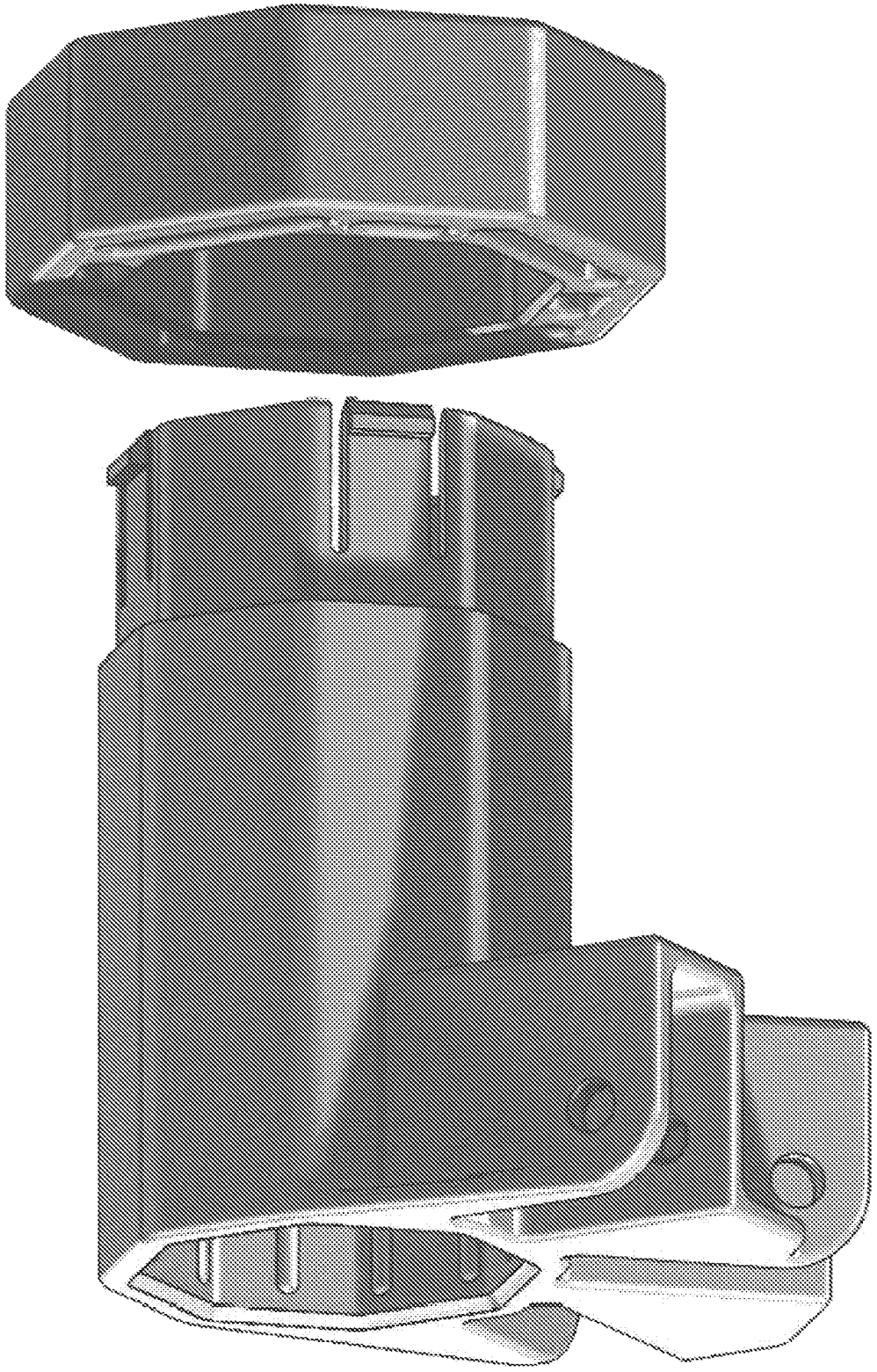


FIG. 44

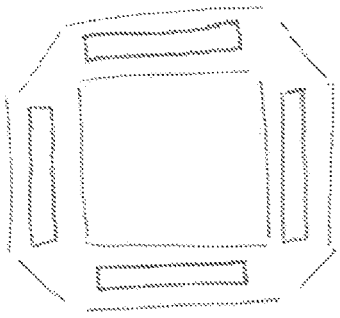


FIG. 45A

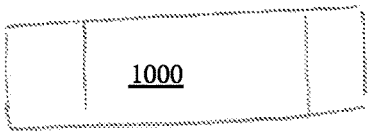
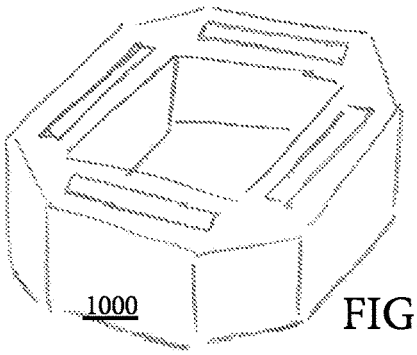


FIG. 45B



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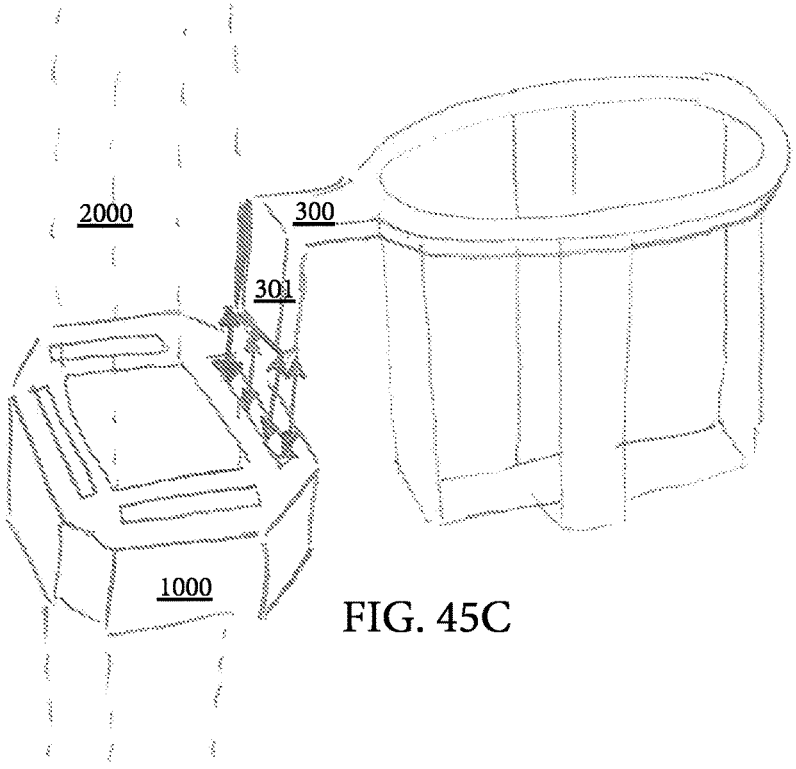

FIG. 45C

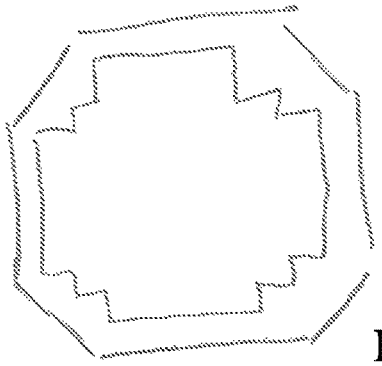

FIG. 46A

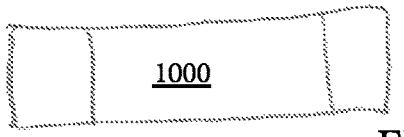

FIG. 46B

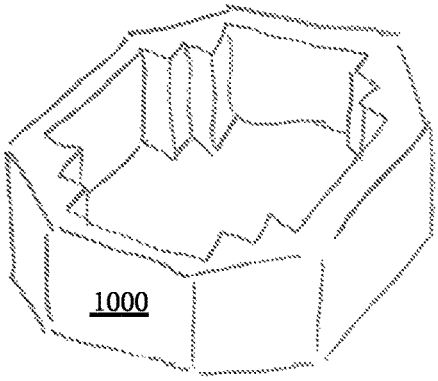

FIG. 46

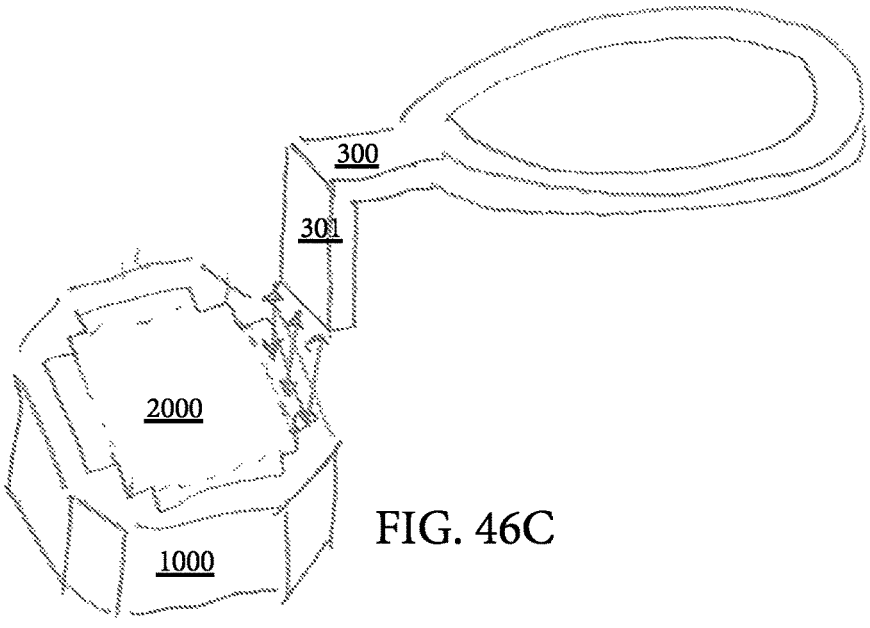

FIG. 46C

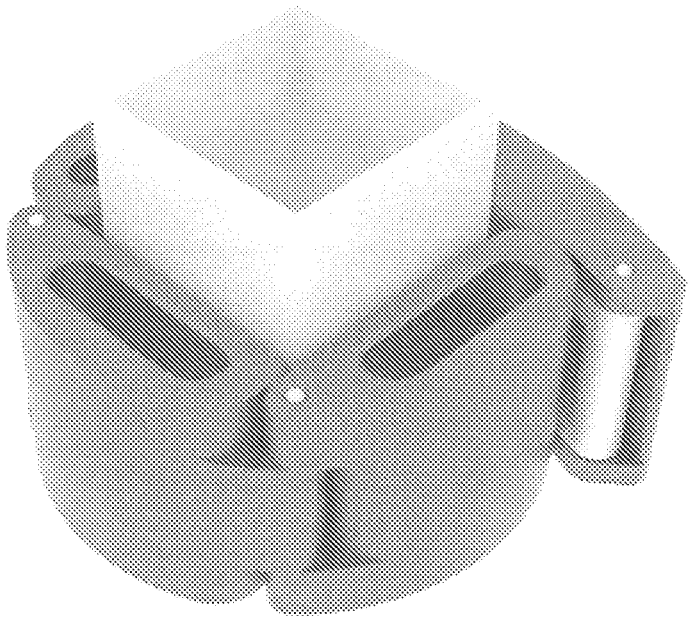

FIG. 47

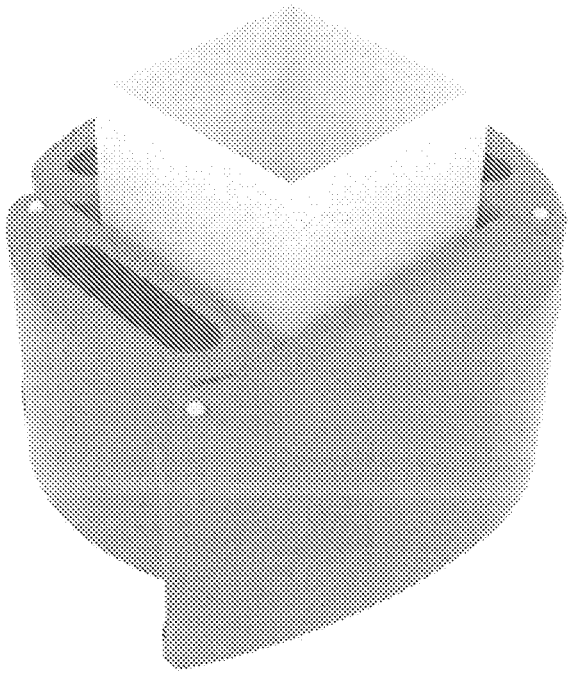

FIG. 48

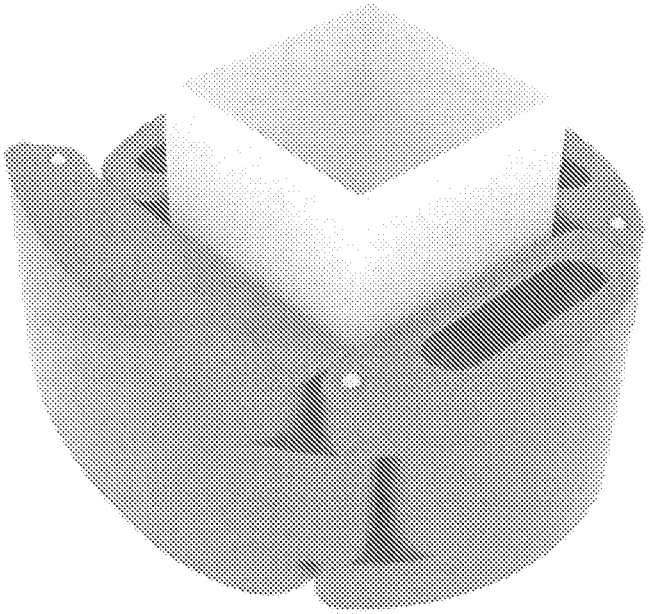

FIG. 49

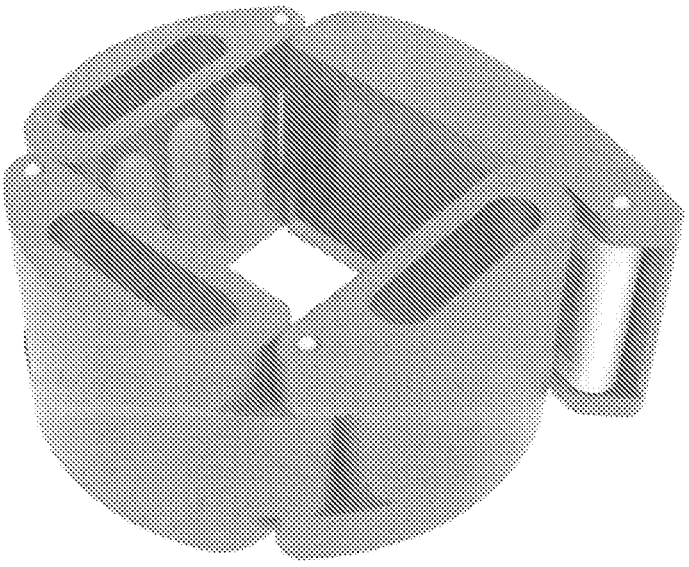

FIG. 50

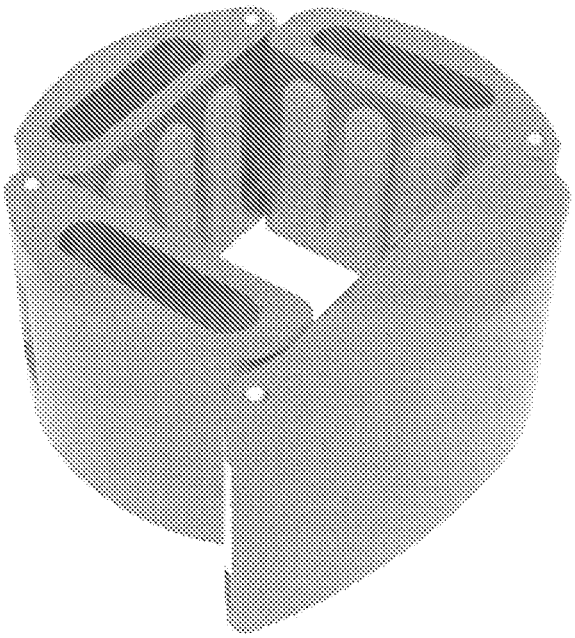

FIG. 51

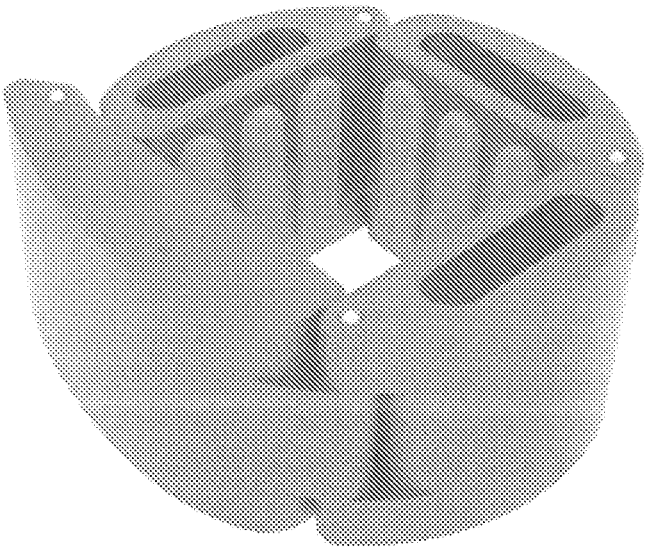

FIG. 52

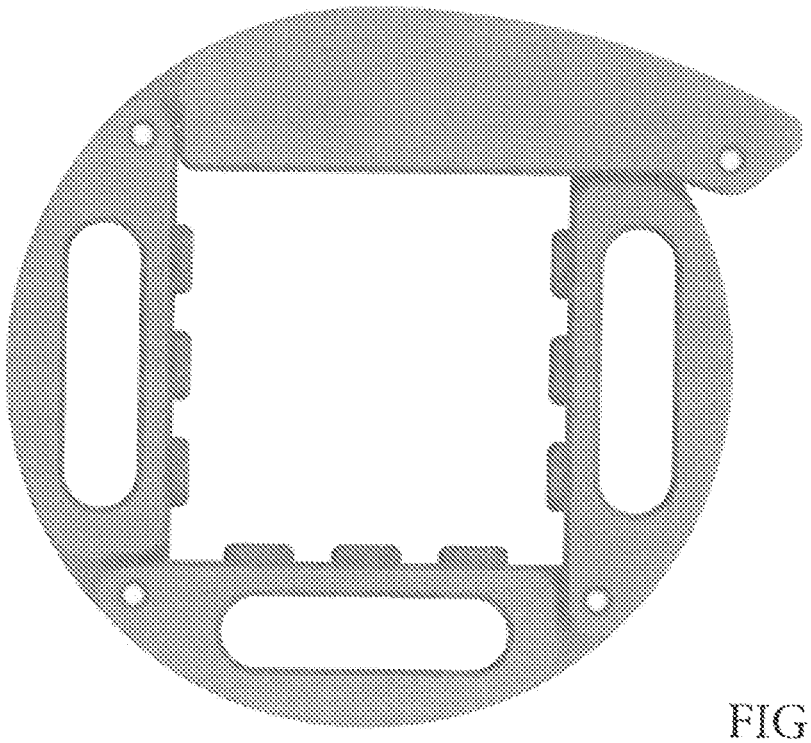

FIG. 53

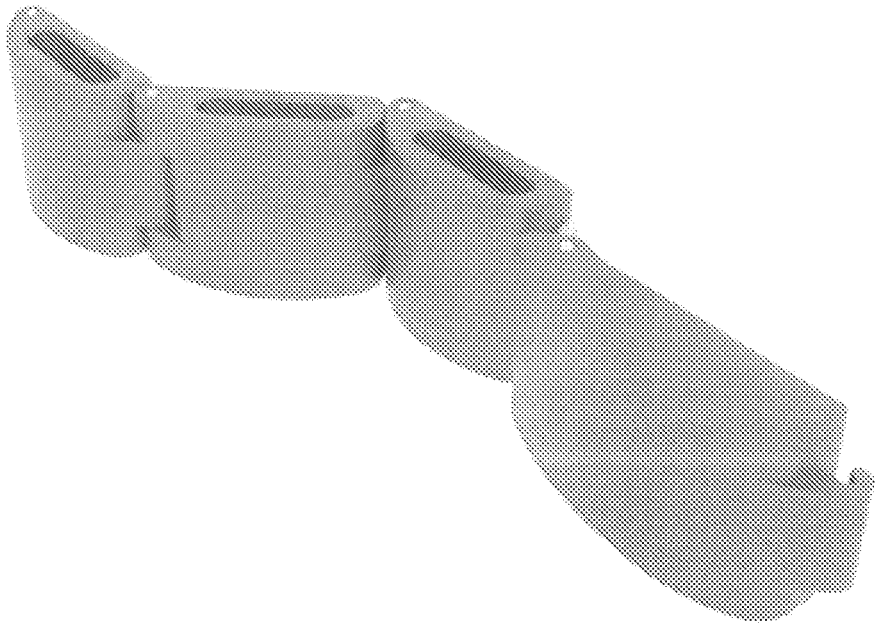

FIG. 54

FIG. 55

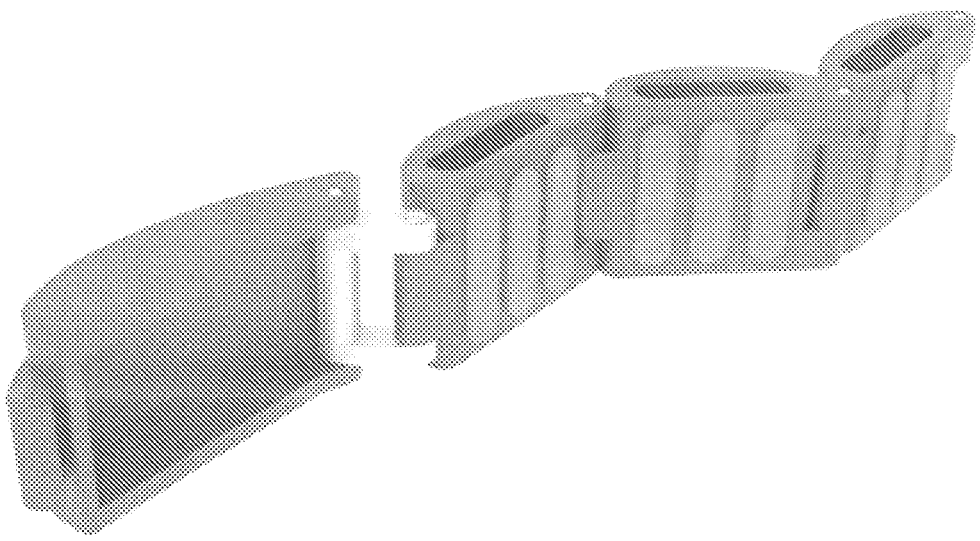

FIG. 56

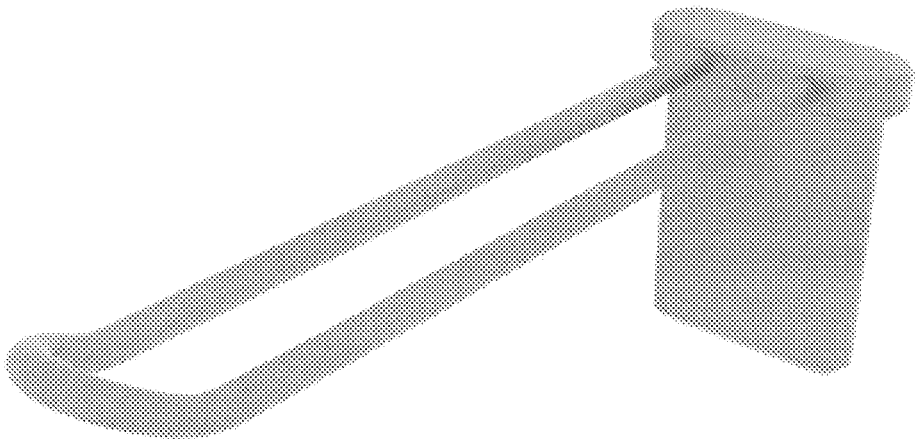

FIG. 57

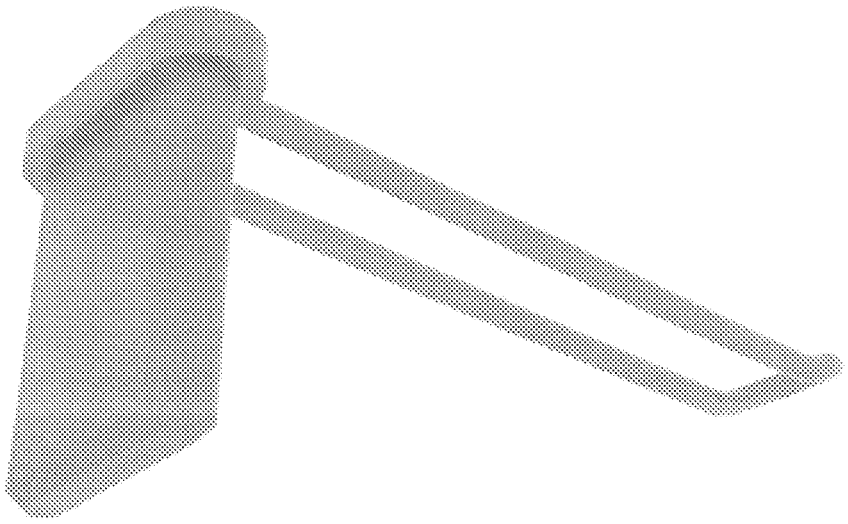

FIG. 58

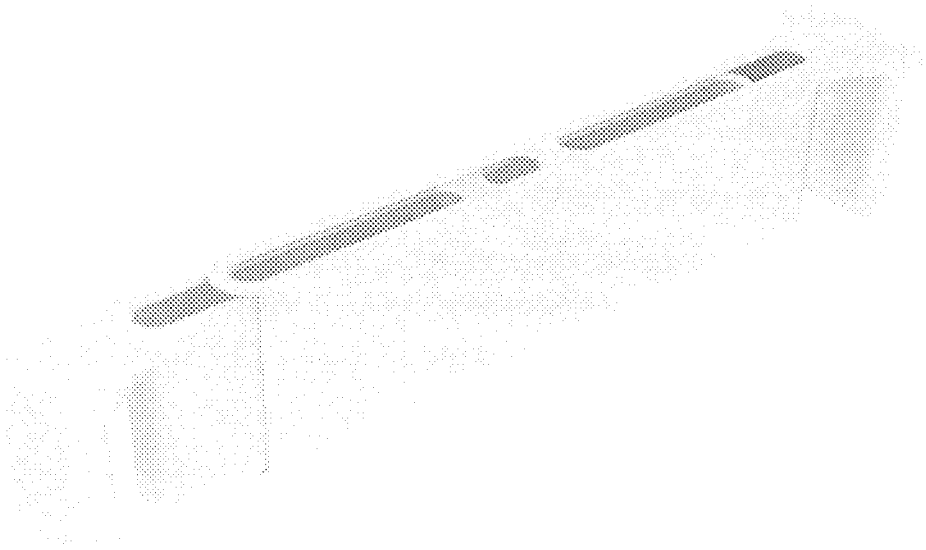

FIG. 59

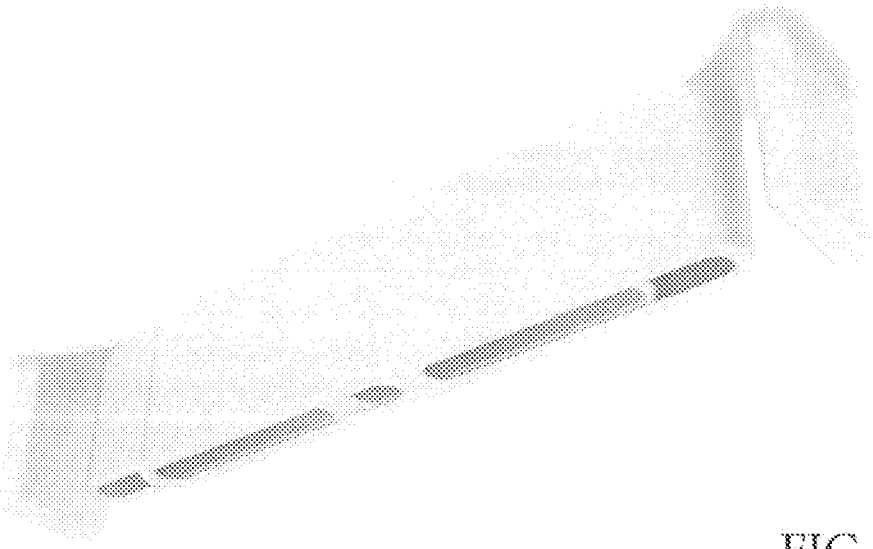

FIG. 60

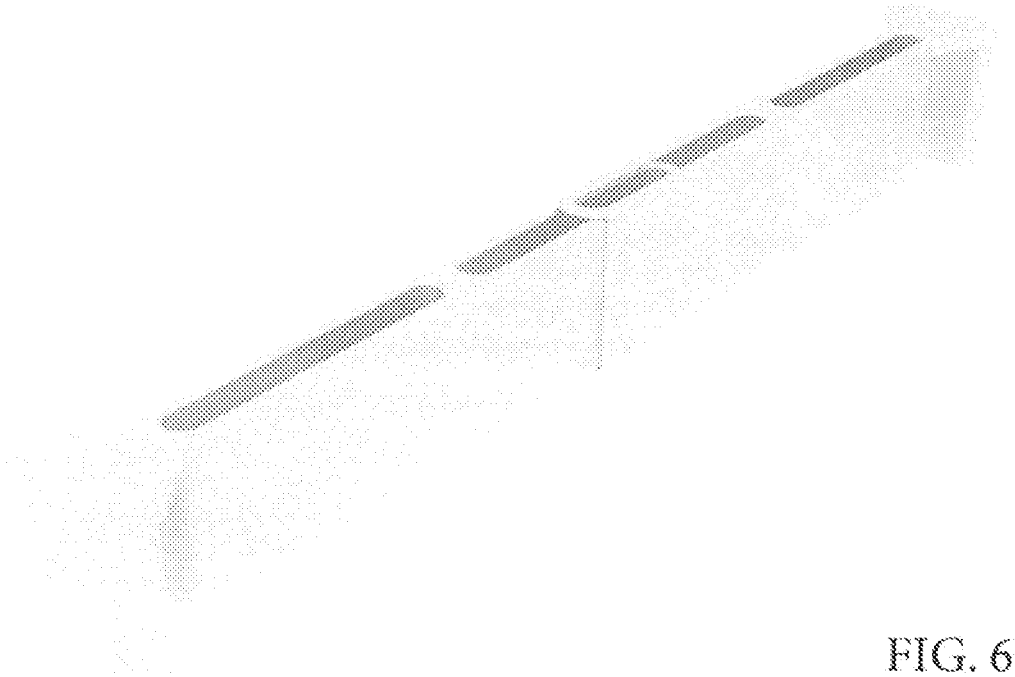

FIG. 61

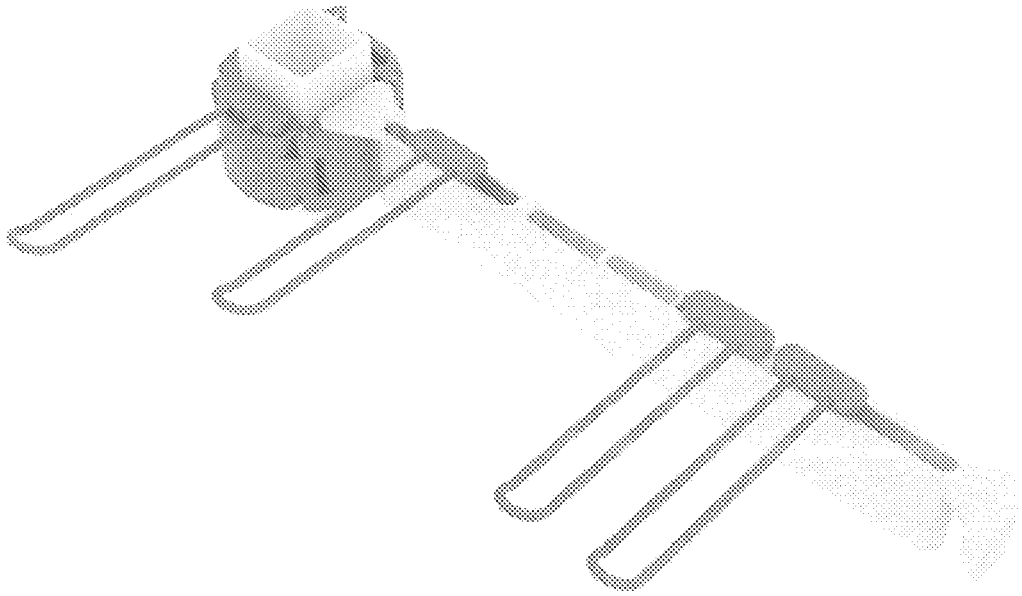

FIG. 62

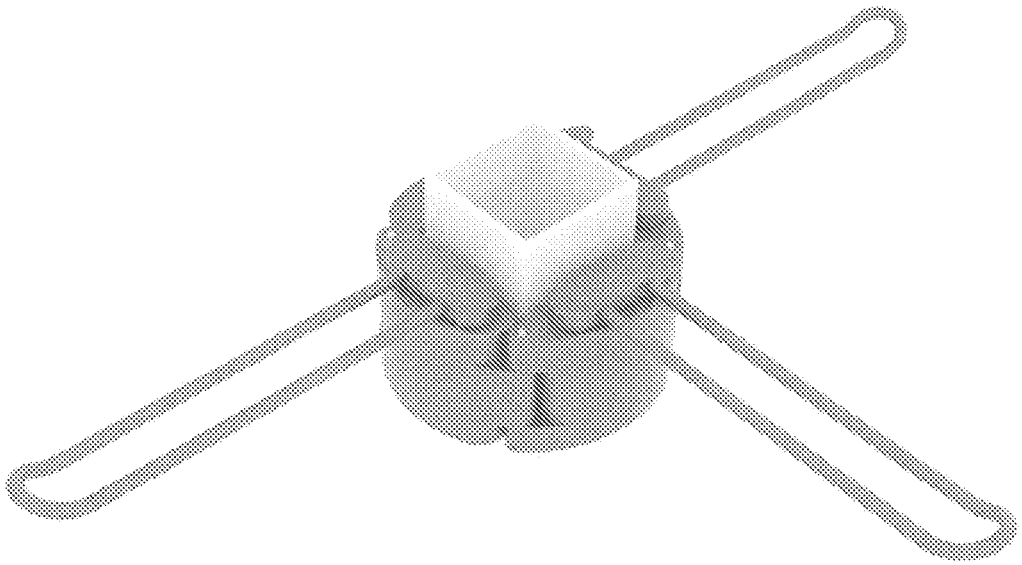

FIG. 63

INSTANT CANOPY FRAME WITH BUILT-IN HUBS FOR AN ASSORTMENT OF ATTACHMENTS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 62/575,490, filed Oct. 22, 2017. This document is incorporated by reference in its entirety.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT

Not applicable.

REFERENCE TO AN APPENDIX SUBMITED ON A COMPACT DISC AND INCORPORATED BY REFERENCE OF THE MATERIAL ON THE COMPACT DISC

Not applicable.

STATEMENT REGARDING PRIOR DISCLOSURES BY THE INVENTOR OR A JOINT INVENTOR

Reserved for a later date, if necessary.

BACKGROUND OF THE INVENTION

Field of Invention

The disclosed subject matter is in the field of pop-up shelters.

Background of the Invention

Deconstructable canopy frames provide a multitude of uses for outdoor recreational activities. Such frames have become essential for protection from sun and rain while also providing a temporary sanctuary for dining, resting, and outdoor play. Further, canopy frames have become more and more reliable as brand identifiers—displaying brand names so that the vender using the frame may be easily located by searching pedestrians in a crowded outdoor area.

Traditional canopy frames merely provide a sheltering frame; however, rarely do users utilize canopy frames for nothing more than sitting beneath them. Canopy frames are used in conjunction with a variety of outdoor activities, such as camping, tailgating, or marketing. All of these activities entail several hours of outdoor time and require additional gear that must be brought separately and assembled independently of the canopy frame. These additional items are burdensome to pack and unpack. Especially for items such as banners and trash bags, which require additional attachment means to connect the items to the canopy frame. When such products are simply hung on the trusses of the canopy, the framework is weakened because the trusses bend under the weight of the hung-up items.

Thus, a need exists for attachment means incorporated into a canopy frame so as to avoid the excessive and burdensome packing that is now required for outdoor activities.

SUMMARY OF THE INVENTION

In view of the foregoing, an object of this specification is to disclose a novel canopy frame hub, or bracket, that features insert openings on all four sides as well as leg adjustments. The frame hub encompass a leg of a traditional canopy frame and may be adjusted vertically to a desired height by sliding the bracket along the frame leg. The hub may then be fixated at the desired height via the twisting of a fixed screw inserted through an opening in one side of the hub.

The insert openings on the sides of each hub permit a user to easily and removably attach a variety of useful accessories such as: flags, banners, awnings, racks, garbage bags, drink holders, tables, shelves, gutters, and tents. Currently canopy frames lack adjustable hubs with built-in insert openings, requiring users to use alternative means to attach items to the frame, such a zip ties or ropes. The frame hubs of the present invention not only provide an adjustable attachment means, but they require less work for a user who would otherwise have to remember the loose parts (rope, zip ties, etc.) and construct attachment means with those loose parts.

Another objective of this disclosure is to describe various embodiments of hubs for various functional attachments or accessories with a wide variety of uses. In some cases, the hubs are integrated on a framework for a pop-up canopy or other shelter. It is another objective to describe hubs that easily attach to the framework in a manner that eliminates loose parts (i.e., parts capable of being lost). Yet another objective is to describe the integrated hubs in a way that enables establishment of the framework without interfering with the put-up or take down of the framework. In some instances, the hubs feature vertical openings that are easily accessible when the canopy or shelter framework is erected. Suitably, the hubs may be identified via one or more of said vertical openings on either of the 1 or more openings on either the slider, the leg adjustment mechanism or the bottom of the outer or upper leg. In one mode of use, multiple accessories will be available to enhance the popular uses of Instant Canopies during e.g.: tailgating; street fairs; farmers markets; promotional events; community events and sporting events. Suitably, the hubs have a multiplicity of benefits, including: providing a clean professional look for attaching accessories to the framework without unsightly clamps or homemade attachments. Preferably, the hubs are easy to use and are inexpensive. Finally, it is preferable that the hubs enable installation of a bar or pole from leg to leg in 2 locations where the bar or pole is strong enough to hold display walls or merchandise.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

Other objectives of the disclosure will become apparent to those skilled in the art once the invention has been shown and described. The manner in which these objectives and other desirable characteristics can be obtained is explained in the following description and attached figures in which:

FIG. **1** is a perspective view of the frame hub surrounding a canopy frame leg;

FIG. **2** is a perspective view of an environmental view of the frame hub in use;

FIG. **2**A is a magnified view of the frame hub supporting an awning;

FIG. **2**B is a magnified view of the frame hub showing the fixated screw;

FIG. **2**C is a magnified view of the frame hub supporting a counter attachment;

FIG. **3**A is a perspective view of the frame hub unattached to a counter attachment;

FIG. **3**B is a perspective view of the frame hub connected to a counter attachment;

FIG. **4** is a perspective view of the frame-receiving extension;

FIG. **5**A is an environmental view of the frame-receiving extension in use, supporting an advertisement banner;

FIG. **5**B is an environmental view of the frame-receiving extension in use, supporting an advertisement banner;

FIG. **6** is an environmental view of the frame-receiving extension supporting a sign with frame hubs also attached;

FIG. **7** is an environmental view showing the simultaneously use of the frame-receiving extension and the frame hub;

FIG. **8** is an environmental view showing the simultaneously use of the frame-receiving extension and the frame hub;

FIG. **9** is a perspective view of an example of framework for a pop-up canopy;

FIG. **10** is a perspective view of a leg adjustment hub and insertable accessory pole;

FIG. **11** is a perspective view of a leg adjustment hub with a cup holder installed in one of the vertical openings of the slider;

FIG. **12** is a perspective view of a leg adjustment hub with a garbage bag holder installed in one of the vertical openings of the slider;

FIG. **13** is a perspective view of a leg adjustment hub with a cup holder installed in one of the vertical openings of the slider;

FIG. **14** is a perspective view of a truss support slider and insertable accessory pole;

FIG. **15** is a cross section of the truss support slider and insertable accessory pole of FIG. **14**;

FIG. **16** is a perspective view of a canopy with various accessories installed on the framework via hubs;

FIG. **17** is a perspective view of a canopy with various accessories installed on the framework via hubs;

FIG. **18** is a view of a display assembly;

FIG. **19** is a perspective view of a prior art truss support slider;

FIG. **20** is a perspective view of pole attachment accessory that is capable of connecting to a hub disclosed herein;

FIG. **21** is a perspective view of a canopy with various accessories installed on the framework via hubs;

FIG. **22** is a perspective view of pole attachment accessory that is capable of connecting to a hub disclosed herein;

FIG. **23** is an environmental view of a canopy;

FIG. **24** is an environmental view of a hub provided to a truss support slider;

FIG. **25** is an environmental view of a hub provided to a leg adjustment hub;

FIG. **26** is perspective view of the hub of FIG. **25**;

FIG. **27** is top view of the hub of FIG. **25**;

FIG. **28** is a bottom view of the hub of FIG. **25**;

FIG. **29** is a left-side view of the hub of FIG. **25**;

FIG. **30** is a right side view of the hub of FIG. **25**;

FIG. **31** is a back view of the hub of FIG. **25**;

FIG. **32** is a front view of the hub of FIG. **25**;

FIG. **33** is a perspective view of the hub of FIG. **25**;

FIG. **34** is a perspective view of the hub of FIG. **25**;

FIG. **35** is a perspective view of the hub of FIG. **24**;

FIG. **36** is a top view of the hub of FIG. **24**;

FIG. **37** is a bottom view of the hub of FIG. **24**;

FIG. **38** is a left-side view of the hub of FIG. **24**;

FIG. **39** is a right side view of the hub of FIG. **24**;

FIG. **40** is a back view of the hub of FIG. **24**;

FIG. **41** is a front view of the hub of FIG. **24**;

FIG. **42** is a perspective view of the hub of FIG. **24**;

FIG. **43** is a perspective view of the hub of FIG. **24**;

FIG. **44** is an alternate embodiment of the hub of FIG. **24**;

FIG. **45** is a repositionable hub that may be threaded by a leg of a canopy framework;

FIG. **45**A is a top view of the hub of FIG. **45**;

FIG. **45**B is a front view of the hub of FIG. **45**;

FIG. **45**C is an environmental view of the hub of FIG. **45**;

FIG. **46** is a repositionable hub that may be threaded by a leg of a canopy framework;

FIG. **46**A is a top view of the hub of FIG. **46**;

FIG. **46**B is a front view of the hub of FIG. **46**;

FIG. **46**C is an environmental view of the hub of FIG. **46**;

FIG. **47** is a front perspective of a hub that may be secured around a leg of a canopy framework;

FIG. **48** is a different perspective of the hub of FIG. **47**;

FIG. **49** is a different perspective of the hub of FIG. **47**;

FIG. **50** is a different perspective of the hub of FIG. **47**;

FIG. **51** is a different perspective of the hub of FIG. **47**;

FIG. **52** is a different perspective of the hub of FIG. **47**;

FIG. **53** is a top view of the hub of FIG. **47**;

FIG. **54** is an unfurled view of the hub of FIG. **47**;

FIG. **55** is another unfurled view of the hub of FIG. **47**;

FIG. **56** is another unfurled view of the hub of FIG. **47**;

FIG. **57** is a hanger accessory that may be provided to the openings of a hub;

FIG. **58** is another view of the hanger accessory that may be provided to the openings of a hub;

FIG. **59** is a support accessory that may be provided between two hubs;

FIG. **60** is a support accessory that may be provided between two hubs;

FIG. **61** is a support accessory that may be provided between two hubs;

FIG. **62** is an environmental view of the hub and accessories of FIGS. **47**, **57**, and **59**; and,

FIG. **63** is an environmental view of the hub and accessories of FIGS. **47** and **57**.

It is to be noted, however, that the appended figures illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments that will be appreciated by those reasonably skilled in the relevant arts. Also, figures are not necessarily made to scale but are representative.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Disclosed is a canopy frame hub which encompasses the leg of a canopy frame and receives attachments means. In the preferred embodiments, the hub is defined by the leg independently, as part of the leg adjustment hub, or as part of a canopy truss support cap or attachment of the leg.

As shown in FIG. **1**, the frame hub **1000** suitably features four sides with a tunneled opening that passes through the frame hub for receiving a canopy frame leg **2000** (not shown

in FIG. **1**). The frame hub **1000** may be slid onto a canopy frame leg **2000** via insertion of the frame leg into the central opening of the frame hub **1000**, as shown. Each side of the frame hub **1000** features attachment portals or openings **1100**. Attachment accessories (such as a counter as shown in FIG. **2**) may be connected to the frame hub via insertion of attachment pegs into the attachment portals.

FIG. **2** shows an environmental view of the frame hub **1000** in use, supporting a counter attachment **3000**, and an awning attachment **4000**. FIGS. **2**A-C show magnified views of the frame hub **1000** in use. Referring to FIGS. **2**B and C, the frame hub **1000** features an opening on one side through which a set screw **1200** is provided. A twisting of the fixed screw drives the screw through the opening and applies pressure to the canopy leg **2000** inserted into the opening of the frame hub **1000**. The pressure of the screw **1200** onto the canopy frame leg **2000** maintains the vertical position of the frame hub **1000**, preventing the downward sliding of the frame hub **1000** down the canopy frame leg **2000**. An untwisting of the set screw **1200** alleviates the pressure, making the frame hub **1000** moveable laterally along the canopy frame leg **2000** and permitting a user to adjust the height of the frame hub.

As shown in FIGS. **3**A and B, the attachment portals **1100** on each side of the frame hub **1000** receive attachment pegs **3100** from various attachment accessories, thereby connecting the attachment accessories **3000**/**4000** to the canopy frame legs **2000**. As shown in FIG. **3**A, the attachment pegs **3100** of an attachment accessory **3000** are aligned above the frame hub **1000**, such that the attachment pegs **3100** correspond to the attachment portals **1100** on the frame hub **1000**. The attachment accessory is then brought downward, such that the aligned attachment pegs are inserted into the attachment portals **1100** of the frame hub **1000**. The attachment pegs **3100** are pinched inward and held inward by the outer walls of the attachment portals **1100** during insertion. Once the attachment pegs **3100** emerge from the bottom opening of the attachment portals **1100**, the attachment pegs **3100** spring outward, preventing the upwards movement of the attachment accessory **3000** and, thereby, locking the attachment accessory **3000** in place. FIG. **3**B shows the attachment pegs **3100** extending outward from the bottom of the attachment portals **1100**, thereby locking the attachment accessory in place **3000**. A pinching of the attachment pegs **3100** in conjunction with the an upward pushing force allows the attachment pegs **31000** to ascend back up the attachment portals **1100** and thereby release the attachment accessory **3000** from its fixated position on the canopy leg **2000**. In another embodiment, the attachment pegs are simple J-shaped hooks that insert into the attachment portals.

Referring to FIG. **4**, the frame hub **1000** may be built into or otherwise feature truss support cap or attachment for securing a truss **5000** to the leg **2000**. In this embodiment, the frame hub **1000** is also referred to as a frame hub **1000**. As shown, the frame hub **1000** also encompasses the canopy frame leg **2000**. The frame hub **1000** features a truss portal **1300**, whereby the overhead truss of the canopy is attached. The frame-receiving extension also features two banner post portals **1400**, whereby a large advertisement sign or banner may be inserted so as to display the sign without having to use additional attachment means (such as rope or zip ties). FIGS. **5** through **8** show signs being supported by the frame-receiving extension.

As shown in FIGS. **7** and **8**, the frame-receiving extension may be used simultaneously as another frame hub which may be fixated at a different height on the same frame leg.

FIG. **9** is a perspective view of an example of framework for a pop-up canopy. As shown the canopy features trusses **6000**, legs **2000**, frame hubs **1000**, and frame hubs **1000**. A comparable framework is disclosed by U.S. Pat. No. 9,995,056 (issued Jun. 12, 2018; collapsible gazebo frame with single activation feature) and this U.S. Pat. No. 9,995,056 is hereby incorporated by reference for disclosure of similar frameworks described herein.

FIGS. **10** through **13** illustrate the frame hub **1000**. FIG. **10** is a perspective view of a frame hub **1000** and insertable accessory pole **200** with a digit **201** for insertion into the portals **1100** of the hub (as shown). FIG. **11** is a perspective view of a frame hub **1000** with a cup holder **300** installed in one of the vertical openings **1100** of the frame hub **1000**. FIG. **12** is a perspective view of a frame hub **1000** with a garbage bag holder **100** installed in one of the vertical openings of the frame hub **1000**. FIG. **13** is a perspective view of a frame hub **1000** with a cup holder installed in one of the vertical openings of the frame hub **1000**.

FIGS. **14** through **15** illustrate the frame hub **1000**. FIG. **15** is a cross section of the frame hub **1000** and insertable accessory pole **200** of FIG. **14**.

FIG. **16** is a perspective view of a canopy with various pole accessories installed on the framework via frame hubs **1000**, where the poles support items such as signs or flags. FIG. **17** is a perspective view of a canopy with various accessories installed on the framework via hubs. FIG. **18** is a view of a display assembly using pole accessories. These attachments contrast with the prior art, as shown in FIG. **19**, which is a perspective view of a prior art truss support slider that can accept a dowel in a hole. Other types of pole accessories are also contemplated. For instance, FIG. **20** is a perspective view of another type of pole attachment accessory that is capable of connecting to a hub disclosed herein. FIG. **21** is a perspective view of a canopy with various accessories to make a fence or border around the framework is installed on the framework via hubs. FIG. **22** is a perspective view of pole attachment accessory that is capable of connecting to a hub disclosed herein. The pole accessories can be strung between two legs **2000** to accomplish a hanging rod or a rail skirt, e.g., as shown in FIG. **23**, which is an environmental view of a canopy.

FIG. **24** is an environmental view of a hub provided to an eight sided truss support slider. In the earlier figures, the legs were only four sided or substantially four sided. It is contemplated that the frame hub **1000** may be modified for placement onto a leg of any number of sides. FIG. **25** is an environmental view of a hub provided to a leg extensions slider for an eight sided leg. FIG. **26** is perspective view of the hub of FIG. **25**. FIG. **27** is top view of the hub of FIG. **25**. FIG. **28** is a bottom view of the hub of FIG. **25**. FIG. **29** is a left-side view of the hub of FIG. **25**. FIG. **30** is a right side view of the hub of FIG. **25**. FIG. **31** is a back view of the hub of FIG. **25**. FIG. **32** is a front view of the hub of FIG. **25**. FIG. **33** is a perspective view of the hub of FIG. **25**. FIG. **34** is a perspective view of the hub of FIG. **25**. FIG. **35** is a perspective view of the hub of FIG. **24**. FIG. **36** is a top view of the hub of FIG. **24**. FIG. **37** is a bottom view of the hub of FIG. **24**. FIG. **38** is a left-side view of the frame hub **1000** of FIG. **24**. FIG. **39** is a right side view of the frame hub **1000** of FIG. **24**. FIG. **40** is a back view of the frame hub **1000** of FIG. **24**. FIG. **41** is a front view of the frame hub **1000** of FIG. **24**. FIG. **42** is a perspective view of the frame hub **1000** of FIG. **24**. FIG. **43** is a perspective view of the frame hub **1000** of FIG. **24**. FIG. **44** is an alternate embodiment of the frame hub **1000** of FIG. **24**. The operation of the

hubs of FIGS. **24** and **25** are substantially similar to the frame hubs **1000** described above in connection with the earlier figures.

FIG. **45** is a frame hub **1000** that may be threaded by a leg of a canopy framework. FIG. **45**A is a top view of the frame hub **1000** of FIG. **45**. FIG. **45**B is a front view of the frame hub **1000** of FIG. **45**. FIG. **45**C is an environmental view of the frame hub **1000** of FIG. **45** being mated with a cup holder **300**. FIG. **46** is a frame hub **1000** that may be threaded by a leg of a canopy framework. FIG. **46**A is a top view of the hub of FIG. **46**. FIG. **46**B is a front view of the frame hub **1000** of FIG. **46**. The frame hubs **1000** depicted in FIGS. **45**-**46**B may be fit to the canopy frame leg **2000** framework by restriction fit, set screw, or adhesive.

FIG. **47** is a front perspective of a frame hub **1000** that may be secured around a leg of a canopy framework. FIG. **48** is a different perspective of the frame hub **1000** of FIG. **47**. FIG. **49** is a different perspective of the frame hub **1000** of FIG. **47**. FIG. **50** is a different perspective of the frame hub **1000** of FIG. **47**. FIG. **51** is a different perspective of the frame hub **1000** of FIG. **47**. FIG. **52** is a different perspective of the frame hub **1000** of FIG. **47**. FIG. **53** is a top view of the frame hub **1000** of FIG. **47**. FIG. **54** is an unfurled view of the frame hub **1000** of FIG. **47**. FIG. **55** is an unfurled view of the frame hub **1000** of FIG. **47**. FIG. **56** is another unfurled view of the frame hub **1000** of FIG. **47**. As shown in these figures, the frame hub **1000** may be defined by flat surfaced chain links that can be wrapped around a leg of a canopy frame and ratchetedly connected to the leg.

FIG. **57** is a hanger accessory that may be provided to the openings of a frame hub **1000**. FIG. **58** is another view of the hanger accessory that may be provided to the openings of a frame hub **1000**. FIG. **59** is a support accessory that may be provided between two frame hubs **1000**. FIG. **60** is a support accessory that may be provided between two frame hubs **1000**. FIG. **61** is a support accessory that may be provided between two frame hubs **1000**. FIG. **62** is an environmental view of the frame hub **1000** and accessories of FIGS. **47**, **57**, and **59**. FIG. **63** is an environmental view of the frame hub **1000** and accessories of FIGS. **47** and **57**.

Although the method and apparatus is described above in terms of various exemplary embodiments and implementations, it should be understood that the various features, aspects and functionality described in one or more of the individual embodiments are not limited in their applicability to the particular embodiment with which they are described, but instead might be applied, alone or in various combinations, to one or more of the other embodiments of the disclosed method and apparatus, whether or not such embodiments are described and whether or not such features are presented as being a part of a described embodiment. Thus the breadth and scope of the claimed invention should not be limited by any of the above-described embodiments.

Terms and phrases used in this document, and variations thereof, unless otherwise expressly stated, should be construed as open-ended as opposed to limiting. As examples of the foregoing: the term "including" should be read as meaning "including, without limitation" or the like, the term "example" is used to provide exemplary instances of the item in discussion, not an exhaustive or limiting list thereof, the terms "a" or "an" should be read as meaning "at least one," "one or more," or the like, and adjectives such as "conventional," "traditional," "normal," "standard," "known" and terms of similar meaning should not be construed as limiting the item described to a given time period or to an item available as of a given time, but instead should be read to encompass conventional, traditional, normal, or standard technologies that might be available or known now or at any time in the future. Likewise, where this document refers to technologies that would be apparent or known to one of ordinary skill in the art, such technologies encompass those apparent or known to the skilled artisan now or at any time in the future.

The presence of broadening words and phrases such as "one or more," "at least," "but not limited to" or other like phrases in some instances shall not be read to mean that the narrower case is intended or required in instances where such broadening phrases might be absent. The use of the term "assembly" does not imply that the components or functionality described or claimed as part of the module are all configured in a common package. Indeed, any or all of the various components of a module, whether control logic or other components, might be combined in a single package or separately maintained and might further be distributed across multiple locations.

Additionally, the various embodiments set forth herein are described in terms of exemplary block diagrams, flow charts and other illustrations. As will become apparent to one of ordinary skill in the art after reading this document, the illustrated embodiments and their various alternatives might be implemented without confinement to the illustrated examples. For example, block diagrams and their accompanying description should not be construed as mandating a particular architecture or configuration.

All original claims submitted with this specification are incorporated by reference in their entirety as if fully set forth herein.

I claim:

1. A hub that secures a truss of a canopy frame to a leg of the canopy frame while supporting an attachment, said hub comprising:

a central opening that has received the leg of the canopy frame so that the leg of the canopy frame extends upward relative to and is encompassed by the hub;

a plurality of portals disposed around the central opening, wherein one of the portals receives a digit of the attachment; and

a truss support cap disposed on and extending from at least one side of the central opening, wherein the truss support cap features a truss portal that is attached to the truss of the canopy frame so that the truss extends upward from the truss support cap at an acute angle relative to the leg of the canopy frame.

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