

US011524622B1

(12) **United States Patent**
Apilado

(10) **Patent No.:** **US 11,524,622 B1**
(45) **Date of Patent:** **Dec. 13, 2022**

(54) **BRACKET FOR MOUNTING LIGHT TO STEERING ARM**

USPC 362/549, 37, 53, 46
See application file for complete search history.

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

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(21) Appl. No.: **17/571,276**

(22) Filed: **Jan. 7, 2022**

Related U.S. Application Data

(63) Continuation-in-part of application No. 17/188,926, filed on Mar. 1, 2021, now Pat. No. 11,254,259.

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(60) Provisional application No. 63/063,535, filed on Aug. 10, 2020.

(51) **Int. Cl.**

B60Q 1/04	(2006.01)
B60Q 1/26	(2006.01)
B60Q 1/12	(2006.01)
B60Q 1/124	(2006.01)
B60Q 1/18	(2006.01)

(57) **ABSTRACT**

A light mount for mounting a light to a steering arm on an axle may include a bracket designed to attach to the steering arm, wherein the bracket and, thus, the light pod rotate with rotation of the steering arm. The bracket may include a mounting frame, wherein a first edge of the mounting frame is concavely curved and wherein a plurality of mounting orifices extend through the mounting frame; and a mounting plate extending substantially perpendicularly from an upper edge of the mounting frame, wherein the mounting plate has a mounting orifice extending therethrough, the mounting orifice being sized to accommodate a fastener extending from a light pod.

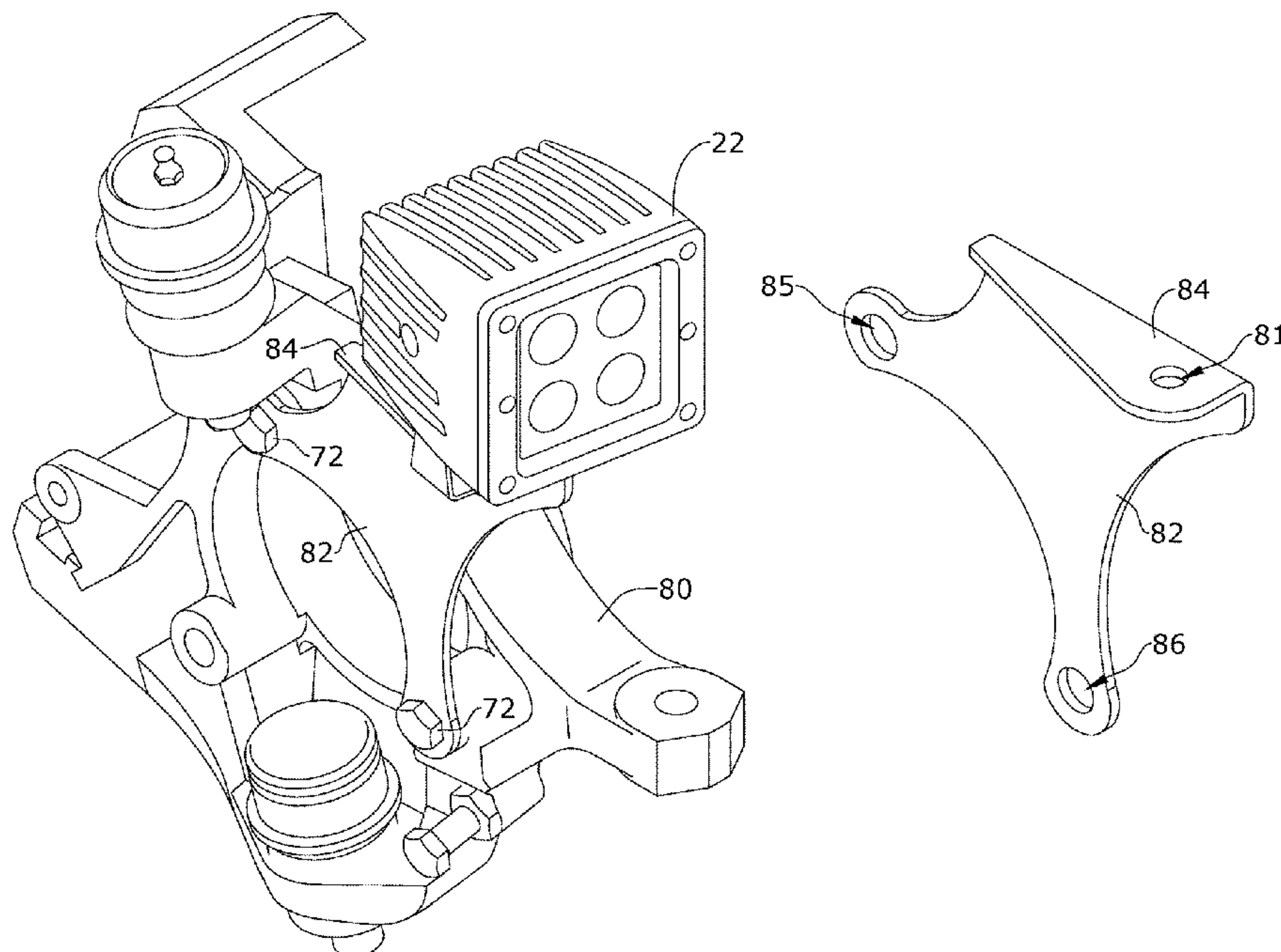
(52) **U.S. Cl.**

CPC **B60Q 1/0408** (2013.01); **B60Q 1/12** (2013.01); **B60Q 1/124** (2013.01); **B60Q 1/18** (2013.01); **B60Q 1/2661** (2013.01)

(58) **Field of Classification Search**

CPC B60Q 1/048; B60Q 1/0483; B60Q 1/2661; B60Q 1/06; B60Q 1/124; B60Q 1/068; B60Q 1/18; B60Q 1/12; B60Q 1/0408; F21V 21/00

9 Claims, 8 Drawing Sheets



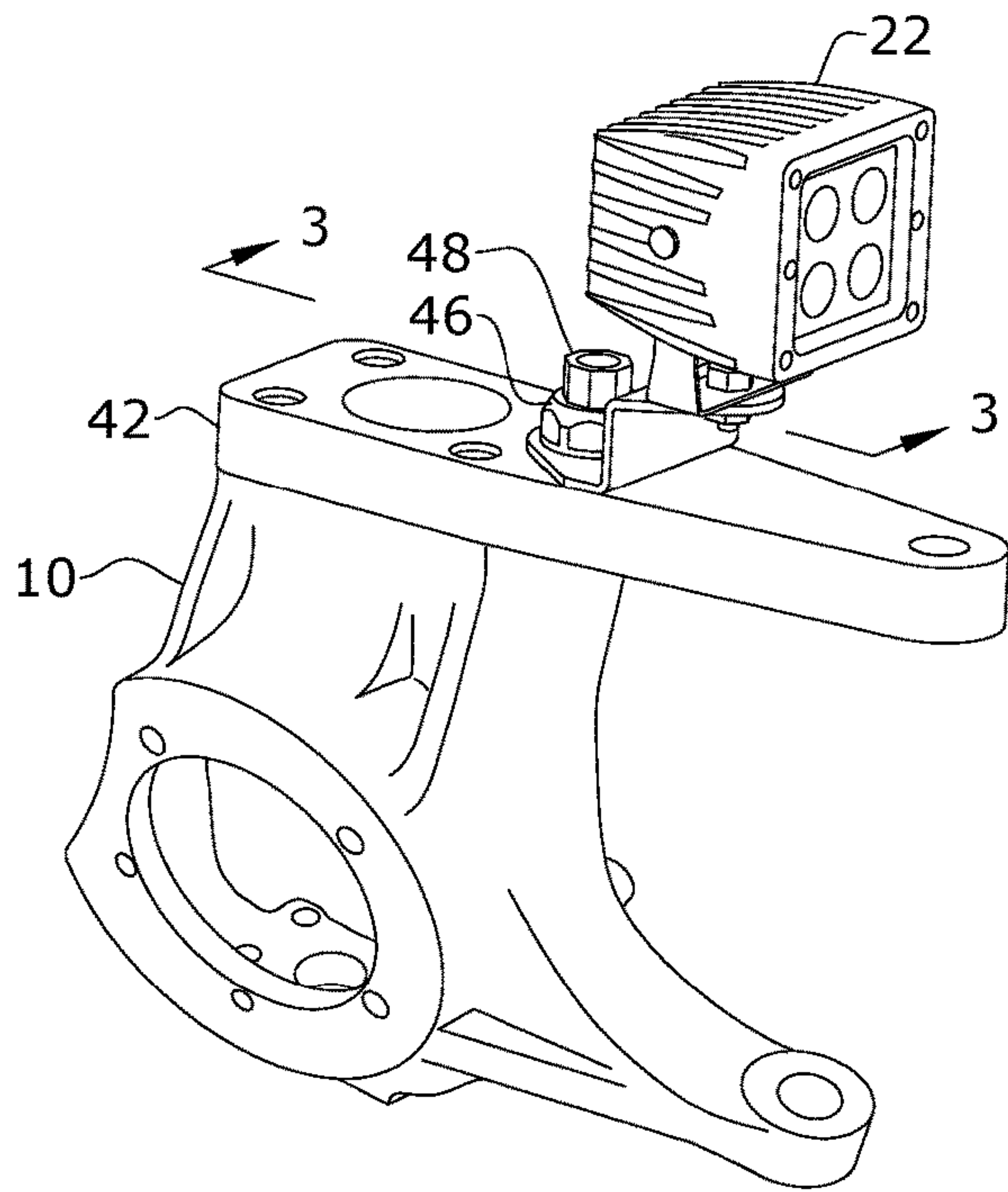


FIG. 1

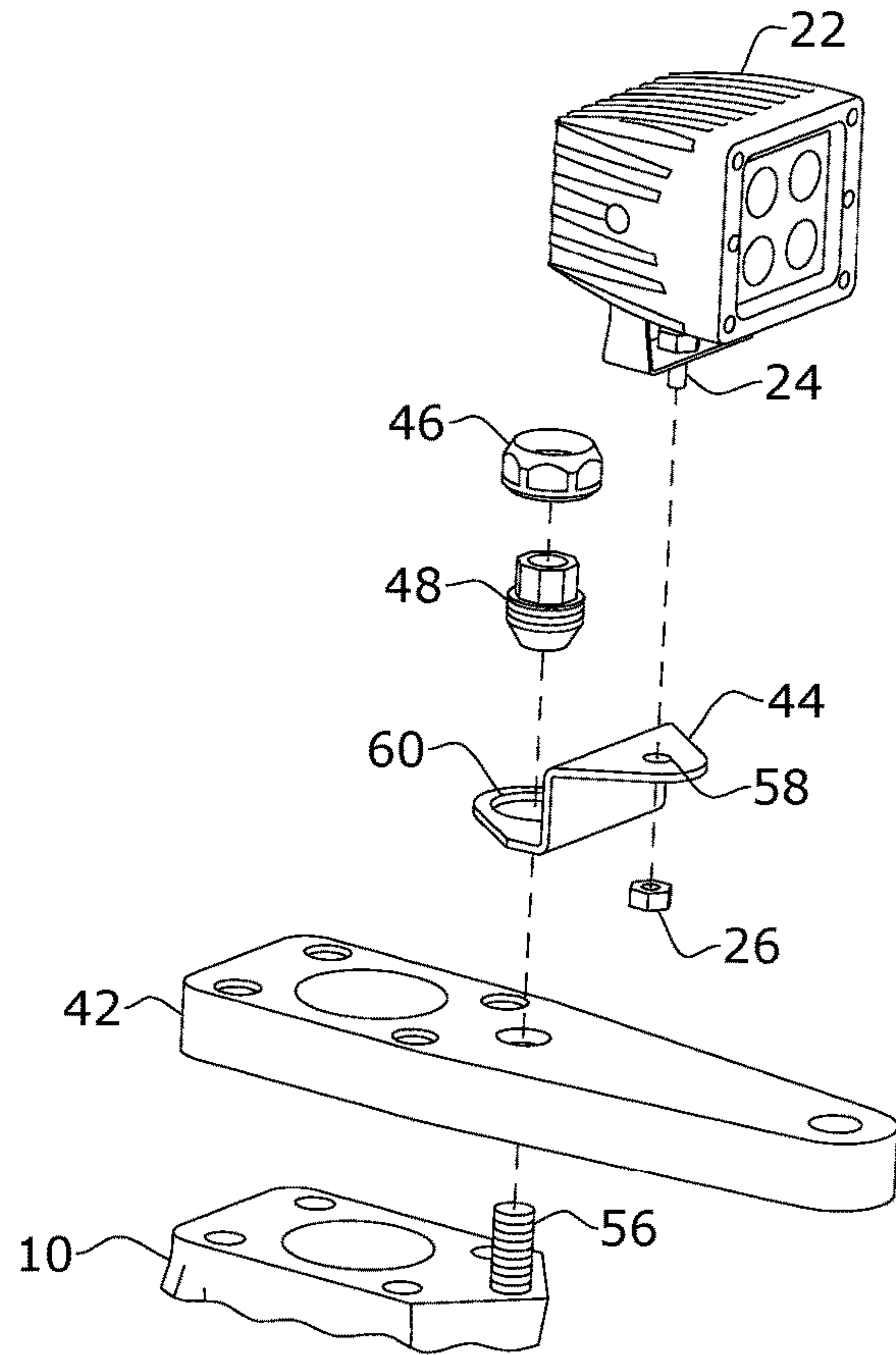


FIG. 2

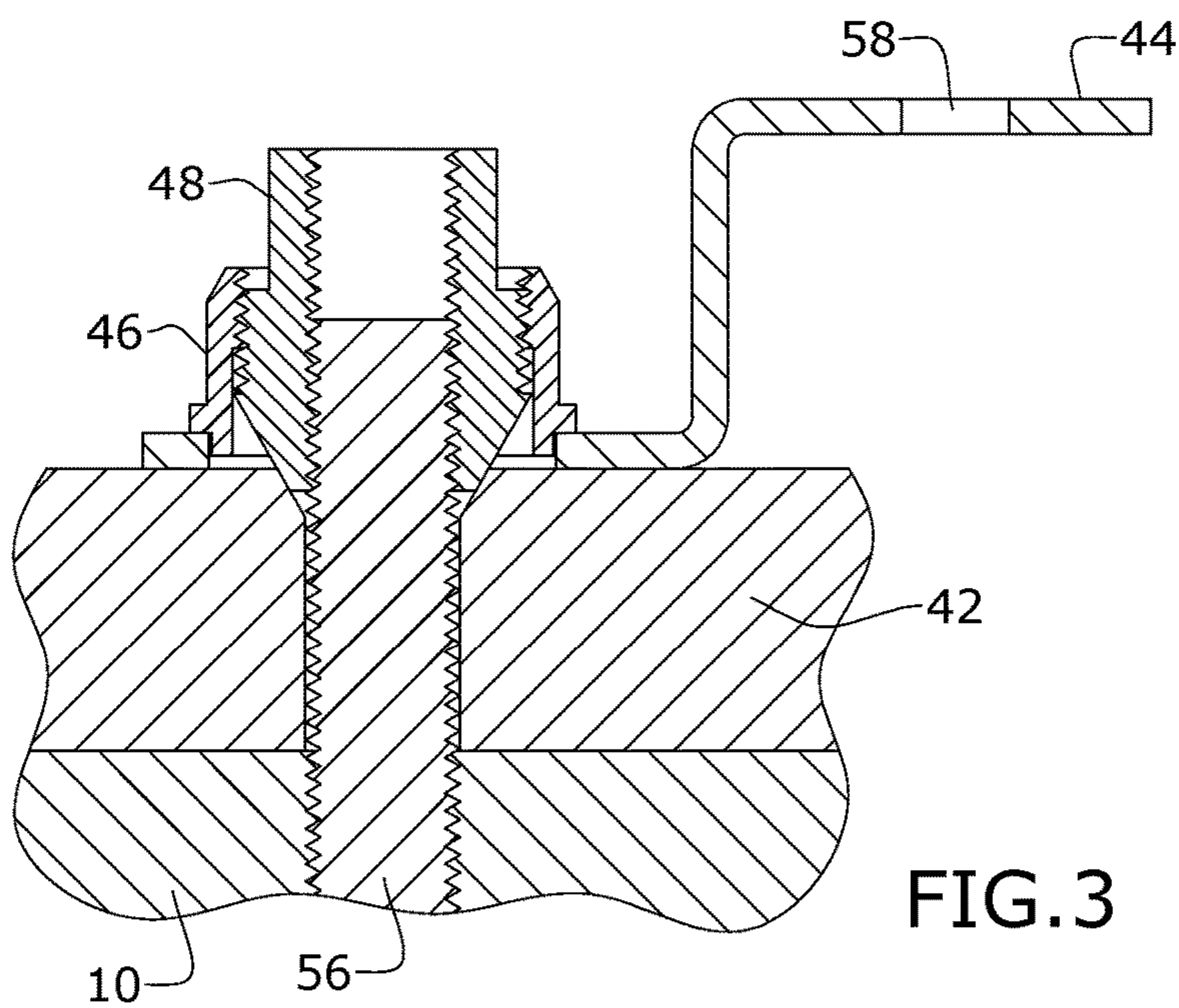


FIG. 3

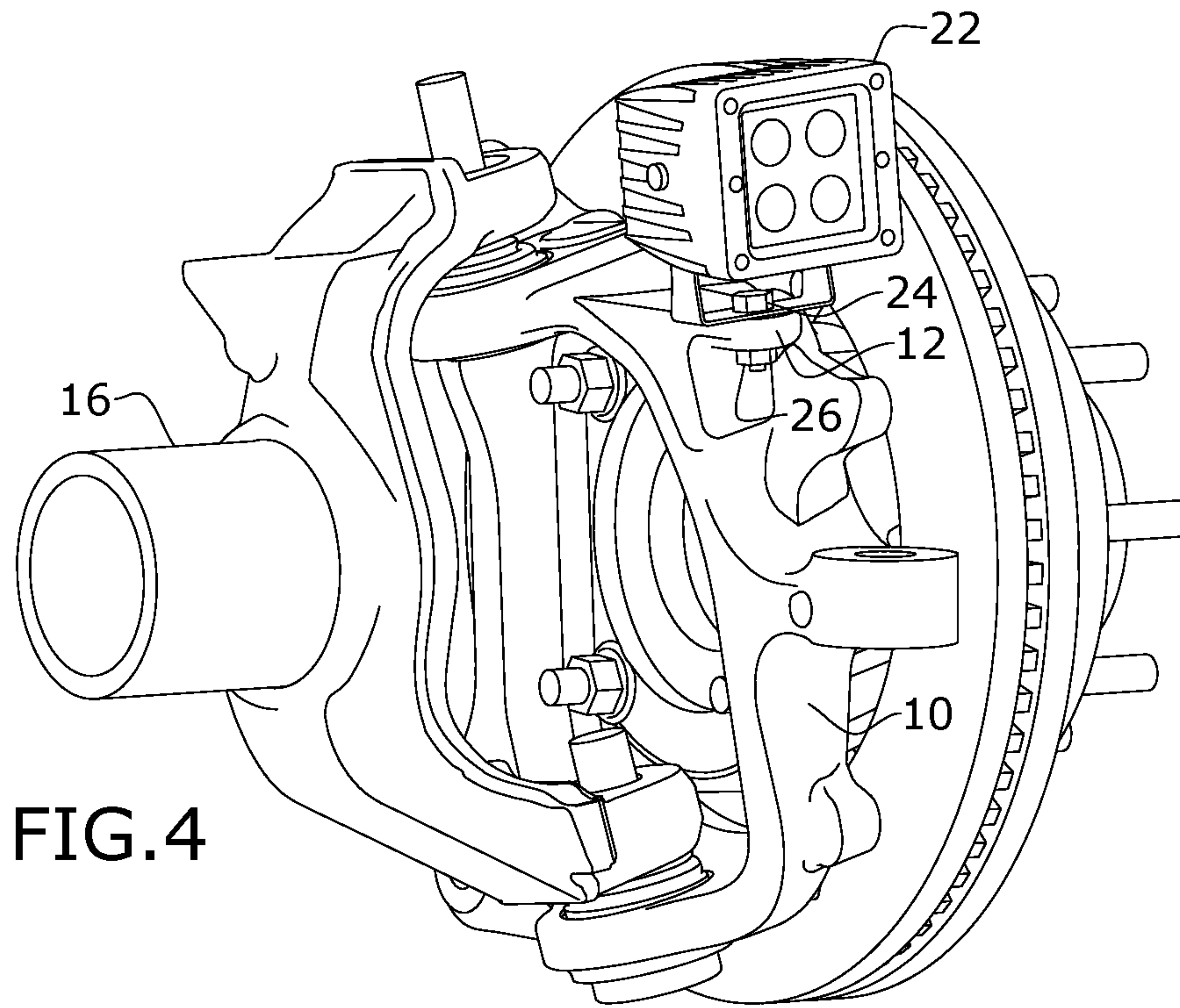


FIG. 4

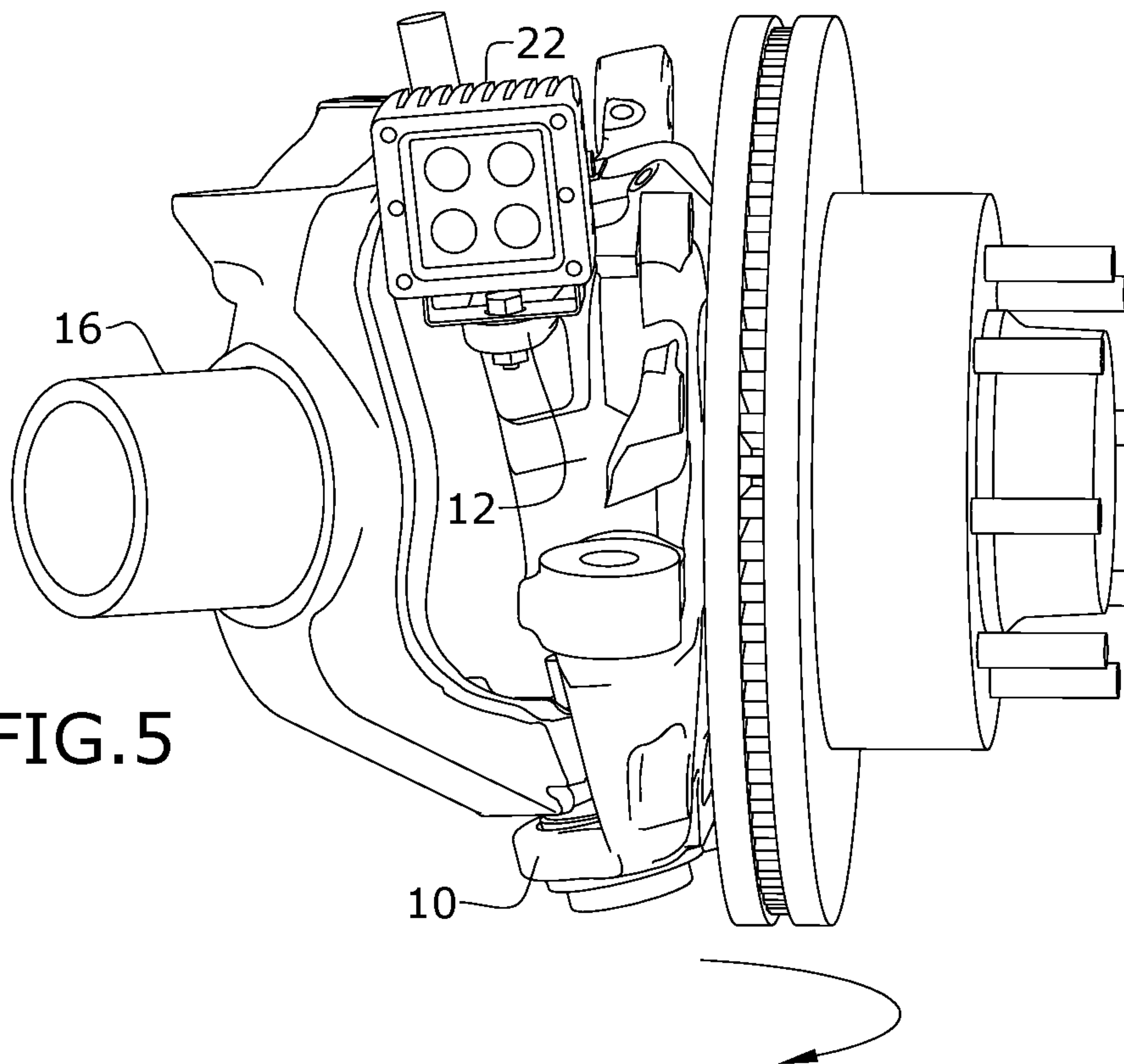
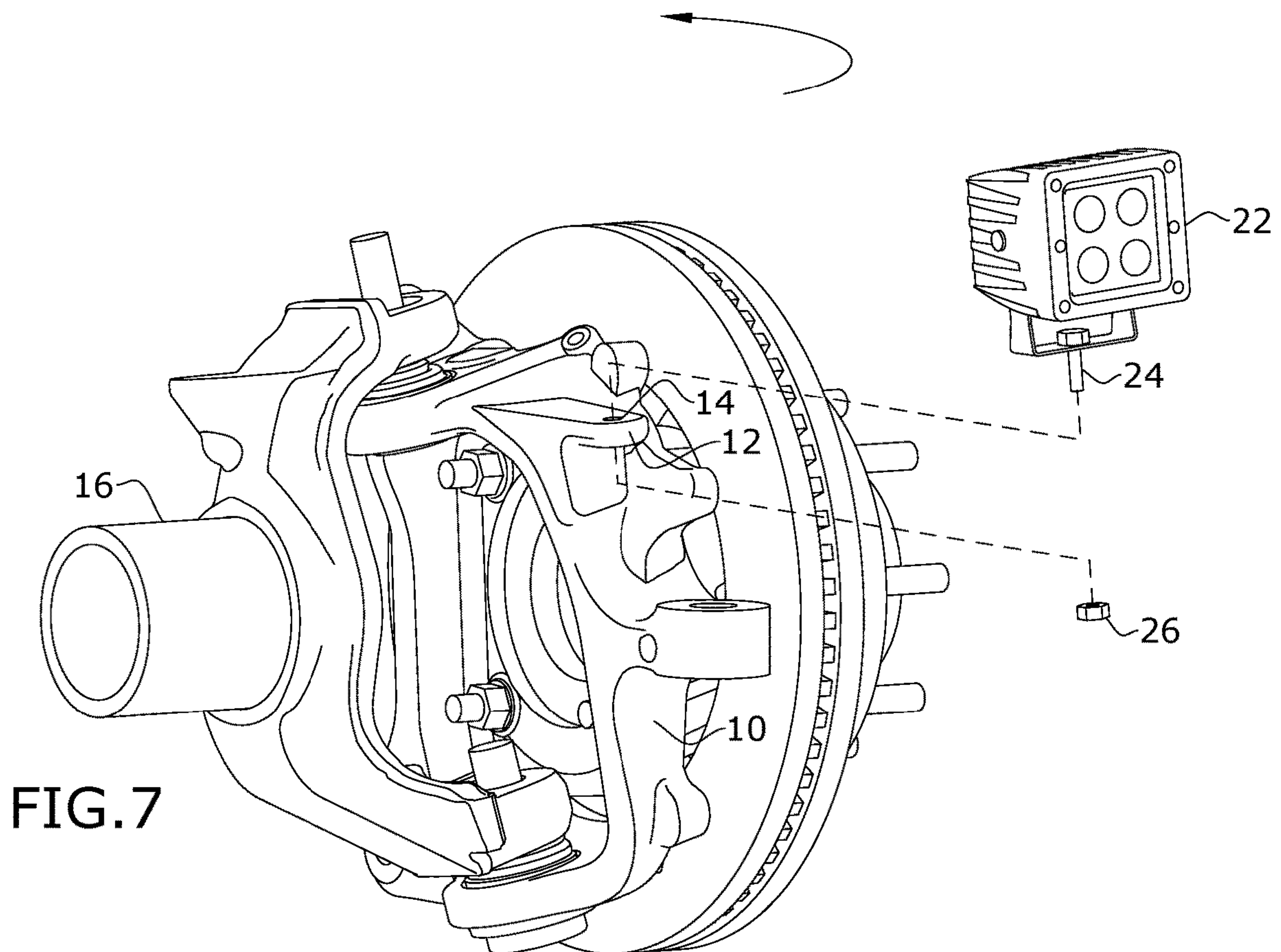
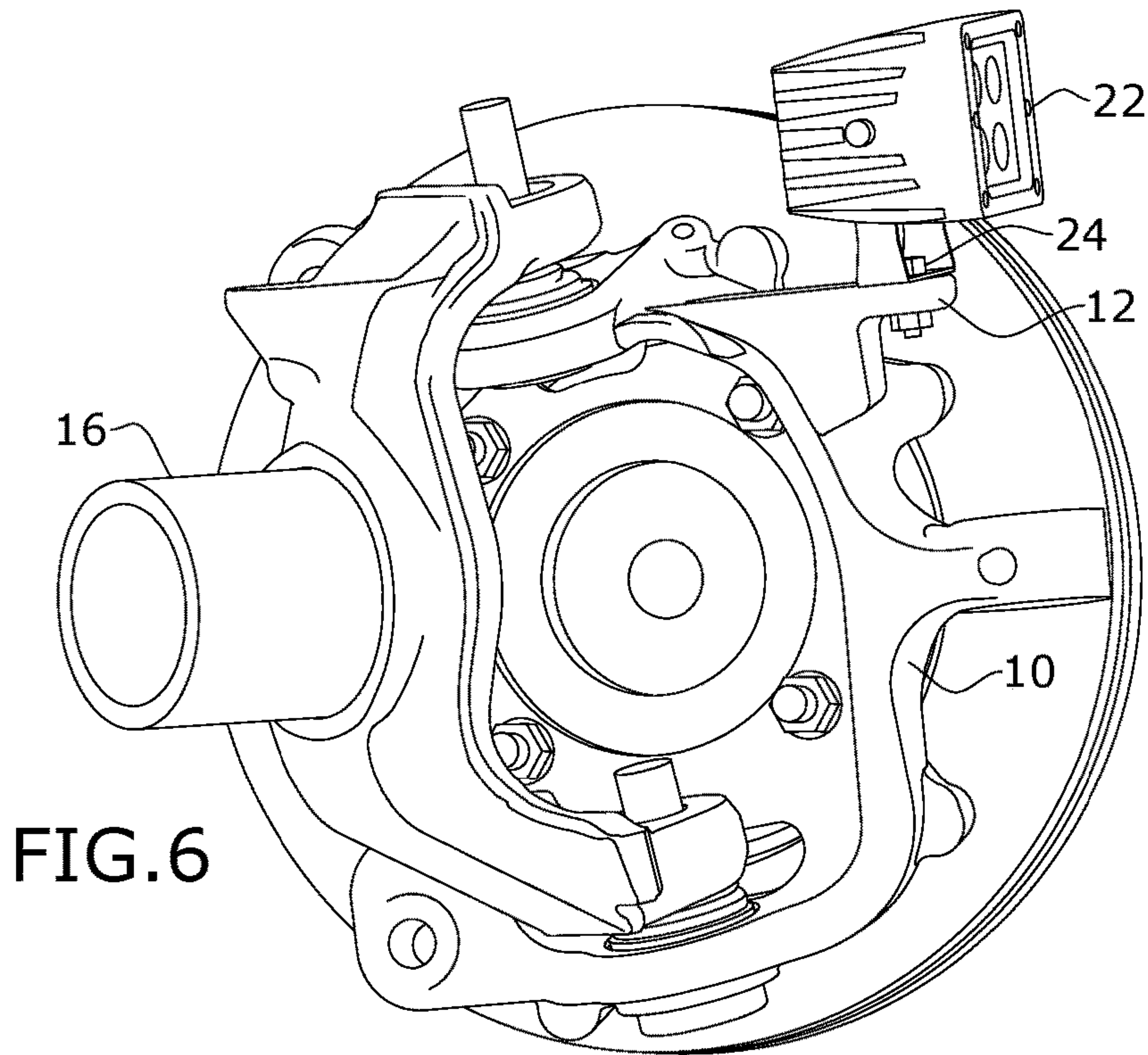


FIG. 5



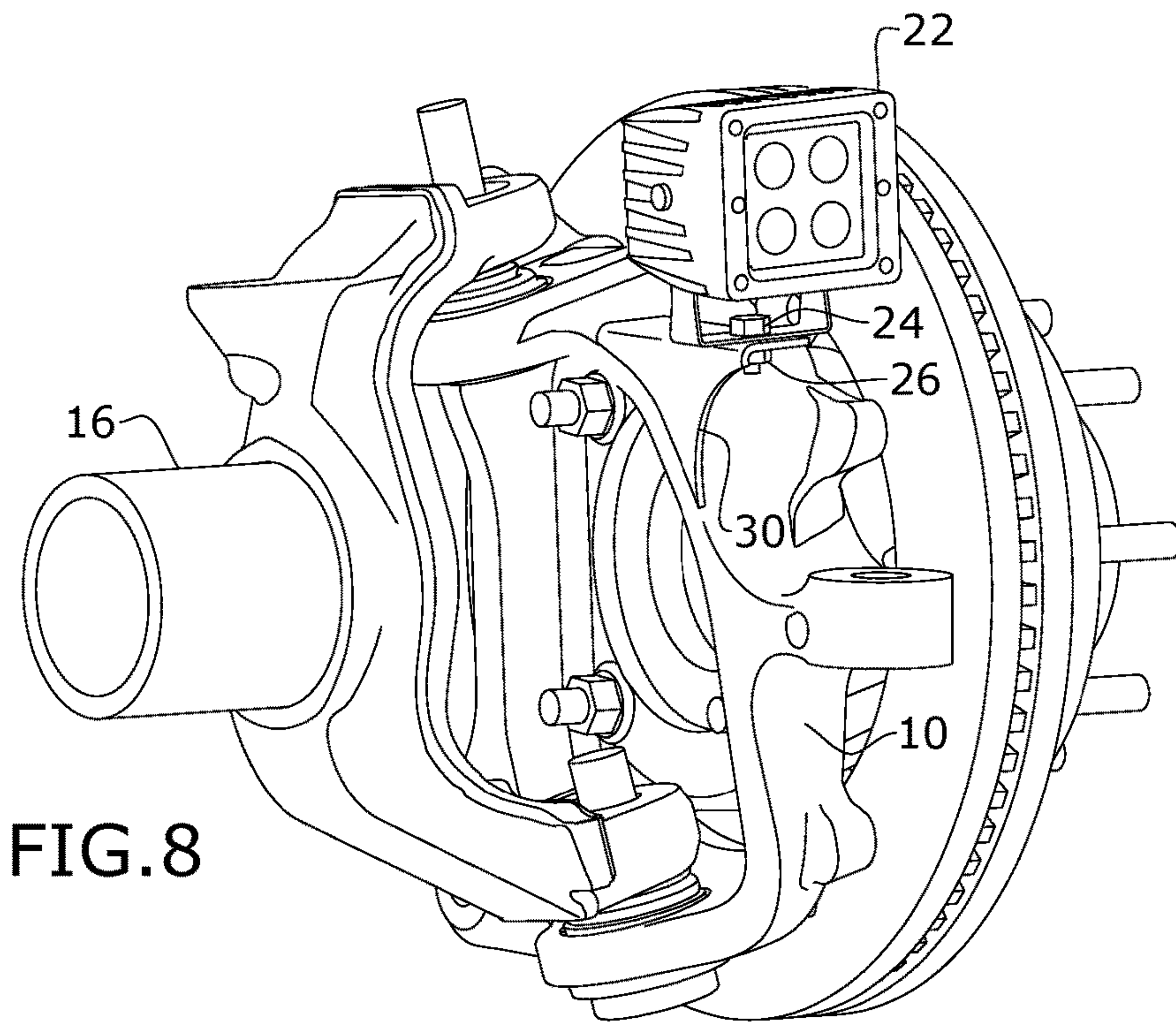


FIG. 8

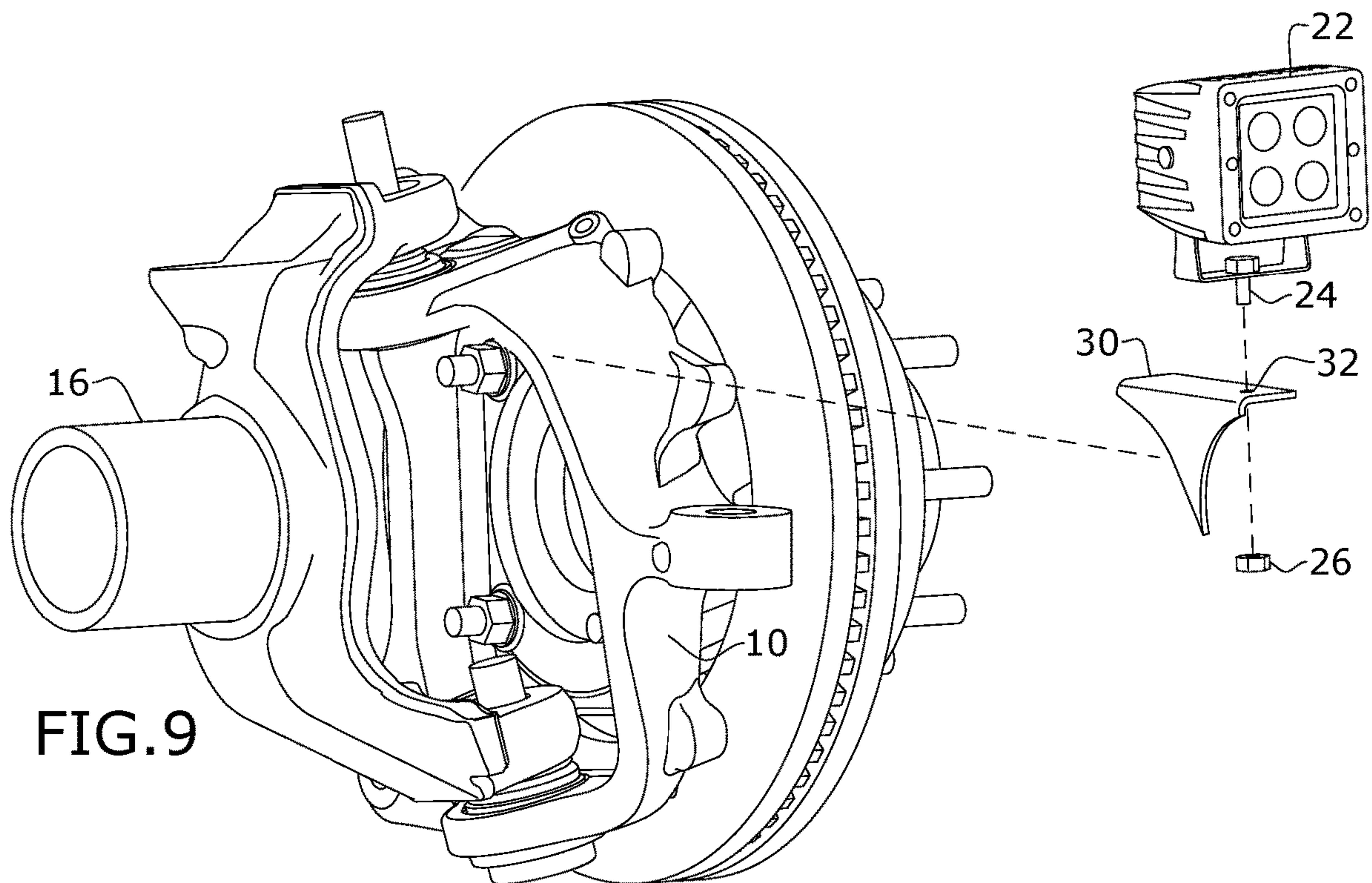
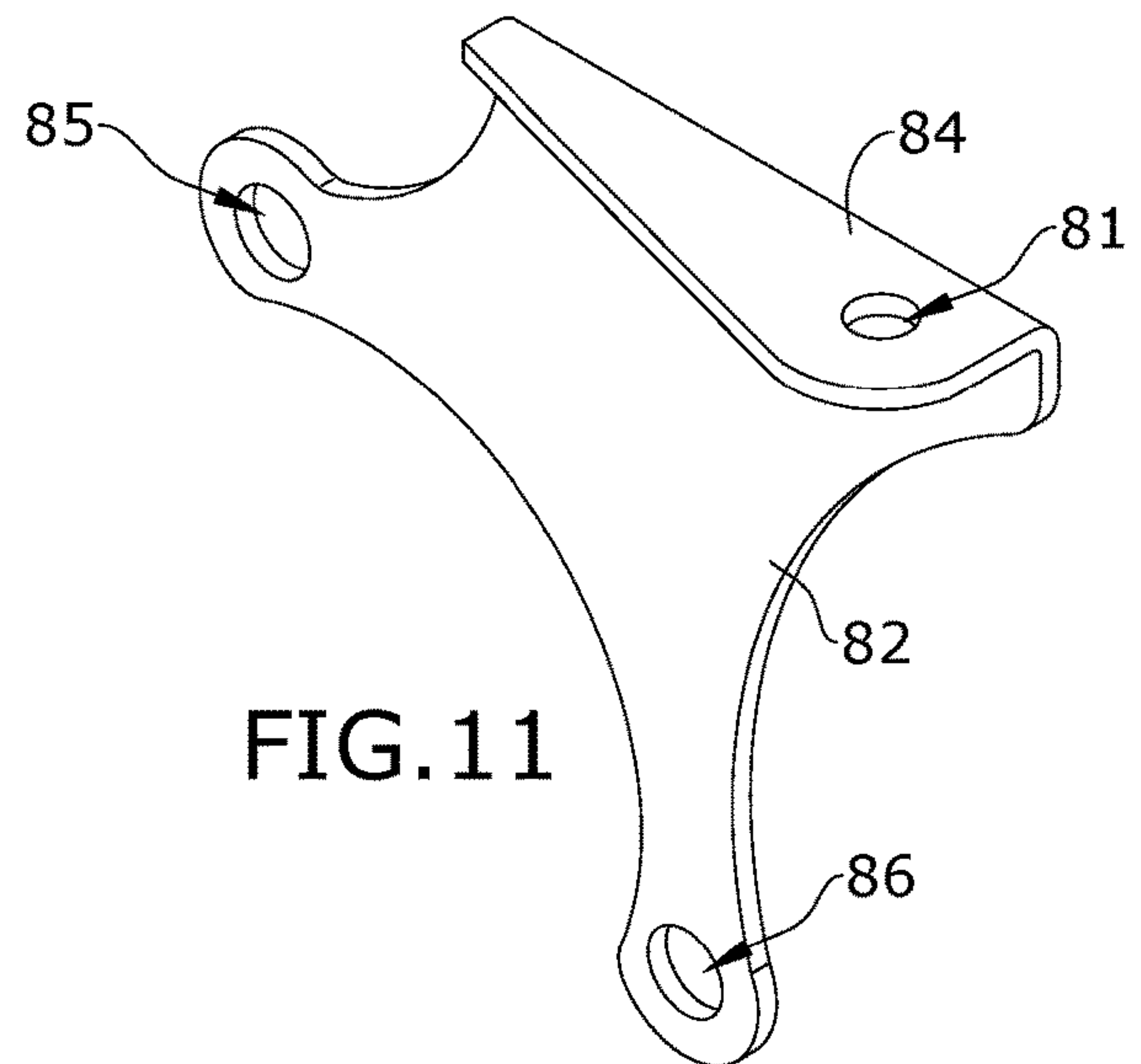
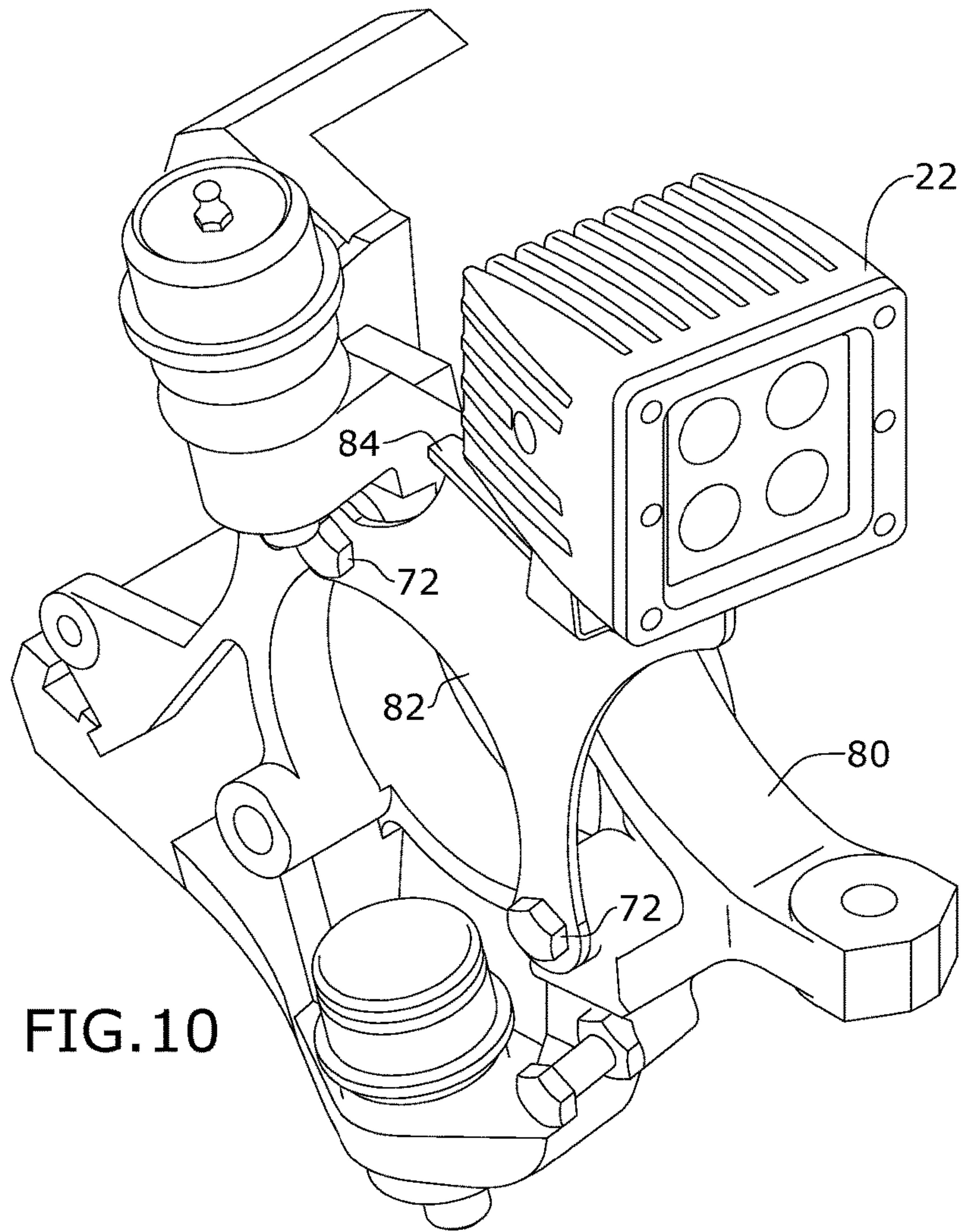


FIG. 9



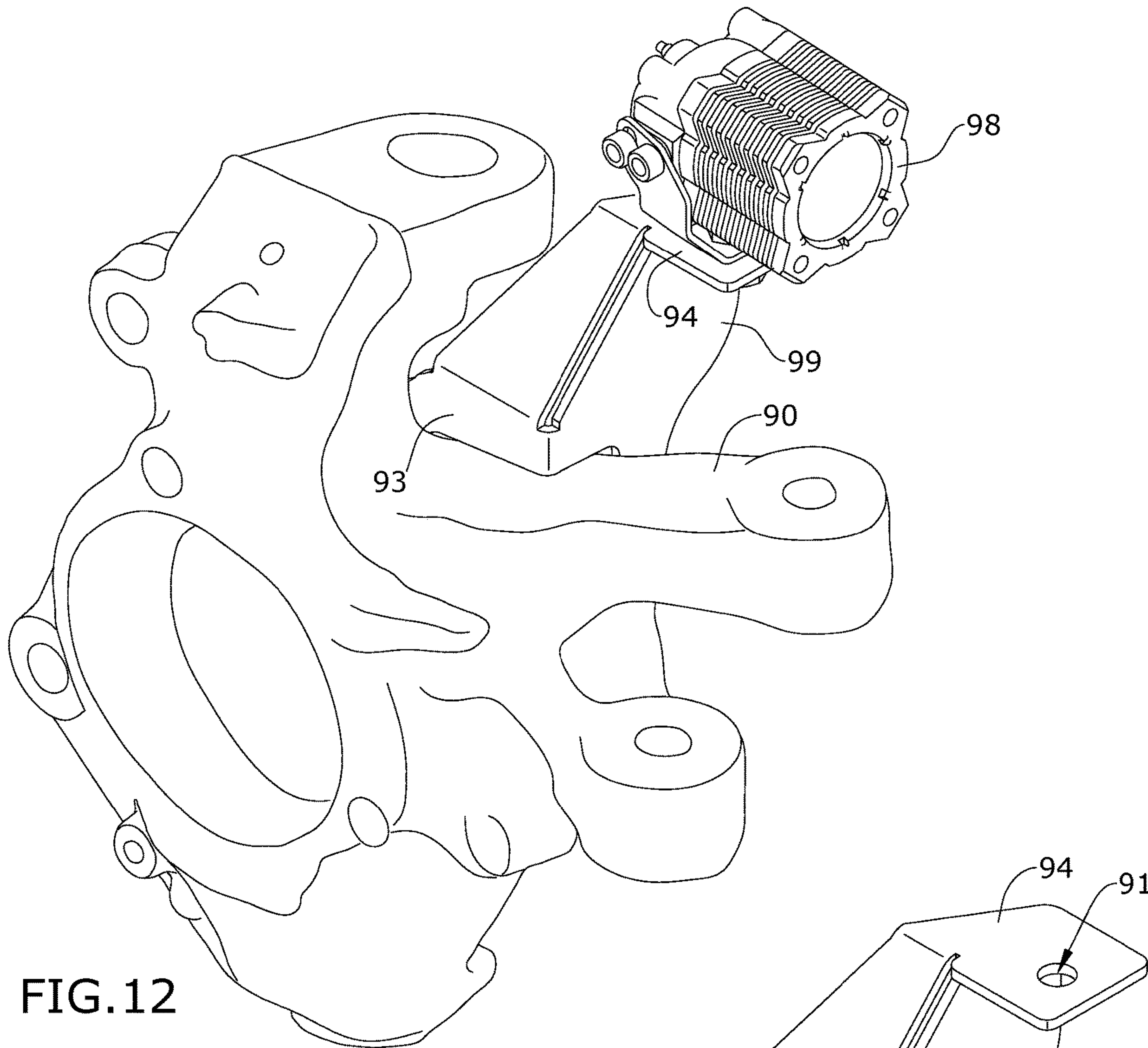


FIG. 12

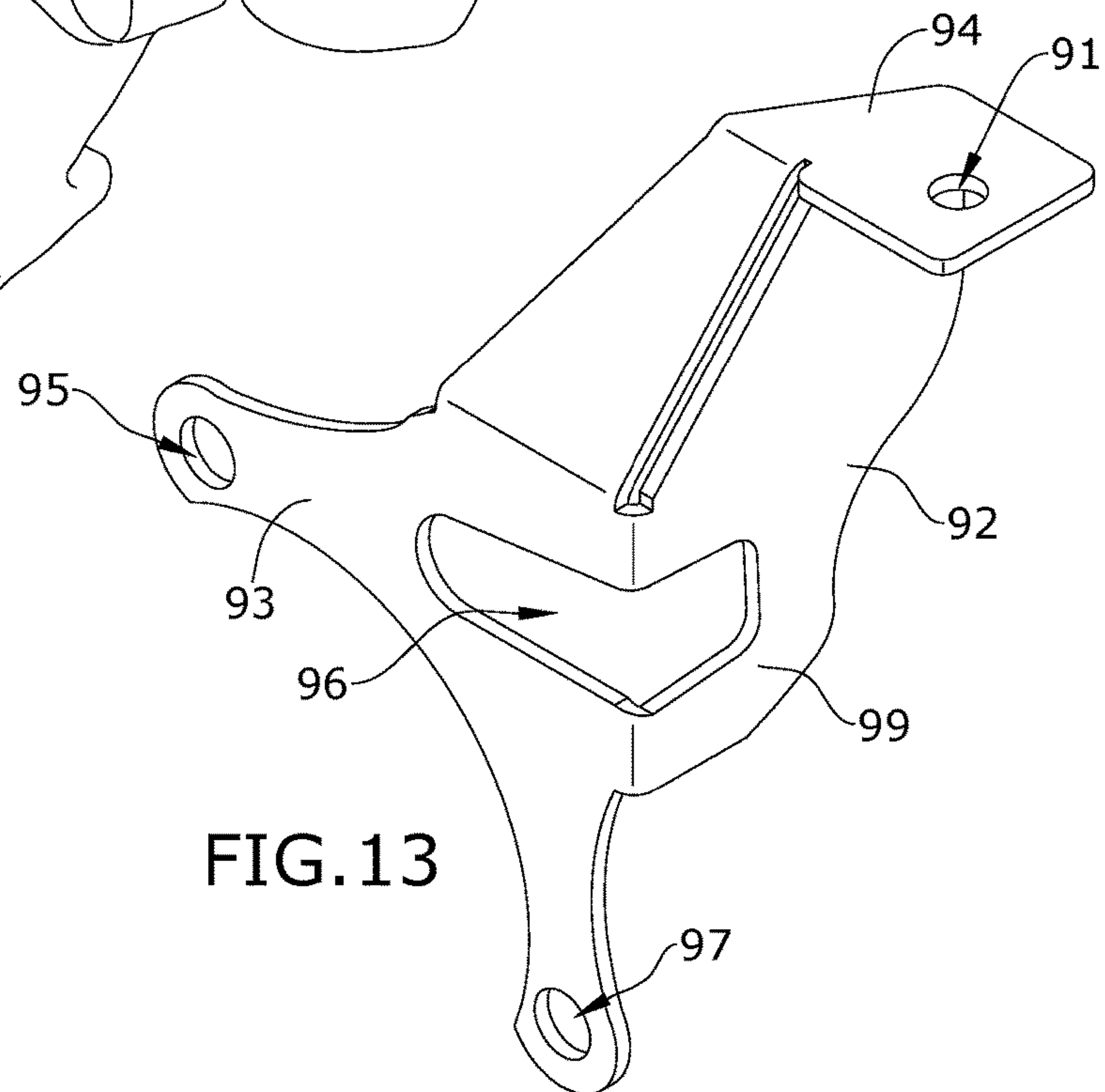


FIG. 13

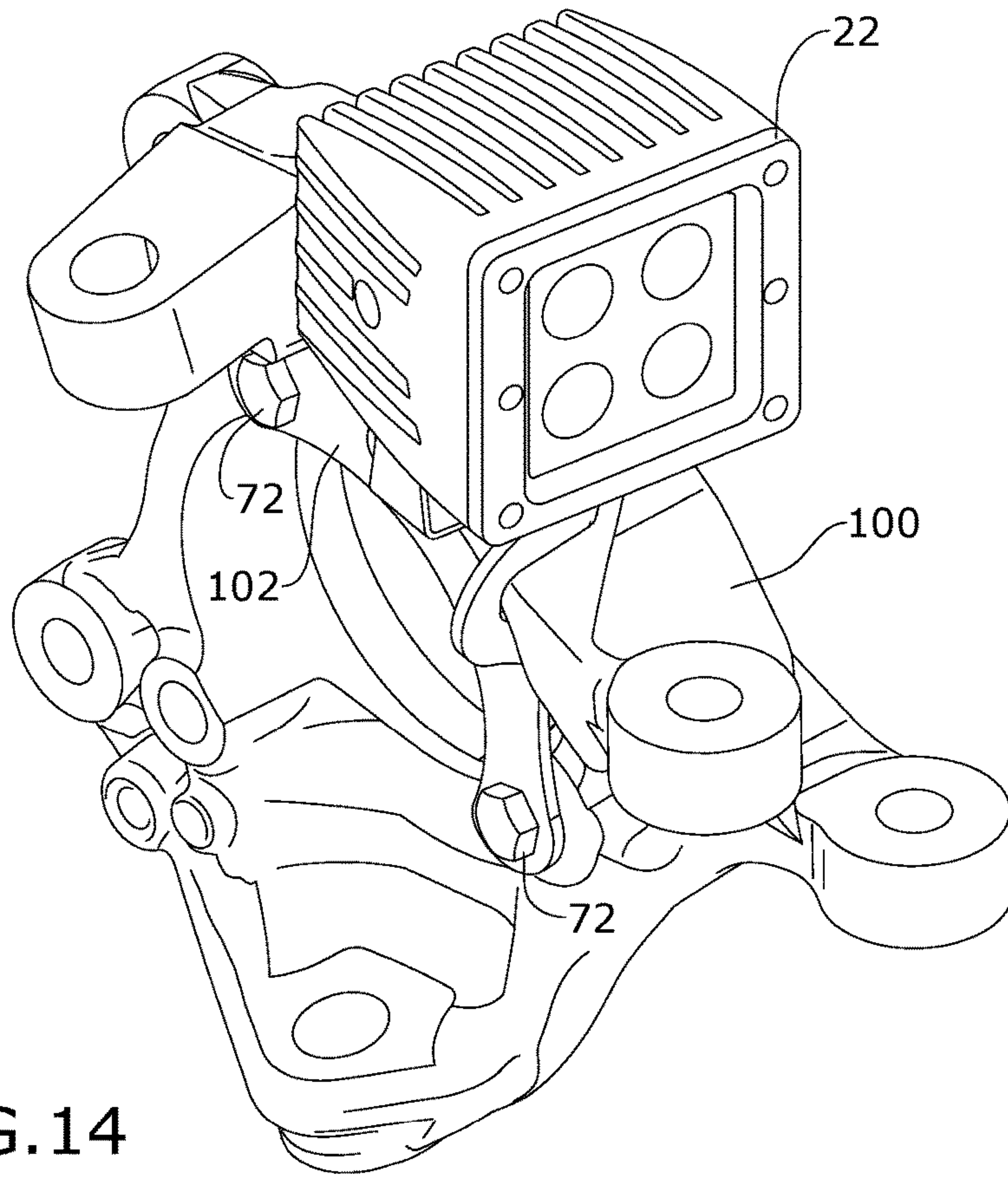


FIG. 14

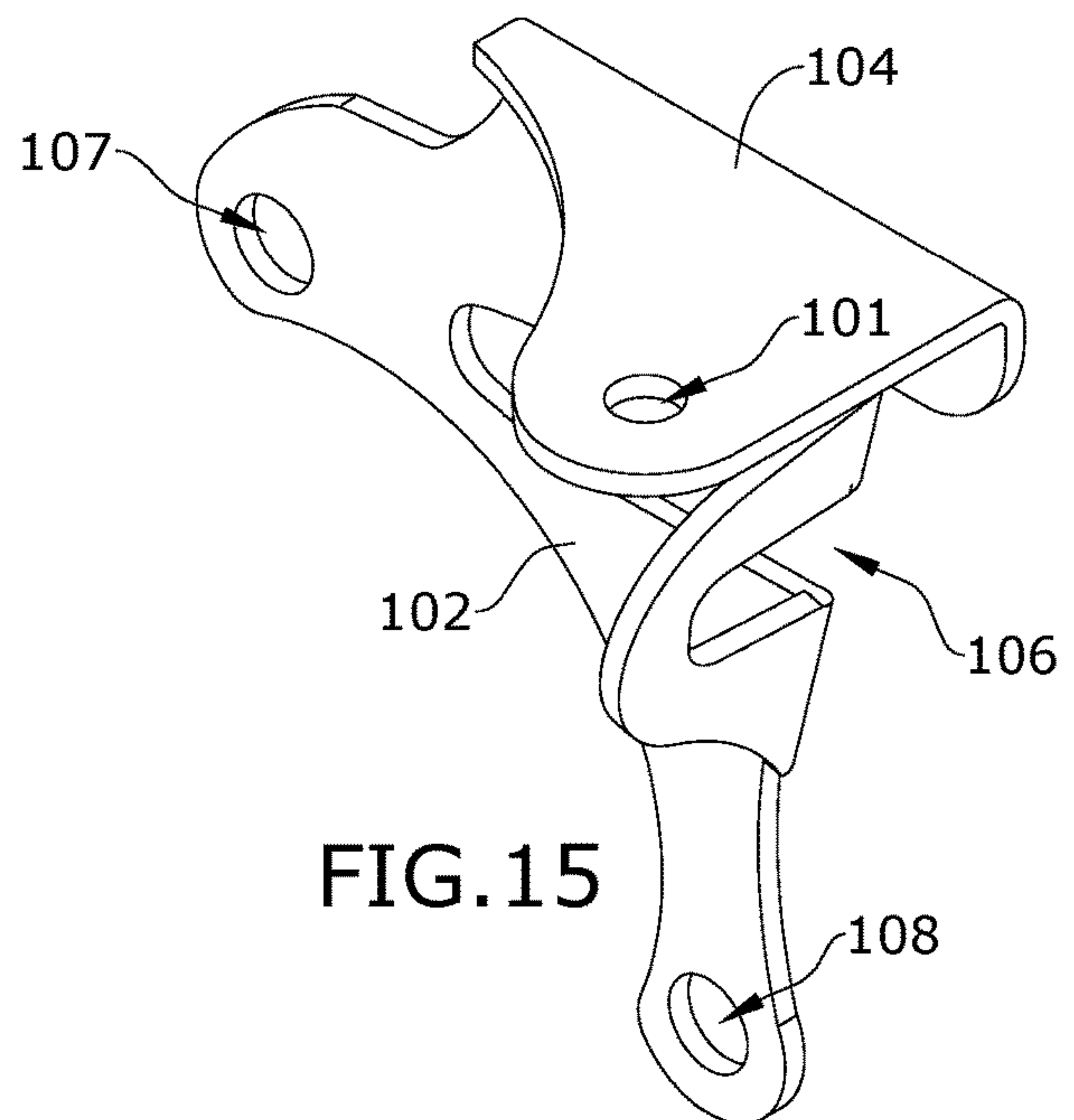


FIG. 15

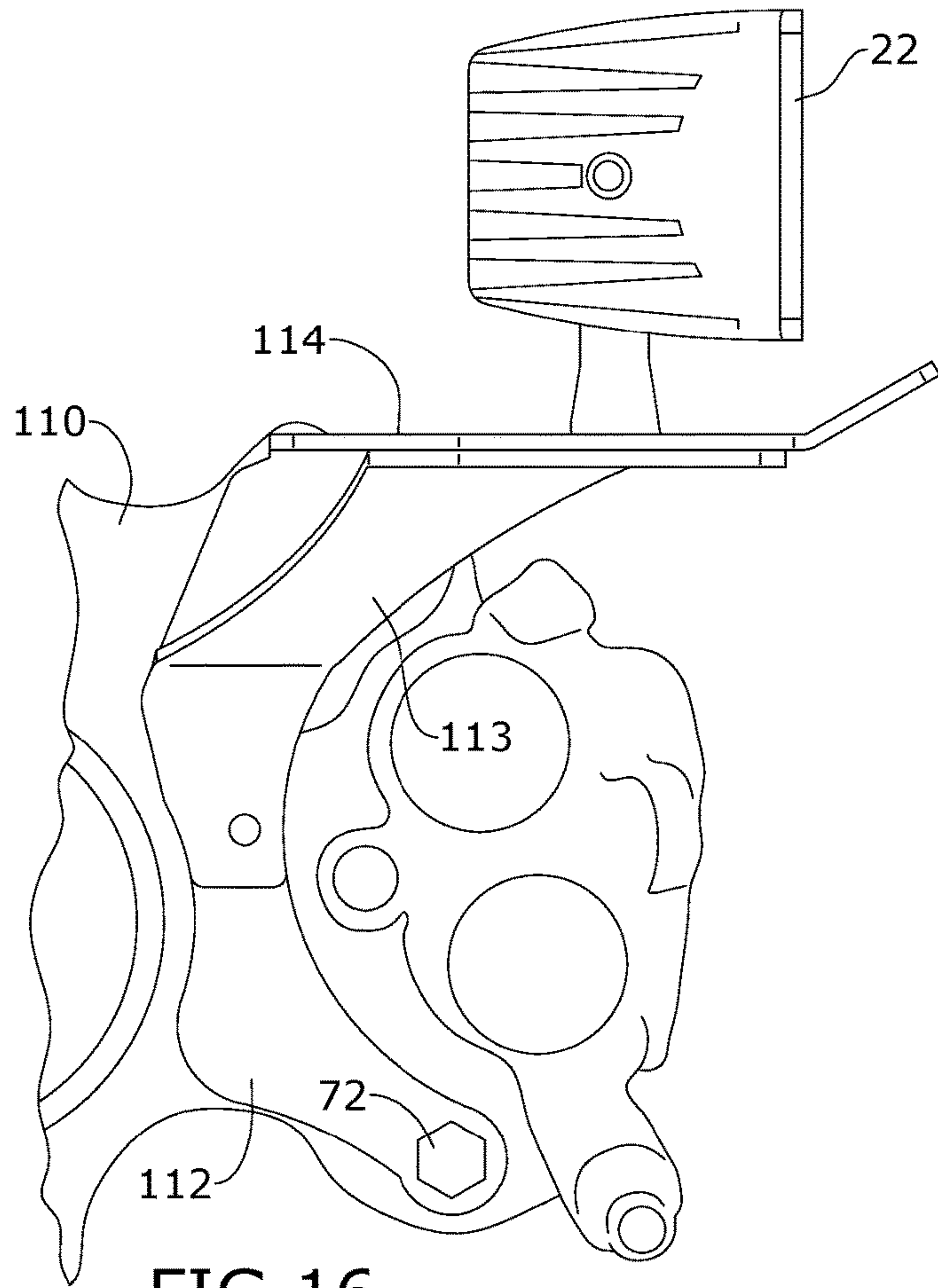


FIG. 16

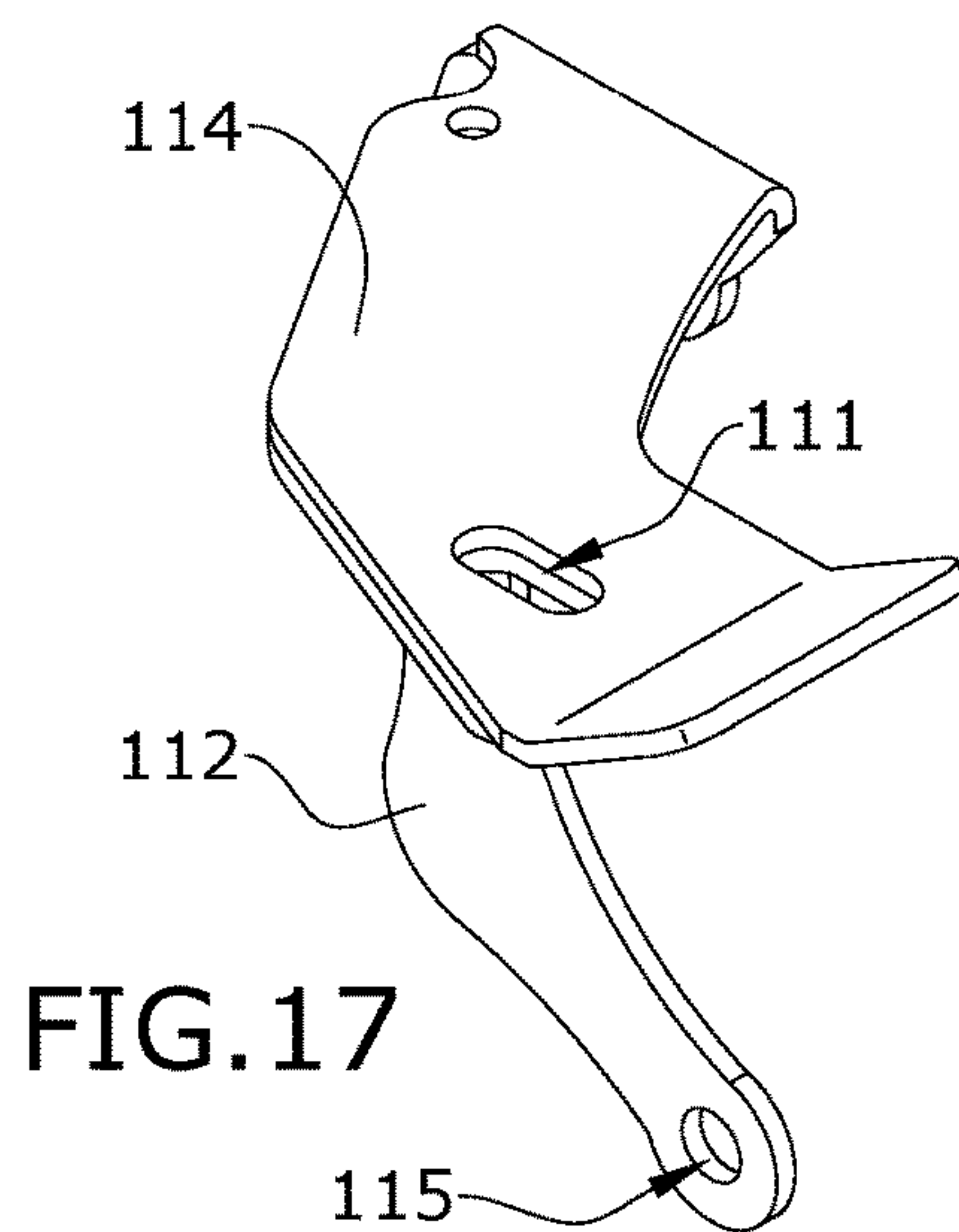


FIG. 17

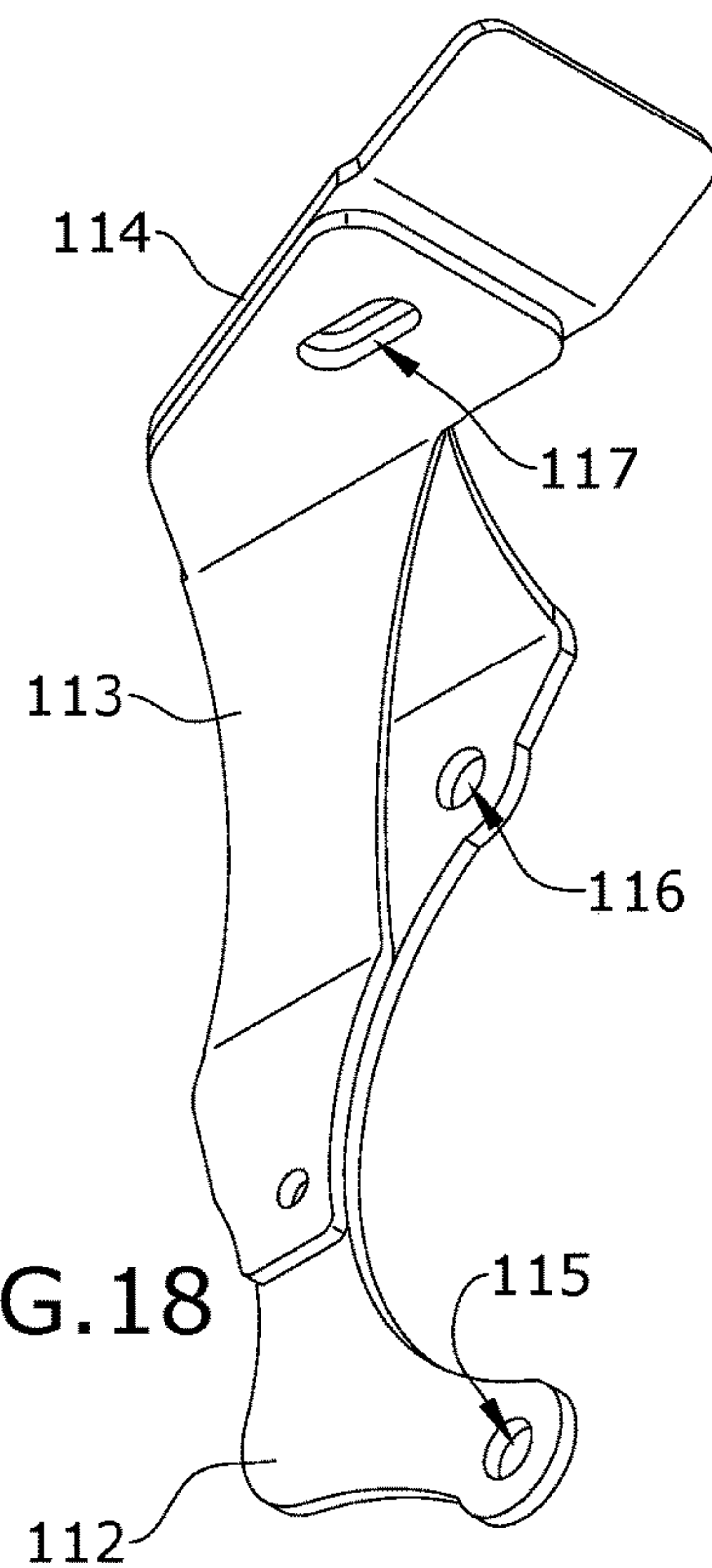


FIG. 18

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BRACKET FOR MOUNTING LIGHT TO STEERING ARM

RELATED APPLICATION

This application claims priority to and is a continuation-in-part application of U.S. Ser. No. 17/188,926 filed on Mar. 1, 2021, the entire contents of which is herein incorporated by reference.

BACKGROUND

The embodiments described herein relate generally to automotive accessories and, more particularly, to a bracket for mounting a light to a steering arm on an axle.

Most vehicles do not have lights that turn with the wheels, leading to nighttime visibility issues. While some high-end vehicles come standard with this feature, there is currently no aftermarket product that can be added to a vehicle with standard lights to allow the lights to turn with the wheels.

Therefore, what is needed is a bracket for mounting a light to a steering arm on an axle, allowing the light to turn with the turning of the steering wheel.

SUMMARY

Some embodiments of the present disclosure include a light mount for mounting a light to a steering arm on an axle. The light mount may include a bracket designed to attach to the steering arm, wherein the bracket and, thus, the light pod rotate with rotation of the steering arm. The bracket may include a mounting frame, wherein a first edge of the mounting frame is concavely curved and wherein a plurality of mounting orifices extends through the mounting frame; and a mounting plate extending substantially perpendicularly from an upper edge of the mounting frame, wherein the mounting plate has a mounting orifice extending there-through, the mounting orifice being sized to accommodate a fastener extending from a light pod.

BRIEF DESCRIPTION OF THE FIGURES

The detailed description of some embodiments of the invention is made below with reference to the accompanying figures, wherein like numerals represent corresponding parts of the figures.

FIG. 1 is a perspective view of one embodiment of the present disclosure, shown in use.

FIG. 2 is an exploded view of one embodiment of the present disclosure.

FIG. 3 is a section view of one embodiment of the present disclosure, taken along line 3-3 in FIG. 1.

FIG. 4 is a perspective view of one embodiment of the present disclosure, shown in use.

FIG. 5 is a perspective view of one embodiment of the present disclosure, shown in use.

FIG. 6 is a perspective view of one embodiment of the present disclosure, shown in use.

FIG. 7 is an exploded view of one embodiment of the present disclosure.

FIG. 8 is a perspective view of one embodiment of the present disclosure, shown in use.

FIG. 9 is an exploded view of one embodiment of the present disclosure.

FIG. 10 is a perspective view of one embodiment of the present disclosure, shown in use.

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FIG. 11 is a side view of one embodiment of the present disclosure.

FIG. 12 is a perspective view of one embodiment of the present disclosure, shown in use.

5 FIG. 13 is a side view of one embodiment of the present disclosure.

FIG. 14 is a perspective view of one embodiment of the present disclosure, shown in use.

10 FIG. 15 is a side view of one embodiment of the present disclosure.

FIG. 16 is a side view of one embodiment of the present disclosure, shown in use.

FIG. 17 is a perspective view of one embodiment of the present disclosure.

15 FIG. 18 is a bottom perspective view of one embodiment of the present disclosure.

DETAILED DESCRIPTION

20 In the following detailed description of the invention, numerous details, examples, and embodiments of the invention are described. However, it will be clear and apparent to one skilled in the art that the invention is not limited to the embodiments set forth and that the invention can be adapted

25 for any of several applications.

The device of the present disclosure may be used as a light mounting bracket and may comprise the following elements. This list of possible constituent elements is intended to be exemplary only, and it is not intended that this list be used

30 to limit the device of the present application to just these elements. Persons having ordinary skill in the art relevant to the present disclosure may understand there to be equivalent elements that may be substituted within the present disclosure without changing the essential function or operation of

35 the device.

The various elements of the present disclosure may be related in the following exemplary fashion. It is not intended to limit the scope or nature of the relationships between the various elements and the following examples are presented

40 as illustrative examples only.

By way of example, and referring to FIGS. 1-18, some embodiments of the invention include a light mount for mounting a light pod 22 to a steer arm, such as kingpin steering knuckle or steering knuckle 10, 80, 90, 100, 110, on an axle tube 16 in a vehicle, the light mount comprising a bracket attached, such as removably or permanently attached, to the steer arm or to the steering knuckle and to the light pod 22 such that the light pod 22 moves with the

45 As shown in FIGS. 1-3, the bracket may comprise a Z-shaped bracket, wherein a first portion of the bracket is designed to be positioned flush to a kingpin mounting plate 42 on a kingpin steering knuckle, the first portion including a mounting plate stud orifice 60 extending there through, the

50 mounting plate stud orifice 60 sized to accommodate a kingpin stud 56 and a fastener positioned therein. For example, as shown in FIG. 3, the king pin stud 56 may extend upwards from the kingpin mounting knuckle and the kingpin mounting plate 42 through the mounting plate stud orifice 60. An inner nut 48 with threaded interior walls may be engaged with the threads on the kingpin stud 56, and an outer nut 46 may engage with threads on the outer wall of the inner nut 48, thus securing the bracket to the kingpin mounting plate 42. As shown in the Figures, the inner nut 48

55 may comprise, for example, a tapered nut, such as a Chevy wheel nut, wherein the end of the inner nut 48 extending through the mounting plate stud orifice may have a taper off,

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for example, about 60 degrees, which may allow the inner nut **48** to seat fully into the steering knuckle or high steer components.

A second portion of the bracket may comprise a mounting plate **44**, wherein the mounting plate **44** may be substantially parallel to and spaced from the first portion of the bracket, wherein the mounting plate **44** may comprise a mounting orifice **58** extending there through. The mounting orifice **58** may be sized to accommodate a fastener, such as a bolt **24**, extending from the light pod **22**, wherein the bolt **24** may be designed to engage with a mounting nut **26** on an opposite side of the mounting plate **44** from the light pod **22**.

As shown in FIGS. 4-7, the bracket may comprise a mounting perch **12** integrated onto the steering knuckle **10**. In other words, the bracket may be forged/cast/fabricated as part of the knuckle **10**. As shown in the Figures, the mounting perch **12** may extend substantially outward from the outer surface of the knuckle **10**. The mounting perch **12** may include a mounting orifice **14** extending there through, wherein the mounting orifice **14** is sized to accommodate the fastener, such as bolt **24**, extending from the light pod **22**, wherein a nut **26** may be used to engage with the bolt **24** to secure the light pod **22** to the mounting perch **12**. Thus, in some embodiments, the device may comprise a newly designed steering knuckle with an incorporated or integrated mounting perch **12**.

In yet a further embodiment, and as shown in FIGS. 8 and 9, the bracket may comprise a mounting plate designed to be attached, such as permanently attached, to an existing steering knuckle **10**. For example, the bracket may comprise a weld-on plate **30** designed to be welded or otherwise securely attached to an outer surface of the steering knuckle **10**. Thus, a first, inner edge of the weld-on plate **30** may mimic the shape of the outer surface of the steering knuckle **10**, while the outer edge may extend outward from the steering knuckle, thus forming a mounting surface. The mounting surface of the weld-on plate **30** may include a mounting orifice **32** extending there through, wherein the mounting orifice **32** is sized to accommodate the fastener, such as bolt **24**, extending from the light pod **22**, wherein a nut **26** may be used to engage with the bolt **24** to secure the light pod **22** to the weld-on plate **30**. Thus, in some embodiments, the bracket may include an aftermarket part that may be added to an existing steering knuckle.

In another alternate embodiment, and as shown in FIGS. 10 and 11, the bracket may comprise a mounting frame **82** having a substantially planar shape, wherein one edge of the mounting frame **82** is curved to match the inner curvature of the steering knuckle **80** to avoid impeding functionality of the steering knuckle **80**. More specifically, as shown in the Figures, the curved edge may be a concave curved edge with the curvature extending toward a central portion of the mounting frame **82**. Each end of the curved edge may comprise a mounting orifice and, thus, a top end of the curved edge may have a rearward mounting orifice **85** extending therethrough and a bottom end of the curved edge may have a forward mounting orifice **86** extending there-through. The bracket may further comprise a mounting plate **84** extending substantially perpendicularly outward from an outer edge of the mounting frame opposite the curved edge wherein the mounting plate **84** may have an upper mounting orifice **81** extending therethrough. The mounting plate **84** may taper from the widest width proximate to the forward edge of the mounting frame **82** and the smallest width proximate to the rear edge of the mounting frame **82**. As shown in FIG. 10, the mounting frame **82** may be mounted to side surfaces of the steering knuckle **80** using fasteners **72**

extending through the rearward mounting hole **85** and the forward mounting hole **86**, and a light pod **22** may be mounted to the mounting plate **84** using a fastener extending through the upper mounting orifice **81**. Because of its structure, the bracket shown in FIGS. 10 and 11 may be suitable for mounting to a JEEP brand TJ D44/D30 steering arm/knuckle. More specifically, the hub mounting bolt locations may be utilized to mount the bracket to the steering arm/knuckle.

As shown in FIGS. 12 and 13, a yet further embodiment of the bracket may comprise a mounting frame **92** having a first frame plate **93** that is substantially planar, wherein one edge of the first frame plate **93** is curved to match the inner curvature of the steering knuckle **90** to avoid impeding functionality of the steering knuckle **90**, and a second frame plate **99** that extends substantially perpendicularly from a rearward edge of the first frame plate **93**, wherein a frame cavity **96** extends through a portion of both the first frame plate **93** and the second frame plate **99** to provide for clearance of a protrusion extending from the steering knuckle **90**, as shown in FIG. 12. More specifically, as shown in the Figures, the curved edge may be a concave curved edge with the curvature extending toward a central portion of the mounting frame **92**. Each end of the curved edge may comprise a mounting orifice extending there-through and, thus, a top end of the curved edge may have a forward mounting orifice **95** extending therethrough and a bottom end of the curved edge may have a rearward mounting orifice **97** extending therethrough. The bracket may further comprise a mounting plate **94** extending substantially perpendicularly outward from a top edge of the mounting frame **92**. For example, the mounting plate **94** may extend perpendicularly outward from a top surface of the second frame plate **99**, as shown in FIG. 13. The mounting plate **94** may be substantially trapezoidal shaped with an upper mounting orifice **91** extending therethrough. As shown in FIG. 12, the mounting frame **92**, and specifically the first frame plate **93**, may be mounted to side surfaces of the steering knuckle **90** using fasteners **72** extending through the rearward mounting orifice **95** and the forward mounting orifice **97**, and a light pod **98** may be mounted to the mounting plate **94** using a fastener extending through the upper mounting orifice **91**. Because of its structure, the bracket shown in FIGS. 12 and 13 may be suitable for mounting to a JEEP brand JL/Gladiator D44/D30 steering arm/knuckle. More specifically, the hub mounting bolt locations may be utilized to mount the bracket to the steering arm/knuckle.

A yet further embodiment of the bracket is shown in FIGS. 14 and 15. As shown, the bracket may comprise a mounting frame **102** having a first frame plate that is substantially planar, wherein one edge of the first frame plate is curved to match the inner curvature of the steering knuckle **100** to avoid impeding functionality of the steering knuckle **100**, and a second frame plate that extends substantially perpendicularly from a rearward edge of the first frame plate, wherein a frame cavity **106** extends through a portion of both the first frame plate and the second frame plate to provide for clearance of a protrusion extending from the steering knuckle **100** as shown in FIG. 14. As shown, the second frame plate may comprise a substantially ark-shaped plate. As shown in the Figures, the curved edge may be a concave curved edge with the curvature extending toward a central portion of the mounting frame **102**. Each end of the curved edge may comprise a mounting orifice extending therethrough and, thus, a top end of the curved edge may have a forward mounting orifice **107** extending therethrough

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and a bottom end of the curved edge may have a rearward mounting orifice **108** extending therethrough. The bracket may further comprise a mounting plate **104** extending substantially perpendicularly outward from a top edge of the mounting frame **102**. For example, the mounting plate **104** may extend perpendicularly outward from a top surface of the first frame plate, as shown in FIG. **15**. The mounting plate **104** may taper from the widest width proximate to the rear edge of the mounting frame **102** and the smallest width proximate to the forward edge of the mounting frame **102** with an upper mounting orifice **101** extending therethrough. As shown in FIG. **14**, the mounting frame **102**, and specifically the first frame plate, may be mounted to side surfaces of the steering knuckle **100** using fasteners **72** extending through the forward mounting orifice **107** and the rearward mounting orifice **108**, and a light pod **22** may be mounted to the mounting plate **104** using a fastener extending through the upper mounting orifice **101**. Because of its structure, the bracket shown in FIGS. **14** and **15** may be suitable for mounting to a JEEP brand JK D44/D30 knuckle pod assembly. More specifically, the hub mounting bolt locations may be utilized to mount the bracket to the steering arm/knuckle.

Another embodiment of the bracket is shown in FIGS. **16-18**. In this embodiment, the bracket may be mounted to a brake caliper, such as a CAN AM brand X3 brake caliper. As shown, the bracket may comprise a mounting frame **112** having a substantially planar shape, wherein one edge of the mounting frame **112** is curved to avoid impeding functionality of the brake caliper. More specifically, the curved edge may be a concave curved edge with the curvature extending toward a central portion of the mounting frame **112**. As shown in the Figures, the curved edge may be substantially semi-circular in shape. Each end of the mounting frame **112** may have a mounting orifice extending therethrough. For example, the mounting frame **112** may include a forward mounting orifice **115** at a bottom end thereof and a rearward mounting orifice **116** at a top end thereof. The bracket may further comprise a mounting plate **114** extending substantially perpendicularly outward from an upper edge of the mounting frame **112**, wherein the mounting plate **114** may have a bent elbow-like shape with an upper mounting orifice **111** extending therethrough. As shown in the Figures, a distal end of the mounting plate **114** may also have an upward angled lip. The bracket may further comprise a support frame **113** extending diagonally between a first surface of the mounting frame **112** and a bottom surface of the mounting plate **114**, wherein the support frame **113** may include a supporting frame mounting orifice **117** aligned with the upper mounting orifice **111**. As shown in FIG. **16**, the mounting frame **112** may be mounted to side surfaces of the brake caliper **110** using fasteners **72** extending through the forward mounting hole **115** and the rearward mounting hole **116**, and a light pod **22** may be mounted to the mounting plate **114** using a fastener extending through the upper mounting orifice **111** and the supporting frame mounting orifice **117**.

While the above describes various potential brackets, it is understood that other shaped brackets are envisioned, depending on the specifics of the steering arm or mounting location. Moreover, the mount may be varied slightly depending on the axle used in the vehicle. In embodiments, the mount may be used with, for example, Dana 35 axles, Dana 44½ and ¾ ton axles, Dana 50 axles, Dana 60 ball joint and kingpin axles, Dana 70 axles, Dana 80 axles, Ford 9-inch axles, Chevy 14 bolt axles, Toyota truck axles, Suzuki Samurai axles, and independent front suspension vehicles.

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To use the mount of the present disclosure, the bracket may be mounted to the steer arm/steering knuckle using a fastener, such as a bolt, and a nut. Alternatively, the bracket may be welded onto or incorporated into the body of the steering arm. A light pod **22** may then be mounted to the bracket by inserting a fastener, such as a bolt, extending from the light pod **22** through the bracket orifice and securing with a nut.

The above-described embodiments of the invention are presented for purposes of illustration and not of limitation. While these embodiments of the invention have been described with reference to numerous specific details, one of ordinary skill in the art will recognize that the invention can be embodied in other specific forms without departing from the spirit of the invention. Thus, one of ordinary skill in the art would understand that the invention is not to be limited by the foregoing illustrative details, but rather is to be defined by the appended claims.

What is claimed is:

1. An accessory mount for mounting an accessory to a steering arm on an axle, the accessory mount comprising:
 - a bracket designed to attach to the steering arm, the bracket comprising:
 - a mounting frame, wherein a first edge of the mounting frame is concavely curved and wherein a plurality of mounting orifices extend through the mounting frame; and
 - a mounting plate extending substantially perpendicularly from an upper edge of the mounting frame, wherein the mounting plate has a mounting orifice extending therethrough, the mounting orifice being sized to accommodate a fastener extending from the accessory,
 - wherein the bracket and, thus, the accessory rotate with rotation of the steering arm.
2. The accessory mount of claim 1, wherein the plurality of mounting orifices includes a forward mounting orifice and a rearward mounting orifice positioned at opposite ends of the mounting frame.
3. The accessory mount of claim 1, wherein the mounting plate tapers from the widest width proximate to a forward edge of the mounting frame to the smallest width proximate to a rear edge of the mounting frame.
4. The accessory mount of claim 1, wherein the mounting plate is substantially trapezoidal shaped.
5. The accessory mount of claim 1, further comprising a supporting frame extending diagonally between the mounting frame and the mounting plate.
6. The accessory mount of claim 5, wherein the supporting frame includes a supporting frame mounting orifice extending therethrough, the supporting frame mounting orifice aligned with the mounting orifice on the mounting plate.
7. The accessory mount of claim 1, wherein:
 - the mounting frame comprises a first frame plate that is substantially planar and includes the curved edge and a second frame plate that extends substantially perpendicularly from a rearward edge of the first frame plate; and
 - a frame cavity extends through a portion of both the first frame plate and the second frame.
8. The accessory mount of claim 7, wherein the mounting plate extends substantially perpendicularly from an upper edge of the second frame plate.
9. The accessory mount of claim 1, wherein the accessory is a light.

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