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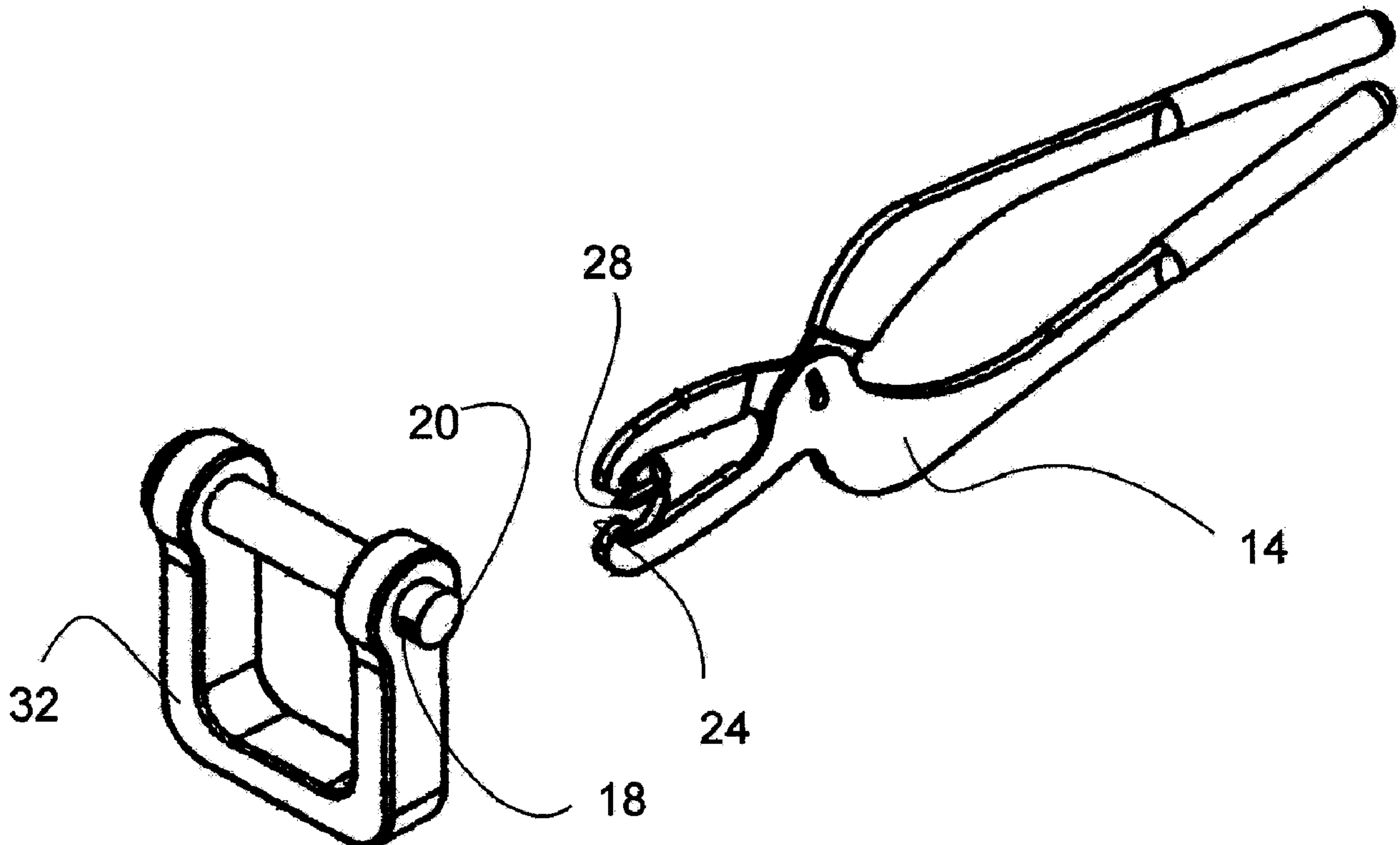
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(54) Titre : DISPOSITIF AUTOVERROUILLABLE MONTE SUR UN ELEMENT DE FIXATION AMOVIBLE PERMETTANT
DE BLOQUER UNE GOUPILLE DE VERROUILLAGE

(54) Title: SELFLOCKING MOUNTED ONTO A REMOVABLE CLIP MEMBER ALLOWING TO BLOCK A LOCKING PIN



(57) Abrégé/Abstract:

A circular clip in the shape of a semi-flexible "W" shaped ring with a central projection that fits into the pin or shaft it is used to hold in position. The circular outer ends snap over the pin or shaft while the central protrusion of the clip fits into a hole in the pin or shaft. The two ends of the ring are bent outward with small protrusions allowing a locking bracket with corresponding openings to be snapped on locking the circlip firmly in place. A set of pliers with jaws designed to hold firmly, open, attach and remove the circlip to and from pins or shafts facilitates ease of use.



ABSTRACT

A circular clip in the shape of a semi-flexible "W" shaped ring with a central projection that fits into the pin or shaft it is used to hold in position. The circular outer ends snap over the pin or shaft while the central protrusion of the clip fits into a hole in the pin or shaft. The two ends of the ring are bent outward with small protrusions allowing a locking bracket with corresponding openings to be snapped on locking the circlip firmly in place. A set of pliers with jaws designed to hold firmly, open, attach and remove the circlip to and from pins or shafts facilitates ease of use.

**Selflocking mounted onto a removable clip
member allowing to block a
locking pin.**

FIELD OF THE INVENTION

5[001] The invention relates generally to a clip for locking shafts and pins in place but more specifically to an improved circlip and pliers for attaching and removing the same.

BACKGROUND OF THE INVENTION

10 [002] A circlip, a combination of 'circle' and 'clip' and pronounced thus is also known as a snap ring or retaining ring. It is a type of fastener consisting of a semi-flexible metal ring with open ends, which can be snapped into place. Usually fitted in a groove or hole on a shaft or pin it locates the shaft axially in one direction.

15 [003] There are two basic types: internal and external, referring to whether they are fitted into a tube or over a shaft. Circlips are often used to secure pinned connections.

[004] Circlips, which are fitted, are generally removed with a pair of needle-nosed pliers or cautious leverage using a flat-headed screwdriver. E-clips are examples which are sized to provide an interference fit onto or
20 into a groove or land when in use, such that they must be elastically

deformed in order to remove them.

[005] There exist a variety of circlips, retaining rings or e-clips with a multitude of functionalities. The result is to be able to lock the pin or shaft it is used upon as best it can and the locking efficiency is usually proportional to the effort that is used to fix or remove it.

[006] In other words the more difficult the process of snapping or attaching and removing the circlip, the more efficient the locking mechanism or ability of the circlip to hold the pin or shaft in place.

[007] The current invention addresses the need for a circlip or retaining ring, which remains easy to attach and detach yet more secure than its counterparts. An example of its usage would be as a retaining clip for a hitch pin.

[008] The invention provides for an "E" or "W" shaped circlip, which is fitted both into and over the shaft or pin it is used upon. A set of corresponding pliers aid in easy snapping and unlocking of the circlip which when in position can be further secured or locked using a clamp type bracket fixed over its two ends.

SUMMARY OF THE INVENTION

[009] It is a main advantage of this invention to provide for an E or W shaped clip that fits both over and into the pin or shaft it is used to hold in position. The circular outer ends snap over the pin or shaft while the
5 central protrusion of the clip fits into a hole in the pin or shaft.

[0010] Another advantage of this invention is a bracket or lock that snaps over the two ends of the clip once it is in place, securing it firmly. The bracket or lock has holes in its sides, which correspond to similar protrusions on the ends of the clip allowing them to be locked together.

10[0011] A further advantage is a tool or set of pliers designed to fit the clip facilitating ease of attachment and removal of the clip from the pin or shaft it is used upon.

[0012] The clip is circular in shape with a central protrusion much like the center apex of the letter "W" except that it is pressed together. The
15 outer ends of the clip bend slightly outwards, then of which have a small protrusion. The protrusions correspond to similar holes in a bracket that can be placed or clicked onto the two outer ends when the clip is in use.

[0013] A set of pliers that have a nose shaped so as to hold the clip firmly in its jaws allows the clip to be opened and snapped onto a pin or shaft and similarly removed from it with equal ease.

[0014] Once the clip is snapped into place, the pliers are detached and the
5 bracket, which acts as a locking device, is snapped onto the two ends of the clip, securing them firmly together.

[0015] There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present
10 contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

[0016] In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited
15 in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are
20 for the purpose of description and should not be regarded as limiting.

[0017] As such, those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that
5 the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

[0018] These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with
10 particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be made to the accompanying drawings and descriptive matter which contains illustrated preferred embodiments of the invention.

15 BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019] **Fig. 1** Exploded view of all components of the invention.

[0020] **Fig. 2** Opened view of the circlip.

[0021] **Fig. 3** Closed view of the circlip.

[0022] **Fig. 4** View of pliers holding closed circlip in place.

[0023] **Fig. 5** View of pliers holding opened circlip.

[0024] **Fig.6** Exploded view of circlip, lock and pin.

[0025] **Fig.7** View of circlip in use.

5 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0026] A circlip (12) used to locate a pin or shaft (20) axially in one direction comprising of a semi-flexible ring with open ends (22) and a central protrusion (28) formed similar to the central apex of the letter "V". The open ends (22) are bent slightly outward facilitating easy placement onto the pin (20) and have at their ends a small protrusion (26) that correspond to similar sized openings (30) in a bracket (16) which snaps onto the open ends (22) of the circlip (12) to lock the circlip (12) firmly in position over the pin (20).

[0027] A tool or set of pliers (14) with a set of jaws (24) is used to hold the circlip (12) and open its ends (22) allowing the circlip (12) to be placed over the pin (20) while at the same time its central protrusion (28) is slid into an opening (18) in the pin (20). Once in place, the pliers (14) are removed and the circlip (12) clamps onto the pin (20) while the central

protrusion (28) sits firmly in the opening (18) of the pin (20). To further secure the circlip (12), the bracket (16) is pressed onto the two open ends (22) of the closed circlip (12) so that the openings (30) on the bracket (16) click into the protrusions (26) at the ends (22) of the circlip (12) thereby acting as a locking mechanism.

[0028] As to a further discussion of the manner of usage and operation of the present invention, the same should be apparent from the above description. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

10[0029] With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those
15 illustrated in the drawings and described in the specification are intended to be encompassed by the present invention. Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the
20 invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

CLAIMS:

1. A circular clip comprising:
5 a semi-flexible ring with open ends and a central protrusion formed similar to the central apex of the letter "W";
the open ends are bent slightly outward facilitating easy placement onto the pin and have at their ends a small protrusion corresponding to similar sized openings in a bracket which snaps onto the open
10 ends of the circlip to lock the circlip firmly in position over the pin.
2. A circular clip as in claim 1 wherein:
a tool or set of pliers with a set of jaws is used to hold the circlip and open its ends allowing the circlip to be placed over the pin while at
15 the same time its central protrusion is slid into an opening in the pin;
once in place, the pliers are removed and the circlip clamps onto the pin while the central protrusion sits firmly in the opening of the pin;
to further secure the circlip, the bracket is pressed onto the two open
ends of the closed circlip so that the openings on the bracket click
20 into the protrusions at the ends of the circlip thereby acting as a locking mechanism.

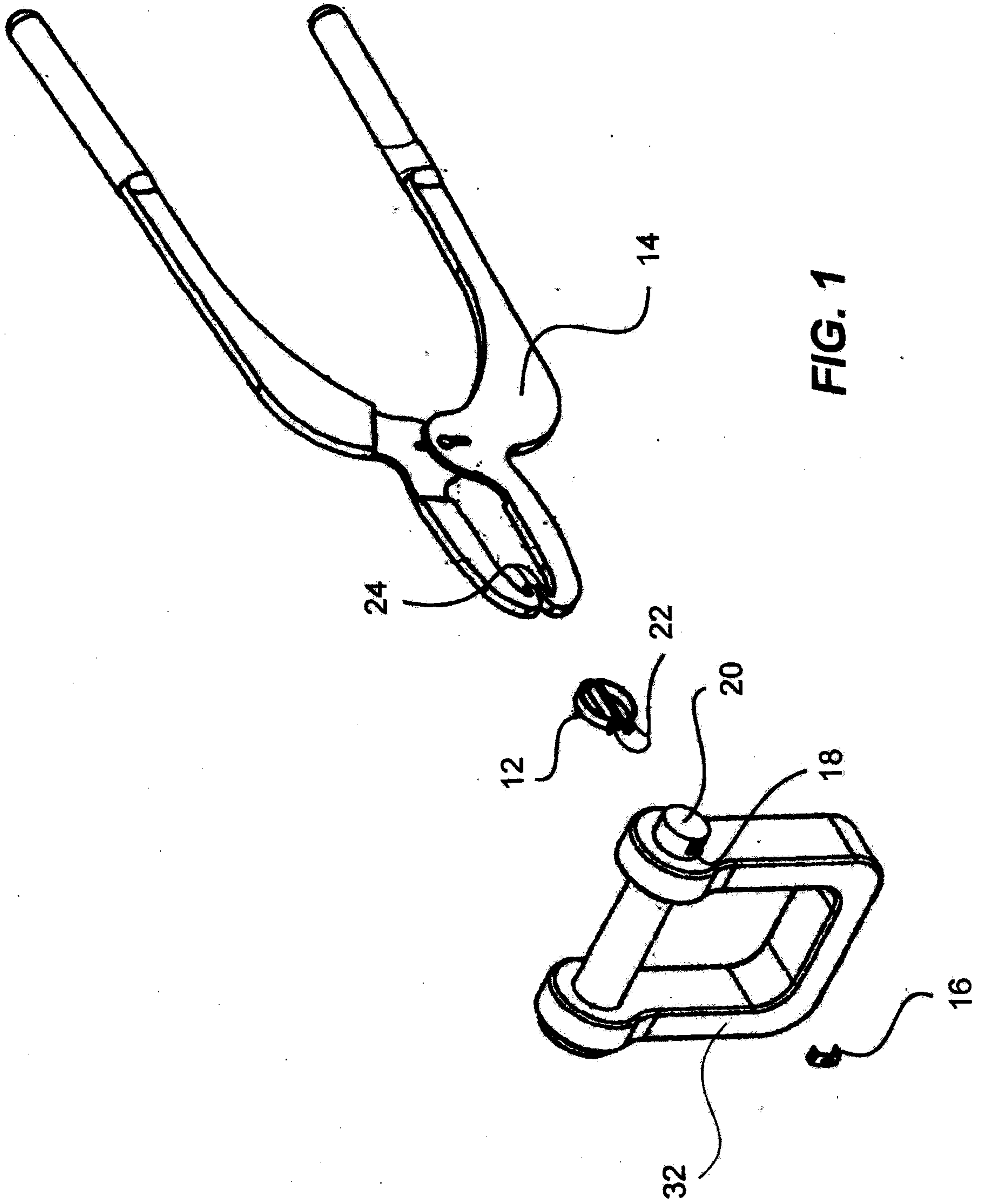


FIG. 2

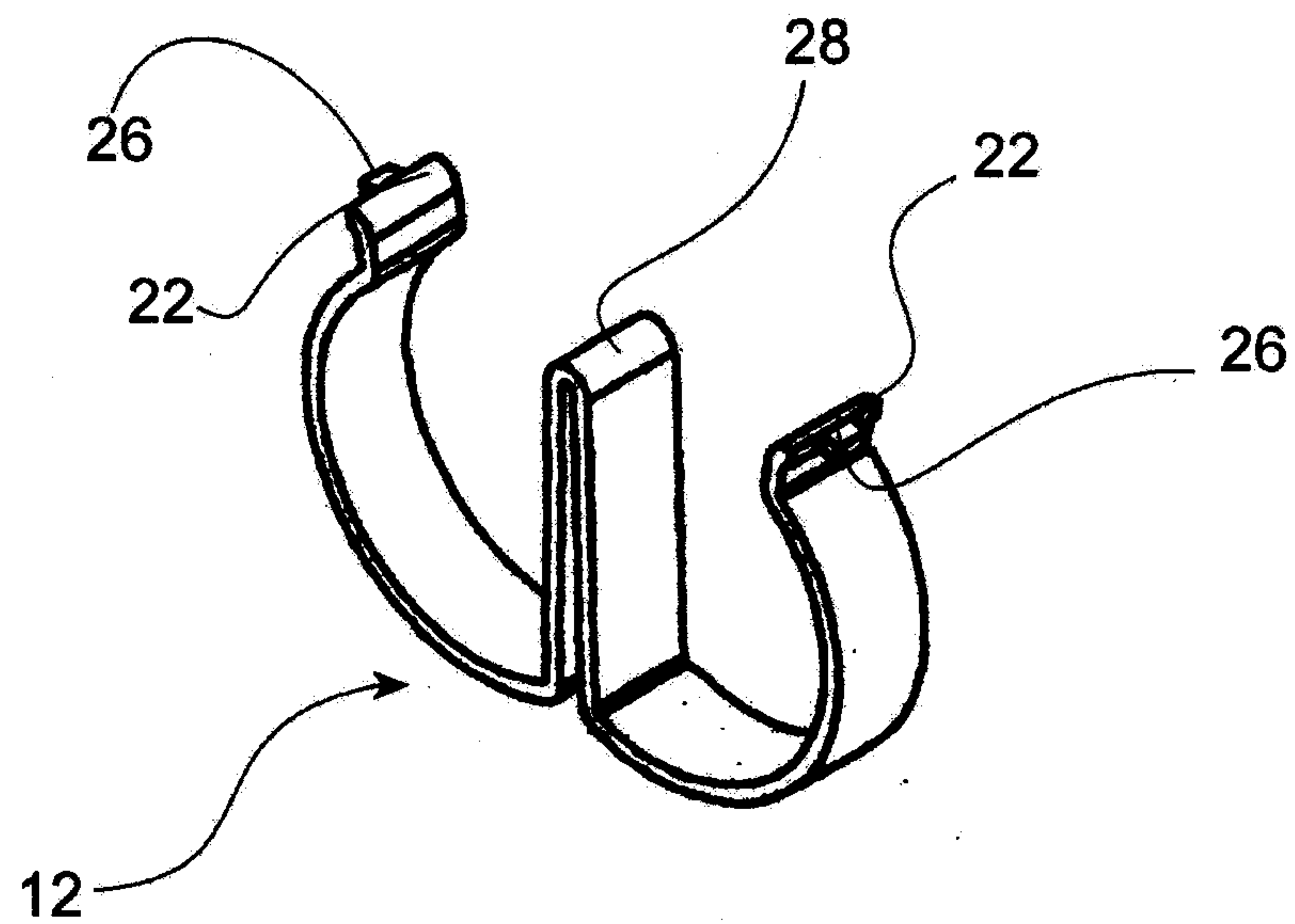


FIG. 3

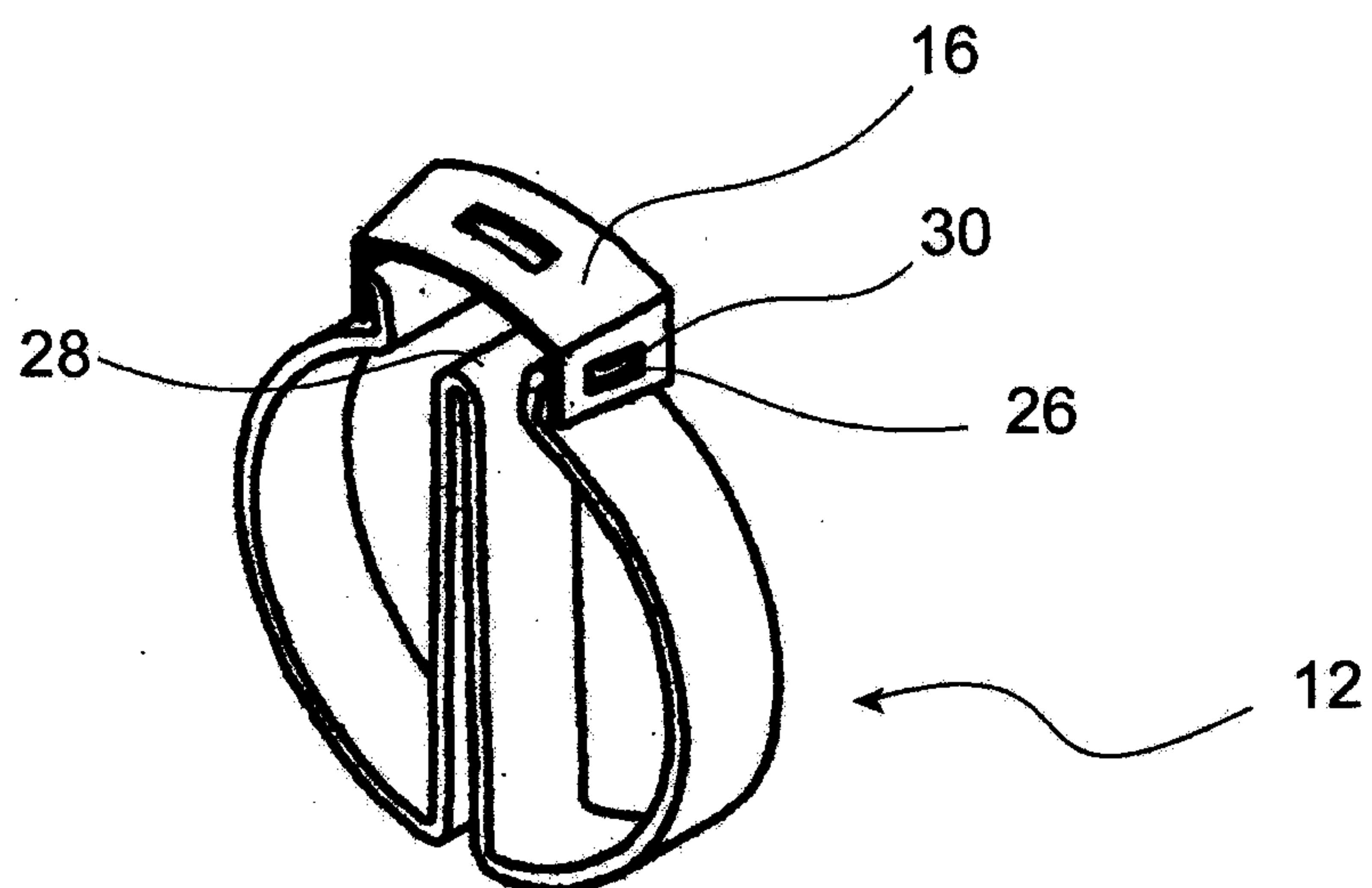


FIG. 4

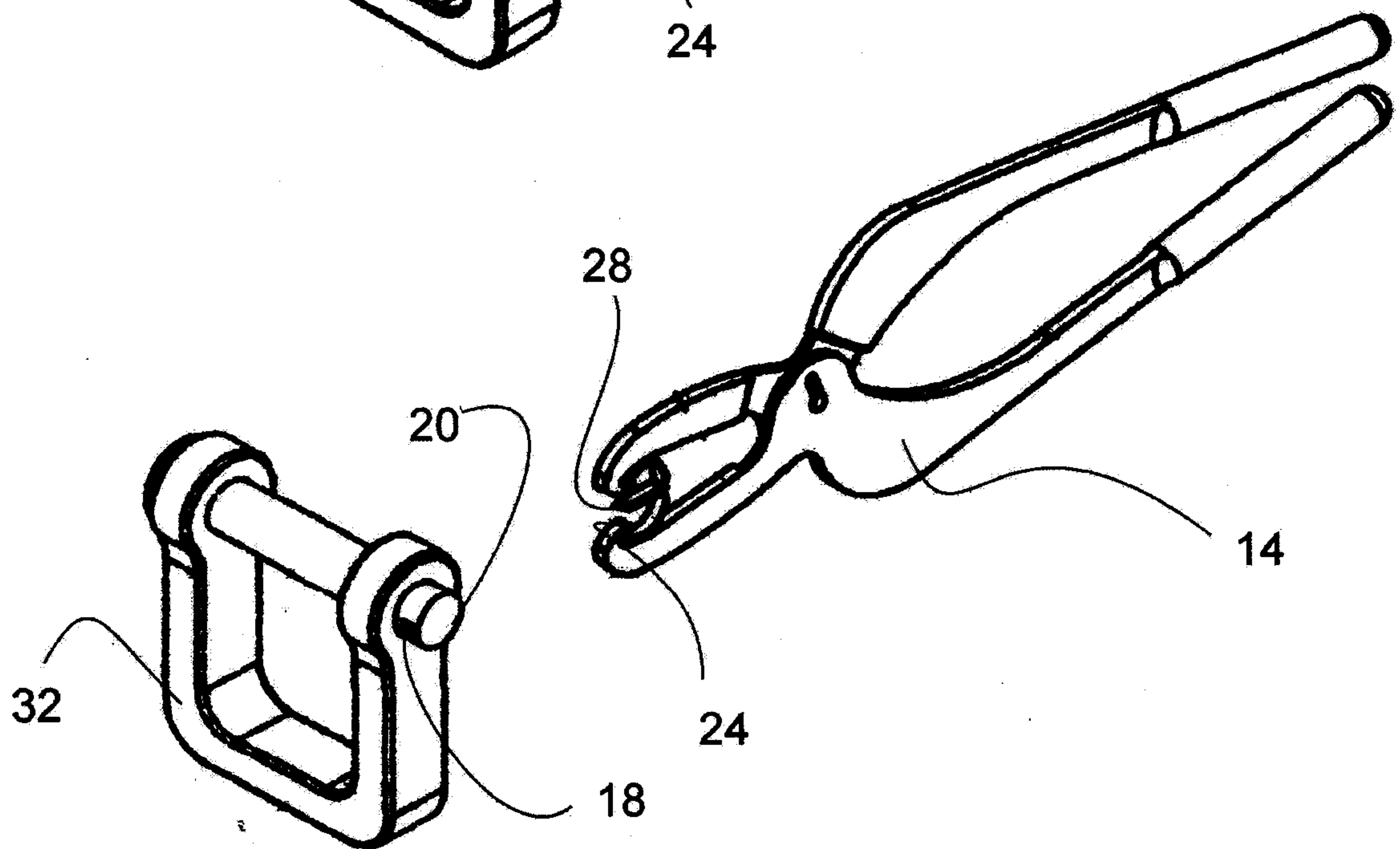
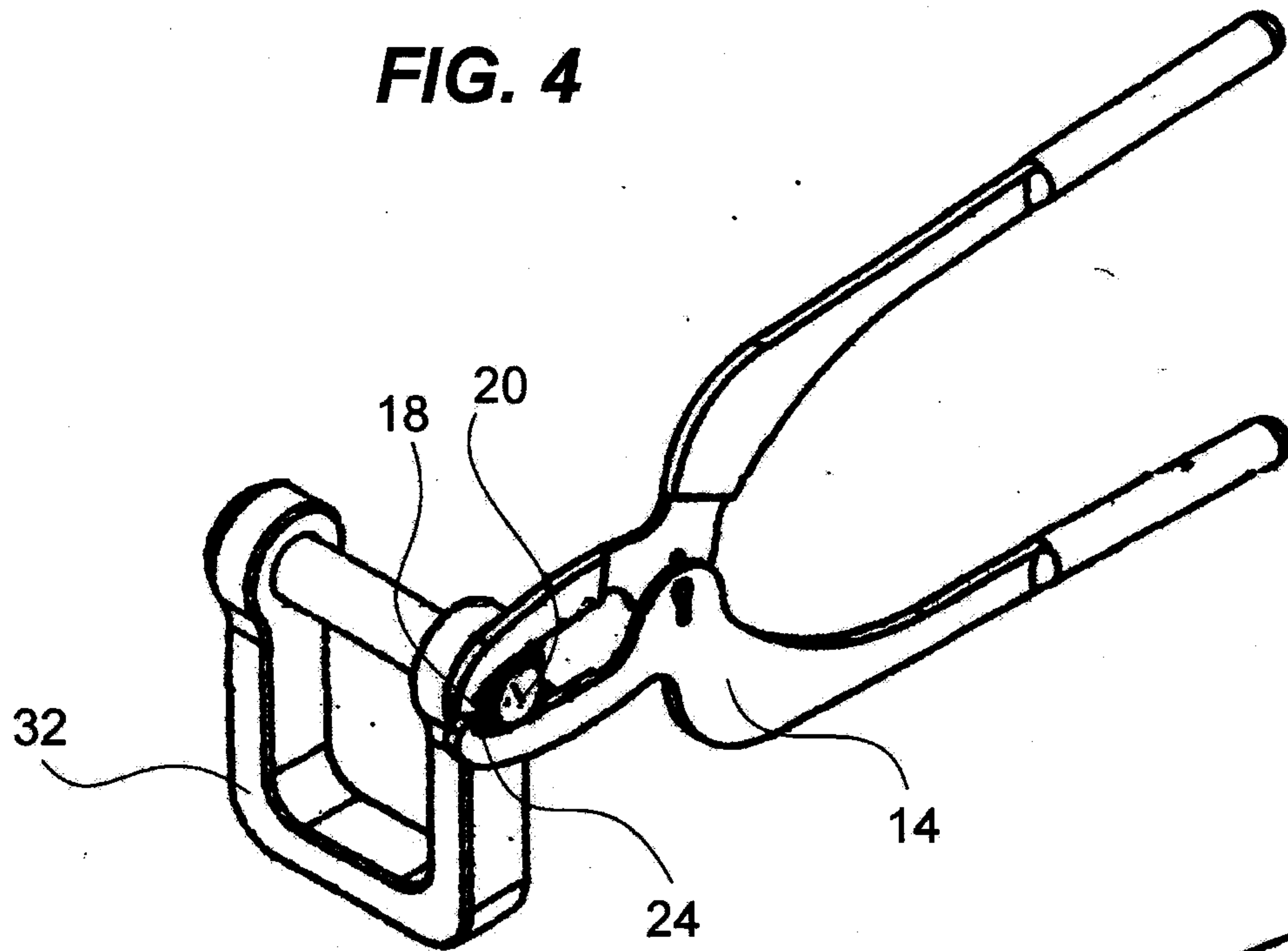


FIG. 5

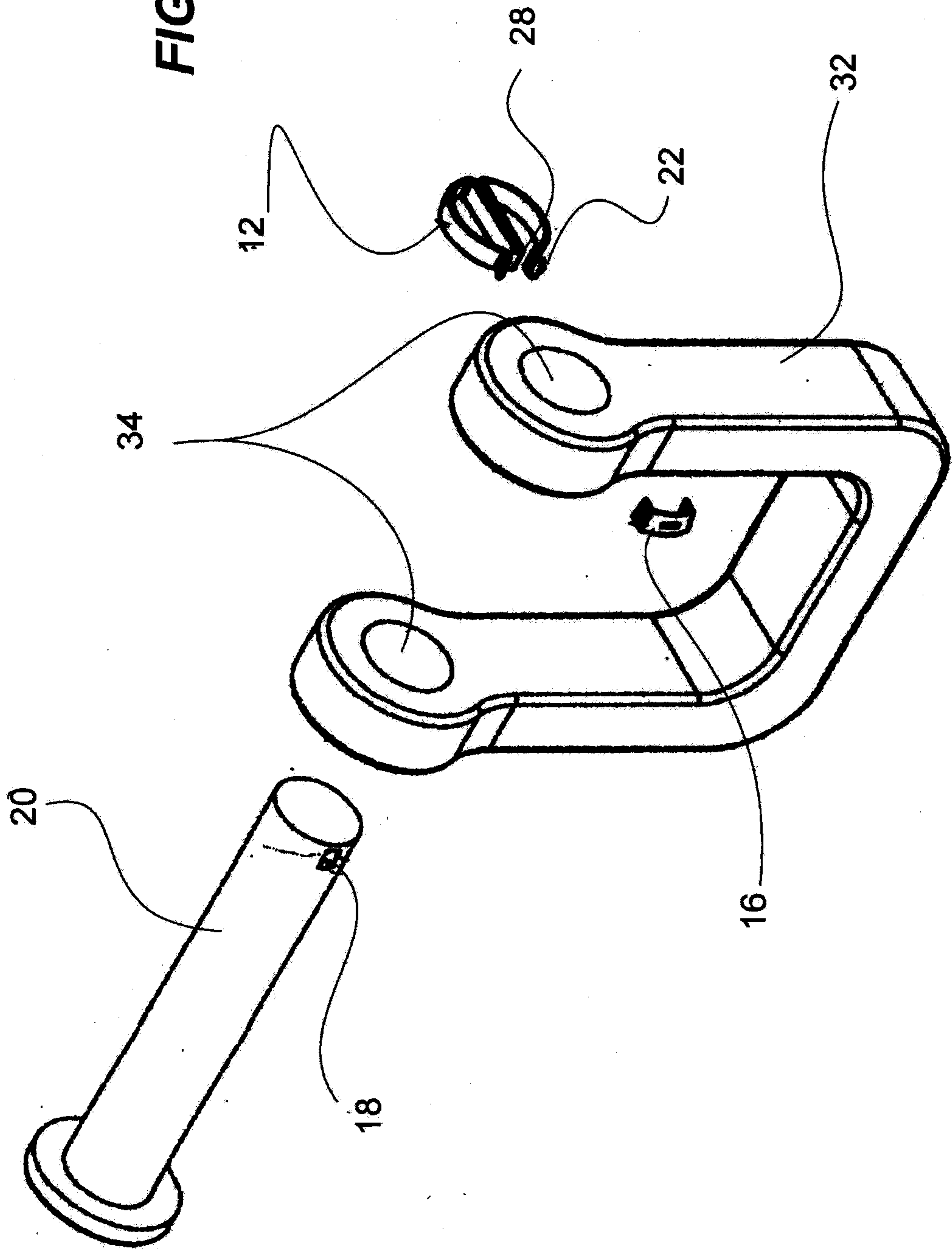


FIG. 7

