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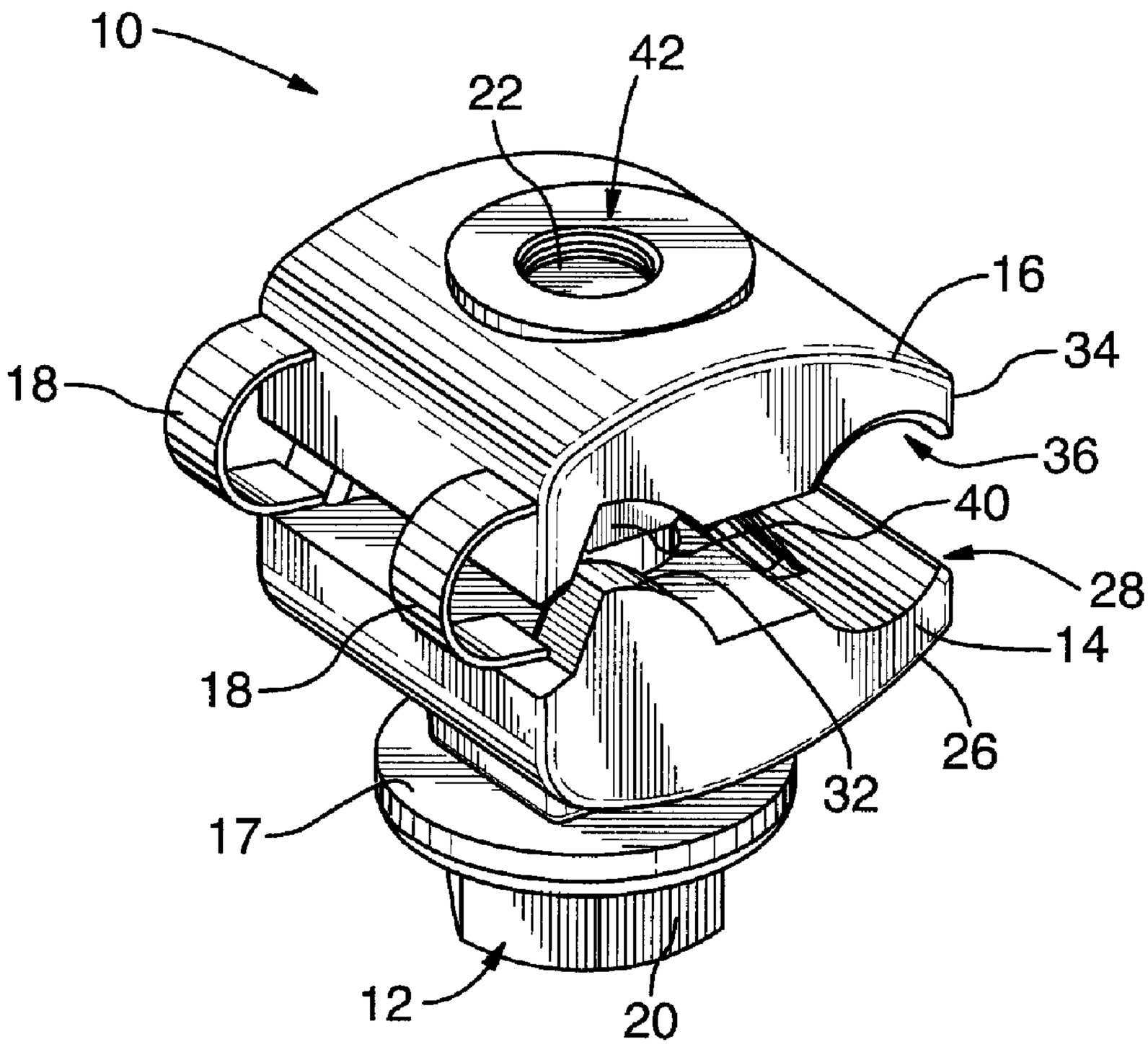
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(54) Titre : DISPOSITIF DE SERRAGE POUR PROTEGE-HAUBAN
(54) Title: CLAMP FOR A GUY GUARD



(57) Abrégé/Abstract:
A guy guard assembly for use with a guy wire is disclosed. The assembly comprises a tubular guy guard and a clamp. The tube wall has an aperture. The clamp includes a bolt, a first plastic portion and a second plastic portion. The bolt has a head outside the

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(57) Abrégé(suite)/Abstract(continued):
tube and a threaded shaft extending from the head through the aperture. The first portion is inside the tube against the tube wall; has the bolt extending therethrough; and defines a first jaw. The second portion defines a second jaw and is threaded to the bolt. The portions have a first configuration, wherein the jaws are relatively distal to and spaced from one another to define a slot for said wire and, from the first configuration, are configurable by rotating the bolt to a second configuration, wherein the jaws are relatively proximal to one another to grip said wire.

ABSTRACT

A guy guard assembly for use with a guy wire is disclosed. The assembly comprises a tubular guy guard and a clamp. The tube wall has an aperture. The clamp includes a bolt, a first plastic portion and a second plastic portion. The bolt has a head outside the tube and a threaded shaft extending from the head through the aperture. The first portion is inside the tube against the tube wall; has the bolt extending therethrough; and defines a first jaw. The second portion defines a second jaw and is threaded to the bolt. The portions have a first configuration, wherein the jaws are relatively distal to and spaced from one another to define a slot for said wire and, from the first configuration, are configurable by rotating the bolt to a second configuration, wherein the jaws are relatively proximal to one another to grip said wire.

CLAMP FOR A GUY GUARD

The present invention relates to the field of guy guards, and more particularly, to clamps therefor.

It is well known to provide a guy wire with a guard. The purpose of the guard is to make the guy wire highly visible, so as to reduce the potential that passers-by will collide with the guy wire, and to reduce the severity of injuries flowing from collisions that do occur. To serve this purpose, a guard is often constructed out of highly-visible plastic and takes the form of a tube of sufficient length to wrap around that portion of the guy wire that is likely to be the subject of a collision, and of a diameter calculated to spread the force of a typical collision over a sufficient area to avoid serious injury. Guards often are about 5-7' long, and 3-5" in diameter.

Usually, that portion of the guy wire that is likely to be collided with is the portion nearest the ground. If the guard tube is not secured to the wire, it is possible for wind to carry the tube away from the ground, thereby dangerously exposing the lower portion of the wire. Accordingly, it is commonplace to immobilize the guy guard with respect to the guy wire. This has the added benefit of reducing the incidence of unlawful removal of the guards. Various immobilization systems are known in the art. A commonly used system involves a metal bolt and a pair of metal jaws, one having a threaded bore and the other having a clearance hole. The shaft of the bolt is slipped through a hole in the tube wall and through the clearance hole, and then threaded into the threaded bore. Using this system, an installer can fit the guy wire between the jaws and tighten the bolt to immobilize the wire. This system is known to be operable, but the metal components can be expensive. It can also be inconvenient to use, as the installer is required to simultaneously keep the guy wire and jaws properly arranged and tighten the bolt. A result of this inconvenience is that often installers fail to immobilize the guards, with consequential deleterious impacts on safety.

A guy guard assembly forms one aspect of the invention. The guy guard assembly is for use with a guy wire of the type secured in use at one end to a structure to be supported and at the other end to the ground. The guy guard assembly comprises a guy guard and a clamp. The guy guard takes the form of a tube, the tube wall having an aperture defined therethrough. The clamp includes a bolt, a first plastic clamp portion and a second plastic clamp portion. The bolt has a head disposed outside the tube and a threaded shaft extending from the head through the aperture. The first plastic clamp portion is disposed inside the tube against the tube wall, has the bolt extending therethrough in spaced-relation and defines a first jaw part. The second plastic clamp portion defines a second jaw part and is threaded to the bolt. The clamp portions have a first configuration, wherein the jaw parts are relatively distal to and spaced apart from one another to define a slot in which said guy wire can be slotted, and, from the first configuration, are configurable through rotation of the bolt to a second configuration, wherein the jaw parts are relatively proximal to one another to grip said guy wire when disposed in said slot.

A clamp for use with a guy guard tube forms another aspect of the invention. The tube is of the type through which a guy wire extends in use and having an aperture defined through the tube wall. The clamp includes a bolt, a first plastic clamp portion and a second plastic clamp portion. The bolt has a head disposed in use outside said guy guard and a threaded shaft extending from the head through said aperture in use. The first plastic clamp portion is disposed in use inside the tube against the tube wall, has the bolt extending therethrough in spaced relation and defines a first jaw part. The second clamp portion defines a second jaw part and is threaded to the bolt. The clamp portions have a first configuration, wherein the jaw parts are relatively distal to and spaced apart from one another to define a slot in which said guy wire can be slotted, and, from the first configuration, are configurable through rotation of the bolt to a second configuration, wherein the jaw

parts are relatively proximal to one another to grip said guy wire when disposed in said slot.

A clamp forms another aspect of the invention. The clamp is for use with a guy guard tube of the type through which a guy wire extends in use and having an aperture defined through the tube wall. The clamp comprises a bolt, a first clamp portion, a second clamp portion and bias means. The bolt has a head disposed in use outside said guy guard tube and a threaded shaft extending from the head through said aperture in use. The first clamp portion is disposed in use inside the tube against the tube wall, has the bolt extending therethrough in spaced relation and defines a first jaw part. The second clamp portion defines a second jaw part and is threaded to the bolt. The clamp portions have a first configuration, wherein the jaw parts are relatively distal to and spaced apart from one another to define a slot in which said guy wire can be slotted, and, from the first configuration, are configurable through rotation of the bolt to a second configuration, wherein the jaw parts are relatively proximal to one another to grip said guy wire when disposed in said slot. The bias means is for biasing the clamp portions for movement toward the first configuration.

Advantages, features and characteristics of the present invention, as well as methods of operation and functions of the related elements of the structure, and the combination of parts and economies of manufacture, will become more apparent upon consideration of the following detailed description and the appended claims with reference to the accompanying drawings, which drawings are briefly described hereinbelow.

FIG. 1A is a perspective view of a clamp constructed according to a first preferred embodiment of the invention and shown in a first, open configuration;

FIG. 1B is a perspective view of the structure of FIG. 1A from an opposing viewpoint;

FIG. 1C is a side view of the structure of FIG. 1A;

FIG. 1D is a front view of the structure of FIG. 1A;

FIG. 1E is a rear view of the structure of FIG. 1A;

FIG. 1F is a top view of the structure of FIG. 1A;

FIG. 1G is a bottom view of the structure of FIG. 1A;

FIG. 2A is a view similar to FIG. 1A, with the clamp shown in a second, closed configuration;

FIG. 2B is a perspective view of the structure of FIG. 2A from an opposing viewpoint;

FIG. 2C is a side view of the structure of FIG. 2A;

FIG. 2D is a front view of the structure of FIG. 2A;

FIG. 2E is a rear view of the structure of FIG. 2A;

FIG. 2F is a top view of the structure of FIG. 2A;

FIG. 2G is a bottom view of the structure of FIG. 2A;

FIG. 3A is a side view of a guy guard assembly constructed according to a second preferred embodiment of the present invention;

FIG. 3B is an end view of the guy guard assembly of FIG. 3A;

FIG. 4A is a side view of the guy guard assembly of FIG. 3A in use; and

FIG. 4B is a view along section line 4B-4B of FIG. 4A.

With general reference to FIG. 1A, a preferred embodiment of the present invention, a clamp 10, is illustrated, and will be seen to include a bolt 12, a first clamp portion 14, a second clamp portion 16, a washer 17 and one or more resilient straps 18, specifically, a pair of resilient straps 18.

The bolt 12 is constructed of steel and has a hex head 20 and a threaded shaft 22 extending from the head 20. The washer 17 is constructed out of a durable, polymeric material, and is disposed around the shaft 22, adjacent the hex head 20.

The first clamp portion 14 is injection-molded integrally out of plastic that is substantially electrically non-conductive, specifically, 30% glass filled nylon, and, with general reference to FIGS. 1A-1G and 2C, has a bore 21 through which the

bolt 12 extends in spaced relation, a first jaw part 26 defining a trough 28, a square protruding boss 30, a pair of protruding ears 32 and a first grip member 62 defined in the trough 28.

The second clamp portion 16 is also injection-molded out of 30% glass filled nylon, has a second jaw part 34 defining a trough 36 in which a second grip member 64 is defined, and is threaded on the shaft 22 such that the troughs 28,36 of the first clamp portion 14 and second clamp portion 16 are opposed and such that the ears 32 projecting from the first clamp portion 14 mechanically engage opposite notches 38,40 of the second clamp portion 16 so as to define arresting means for arresting relative rotation of the first clamp portion 14 and the second clamp portion 16 about the bolt 12. The second clamp portion 16 is threaded on the shaft 22 by means of a threaded bore 42 which extends through the second clamp portion 16.

The straps 18 are each connected to each of the first clamp portion 14 and the second clamp portion 16, and are constructed out of resilient, non-electrically conductive plastic.

The clamp portions have a first configuration shown in FIGS. 1A-1G, wherein the jaw parts 26,34 are relatively distal to and spaced apart from one another to define a slot 44, and, from the first configuration, are configurable through rotation of the bolt 12 to a second configuration, shown in FIGS. 2A-2G, wherein the jaw parts 26,34 are relatively proximal to one another. The resilient straps 18 are sprung so as to define means for biasing the clamp portions 14,16 towards the first configuration.

In FIGS. 3A, 3B, the clamp 10 is illustrated in use with a guy guard 46 to form a guy guard assembly 48. The guy guard 46 is in the form of a tube defined by a sheet of plastic formed in a roll. The tube wall has defined therethrough a square aperture 50, shown in phantom outline in FIG. 3A, which aperture defines a socket. In such use, the first clamp portion 14 is disposed inside the tube 46 against the tube wall and the boss 30 is mechanically engaged in the socket 50,

such that the boss 30 defines lock means for securing the first clamp portion 14 as against rotation about the bolt axis relative to the tube 46.

FIGS. 4A,4B show the structure of FIG. 3A in use with a guy wire 52 supporting a pole structure 54, with one end 56 of the guy wire 52 secured to the structure 54 and the other end 58 of the guy wire 52 secured to a ground-mounted stake 60.

To use the guy guard assembly of FIG. 3A with the guy wire of FIG. 4A, the plastic sheet forming the tube 46 is partially unrolled, and the tube 46 is spun over the wire, such that the tube wraps around the wire. Following this initial stage of installation, the guy wire 52 will typically lie outside the clamp 10 (not shown), but the jaw parts 26,34 of the clamp 10 are separated from one another to define a slot 44, shown in FIG. 3B, into which the guy wire 52 can easily be slotted by an installer.

In the next step of installation, by manipulation of the guy guard assembly 48 and the guy wire 52, the guy wire 52 is slotted into the slot 44 (not shown).

Thereafter, the installer rotates the bolt 12 using a socket driver or similar tool, which causes the clamp portions 14,16 to assume the second configuration, wherein the jaw parts 26,34 grip the guy wire 52, as shown in FIG. 4B, to immobilize the guy guard assembly 48. As evidenced in FIG. 4B, the guy wire 52 extends through the troughs 28,36 of the jaw parts 26,34 when the clamp portions 14,16 are disposed in the second configuration. The first 62 and second 64 grip members defined in the troughs are shaped so as fill the gap between 2 adjacent wires or strands of the guy wire 52. This increases surface area in contact, improving grip. As well, the grip members engage with the guy wire in the manner of a bolt with a nut, such that, generally, if the guy guard assembly 48 is to move along the length of the wire 52, it is constrained to move along a helical path, ie. it must spiral. This minimizes the likelihood that the guy guard assembly 48 will be displaced by vandals or the like.

As shown, each grip member defines only a single "spline". Two or more splines could conceivably be defined by each grip member, which could yet further increase the surface area and gripping strength. However, additional splines render proper engagement between splines and wire more difficult, and also demands finer tolerances in terms of the guy wire used – where the helix followed by the splines does not match exactly the helix defined by the cable, the risk of poor engagement would be relatively high. A single, relatively short, spline is more likely to find engagement between strands in the guy wire. Without intending to be bound by theory, it is believed that a single, relatively short spline, may seat itself even in the context of not-perfectly matching wire/spline helixes, by flexing the strands in the guy wire and/or flexing itself. The short length of the splines does not substantially impair the gripping strength provided thereby, since in the preferred embodiment illustrated, the gripping force is focused or centred in the vicinity of the threaded bore.

While but two embodiments of the invention are herein shown and described, it is to be understood that various changes in size and shape of parts may be made. For example, whereas the boss and aperture shown are both square, it will be evident that other cross-sections, such as rectangular, could equally be employed with similar utility. Further, whereas the bias means illustrated comprises a pair of straps, it will be evident that greater or lesser number of straps could be utilized. As well, whereas a metallic bolt is described, bolts of plastic or composite material could be utilized. Additionally, whereas the disclosure describes clamp portions injection-molded out of 30% glass-filled nylon, other plastics and construction techniques could be employed. Further, whereas a washer is shown, the washer could be omitted, or formed as part of the bolt or the guard. Greater or lesser numbers of grip members in the troughs could be utilized. Lastly, but without limitation, whereas ears projecting from the first clamp portion and mechanically engaging opposite notches of the second clamp portion are employed to arrest

rotation in the preferred embodiments, other mechanisms could be provided. Indeed, the straps themselves provide some functionality in this regard.

Accordingly, it should be understood that the invention is to be limited only by the claims appended hereto, purposively construed.

CLAIMS

1. A guy guard assembly for use with a guy wire of the type secured in use at one end to a structure to be supported and at the other end to the ground, the guy guard assembly comprising:

a guy guard in the form of a tube, the tube wall having an aperture defined therethrough; and

a clamp including:

a bolt having a head disposed outside the tube and a threaded shaft extending from the head through the aperture, the head being larger than the aperture such that the head is captured outside the tube;

a first plastic clamp portion disposed inside the tube against the tube wall and through which the bolt extends in spaced-relation, the first plastic clamp portion defining a first jaw part; and

a second plastic clamp portion defining a second jaw part and threaded to the bolt,

the clamp portions having a first configuration, wherein the jaw parts are relatively distal to and spaced apart from one another to define a slot in which said guy wire can be slotted, and, from the first configuration, being configurable through rotation of the bolt to a second configuration, wherein the jaw parts are relatively proximal to one another to grip said guy wire when disposed in said slot,

the clamp further comprising bias means for biasing the clamp portions for movement toward the first configuration.

2. A guy guard assembly according to claim 1, wherein the bias means comprises one or more resilient plastic straps, each of said one or more resilient plastic straps being connected to each of the first clamp portion and the second clamp portion.

3. A guy guard assembly according to claim 1, further comprising lock means for securing the first clamp portion as against rotation about the bolt axis relative to the tube.

4. A guy guard assembly according to claim 3, wherein the aperture defines a socket and the first clamp portion has a protruding boss mechanically engaged in said socket and defining the lock means.

5. A guy guard assembly according to claim 4, wherein the aperture and the boss are both square.

6. A guy guard assembly according to claim 1, wherein the first clamp portion and the second clamp portion are formed from plastic that is substantially electrically non-conductive.

7. A guy guard assembly according to claim 1, wherein the first jaw part and the second jaw part respectively define opposed troughs of substantially semi-circular cross-section, through which the guy wire extends in use when the clamp portions are disposed in the second configuration.

8. A guy guard assembly according to claim 1, wherein a sheet of plastic formed in a roll defines the tube.

9. A guy guard assembly according to claim 1, further comprising arresting means for arresting relative rotation of the first clamp portion and the second clamp portion.

10. A guy guard assembly according to claim 9, wherein the first clamp portion has a pair of projecting ears mechanically engaging opposite notches of the second clamp portion and defining the arresting means.

11. A guy guard assembly according to claim 7, wherein, when the jaw parts are disposed in the second configuration, with a guy wire disposed in said slot, the guy wire being of the type defined by strands twisted in a helical manner, the jaw parts grip the guy wire such that sliding movement of said guy guard assembly along said guy wire is constrained to follow a helical path.

12. A guy guard assembly according to claim 11, wherein a grip member is defined in each trough, said grip members engaging with the guy wire in the manner of a bolt with a nut.

13. A clamp for use with a guy guard tube of the type through which a guy wire extends in use and having an aperture defined through the tube wall, the clamp including:

a bolt having a head disposed in use outside said guy guard and a threaded shaft extending from the head through said aperture in use, the head being larger than the aperture such that the head is captured outside the tube;

a first plastic clamp portion disposed in use inside the tube against the tube wall and through which the bolt extends in spaced relation, the first plastic clamp portion defining a first jaw part; and a second clamp portion defining a second jaw part and threaded to the bolt, the clamp portions having a first configuration, wherein the jaw parts are relatively distal to and spaced apart from one another to define a slot in which said guy wire can be slotted, and, from the first configuration, being configurable through rotation of the bolt to a second configuration, wherein the jaw parts are relatively proximal to one another to grip said guy wire when disposed in said slot; and

bias means for biasing the clamp portions for movement toward the first configuration.

14. A clamp according to claim 13, wherein the bias means comprises one or more resilient plastic straps, each of said one or more resilient plastic straps being connected to each of the first clamp portion and the second clamp portion.

15. A clamp according to claim 13, wherein the first clamp portion and the second clamp portion are formed from plastic that is substantially electrically non-conductive.

16. A clamp according to claim 13, wherein the first jaw part and the second jaw part respectively define opposed troughs of substantially semi-circular cross-section, through which the guy wire extends in use when the clamp is disposed in the second configuration.

17. A clamp according to claim 13, further comprising arresting means for arresting relative rotation of the first clamp portion and the second clamp portion.

18. A clamp according to claim 17, wherein the first clamp portion has a pair of projecting ears mechanically engaging opposite notches of the second clamp portion and defining the arresting means.

19. A clamp for use with a guy guard tube of the type through which a guy wire extends in use and having an aperture defined through the tube wall, the clamp comprising:

a bolt having a head disposed in use outside said guy guard tube and a threaded shaft extending from the head through said aperture in use, the head being larger than the aperture such that the head is captured outside said guy guard tube;

a first clamp portion and a second clamp portion, the first clamp portion being disposed in use inside the tube against the tube wall and through which the bolt extends in spaced relation, the first clamp portion defining a first jaw part and the second clamp portion defining a second jaw part and threaded to the bolt, the clamp portions having a first configuration, wherein the jaw parts are relatively distal to and spaced apart from one another to define a slot in which said guy wire can be slotted, and, from the first configuration, being configurable through rotation of the bolt to a second configuration, wherein the jaw parts are relatively proximal to one another to grip said guy wire when disposed in said slot; and

bias means for biasing the clamp portions for movement toward the first configuration.

20. A clamp according to claim 19, further comprising:

lock means for securing, in use, the first clamp portion as against rotation about the bolt axis relative to the tube; and

arresting means for arresting relative rotation of the first clamp portion and the second clamp portion

such that, with the clamp portions in the first configuration, the jaw parts of the clamp are separated from one another to define a slot into which said guy wire can be slotted by an installer in use.

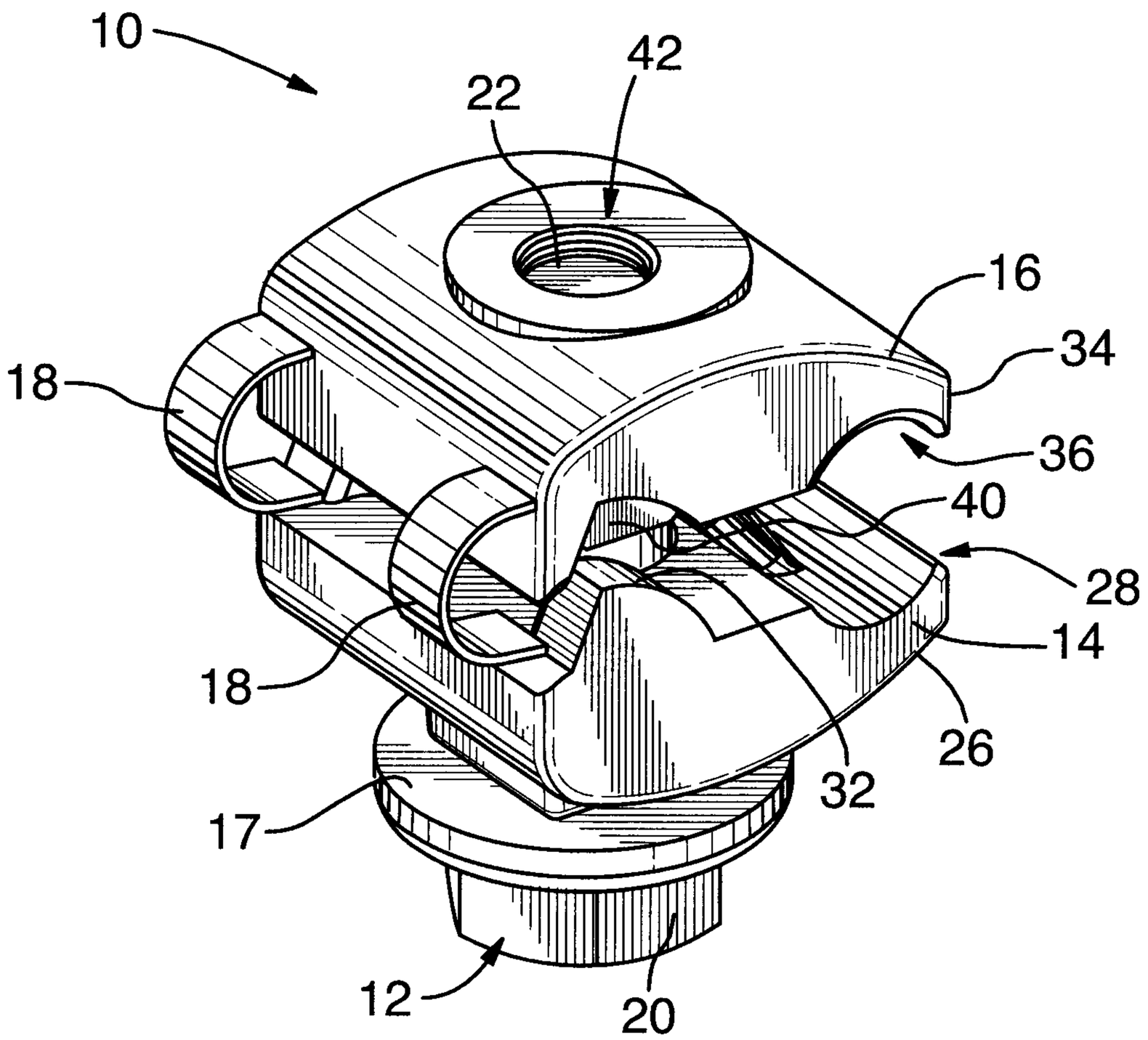

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FIG.1A

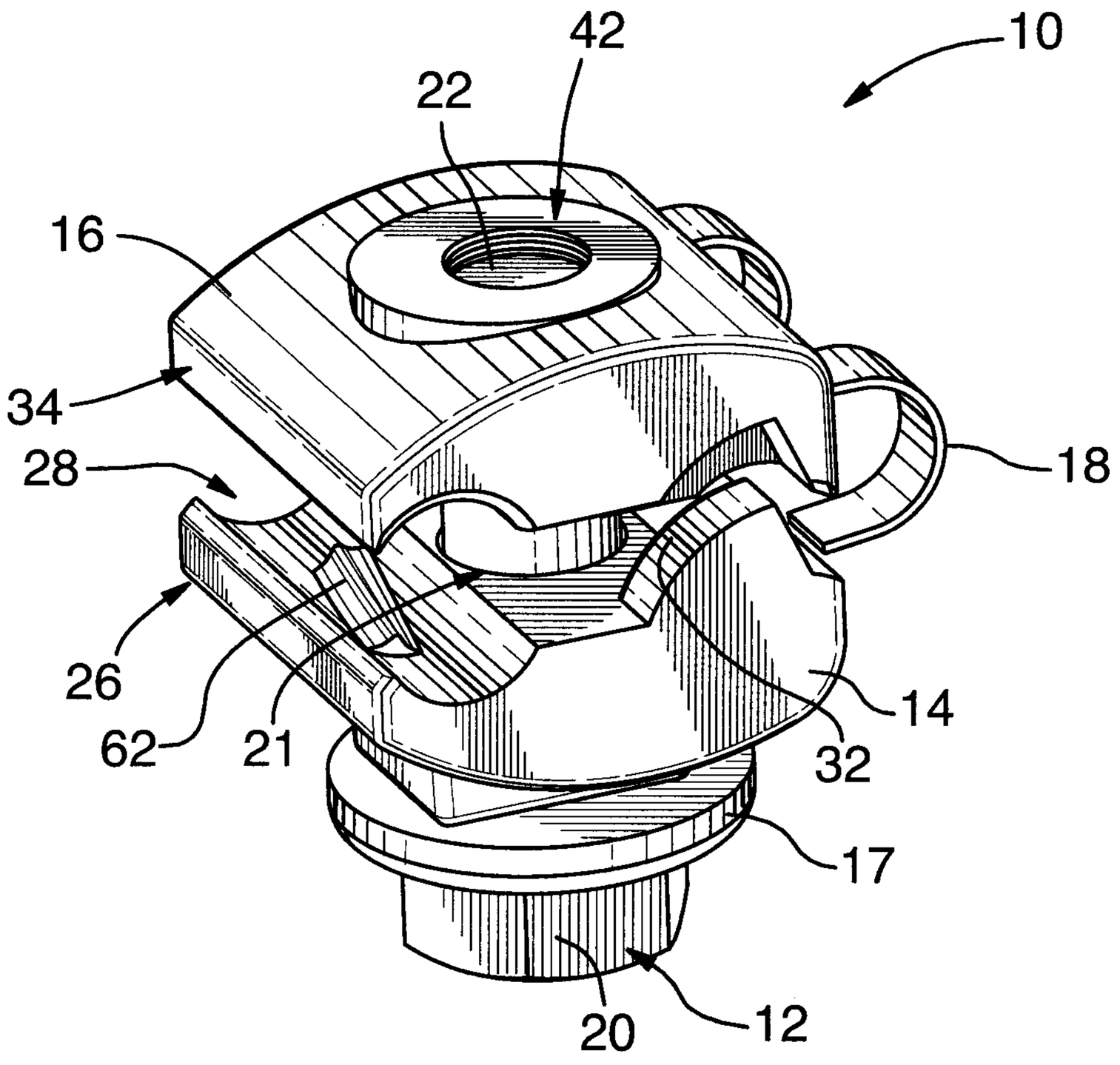

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FIG.1B

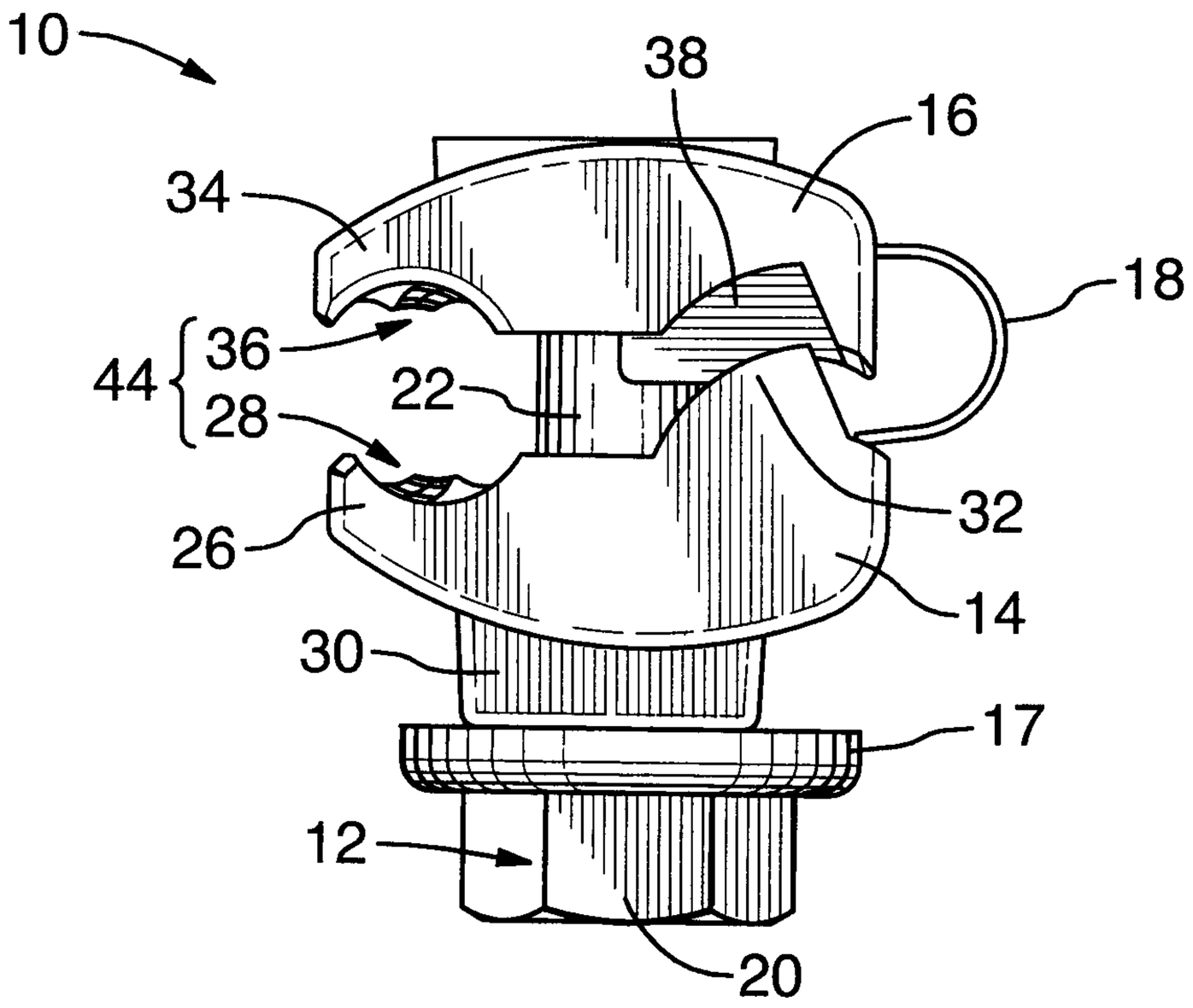


FIG.1C

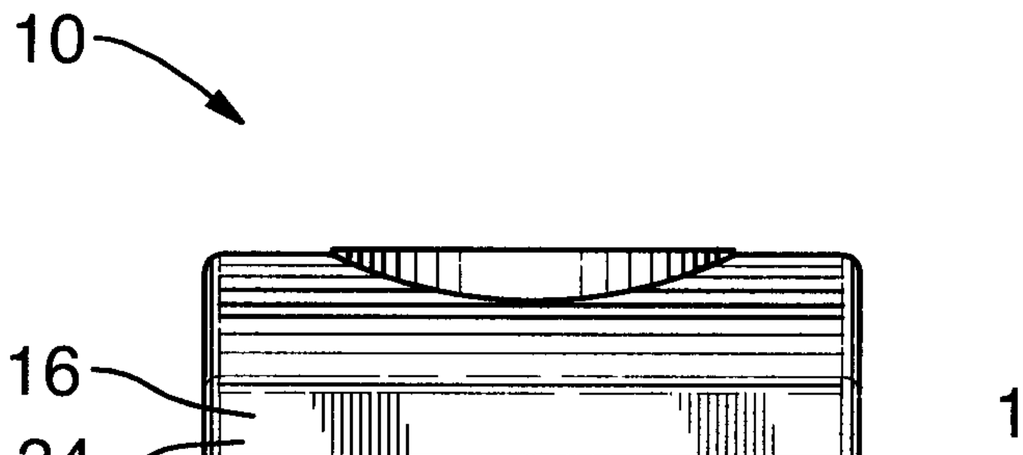


FIG.1D

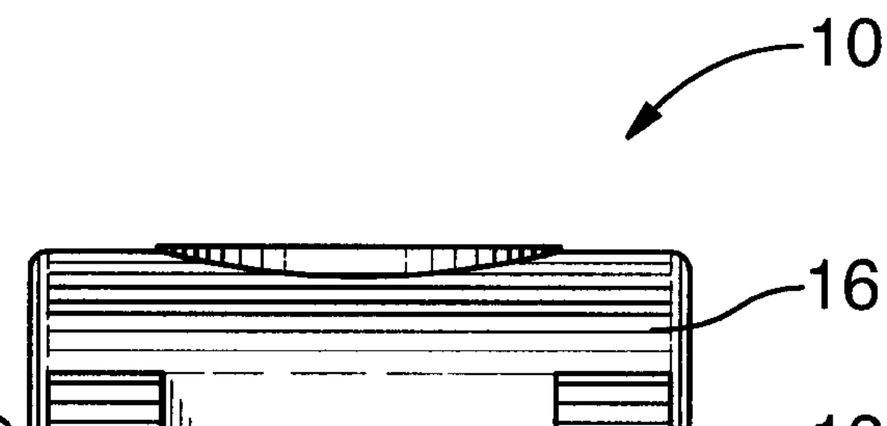


FIG.1E

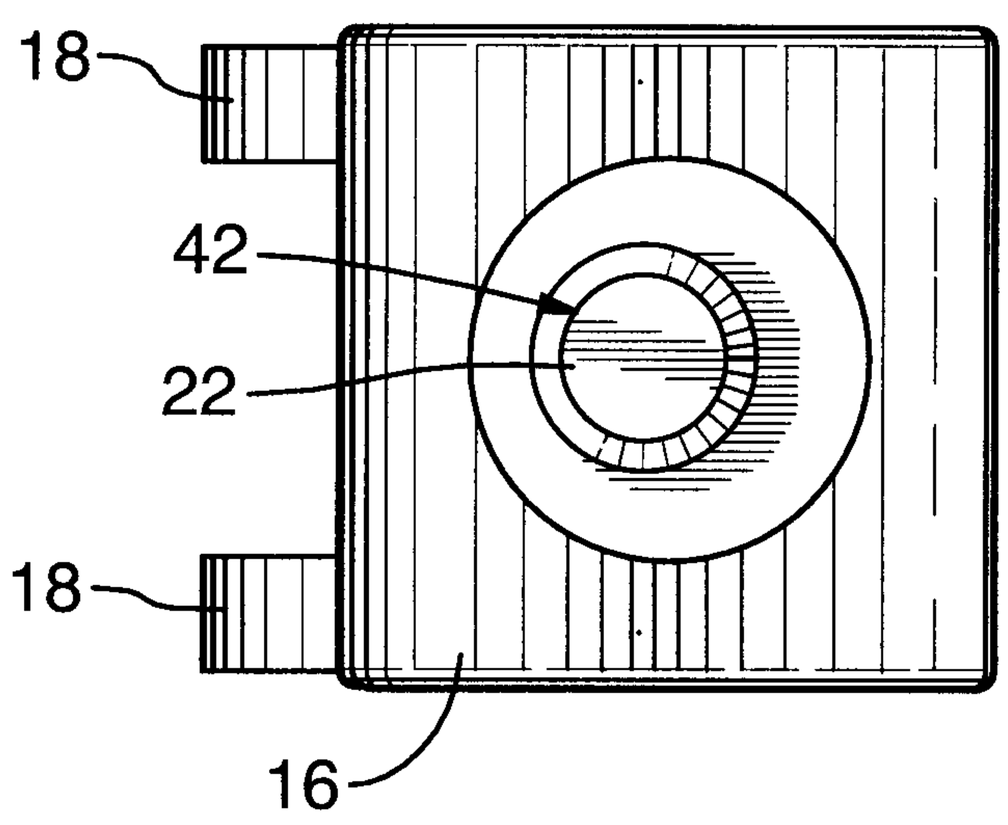


FIG.1F

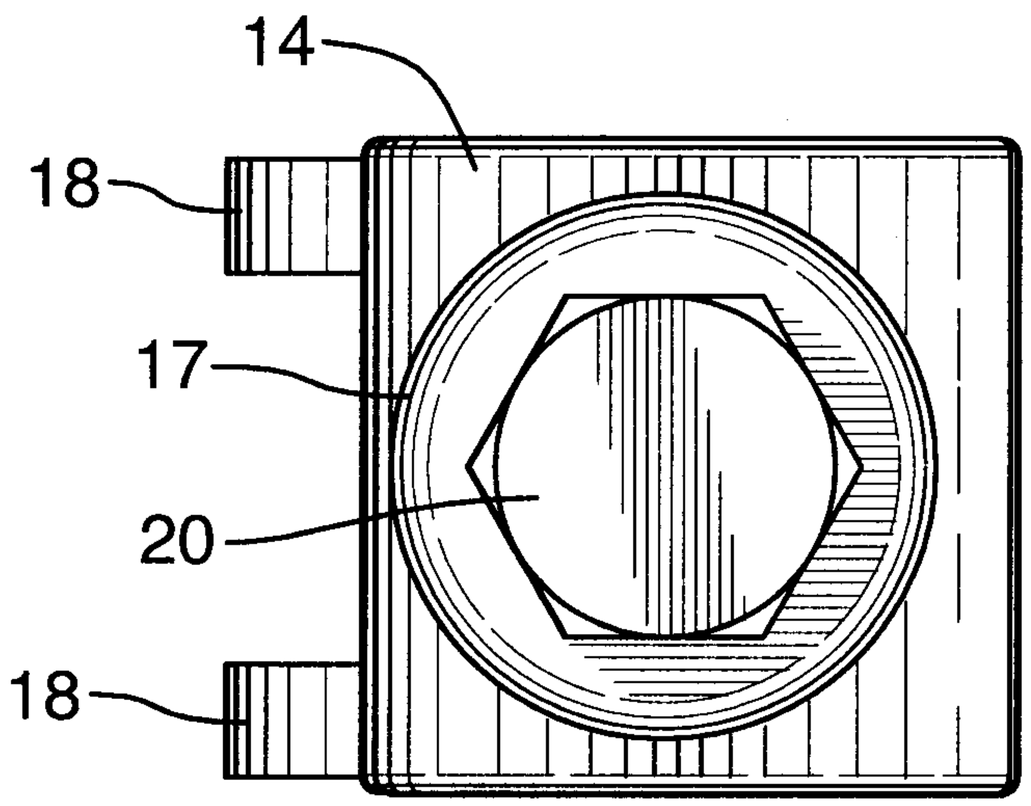


FIG.1G

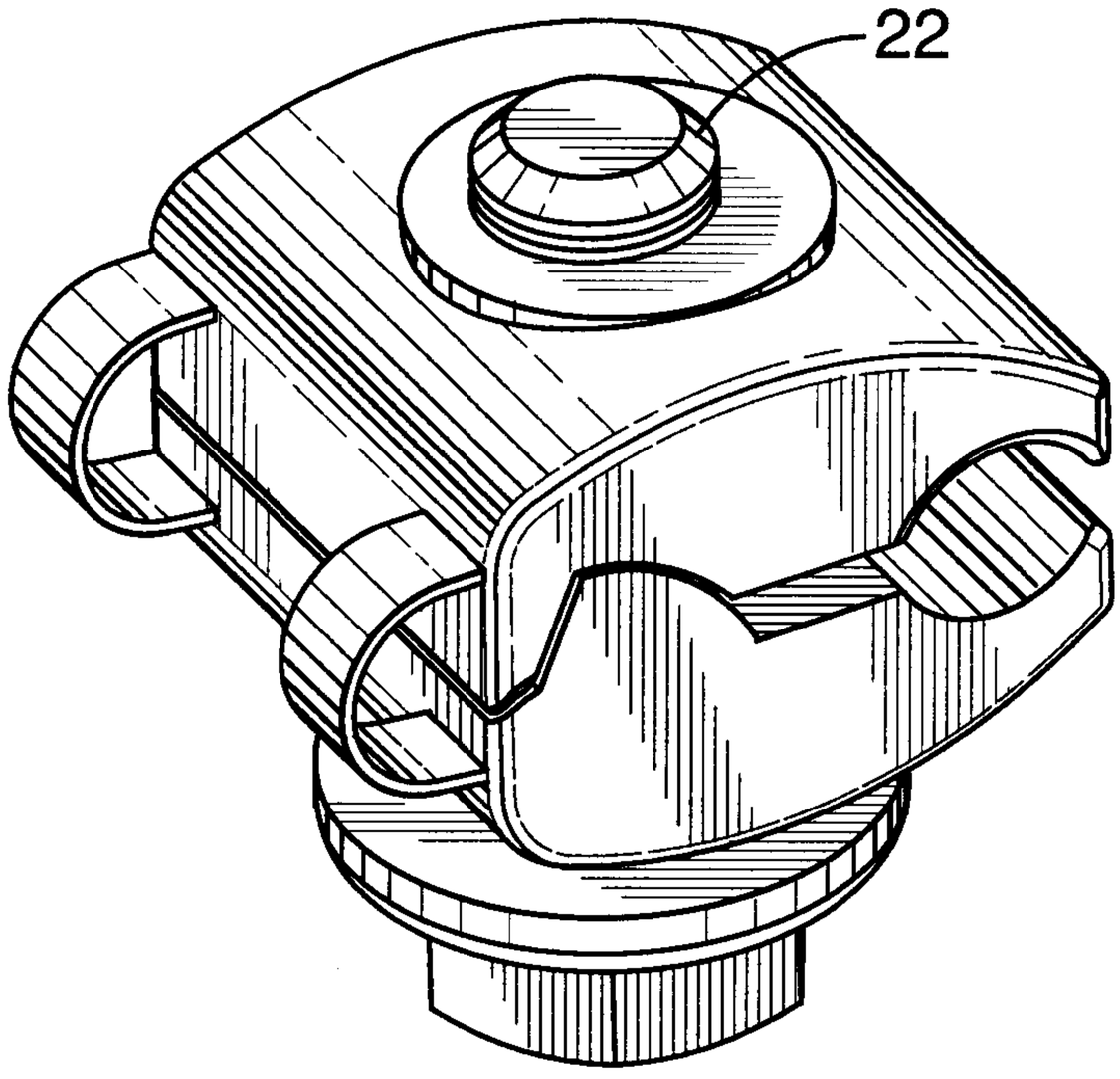


FIG.2A

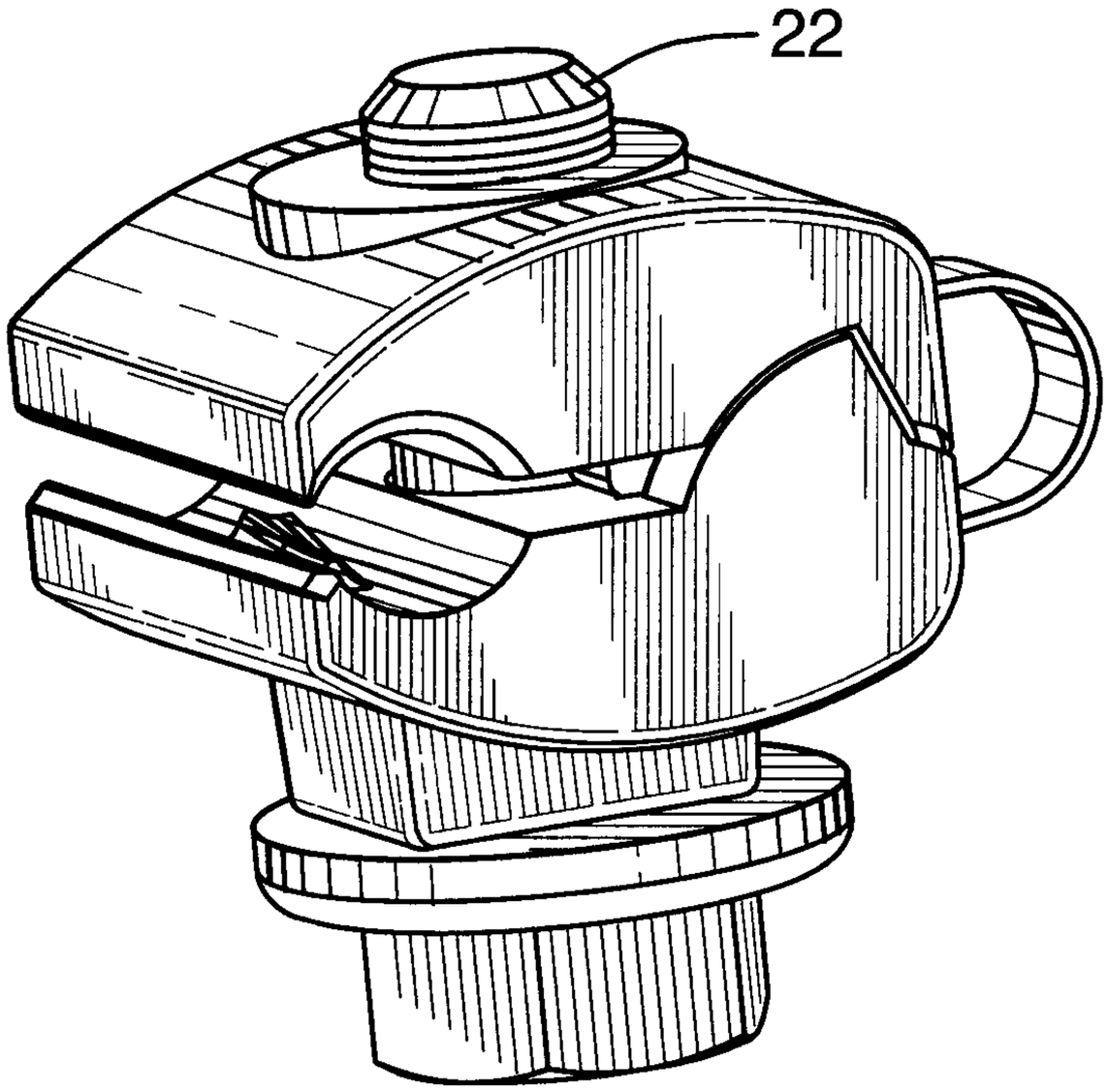


FIG.2B

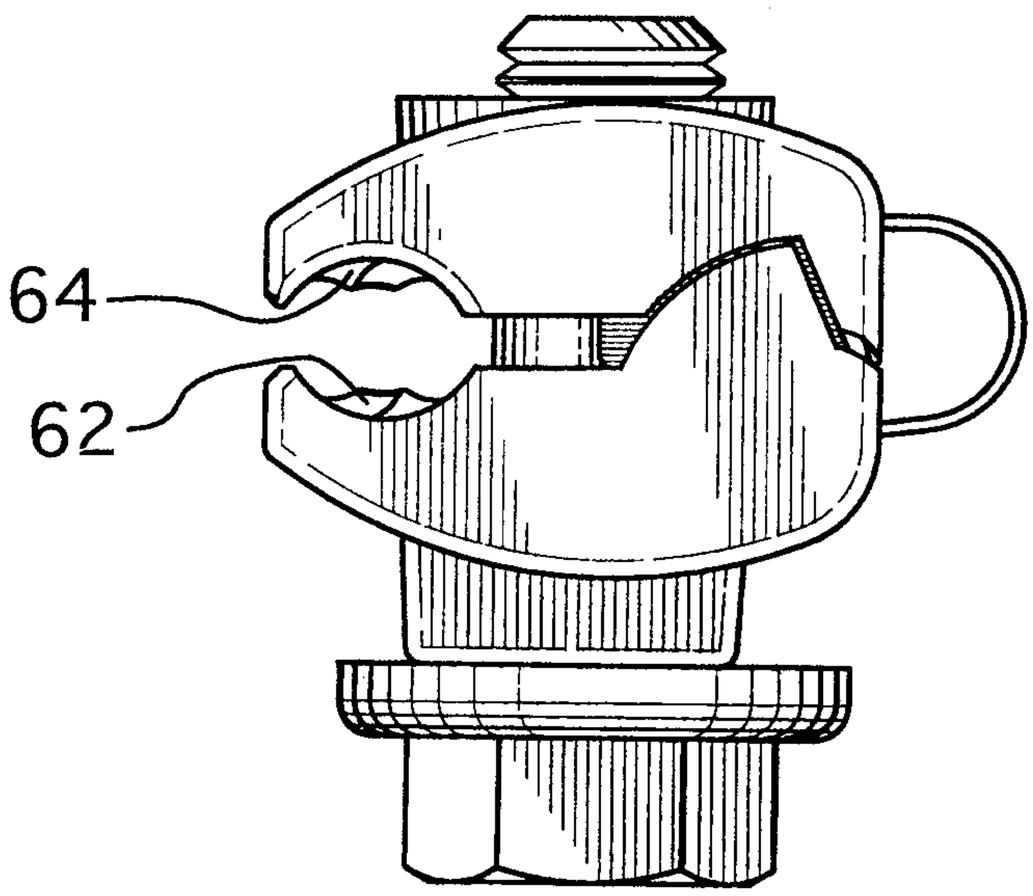


FIG.2C

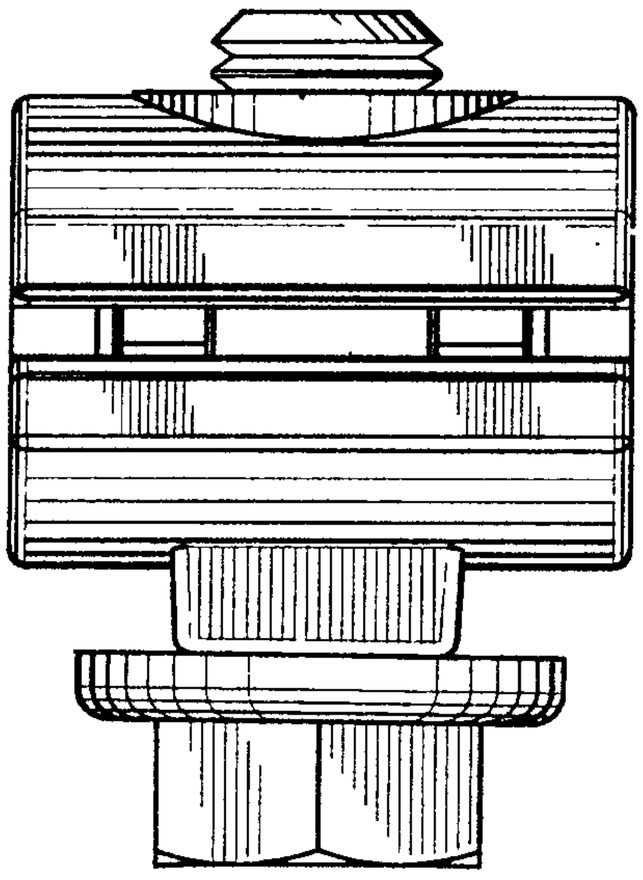


FIG.2D

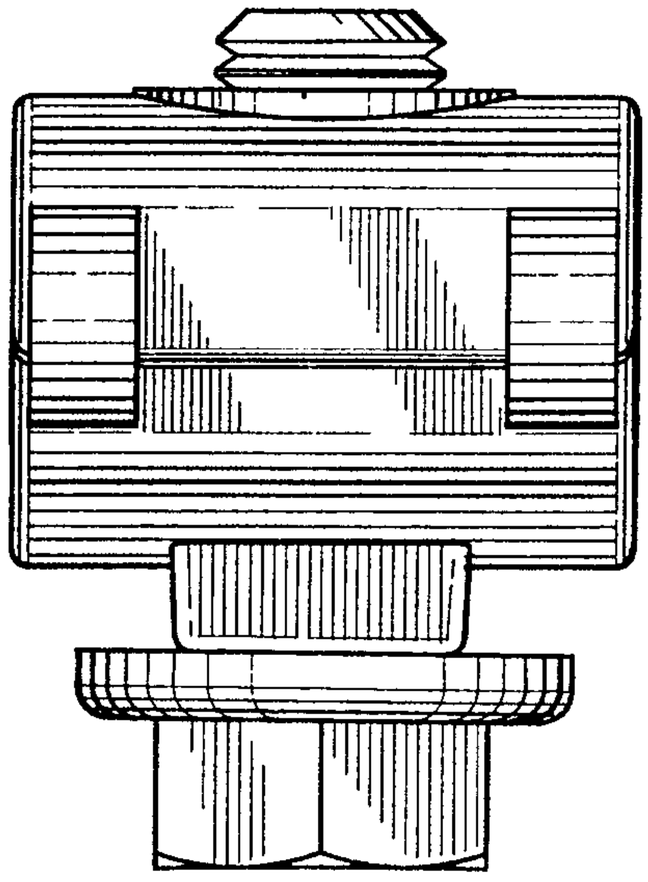


FIG.2E

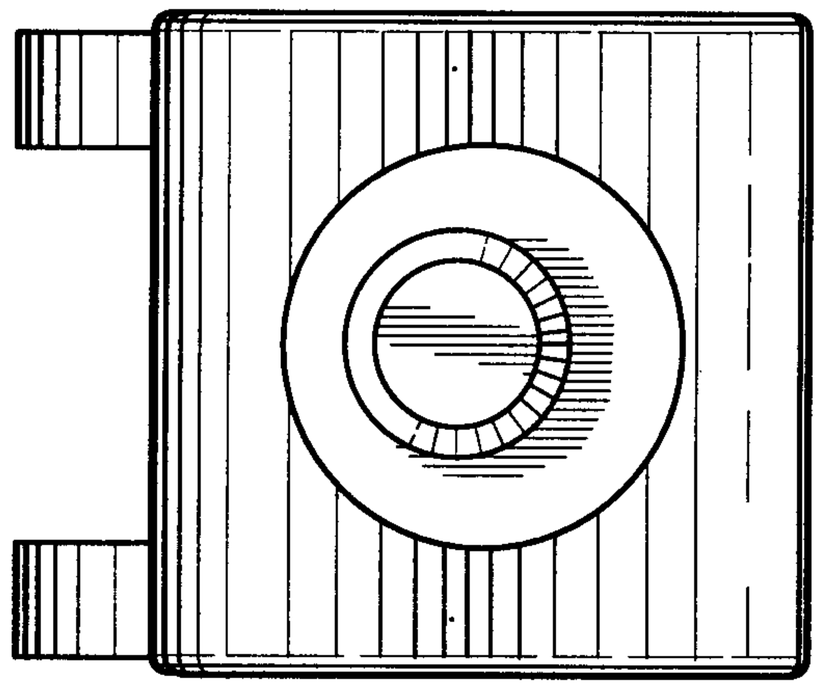


FIG.2F

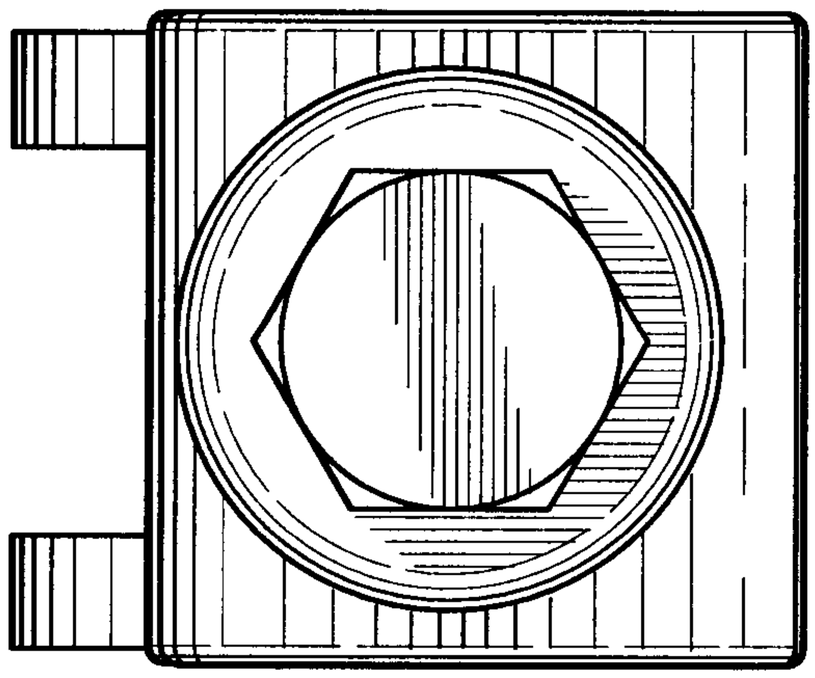


FIG.2G

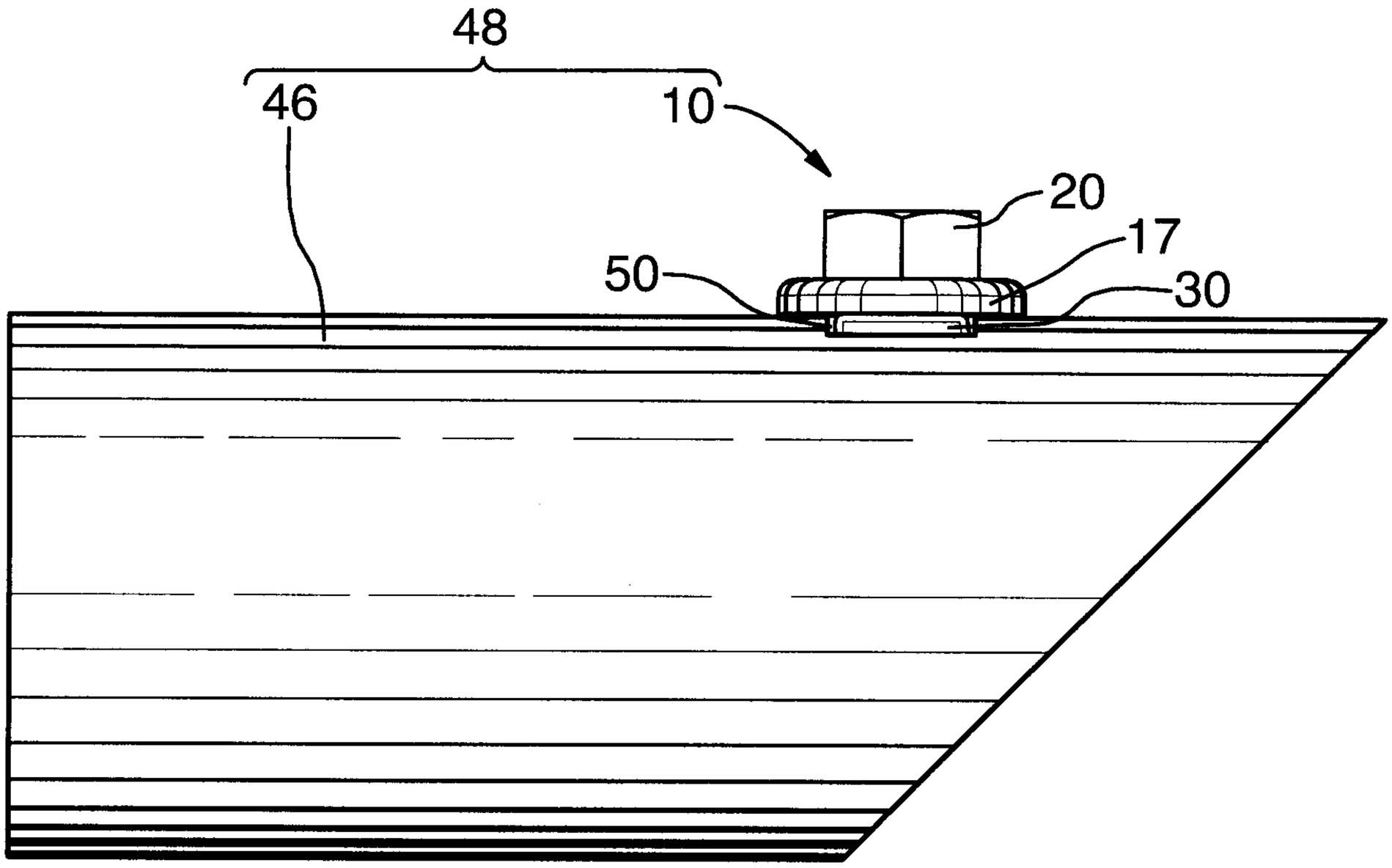


FIG.3A

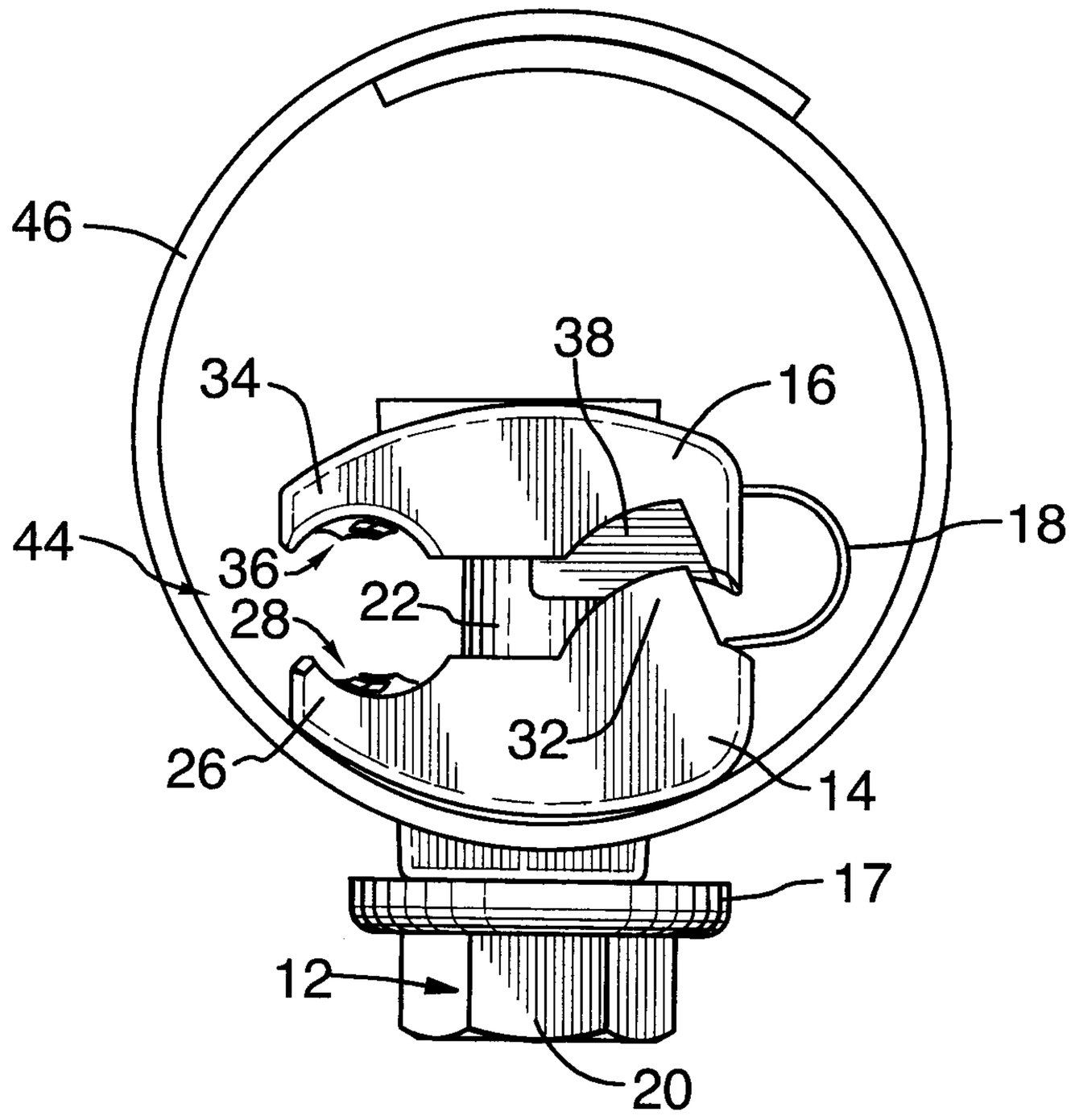


FIG.3B

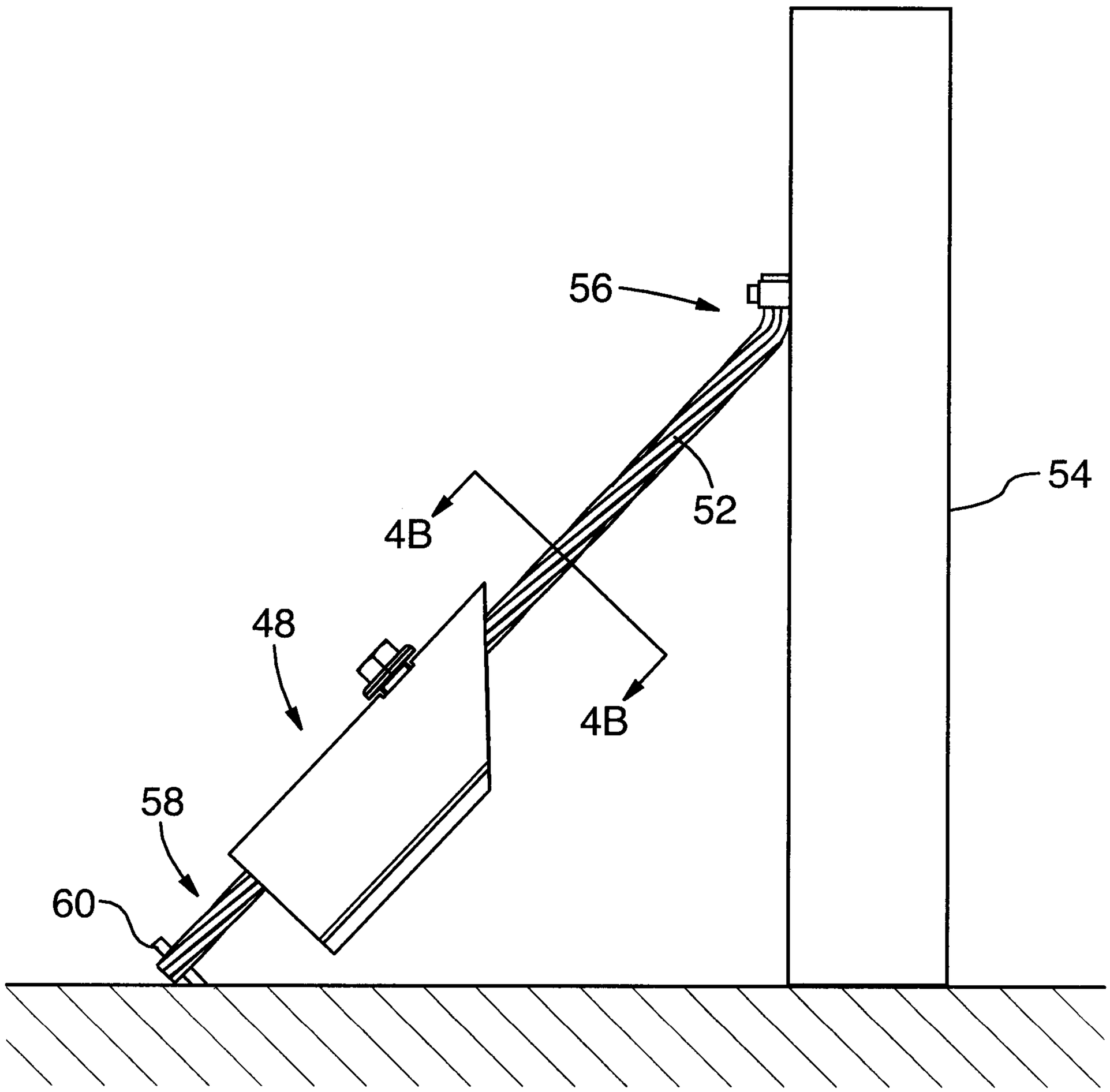


FIG.4A

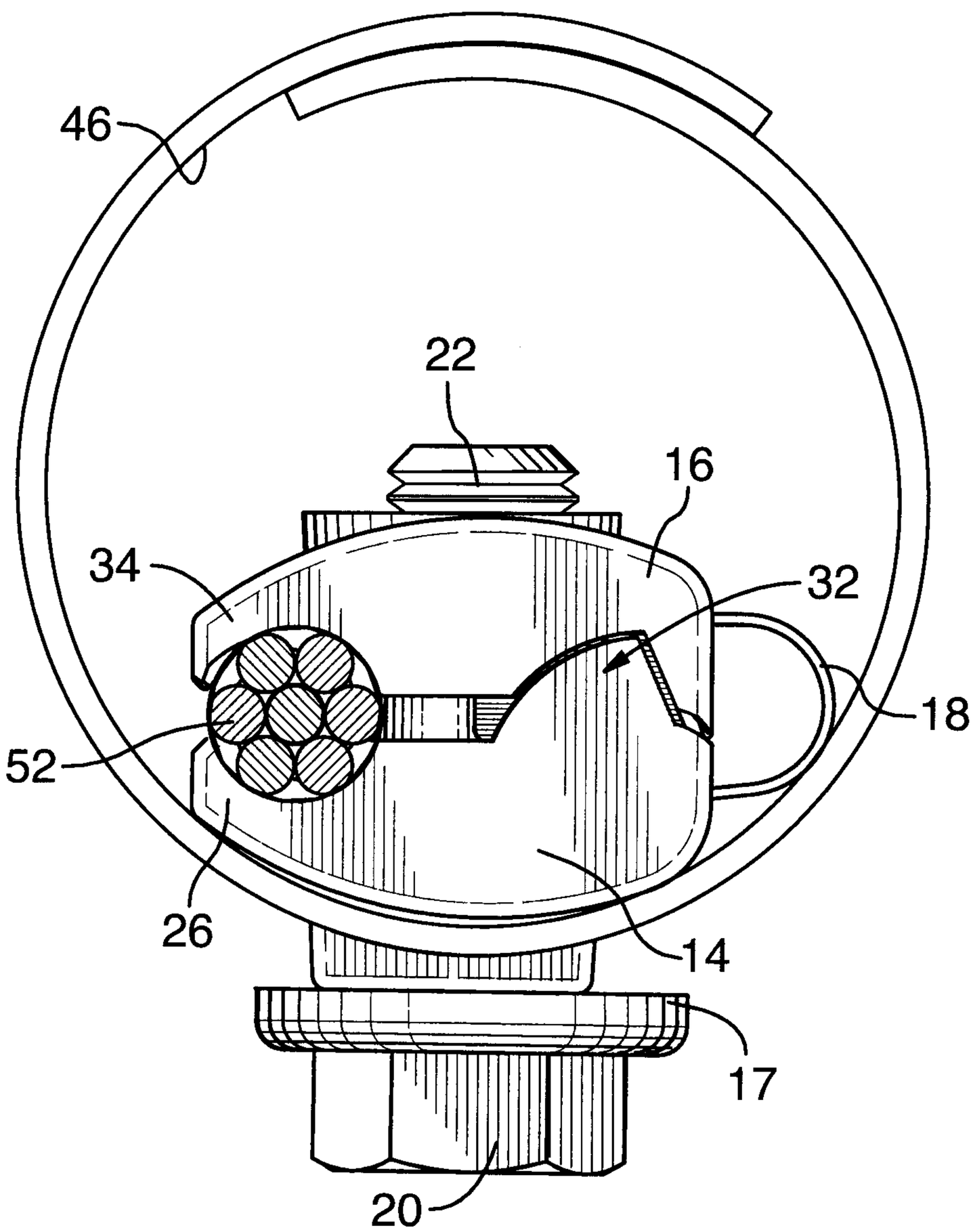
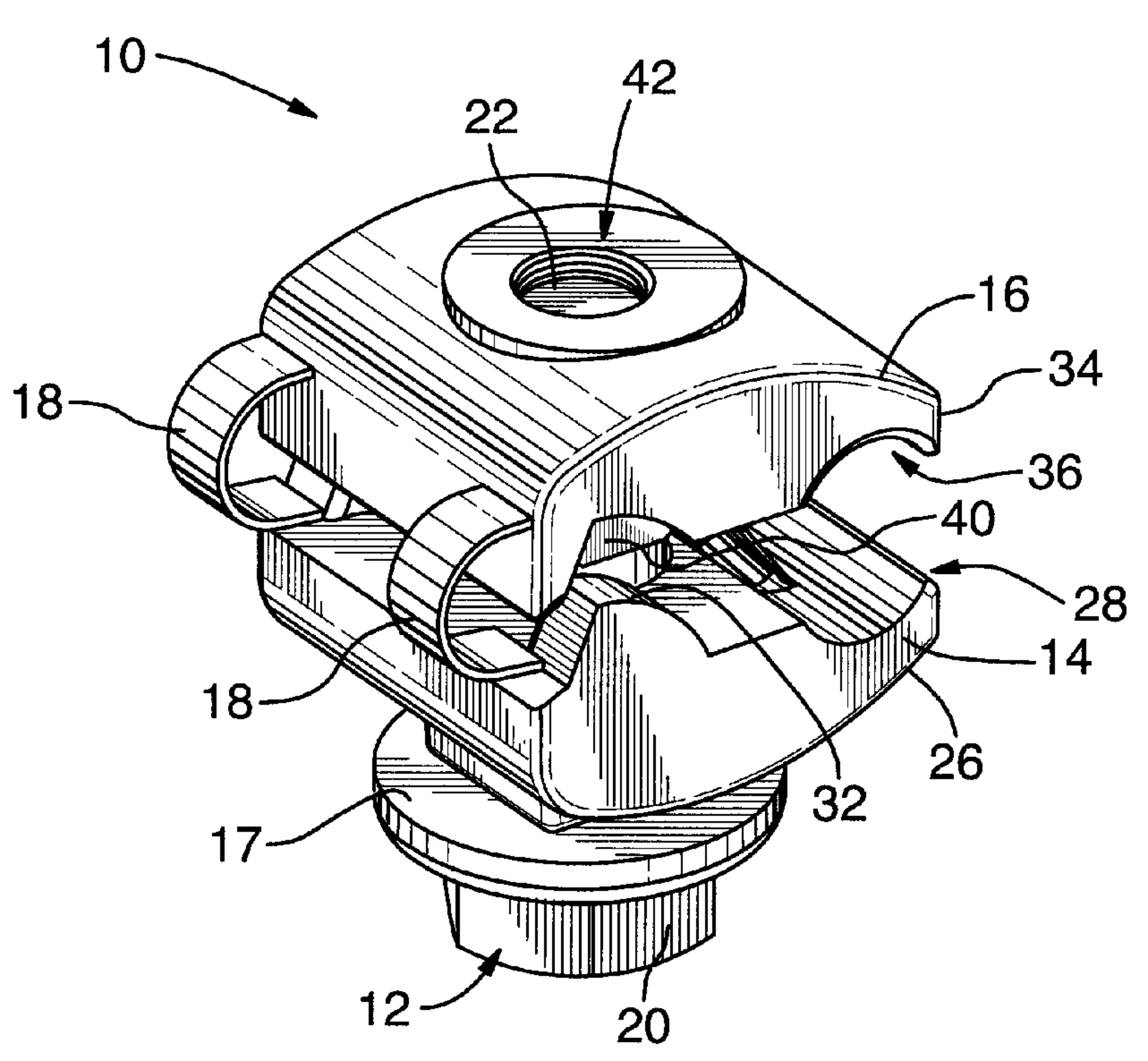


FIG.4B


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