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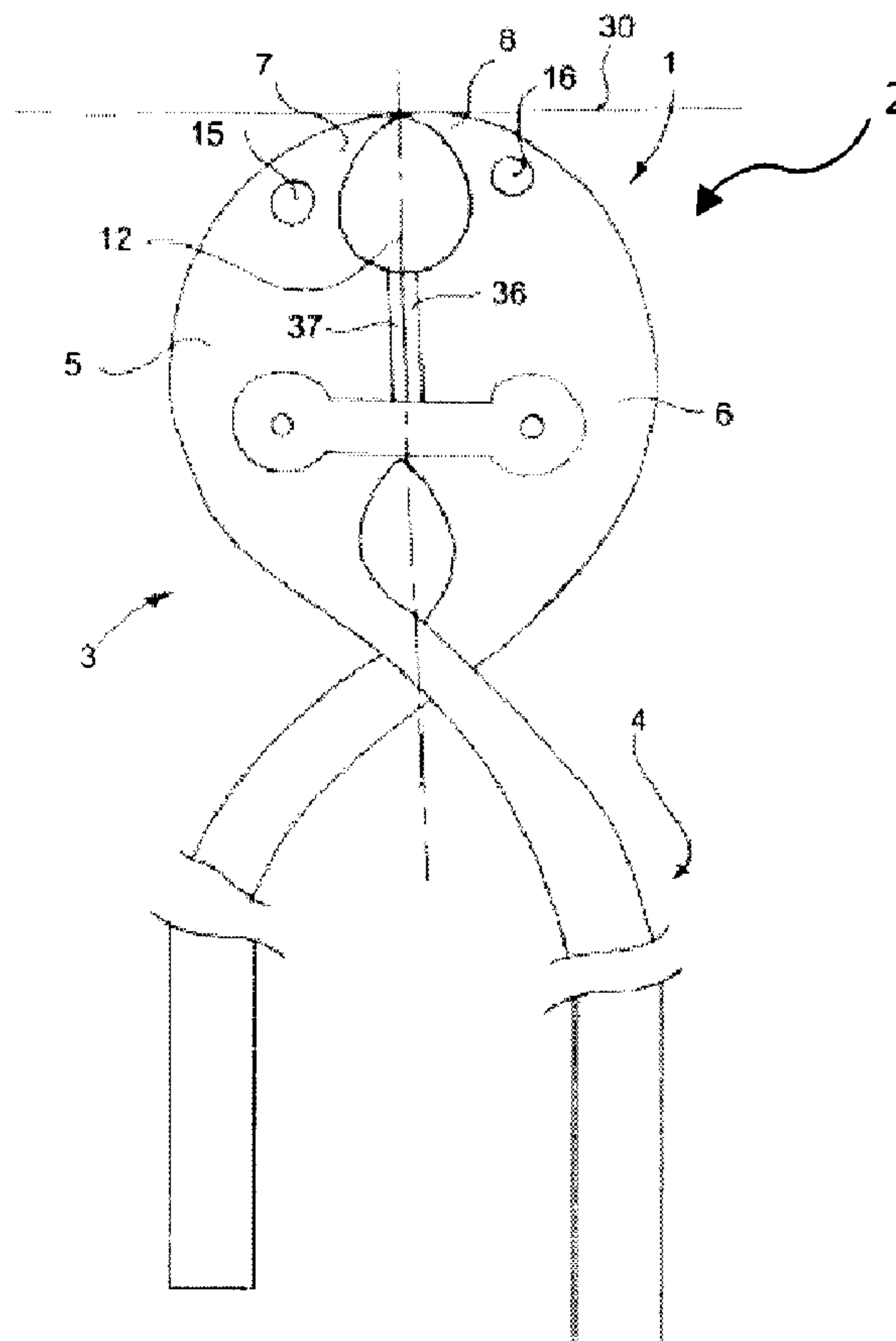
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(54) **Titre : UN OUTIL AMELIORE SERVANT DANS LE DOMAINE DES CLOTURES OU AUTRES SEMBLABLES**

(54) **Title: AN IMPROVED TOOL FOR USE IN THE FENCING INDUSTRY OR THE LIKE**



(57) **Abrégé/Abstract:**

The present invention relates to an improved tool for use in removing staples from a fence batten or the like. The tool comprises a pair of jaws; a hinge portion; a handle portion to allow for opening and closing of the pair of jaws; and at least one projection

(57) **Abrégé(suite)/Abstract(continued):**

extending outwardly from each of the jaws in the plane within which the jaws pivot, wherein the top surface of the at least one projection distal the jaw from which the projection extends are configured to contact a support surface and act as a fulcrum for applying a levering force to an article grasped by the jaws when in the closed position. The tool optionally also comprises a wire gripping portion to grip and tension a fence wire when the tool is used in conjunction with the at least one projection.

Abstract

The present invention relates to an improved tool for use in removing staples from a fence batten or the like. The tool comprises a pair of jaws; a hinge portion; a handle portion to allow for opening and closing of the pair of jaws; and at least one projection extending outwardly from each of the jaws in the plane within which the jaws pivot, wherein the top surface of the at least one projection distal the jaw from which the projection extends are configured to contact a support surface and act as a fulcrum for applying a levering force to an article grasped by the jaws when in the closed position. The tool optionally also comprises a wire gripping portion to grip and tension a fence wire when the tool is used in conjunction with the at least one projection.

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An Improved Tool for use in the Fencing Industry or the like

FIELD OF INVENTION

The present invention is directed to an improved tool for use in the fencing industry or the like. In particular, the present invention relates to a pair of pliers suitable for the removal of staples and the tensioning of fence wires.

BACKGROUND DESCRIPTION

The present invention addresses problems in the fencing industry but may find application in other areas. For simplicity of description, the invention will be described with the problems and considerations of the fencing industry in mind.

Many farm fences are of wire construction. Posts are placed at intervals and multiple parallel wires are strung between them. To help maintain the relative tension of the wires and keep them spaced apart, floating (i.e. not planted or secured to the ground) battens are regularly spaced between the posts. These are often of wood, and typically around 40x40mm in cross-section.

The fence wires are usually fastened to the battens and posts by means of fence staples – U-shaped nails that accommodate the wire in their crook. While easy to hammer in, they are actually very difficult to remove – especially without damaging the fence wire.

Normally, staples only need to be removed during fence repairs – occasionally battens need to be replaced or a section of fencing may be altered. In both cases, it is usually a case of trying to repair the fence rather than replacing it. Accordingly it is desirable that the fence wires remain intact and are not damaged. However, trying to remove staples (especially barbed staples) with traditional means often results in damage.

The main causes of damage relate to the fact that the crook of a staple is quite small and sometimes smaller than the actual diameter of the wire. Hence the area of the crook is completely filled with wire, making it difficult to lift the staple without the wire (lifting the wire can damage or introduce a weak point into the wire). Sometimes also, in softwood battens,

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the staple can be overdriven into the batten, making it even harder (using conventional means) to lift the staple. Quite a degree of force is required to lift a staple, often requiring some leverage to pull up the staple. Known pliers have jaws with a rounded head (like the claw of a hammer) to provide some leverage to pull the staple out (like a conventional nail with a claw hammer). The problem is, however, that the rotating leverage applied by traditional pliers is transverse to the length of the batten. Since most battens are around 40mm wide, it is very difficult to effectively use traditional pliers to pull out staples from battens – you can pull the staples a short distance if you are lucky, but can't get any further leverage due to the lack of an adequate support surface (i.e. you are limited by the width of the batten).

Secondly, most traditional pliers for use in fencing are crimping pliers, for crimping wire joiners/sleeves. Due to the force required to compress the joiners/sleeves, they are typically designed for two handed use. In contrast, a one handed plier suitable for removing staples will be quicker and easier to use, and will potentially speed up repair jobs for the user.

Hence, batten replacement is an often onerous and tedious job and typically results in damage to the fence wire.

Accordingly there is a need to provide an improved process and/or apparatus capable of more effectively removing metal fence staples from fence battens.

Accordingly there is a need to provide apparatus capable of removing metal fence staples from fence battens and posts, and which can be used substantially with one hand.

Another issue which also needs to be addressed is tensioning the fence wires as they are stapled to fencing battens and posts during repairs, temporary fences, and new installations. For a new fence, specialised wire strainers are generally used to tension wires at the strainer posts. However, sometimes a farmer needs to apply tension to a wire during a repair, or when putting up a temporary fence.

Not all farmers have specialised wire strainers/tensioners, as they are a specialised professional tool aimed at fencing contractors. Further, it is not generally something the farmer will carry around (typically on their quad-bike as they travel around the farm) as specialised strainers are only occasionally used. Hence, if in a remote area of the farm the

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farmer notices that a small repair needs to be made, they will need to make a special trip back to the toolshed to retrieve their wire strainer or (most likely) improvise with some other tool – typically a pair of standard or fencing pliers, though it is very difficult to apply a good degree of tension on a wire using these tools and any repair will need to be followed up and done properly.

Accordingly, there is also a need for a tool which is readily able to be carried around as part of a farmer's standard tool kit, and which can easily allow a farmer or fencer to apply a good degree of tension on a fencing wire during various uses such as repairs, and stringing temporary fences.

OBJECT OF THE INVENTION

It is an object of the invention to address the problems of the prior art, such as those discussed above.

At the very least it is an object of the present invention to provide the public with a useful alternative choice.

GENERAL DESCRIPTION OF THE INVENTION

According to one aspect of the present invention there is provided a tool comprising:

- a jaw portion comprising a pair of jaws;
- a hinge portion configured to allow each jaw of the pair of jaws to pivot between open and closed positions relative to each other and form an aperture adjacent a tip of each of the pair of jaws when the jaws are in the closed position;
- a handle portion on the opposite side of the hinge portion to the jaw portion to allow for opening and closing of the pair of jaws; and
- at least one projection extending outwardly from each of the pair of jaws in the plane within which the jaws pivot

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wherein the top surface of the at least one projection distal the jaw from which the projection extends, are configured to contact a support surface and act as a fulcrum for applying a levering force to an article grasped by the jaws when in the closed position.

Preferably, the shape of the projections is selected from the group consisting of: cylindrical, conical, frustoconical, pyramidal, cuboid, and a parallelepiped.

Preferably, the projections extend a minimum of 7.5mm from the face of each of the pair of jaws.

Preferably, the projections extend a minimum of 12.5mm from the said center plane of each of the pair of jaws.

Preferably, the projections are integrally formed into each of the pair of jaws.

Preferably, a cross-sectional area of the top surface of the projections is at least 20 mm².

Preferably, the top surface of the projections comprises a gripping or anti-slip surface.

Preferably, the top surface of the projections when the pair of jaws are in a closed position, is within the inclusive range of 1 to 10mm of a tangential line at the tip of each of the pair of jaws, said tangential line being substantially perpendicular to the axis of symmetry as the jaws open outwardly into the open position.

Preferably, the distance of closest approach between the primary load-bearing areas of the projection on each jaw when the pair of jaws is in the closed position is within the inclusive range of 8 to 35 mm.

Preferably, the aperture is substantially circular.

Preferably, the aperture accommodates a wire with a diameter in the range 1.6mm to 4.5mm.

Preferably, the hinge portion comprises a single pivot connecting the pair of jaws.

Preferably, the hinge portion comprises a multiple pivot point hinge arrangement with mechanical linkages connecting the pair of jaws.

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Preferably, the jaw portions are integral with the handle portion.

Preferably, the handle portion comprises one or more of the following features: cushioning, gripping modifications, moulded portions for accommodating fingers, closure limiting features setting the minimum distance of approach when the pliers are in a closed position, are telescoping.

Preferably, the jaw portion also comprises a wire cutting feature.

Preferably, the jaw portion also comprises a cable crimping feature.

Preferably, the tip of at least one jaw of the pair of jaws is fine enough to insert and fit at least half-way under the crook of a 2.5mm gauge fencing staple.

Preferably, the tip of at least one jaw of the pair of jaws is fine enough to insert and fit at least half-way under the crook of a 4mm gauge fencing staple.

Preferably, the tip of at least one jaw of the pair of jaws is tapered towards its end.

Preferably, the tip of at least one jaw of the pair of jaws is less than 1.75mm across.

Preferably, the cross sectional area of the tip of at least one jaw of the pair of jaws is less than 2mm².

Preferably, the jaw portion is made of metal.

More preferably, the metal is a stainless steel or an alloy steel.

Preferably, the tip of each jaw of the pair of jaws is bent out from the plane of jaw pivoting.

Preferably, the tool also comprises a wire gripping portion positioned between the hinge portion and the handle portion and comprising a pair of wire contacting surfaces configured to contact each other as the handle portion is biased to move each jaw of the pair of jaws to the closed position.

More preferably, the jaw portion and the handle portion is connected by a pivot assembly comprising a double pivot arrangement.

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Preferably, one of the wire contacting portions are positioned on an outer edge or face of one of the primary elements.

Preferably, one of the wire contacting portions comprise a portion on a said primary element which closes against a wire contacting portion on the outer face of the other primary element.

Preferably, the wire contacting portions are positioned between the pivot assembly portion and the handle portions of the pliers.

Preferably, the closing of the pliers causes the two wire contacting portions to come together in a cam-like action.

According to another aspect of the present invention there is provided the use of the tool as described above for removing staples from a fence batten.

Summary of the Invention

The present invention, according to a first aspect, comprises a tool in the form of a pair of pliers for use in removing fencing staples, but may find other uses. For example, the tool is useful for removing staples in power utility applications (wooden power poles) where the confines of the elevated bucket (or cherry picker) that is used by the linesman along with the bulky protective gloves the linesmen wears makes the feature of the one handed staple removal, the long handles and the carefully weighted handle that opens without having to prise the tool open very helpful. The one handed operation feature of the tool of the present invention is an advantage over known two handed operative tools which can be clumsy and bulky to use thereby improving linesman safety.

As per typical pliers there is a jaw portion, a hinge portion (allowing the jaws of the jaw portion to open and close), and a handle portion (for effecting opening and closing of the jaws).

In the present invention the handle portion may take a number of different known forms. One consideration is that the handles of the handle portion are sufficiently robust for use in the field, resistance to corrosion, and being able to provide enough mechanical force to the jaws

for them to perform their function (though different hinge designs can influence the effective leverage). Other considerations may include comfort, grip (avoiding slipping in wet conditions), and various ergonomic considerations. The shape of the handle is preferably straight with a relatively long length of approximately 190 mm. This configuration provides enough leverage and avoids the tool being too clumsy during use.

The hinge portion may also incorporate various known hinge designs. A simple single pivot connecting the jaws may be used, though multiple pivot point hinges, and hinges with various mechanical linkages to improve leverage (etc.) may also be considered. These latter designs may be considered more closely when the jaws provide additional functionality, such as the ability to cut wire, or to crimp wire crimps/joiner-sleeves.

In the present invention the jaw portion comprise two jaws pivotable between open and closed positions. The jaws have tips, which are the end portions distal the pivot. The jaws may be substantially planar, or the ends (adjacent and including the tips) may be bent out of plane (the plane being the general pivoting plane in which the arc of opening and closing of the jaws lie).

In preferred embodiments the tips (ideally the tip of both jaws, but only the tip of one jaw needs to possess this feature) are of reduced cross-section and may be tapered. This allows the tip(s) to more effectively insert into the crook of the staple and ideally above the wire. As most staples are of wire of round cross-section, suitable tapering can allow the user to wiggle/manipulate the fine tip between the wire and staple.

Ideally at least one of the tips should be able to insert into the crook of a 4mm staple – if both tips are tapered or of reduced cross-section then each tip need only insert as far as halfway. Ideally, a versatile tool would fit into the crook of the most commonly used staple – locally this is a 2.5mm staple but could be in the range 1.6mm to 4.5mm.

Adjacent the tips, when the jaws are closed, is ideally defined an aperture. This is to accommodate the head of the staple while it is being lifted. As the reader may appreciate, in preferred embodiments the staple head is, rather than being gripped and pulled, actually being supported underneath and lifted. This is quite different to prior art designs which do not readily provide this functionality.

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The outer surface of the jaws may be rounded (like the outer head of a claw hammer), though this is a matter of user choice. However, this allows for the pliers to lift various fasteners (etc.) providing there is a suitable support surface.

The present invention includes on at least one jaw (and preferably both) at least one stud-like projection. This extends outwardly from the general planar surface of the jaw. This may be better explained as follows:

- in a substantially planar jaw set (i.e. no bent out-of-plane tip portions) the general planar surface is also the plane of pivoting (as mentioned before);
- in a case where the ends of the jaws are bent out of the pivoting plane, then the stud-like projections extend from the general plane of the end portions of the jaws which are bent out of plane.

The main purpose of these stud-like projections is to provide a contact point for leverage. Hence, instead of relying on pivoting leverage in one plane (such as described above where some embodiments may use the outer surface of the jaws like a claw hammer), the pliers can be levered in a plane orthogonal to the pivoting plane. A significant potentially realizable advantage is that (due to the orientation of an inserted staple) the claw-hammer type leverage action is limited as it acts across the width of the batten (which is not wide enough for a staple to be more than slightly pulled out). In contrast, the stud-like projections provide a fulcrum for leverage along the length of the batten, which is more effective.

Further, given that in preferred embodiments the stud-like projections are ideally positioned near to the tip of the jaws for maximum leverage, they also allow the pliers to be more effectively used (much more so than the claw hammer type action) transversely across the width of a batten. Hence there is the provision for a potentially more useful and effective levering action.

These stud-like projections can be provided on just one, or both, sides of a jaw though preferred embodiments have the projection on only one side (as the free sides gives a better view of what is happening near the tip).

The exact shape of the stud-like projection is not too important, providing it can provide an effective contact point (primary load bearing area) on a support surface to act as a fulcrum.

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Various embodiments (by way of example) may have projections substantially of the following general shapes (but need not be limited to same) – cylindrical, conical, frustoconical, pyramidal, cuboid, and a parallelepiped.

The height of the projection (at the contact/load bearing area) above the general surface of the jaw with which it is associated is generally 7.5mm or more. Measuring from the centre plane of the jaw (this plane being through the centre of the jaw and parallel to the pivoting plane (see above), except in the case of bent tip pliers in which case it is the centre plane of the tip/end portion of the jaws) the projection will typically extend at least 12.5mm therefrom. There is room for user optimization here, for specific applications.

The contact/load bearing area of the projections should be close to the top of the jaws. This is best referenced to a tangential line across the top of the tips of the closed jaws, said tangential line being substantially perpendicular to the axis of symmetry as the jaws open outwardly into an open position (and best seen in the accompanying diagrams).

Ideally the contact / primary load bearing area of a projection, at its distance of closest approach to said tangential line, should be within the inclusive range of 1 to 10 mm.

In terms of the distance of separation of the projections present on two closed jaws, their distance of closest approach is ideally within the range of 10 to 30 mm.

The other aspect of the invention comprises a wire gripping portion in conjunction with stud-like projections such as described above. In combination, the projections allow greater leverage to be applied to tension a wire. In simple tests by the inventor, tensions of around 100-150kgf can be readily obtained without too much effort – 150kgf being the recommended tension for most farm fences.

However, in further trials, a preferred embodiment of the invention utilises pliers with a double pivot arrangement. Here, there is quite a different type of wire gripping portion. In preferred embodiments the wire gripping portions comprises two wire contacting face portions, of which one is actually present on the outside face of one of the primary elements of the pliers – a primary element being one of the two main body parts of most preferred embodiments of the invention, and characterised in that one end comprises a jaw portion and the opposite end comprises a handle portion.

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The other primary element comprises an extended body modification or element which presents a wire contacting face portion which is able to close against the wire contacting face portion on the outer edge/face of the first primary element. This arrangement will be clearer in the drawings (see below).

When this gripping arrangement is used there is effectively a cam closing action between the two wire contacting face portions, and particularly when a double pivot is used. This provides a relative lateral motion between the wire contacting face portions as their distance of separation alters. It has been found in preliminary trials by the inventor that this subjectively seems to provide a slightly firmer gripping action on the wire being grasped. The cam closing action also seems to provide a finer closing action on the wire, particularly on a double pivot type plier. As the handles are closed at a constant rate, the rate of closure of the two wire closing portions slow slightly, the closer they come together. This gives the user slightly more control on gripping pressure, particularly if using a wire type which can be easily damaged.

In a prototype of this embodiment, preliminary bench tests by the inventor indicated that the nominal wire tension of 150kgf could be readily achieved without too much effort and using one hand – leaving the other hand free to secure the wire to a post, etc.

DESCRIPTION OF DRAWINGS

Further aspects of the present invention will become apparent from the following description which is given by way of example only and with reference to the accompanying drawings in which:

- Figure 1 shows a diagrammatic front view of one preferred embodiment of the present invention in the form of a pair of pliers;
- Figure 2 shows a top end view of the jaw portion of the preferred embodiment shown in Figure 1;
- Figure 3 shows a partial front view of the preferred embodiment shown in Figure 1 in typical use;

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- Figure 4 shows a side view of the preferred embodiment shown in Figure 1 in typical use;
- Figure 5 shows a side view of another preferred embodiment of the present invention in the form of a pair of pliers with a bent nose portion;
- Figure 6 shows a perspective view of another preferred embodiment of the present invention in the form of a pair of pliers incorporating a wire gripping portion; and
- Figure 7 shows a perspective view of the preferred embodiment shown in figure 6 gripping a length of wire and tensioning it.

DESCRIPTION OF PREFERRED EMBODIMENT

The present invention addresses the problems identified in the prior art above by enabling improved ease of use of removing staples from a fence and/or improved ease of use in tensioning fence wires.

In a preferred form of the invention, and with reference to Figures 1 to 4, an improved tool for use in the fencing industry or the like is generally indicated by arrow 1.

With reference to Figure 1 a pair of pliers is generally indicated by arrow 1. The pliers (1) comprise a jaw portion (generally indicated by arrow 2), a hinge portion (generally indicated by arrow 3), and a handle portion (generally indicated by arrow 4).

The jaw portion (2) comprises a first (5) and second (6) jaw. The tip (7, 8) of each jaw (5, 6) respectively is tapered to a relatively fine tip to facilitate insertion into the crook of a fence staple (10) and above the wire (11). The aperture (12) formed between the closed jaws (5, 6) accommodates the head of the staple to prevent it being cut or damaged (making removal impossible).

Adjacent the tips (7, 8) are raised stud-like projections (15, 16) whose top surfaces (17, 18) (primary load bearing surface) can act as fulcrums. Their distance of closest approach to each other (indicated by line 20) is ideally within the inclusive range of 10 through 20mm. Figure 2 shows the case of inwardly slanted projections, by way of example only.

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Referring to Figure 2, the primary load bearing surface (17, 18) rises above the face (21) of the jaw (5) by distance (22) which is ideally at least 7.5 mm. Alternatively the height can be measured from the center plane (24) of the jaw (6) by distance (25) which ideally is at least 12.5mm.

The projections (15, 16) should also be close to the top of the jaws (5, 6). This is best reference by the distance of closest approach to a tangential line (30; see Figure 1) perpendicular to the axis (31) of opening symmetry for the jaws. This distance of approach is ideally within the inclusive range of 1 to 10mm.

In use the tips (7, 8) of the jaws (5, 6) may be inserted under the staple (10) and above the wire (11; see figure 3) and the projections (15, 16) used as a fulcrum for leverage and using the batten (14) as a support surface (see figure 4). This allows the pliers (1) to act as a lever along the length of the batten, though the user can change the angle and use the pliers (1) transversely (across the batten) as well – the close proximity of the projections (15, 16) to the top (30) of the jaws (5, 6) allows this despite the narrowness of a typical batten (14).

The projections (15, 16) also span across the fence wire (11) avoiding contact with the wire (11) when levering the staple (10) out of the batten (14). In this way, the wire (11) is not crushed on the side of the tool (1) that the projections (15, 16) act as a fulcrum as the staple (10) is rotated out of the batten (14). This wire damage can be a problem with known staple removing tools which can cause stripping of the galvanized coating of the wire which leads to oxidation, rust and wire failure leading to costly repairs.

The projections (15, 16) can also be used to wind a fence wire (11) as an alternative to a known daisy type wire tensioner device. In use, the fence wire is placed between the projections (15, 16) and the tool rotated while the pair of jaws (5, 6) grips the wire (11). In this way the wire is effectively coiled up increasing its tension. During this use the body of the tool (1) would need to be resting against the batten (14) to increase wire tension by using the projections (15, 16) in conjunction with the wire gripping portion (101) using the winding action.

A person skilled in the art will appreciate that the projections (15, 16) could take different forms without departing from the scope of the present invention. For example, the exterior

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surface of the projections (15, 16) can either have a smooth exterior surface or comprise an indentation U-shaped guide around the circumference of each projection (15, 16).

Figure 5 illustrates a bent tip jaw embodiment (generally indicated by arrow 40). Here the jaws (41 – only one jaw visible in image) are connected by pivot (44), though the end portion (42) of the jaw (41; both jaws) are bent (center plane 45) out of the plane of pivoting (46). The pliers work in substantially the same way as the other embodiments using projection 43.

Some embodiments may include features such as wire cutters (36, 37; see Figures 1 and 3) though could also include other features such as wire joiner crimpers (e.g. for crimp/sleeve type joiners).

Figure 6 illustrates a further embodiment of the present invention, incorporating a wire gripping portion (generally indicated by arrow 101). This is typically located between the pivot (106) and handle (105) portions of the pliers.

The wire gripping portion (101) comprises a first wire contact face portion (102) on the outer edge/face of a first primary element (110), and a second wire contact face portion (103) on an extended body portion (104) on the second primary element (111).

In the pliers closed position there is optionally a small distance of separation between the wire contacting face portions (102, 103) to reduce likelihood of damage to a typical wire.

Positioning the wire gripping portion (101) on the outer face of the pliers in the manner generally illustrated in figure 6 also provides a further potentially realisable advantage – it makes it easier, in use, for a user to guide a wire within the wire gripping portion (101) as opposed to those of the prior art where the wire is grasped in a position between the handle portions. This can be quite an important feature when tensioning wires in cold, wet, or extreme conditions in the field.

Figure 7 illustrates use of the embodiment of figure 6, where a length of wire (not numbered) is grasped between the wire contacting face portions (102, 103). The stud like projections (15, 16), which are not visible in figure 7, are positioned against the post and act as a fulcrum as the handles are pivoted away from the post to provide tension on the wire. The stud projections potentially provide a good grip against the post and help avoid slipping, as is typically the case in prior art pliers where the tip of the jaws act as a fulcrum. Hence the wire

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gripping portion in conjunction with the stud like projections can potentially provide additional advantage over the prior art.

The present invention offers notable advantages over the prior art by including:

- Improved ease of use in removing staples from fence battens or the like; and
- Improved ease of use in tensioning a fencing wire.

The entire disclosures of all applications, patents and publications cited above and below, if any, are herein incorporated by reference.

Reference to any prior art in this specification is not, and should not be taken as, an acknowledgement or any form of suggestion that that prior art forms part of the common general knowledge in the field of endeavour in any country in the world.

The invention may also be said broadly to consist in the parts, elements and features referred to or indicated in the specification of the application, individually or collectively, in any or all combinations of two or more of said parts, elements or features.

Where in the foregoing description reference has been made to integers or components having known equivalents thereof, those integers are herein incorporated as if individually set forth.

It should be noted that various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. Such changes and modifications may be made without departing from the spirit and scope of the invention and without diminishing its attendant advantages. It is therefore intended that such changes and modifications be included within the present invention.

Unless the context clearly requires otherwise, throughout the description and the claims, the words "comprise", "comprising" and the like, are to be construed in an inclusive sense as opposed to an exclusive or exhaustive sense, that is to say, in the sense of "including, but not limited to".

This specification is also based on the understanding of the inventor regarding the prior art. The prior art description should not be regarded as being authoritative disclosure on the true state of the prior art but rather as referencing considerations brought to the mind and attention of the inventor when developing this invention.

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Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope thereof as defined in the appended claims.

WHAT WE CLAIM IS:

1. A tool comprising:
 - a jaw portion comprising a pair of jaws;
 - a hinge portion configured to allow each jaw of the pair of jaws to pivot between open and closed positions relative to each other, wherein the jaws form an aperture adjacent a tip of each of the pair of jaws when the jaws are in the closed position;
 - a handle portion on the opposite side of the hinge portion to the jaw portion to allow for opening and closing of the pair of jaws; and
 - at least one projection extending outwardly from each of the pair of jaws in a plane within which the jaws pivot

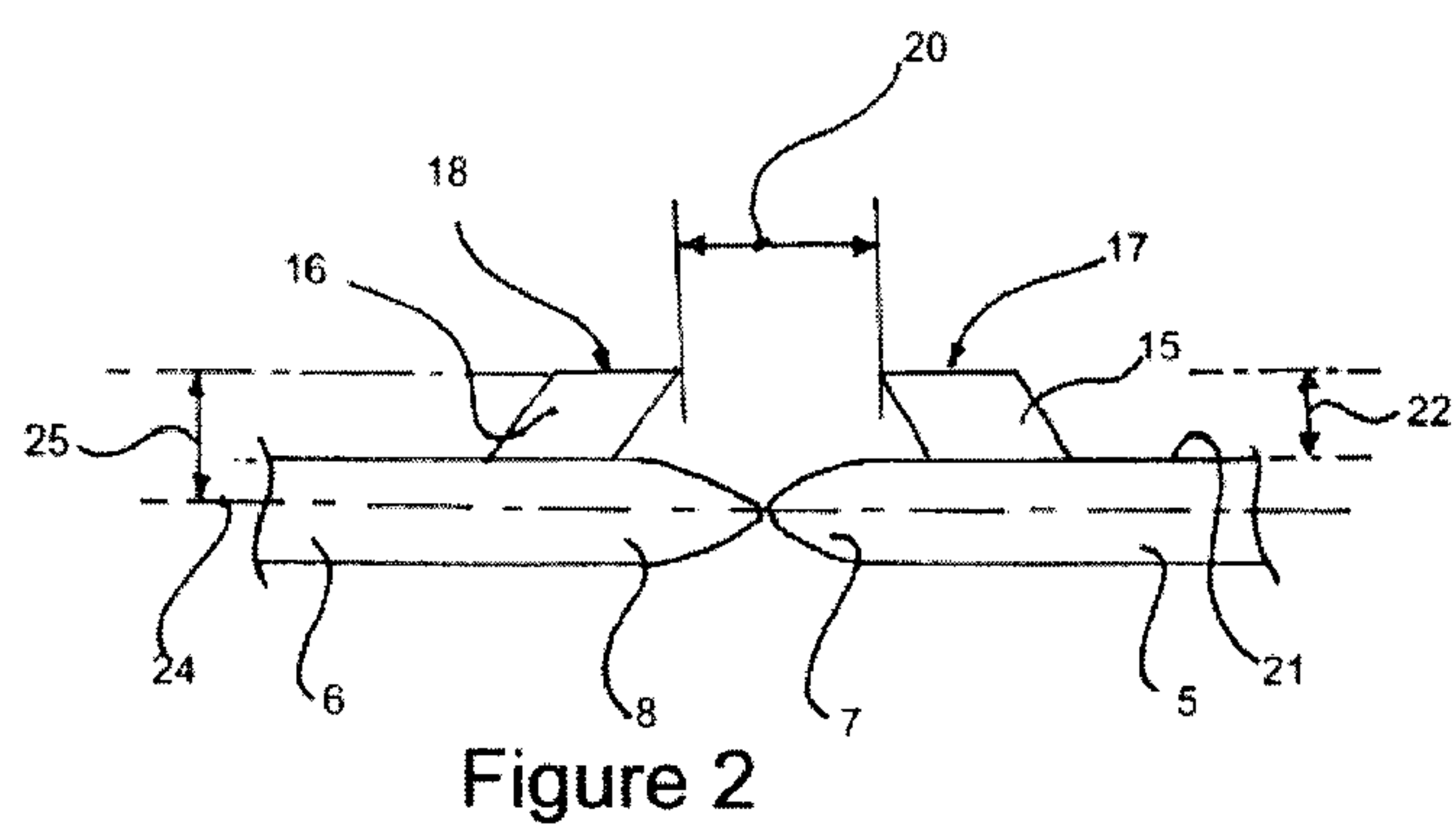
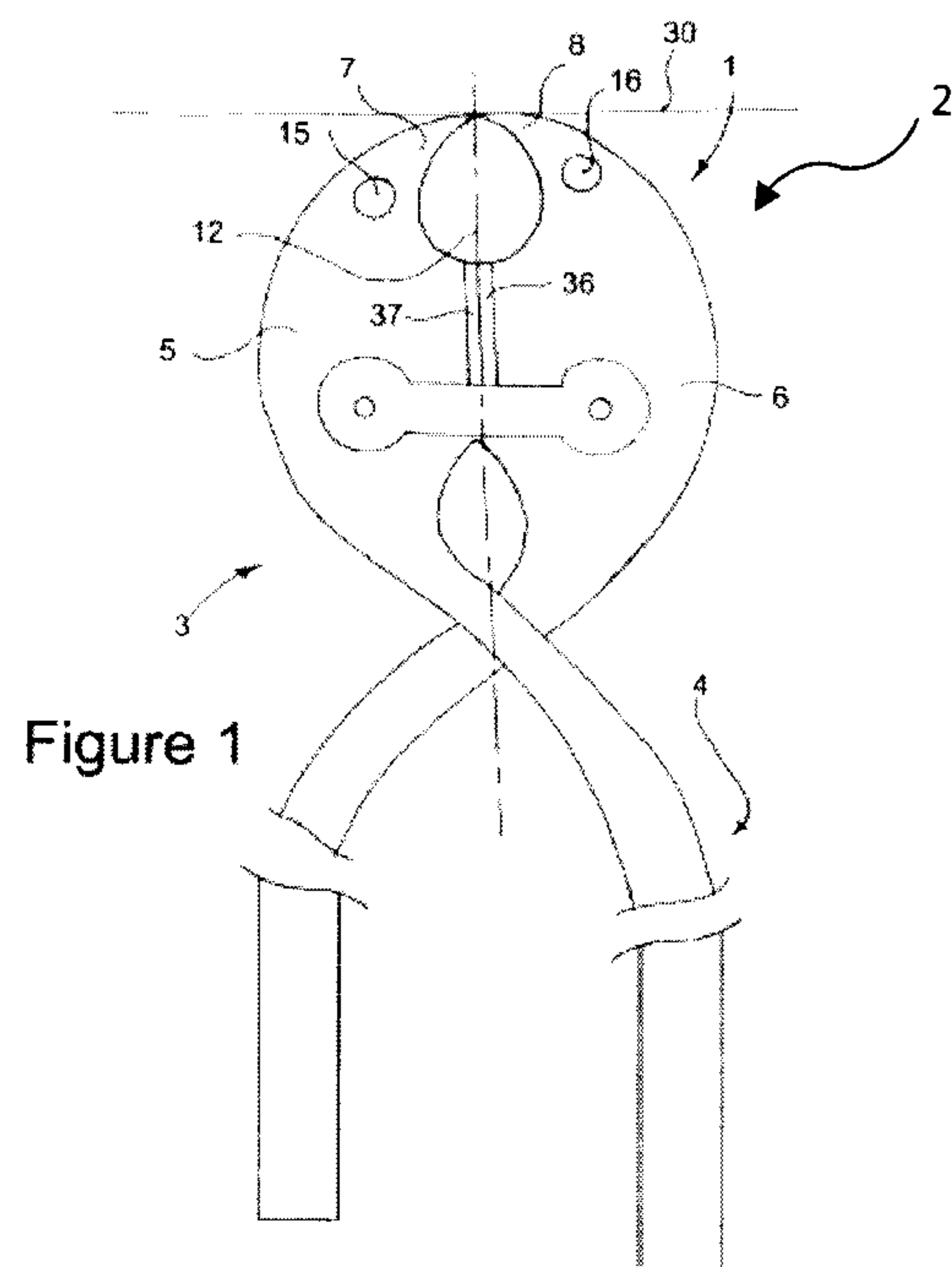
wherein a top surface of the at least one projection distal the jaw from which the projection extends, are configured to contact a support surface and act as a fulcrum for applying a levering force to an article grasped by the jaws when in the closed position.

2. The tool as claimed in claim 1 wherein the shape of the projections is selected from the group consisting of: cylindrical, conical, frustoconical, pyramidal, cuboid, and a parallelepiped.
3. The tool as claimed in claim 1 or claim 2 wherein the projections extend a minimum of 7.5mm from a face of each of the pair of jaws.
4. The tool as claimed in any one of claims 1 to 3 wherein the projections extend a minimum of 12.5mm from the said center plane of each of the pair of jaws.
5. The tool as claimed in any one of claims 1 to 4 wherein the projections are integrally formed into each of the pair of jaws.
6. The tool as claimed in any one of claims 1 to 5 wherein a cross-sectional area of the top surface of the projections is at least 20 mm².

7. The tool as claimed in any one of claims 1 to 6 wherein the top surface of the projections comprises a gripping or anti-slip surface.
8. The tool as claimed in any one of claims 1 to 7 wherein the top surface of the projections when the pair of jaws are in a closed position, is within the inclusive range of 1mm to 10mm of a tangential line at the tip of each of the pair of jaws, said tangential line being substantially perpendicular to an axis of opening symmetry as the jaws open outwardly into the open position.
9. The tool as claimed in any one of claims 1 to 8 wherein a distance of closest approach between the primary load-bearing areas of the projection on each jaw when the pair of jaws is in the closed position is within the inclusive range of 8 mm to 35 mm.
10. The tool as claimed in any one of claims 1 to 9 wherein the aperture is substantially circular.
11. The tool as claimed in any one of claims 1 to 10 wherein the aperture accommodates a wire with a diameter in the range 1.6mm to 4.5mm.
12. The tool as claimed in any one of claims 1 to 11 wherein the hinge portion comprises a single pivot connecting the pair of jaws.
13. The tool as claimed in any one of claims 1 to 12 wherein the hinge portion comprises a multiple pivot point hinge arrangement with mechanical linkages connecting the pair of jaws.
14. The tool as claimed in any one of claims 1 to 13 wherein the jaw portions are integral with the handle portion.
15. The tool as claimed in any one of claims 1 to 14 wherein the handle portion comprises one or more of the following features: cushioning; moulded portions for accommodating fingers; closure limiting features setting the minimum distance of approach when the pliers are in a closed position; the handle portions are telescoping.

16. The tool as claimed in any one of claims 1 to 15 wherein the jaw portion also comprises a wire cutting feature.
17. The tool as claimed in any one of claims 1 to 16 wherein the jaw portion also comprises a cable crimping feature.
18. The tool as claimed in any one of claims 1 to 17 wherein the tip of at least one jaw of the pair of jaws is fine enough to insert and fit at least half-way under a crook of a 2.5mm gauge fencing staple.
19. The tool as claimed in any one of claims 1 to 17 wherein the tip of at least one jaw of the pair of jaws is fine enough to insert and fit at least half-way under a crook of a 4 mm gauge fencing staple.
20. The tool as claimed in any one of claims 1 to 19 wherein the tip of at least one jaw of the pair of jaws is tapered towards its end.
21. The tool as claimed in any one of claims 1 to 20 wherein the tip of at least one jaw of the pair of jaws is less than 1.75mm across.
22. The tool as claimed in any one of claims 1 to 21 wherein a cross sectional area of the tip of at least one jaw of the pair of jaws is less than 2mm².
23. The tool as claimed in any one of claims 1 to 22 wherein the jaw portion is made of metal.
24. The tool as claimed in claim 23 wherein the metal is a stainless steel or an alloy steel.
25. The tool as claimed in any one of claims 1 to 24 wherein the tip of each jaw of the pair of jaws is bent out from the plane of jaw pivoting.
26. The tool as claimed in any one of claims 1 to 25 wherein the tool also comprises a wire gripping portion positioned between the hinge portion and the handle portion and comprising a pair of wire contacting surfaces configured to contact each other as the handle portion is biased to move each jaw of the pair of jaws to the closed position.

27. The tool as claimed in claim 26 wherein the jaw portion and the handle portion is connected by a pivot assembly comprising a double pivot arrangement.
28. The tool as claimed in claim 26 or claim 27 wherein one of the wire contacting portions are positioned on an outer edge or face of one of the primary elements.
29. The tool as claimed in any one of claims 26 to 28 wherein one of the wire contacting portions comprise a portion on a said primary element which closes against a wire contacting portion on an outer face of the other primary element.
30. The tool as claimed in any one of claims 26 to 29 wherein the wire contacting portions are positioned between the pivot assembly and the handle portions of the tool.
31. The tool as claimed in any one of claims 26 to 30 wherein the closing of the tool causes the two wire contacting surfaces to come together in a cam-like action.
32. The use of the tool as claimed in any one of claims 1 to 31 for removing staples from a fence batten.



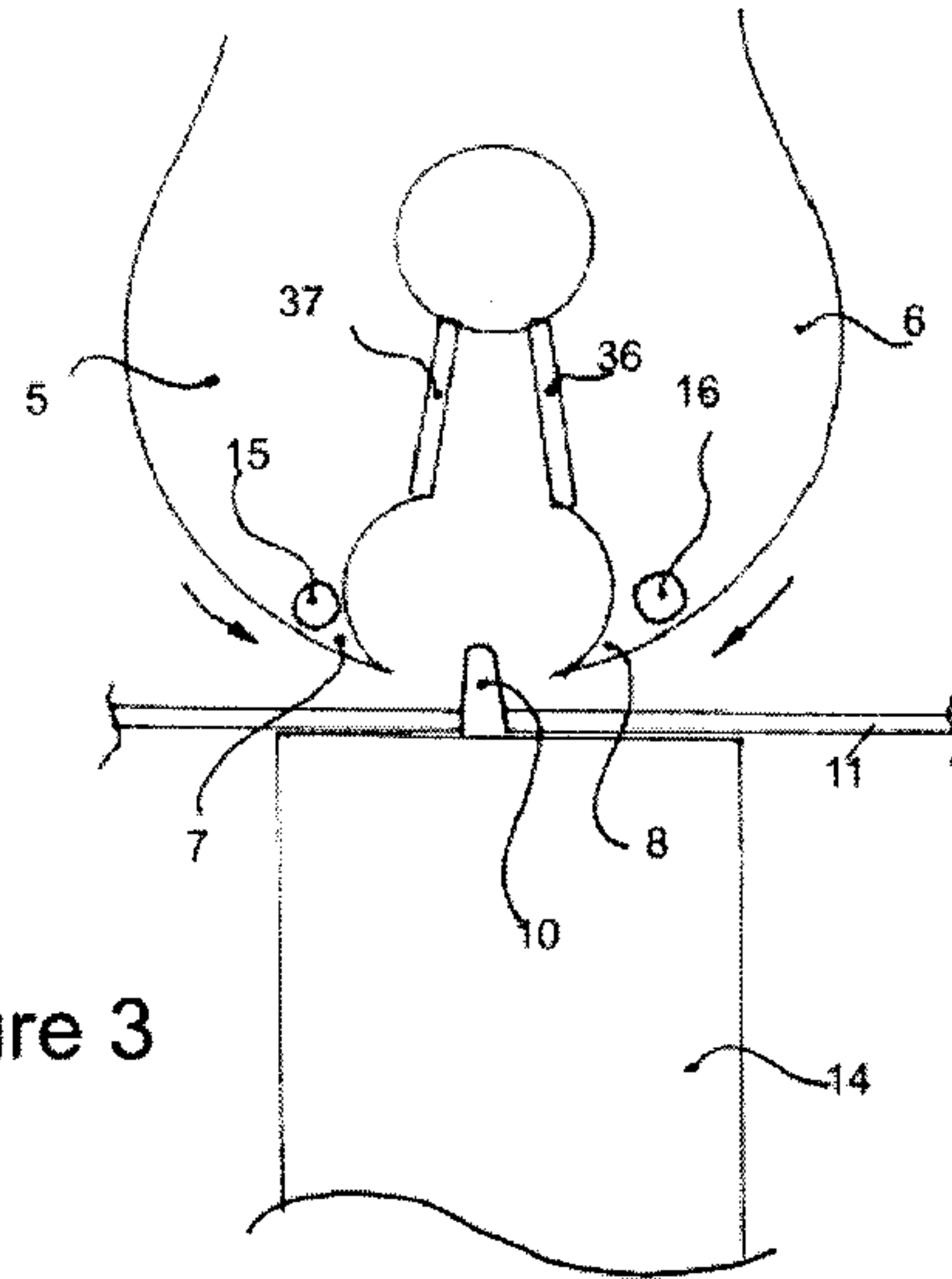


Figure 3

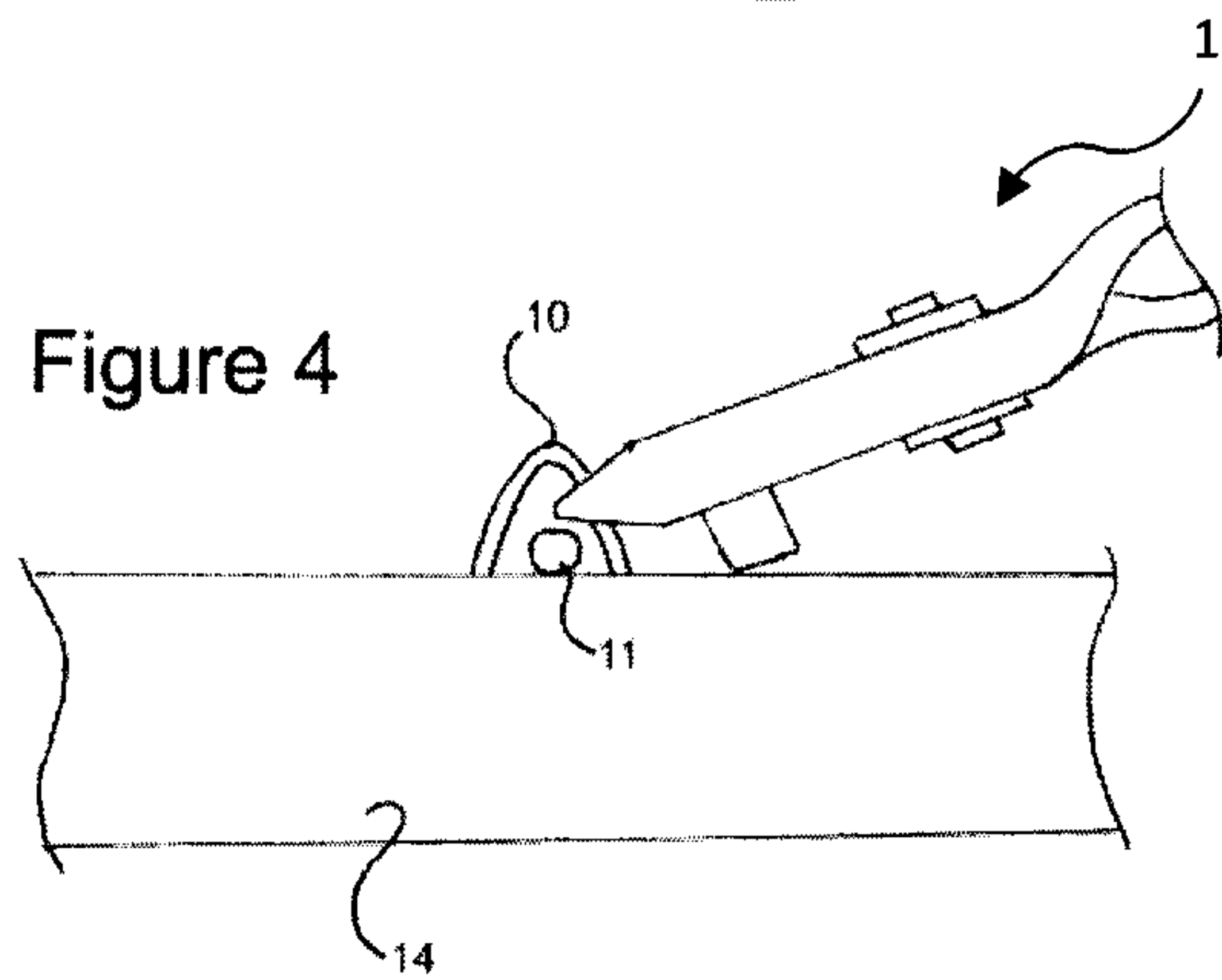


Figure 4

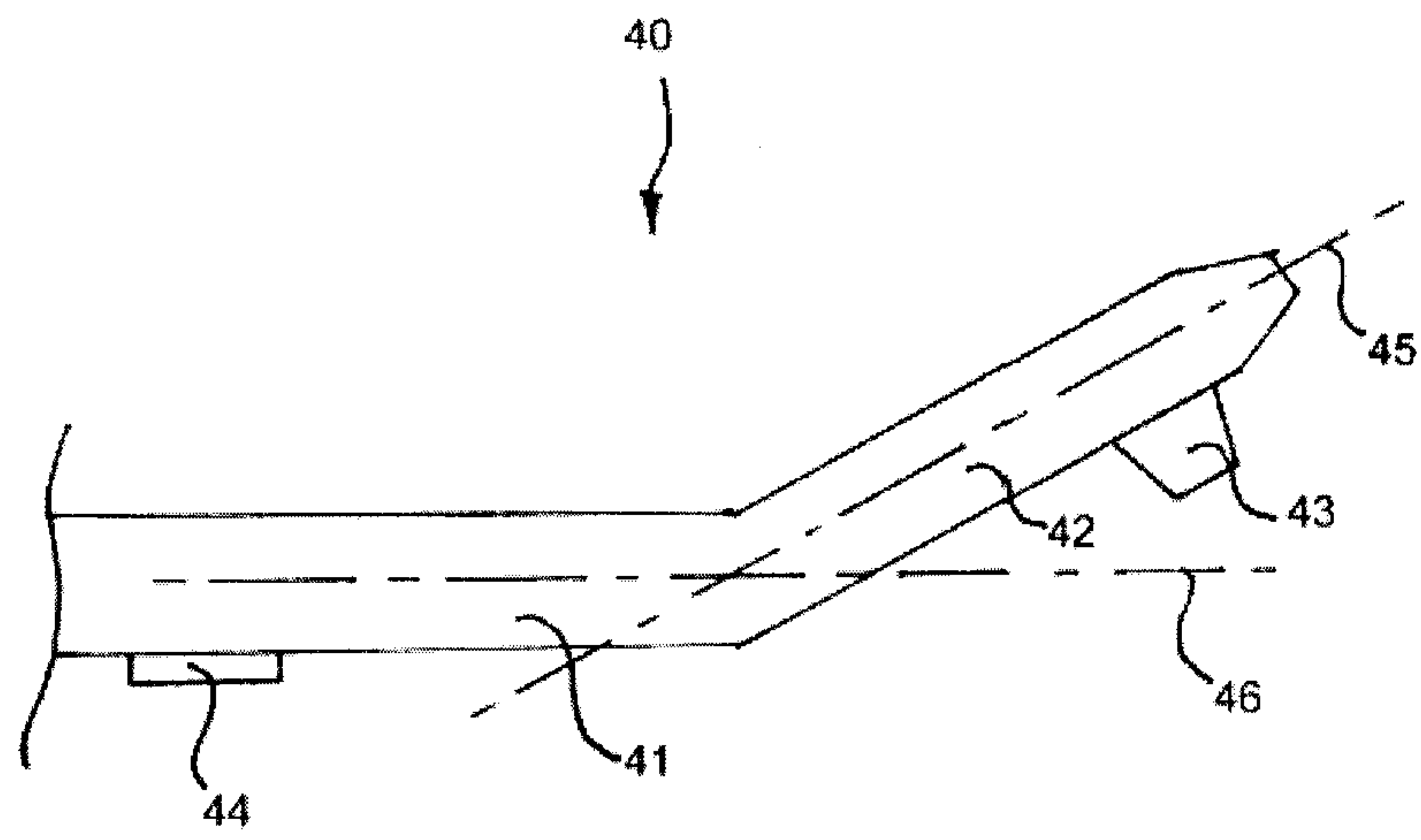


Figure 5

