



(11)

EP 2 313 580 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
26.09.2018 Bulletin 2018/39

(51) Int Cl.:
E04H 17/06 ^(2006.01) **A01K 3/00** ^(2006.01)
E04H 17/26 ^(2006.01)

(21) Application number: **09794696.6**

(86) International application number:
PCT/NZ2009/000133

(22) Date of filing: **06.07.2009**

(87) International publication number:
WO 2010/005321 (14.01.2010 Gazette 2010/02)

(54) FENCING SYSTEM AND TENSIONER

UMZÄUNUNGSSYSTEM UND SPANNVORRICHTUNG

SYSTÈME DE CLÔTURAGE ET TENDEUR

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK SM TR**

(30) Priority: **07.07.2008 NZ 56967908**

(43) Date of publication of application:
27.04.2011 Bulletin 2011/17

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Description

TECHNICAL FIELD

[0001] The present invention relates to a fencing system. The invention has particular application to the setting and tensioning of an electric fencing system.

BACKGROUND ART

[0002] Portable electric fencing is an important aspect of livestock and pasture management. It is usually used in animal containment to ensure that livestock do not graze in an undesired area or to set up temporary enclosures for animals to prevent the animals from extensive roaming.

[0003] By controlling the extent of pasture being grazed by livestock, a farmer is able to sustainably manage pasture growth to ensure a year round supply of food for livestock.

[0004] On a regular basis, a farmer will partition off sections of the pasture, to exclude livestock. This allows the pasture to recover from grazing activity. The partitioning of pasture is easily achieved with the use of portable electric fencing.

[0005] A portable electric fence consists of three key components; a conductive wire, an energiser, and one or more fence posts to carry the wire.

[0006] The most important component is the electric wire which carries the electric current. An animal or person coming into contact with the wire will receive an electric shock.

[0007] The electric current is provided by an energiser. Energisers are sources of power for electric fencing. To energise a portable electric fence, a farmer will usually use a portable energiser, although a portable electric fence can also be powered via an adjacent permanent electric fence.

[0008] The electric wire must be supported along its length by one or more fence posts to ensure that the wire is at a height which forms an effective barrier to the animals being enclosed or excluded.

[0009] A number of fence posts may be required for a portable electric fence, depending on the length of the electric fence.

[0010] For example, a portable electric fence enclosing an area of 25 m² requires 100 m of electric wire, which must be supported by fence posts at least every 10 m or 15 m or so to ensure that the electric wire is suspended at a height that is sufficient to act as a physical barrier and a visual deterrent to enclosed livestock.

[0011] It will be appreciated that this represents a significant amount of fencing paraphernalia which is required to be transported by a farmer. This is particularly the case in areas where vehicle access may be restricted or inappropriate, for example, when a temporary fence has to be established on sloping terrain.

[0012] There are examples of portable fences in the

prior art which integrate the fencing components into a single carrying unit. This makes it easier for a farmer to transport and establish a portable electric fence.

[0013] Such an example is manufactured by Kiwitech Limited. Kiwitech's product consists of poly wire fencing reels carried on a frame. This frame is configured to also carry fencing standards in a horizontal orientation.

[0014] In use, a farmer carries the frame in one hand while using the other hand to collect, orientate and insert the fencing standard into the ground. As the farmer moves along the proposed fencing line, the reels automatically dispense the poly wire. The farmer hooks the dispensed poly wire to the fencing standards as each standard is set up, thus creating the portable electric fence.

[0015] Kiwitech's product is difficult to use for a number of reasons.

[0016] The fencing standards are laid atop one another, and can become easily entangled. It can be difficult when using only one hand to disentangle these fencing standards.

[0017] It can also be difficult for a farmer to hook the wire to the fencing standard once the standard has been placed, with only one free hand.

[0018] It can also be difficult to ensure that adequate tension is being applied to the wire as it is being dispensed or retrieved.

[0019] When setting up a portable fence, in some situations, it is preferable to keep the dispensed wire relatively taut as the wire is unwound from the fencing reel. This prevents the wires becoming entangled, if wire from more than one reel is being dispensed as may be the case when setting up a portable fence with more than one horizontal line of fencing wire. This is also important when retrieving the wires, as they collect onto the fencing reel.

[0020] Keeping the wire taut when retrieving the wire reduces the risk of the wire being entangled on the reel.

[0021] Entangled wire can form knots, thus affecting the reel's ability to dispense or retrieve the wire in the future. Some fencing reels include guides for the wire. Often, knotted fencing wire cannot pass easily through these guides, making it particularly important to avoid the formation of knots in fencing wire if possible.

[0022] A further disadvantage of knotted or entangled wire is that it typically takes up more space on the fencing reel when wound in. This can affect the carrying capacity of the fencing wire.

[0023] Therefore, when taking down the portable fence, a farmer, as well as collecting the fencing standards, must also at the same time use a handle mounted to the reel to wind up and tension the fencing wire. This is particularly laborious and time consuming as the farmer must periodically stop collecting standards to tension any slack wire. Document US3684248A shows a tensioner for a fencing wire reel, said tensioner comprising the features of the preamble of the independent claim 1.

[0024] A solution to the aforementioned problems is

desired.

[0025] It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

[0026] Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

DISCLOSURE OF INVENTION

[0027] According to one aspect of the present invention there is provided a tensioner for a fencing wire reel according to claim 1.

[0028] According to another aspect of the present invention there is provided a portable fence system for constructing a fence according to claim 10.

[0029] A portable fence system for constructing a fence according to the present invention should be understood to mean a fencing system which integrates the fencing post and the fencing wire to be strung between the fence posts into a single carrying unit, and which may be used to construct a fence.

[0030] Preferably, the main fence post is configured with a carrying handle.

[0031] Preferably, the main fence post is configured with a storage housing for storing additional fencing posts.

[0032] A main fence post should be understood to mean any elongate member configured with means to support or otherwise attach fencing wire to the fence post, and shall be referred to as such throughout the remainder of this specification.

[0033] The main fence post may be, for example, a length of timber or a length of polyvinyl chloride (PVC).

[0034] Preferably, a main fence post according to the present invention is a plastics material extrusion formed from injection or rotational moulding. The plastics material may be a mixture of plastics and glass filled nylon for durability, but persons skilled in the art will appreciate that other durable plastics material such as PVC or PET may be used.

[0035] Alternatively, the main fence post is a length of tubing. The tubing may be of any material, but is preferably constructed from a lightweight metal alloy, such as aluminium for its strength and durability, or a fibreglass pultrusion or other polymer material. However, persons skilled in the art will appreciate that other materials may be used as appropriate.

[0036] The additional fence posts, according to the present invention, should be understood to mean an elongate member configured to temporarily or permanently retain fencing wire. The secondary fence post may be a length of timber, PVC, or fibreglass pultrusion, but preferably is a fencing standard, and shall be referred to as such throughout the remainder of this specification.

[0037] The fencing standard may be manufactured from material such as a metal alloy or fibreglass, but preferably is made from injection or rotational moulded plas-

tics material. The plastics material may be PVC, PET or glass filled nylon. Persons skilled in the art will appreciate that other forms of plastic may be used.

[0038] The fencing standards may be configured with retainers for the fencing wire to be carried by the fence post. Preferably, the retainers are configured such that fencing wire can pass through the retainers without being hindered. For example, the retainers may include pigtails or hooks which prevents the wire from coming away from the standard.

[0039] This is advantageous as it permits the fencing standards to be pre-strung with fencing wire. A user does not need to physically manipulate the fencing wire in order to engage the wire with the fencing standard. This saves both time and labour in setting up a portable fence.

[0040] The retainers may be manufactured from any material, but preferably are manufactured from a plastics material, such as PVC, polyethylene, or glass filled nylon. These materials are ideal for use in conventional injection or rotational moulding techniques.

[0041] Preferably, the retainers are integrated into the fencing standard as a one piece moulding on glass filled nylon or some similarly resilient material.

[0042] The main fence post may be configured with a ground engaging member. This may be a base or foot, but preferably, the ground engaging member is a spike, and shall be referred to as such throughout the remainder of this specification.

[0043] A spike is preferred as it is easy to insert into the ground, and enables the fence post to stand upright.

[0044] The main fence post is configured to carry at least one fencing wire reel.

[0045] A fencing wire reel should be understood to mean any storage apparatus configured to have fencing wire wound about its outer surfaces, and shall be referred to as such throughout the remainder of this specification.

[0046] Preferably, the main fence post carries a fencing wire reel for each horizontal strand of the fence. For example, if the fence is to have three horizontal strands of wire, then the fence post will carry three individual fencing reels.

[0047] The fencing reels may be mounted on an axle to permit rotation of the reel as the wire is dispensed or collected. Preferably, each fencing reel is provided with an adjustable slip clutch to assist in placing tension on the fencing reel as it is dispensed and/or retrieved.

[0048] The slip clutch allows the reels to rotate at different rates to allow for wire coming into at different rates. This helps to prevent or minimise tangling of the wires.

[0049] In preferred embodiments of the present invention, the slip clutch includes a spring which ensures that a minimum amount of tension is applied to the slip clutch. This helps to avoid overrunning of the reels as the wire is dispensed.

[0050] Preferably, the main fence post may be configured to include a reel housing for a fencing wire reel such that at least a portion of the fencing reel is covered. However, persons skilled in the art will appreciate that the

fencing reels may simply be hung upon an axle integrated into the fence post, with the stored fencing wire exposed.

[0051] The reel housing for the fencing wire reel may be secured to the main fence post via a mounting. The configuration of the mounting is such that it serves as the carrying handle for the fence post.

[0052] In preferred embodiments of the present invention, the reel housing and mounting is integrated into the main fence post as a single moulding for ease of construction and assembly.

[0053] Preferably a suitably durable and robust plastics material such as polyethylene, PVC, polycarbonate is used for constructing the fencing housing and main fence post. This is preferred in the event that the fence post is to be used with electrical fencing wire. Non-conductive materials will also ensure that the mounting will be electrically isolated from any potential electric current in the electrical fencing wire.

[0054] An additional advantage of using plastics material is their suitability for use in conventional injection or rotational moulding techniques.

[0055] Preferably, the reel housing includes a tensioner.

[0056] A tensioner should be understood to mean an apparatus which places tension upon a filamentary member.

[0057] Preferably, the filamentary member is fencing wire. However, a person skilled in the art will appreciate that the present invention is not limited to use with fencing wire. String or rope used for other purposes may be used with the present invention. For example, builders may use the present invention with building string to mark out lines as required. Another use for the present invention may be to cordon off an area.

[0058] Preferably, the tensioner is integrated into the outer housing of a fencing wire reel. However, persons skilled in the art will appreciate that the tensioner need not be integrated into the housing of a fencing wire reel, and may be placed else on the apparatus. For example, the tensioner may be located on the main fence post, forward of the fencing reel housing.

[0059] Preferably, the tensioner housing is separate to the fencing reel housing. This allows the tensioner housing to be replaced if necessary due to wear and tear. However, persons skilled in the art will appreciate that the tensioner housing may be considered to be part of the outer housing of a fencing reel rather than a separate body.

[0060] The tensioner housing may be manufactured from any suitable material, but preferably is a plastic such as PVC, polyethylene, or glass filled nylon. These materials are preferred as they can be cheaply manufactured using conventional rotational or injection moulding techniques.

[0061] Preferably, the tensioner housing is configured with an aperture passing through the housing. Through this aperture, wire held on the fencing reel passes through the housing of the tensioner as it is dispensed

or collected.

[0062] The tensioner housing may be configured with a biasing surface. The biasing surface of the tensioner housing forms at least a portion of a side of the aperture through which fencing wire passes when being dispensed or collected. In preferred embodiments of the present invention, the biasing surface of the tensioner housing forms one side of the aperture.

[0063] In some embodiments of the present invention, the biasing surface of the tensioner housing is simply that of the outer housing for the fencing reel.

[0064] It should be understood that the biasing surfaces are the surfaces of the tensioner which may contact the fencing wire when in use.

[0065] The tensioning member may be manufactured from any suitable material, but preferably is a plastic such as PVC, polyethylene, or glass filled nylon. These materials are preferred as they can be cheaply manufactured using conventional rotational or injection moulding techniques.

[0066] The tensioning member may be configured with a head at one end of the member, and a hinge at the opposing end of the member. Extending between the head and hinge of the tensioning member is a shaft.

[0067] In some embodiments of the present invention, the head of the tensioning member may be configured to slideably move along the shaft towards or away from the hinge.

[0068] The tensioning member may be configured with a biasing surface. Preferably, the head of the tensioning member is configured with a biasing surface complementary to the biasing surface of the tensioner housing, although persons skilled in the art will appreciate that the entire tensioning member may be configured to be complementary to the biasing surface of the tensioner housing.

[0069] The head of the tensioning member forms at least a portion of a side of the aperture through which fencing wire passes when being dispensed or collected. In preferred embodiments of the present invention, the head forms one side of the aperture.

[0070] It should be understood that in preferred embodiments of the invention, the aperture is formed on one side by the head of the tensioning member and on the opposing side by the biasing surface of the tensioner housing.

[0071] In another embodiment of the present invention, the tensioner may be provided with two tensioning members, arranged such that the head of each member faces each other. Between the two heads is the aperture through which fencing wire passes. It will therefore be appreciated that each head provides a biasing surface which may contact the fencing wire as it passes through the tensioner.

[0072] A biasing means is configured to act upon the tensioning member. Preferably, the biasing means is biased against the head of the tensioning member and at its opposing end biases against the hinge of the tensioner

housing. In some embodiments of the present invention, the biasing means may be biased against the head of the tensioning member and an intermediate portion of the tensioning member such as a protrusion or plate arising from the shaft of the tensioning member.

[0073] Preferably, the biasing means is an expansion spring or coil, and shall be referred to as such throughout the remainder of this specification. However, persons skilled in the art will appreciate that the biasing force may also be derived from an elastomer bung or similar means.

[0074] The spring urges the head of the tensioning member away from the hinge of the tensioner housing, and thus encourages the head of the tensioning against the biasing surface of the tensioner housing. If temporarily displaced, for example when knotted wire (the knot being larger than the aperture between the head of the tensioning member and the biasing surface of the tensioner housing) passes through the housing thus pivoting the tensioning member back into place.

[0075] Preferably, the hinge of the tensioning member may be configured to fit into a recess in the tensioner housing. Preferably, the recess is moulded into the tensioner housing.

[0076] In some embodiments of the present invention, the hinge of the tensioning member is configured to fit into a recess in the outer housing of the fencing reel. In this embodiment, the biasing surface opposing the head of the tensioner is actually a suitably configured portion of the outer housing of the fencing reel.

[0077] Alternatively, the hinge may be an axle member passing through the tensioning member into a channel integrated into the tensioner housing to permit rotation. The axle member may be a metal rod or similar elongate member readily adapted by a person skilled in the art for this purpose.

[0078] Preferably, the hinge of the tensioning member is a peg located into a recess on the tensioner housing. The peg may be snap-locked or others placed in moulded hooks or other suitably configured recesses. The preferred hinging mechanism is thus easily manufactured and quickly assembled.

[0079] However, persons skilled in the art will appreciate that there are other methods of securing the tensioning member to the housing such that the tensioning member is moveable relative to the housing.

[0080] The configuration of the tensioning member and the biasing surface of the tensioner housing are such that the tensioning member can only pivot about the hinge in one direction. This is particularly advantageous as it ensures that different amounts of tension may be applied to the fencing wire depending on its direction of travel.

[0081] In use, when fencing wire passes through the tensioner housing in one direction, the fencing wire is biased against the biasing surface of the tensioner housing by the head of the tensioning member.

[0082] The frictional contact between the wire as it passes through the housing and the biasing surfaces of

the tensioning housing and the head of the tensioning member ensures that tension is applied to the wire as it is collected. This keeps the otherwise slack wires taut, and is more likely to allow the retrieved wire to wind correctly onto the reel. The wire is also much less likely to become entangled in the reel housing.

[0083] Any knots in the wire will cause the head of the tensioning member to move along the shaft of the tensioner. The spring of the tensioner ensures that some biasing force continues to be applied to wire so that it remains tense. Once the knot has passed, the spring biases against the head of the tensioning member to return it to its previous position.

[0084] When wire is being dispensed, the frictional contact between the wire and the biasing surfaces of the tensioning housing and tensioning member overcomes the frictional force of the hinge of the tensioning member and the tensioner housing.

[0085] This causes the tensioning member to move about its hinge, thus displacing the head of the tensioning member and reducing the tension that is able to be applied to the wire relative to the tension that is applied when retrieving the wire. However, from its displaced position, the spring continues to urge the head of the tensioning member against the wire.

[0086] The tensioning member is therefore applying a reduced tension to the dispensed wire.

[0087] The tensioning member is able to continuously apply a degree of tension to wire, regardless of whether the wire is being collected or dispensed, even when knotted wire passes through the tensioner.

[0088] This is helpful when collecting or dispensing wire as persons skilled in the art will appreciate that in conventional systems tension on wires at any one point along the wire can vary for a number of reasons, including walking speed of the person collecting or dispensing the wire, the position of the wire, and how many reels of wire is being carried.

[0089] The present invention ensures a consistent tension is applied to the wire as it is wound on the fencing reel (or reels for a multi-wire fence system). This makes it easy a person to dispense and collect wire as no consideration is required for walking speed, ensuring each wire is tensioned independently of the degree of slack in the wire.

[0090] The main fence post is configured with a storage housing for the fencing standards. A storage housing should be understood to mean any housing adapted for the storage of fencing standards.

[0091] Preferably, the storage housing extends laterally from the lower portion of the main fence post. In one embodiment of the present invention, a portion of the storage housing may act as a foot step to assist in inserting the spike of the main fence post into the ground.

[0092] Preferably, the storage housing may include apertures complementary to the ground engaging portion of the fencing standards, such that the lower portion of the fencing standard engages with the storage housing.

In some embodiments of the present invention, the base may be provided with clips into which the fencing standard base may be inserted.

[0093] The storage housing may be manufactured from any material, but preferably is manufactured from a plastics material, such as PVC or polyethylene, as these materials are ideal for use in conventional injection or rotational moulding techniques.

[0094] In preferred embodiments of the present invention, a bracket may extend laterally from the upper portion of the main fence post in the same plane as the storage housing. The bracket may include clips, apertures, or recesses complementary to the profile of the upper portion of the fencing standard.

[0095] The bracket supports the upper portion of the fencing standards carried by the main fence post, providing additional support for the fencing standards during transportation.

[0096] The bracket may be manufactured from any material, but preferably is manufactured from a plastics material, such as PVC, polyethylene, glass filled nylon or polycarbonate as these materials are ideal for use in conventional injection or rotational moulding techniques.

[0097] This allows all the components required for building a fence line, fence post, fencing standards, and reels, to be easily carried by the farmer. A fence line is able to be built more quickly as all the components are readily to hand.

[0098] The present invention offers a number of advantages over the prior art:

- The portable electric fencing apparatus is easily carried by the farmer.
- The required components to establish a fence (fence posts and fencing wire) are integrated into a single carrying unit.
- Fencing standards are carried separate from each other such that they cannot become entangled in use.
- The portable electric fencing apparatus reduces time and labour when setting up a fence.
- The fencing standards can be pre-wired, such that as each standard is placed, the fencing wire is already in place. The farmer does not require a second pass of the fence to secure the fencing wire to the standard once the standards have been placed in the ground.
- The tensioners act to place tension on fencing wire as it is collected and dispensed.
- The tensioners ensure that as the fence wire is collected onto the reels, it remains taut, without any slackening of wires which may become entangled

with one another on the reel. The tension is only applied to the wire between the tensioner and the reel, rather than wire out on the fence.

- Use of the tensioners may allow a greater amount of wire to be wound onto the fencing reels, maximising the length of wire available for a fencing system.
- When being dispensed, the tensioner is able to apply some tension to the wire as it is dispensed so that there is little or no slackening of dispensed wire.
- The use of the tensioner on any or all of the reels of the integrated fence post and reel housing means that the user of the fencing system may not need to consider the tension of the fencing wire as the wire is fed out during the course of establishing a fence. This may simplify and speeds up the establishment of the fence.
- The configuration of the tensioner also allows knotted wire to pass through the housing onto or off the reel, without affecting the tension being applied to the wire.
- The use of the tensioner also results in less wear and tear on the polywire as it is dispensed. Because the tension applied to the wire is able to be varied as knots pass through the housing, there is less stress placed on on the wire.

BRIEF DESCRIPTION OF DRAWINGS

[0099] 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 is a side view of the present invention; and
- Figure 2 is a perspective view of the present invention; and
- Figure 3 is a perspective view of the base of the present invention; and
- Figure 4 is a perspective view of the reel housing of the present invention; and
- Figure 5 is a perspective view of the tensioner of the present invention; and
- Figure 6 is a plan view of the tensioner; and
- Figure 7 is a side view of the tensioner.

BEST MODES FOR CARRYING OUT THE INVENTION

[0100] The present invention (generally indicated by arrow 1) is illustrated in figure 1.

[0101] The main fence post (2) is configured with a reel housing (3) for at least one fencing reel (4).

[0102] The main fence post (2) is provided with a spike (5) to be inserted into the ground to allow the fence post (2) to be self supporting.

[0103] To assist in the insertion of the spike (5) into the ground (6), a foot plate (7) is provided.

[0104] Fencing standards (8) are carried in a base (9) mounted to the opposing side of the fence post (2) from the foot plate (7). As an additional temporary fastening measure, the fencing standards (8) are clipped into a bracket (10), to ensure the standards (8) remain in place when being carried.

[0105] The entire apparatus can be carried by a handle (11), which connects the housing (3) to the main fence post (2). For added structural integrity, the housing (3) is further fixed to the main fence post (2) by a connector (12).

[0106] Further detail of the present invention is apparent from figure 2. The bracket (10) is configured with recesses (13) into which a fencing standard (8) is inserted.

[0107] It will also be appreciated that the reel housing (3) can accommodate a plurality of fencing reels (4).

[0108] In a staggered arrangement, the reel housing (3) is provided with tensioners (14, 15, 16 (obscured)).

[0109] These tensioners (14, 15, 16) provide a passage from the interior of the housing (3) for the fencing wire (not shown) carried by the fencing reels (4). Each tensioner (14, 15, 16) tensions an individual strand of fencing wire (not shown) as it is wound onto the reels (4).

[0110] The main fence post (2) is provided with guides (17, 18, 19) for each individual strand of fencing wire (not shown). The fencing wire (not shown) passes through the tensioners (14, 15, 16) to the guides (17, 18, 19) and onto the fencing wire retainer (20) of each standard (8).

[0111] Thus, the standards (8) can be pre-assembled with the fencing wire (not shown) already in place as a farmer assembles the fence (not shown).

[0112] Turning now to figure 3, the base (9) is shown in closer detail. The fencing standards (8) are inserted into apertures (21) moulded into the base (9).

[0113] The reel housing (3) is shown in figure 4. For sake of clarity, the fence post has not been illustrated.

[0114] In this view, the tensioners (14, 15, 16) are clearly visible. A tensioner (14, 15, 16) is provided for each fencing reel (not shown) that may be carried in the reel housing (3).

[0115] Each tensioner (14, 15, 16) is staggered from its neighbouring tensioner (14, 15, 16). This helps prevent the dispensed wire from becoming tangled as it is released or retrieved.

[0116] It should be noted that the arrangement of the tensioners (14, 15, 16) is such that the upper most tensioner (14) dispenses the fencing wire which acts as the

highest strand of the fence, while the lowest tensioner (16) dispenses the fencing wire which forms the lowest strand of the fence.

[0117] The tensioner (14), illustrated in figure 5, consists of a housing (21) and a tensioning member (22).

[0118] The tensioning member (22) is configured with a head (23), and a hinge (24). The head (23) is separated from the hinge (24) by the shaft (25) of the tensioning member (22).

[0119] The lower portion (26) of the housing (21) is configured with a recess (27) around its perimeter. This recess (27) engages with the aperture (not shown) of the reel housing (not shown) in which the tensioner (14) is fitted.

[0120] The tensioning member (22) is biased by a spring (28) acting against the tensioner head (23) and a bracing member (29) running across the housing (21).

[0121] The housing (21) is configured with a recess (30) into which the hinge (24) of the tensioning member (22) engages in a snap-lock fit.

[0122] As the wire (not shown) is fed out (being dispensed), the tensioning member (22) pivots away from the housing (21) which essentially increases the aperture (not shown) between the head (23) of the tensioning member (22) and the face (not shown) of the opposing portion of the housing (21). This allows knotted wire to pass through the aperture as it is dispensed.

[0123] In figure 6, it should be appreciated that the head (23) of the tensioning member (22) is of a shape complementary to the inner face (31) of the housing (21). The inner face (31) of the housing (21) acts as a stop to prevent the tensioning member (22) from moving past the housing (21).

[0124] Fencing wire (not shown) passes through the housing (21) of the tensioner (14) through the aperture (32) formed between the head (23) of the tensioning member (22) and the inner faces (31) of the housing (21).

[0125] The size of the aperture (32) may vary depending on the position of the head (23) on the shaft (25) of the tensioning member (22) as it pivots at the hinge (24).

[0126] Turning now to figure 7, the configuration of the tensioner (14) is such that the tensioning member (22) and the inner face (not shown) of the housing (21) is such that the tensioning member (not shown) can only move in an arc approximately 90° from the vertical in the direction indicated by arrow 33.

[0127] The spring (28) causes the head (not shown) of the tensioning member (22) to bias against fencing wire (not shown) when the wire (not shown) is passing through the housing (21) in the direction indicated by arrow 34, such as would be the case when the wire (not shown) is being collected.

[0128] The complementary relationship between the head (not shown) of the tensioning member and the inner face of the housing ensures that the head (not shown) cannot be carried by the frictional contact between the wire (not shown) and the head (not shown) past the housing (21).

[0129] The tensioning member (not shown) therefore tensions the wire (not shown), when the wire is moving in one direction (33).

[0130] When the wire (not shown) passes through the housing (21) in the opposite direction (35), such as when the wire (not shown) is being dispensed, the tensioning member (22) is displaced from the housing (21) along in an arc (33).

[0131] The frictional contact between the head (not shown) of the tensioning member (22) and the wire (not shown) causes the movement of the tensioning member (22) about the hinge (24).

[0132] Thus, there is reduced contact between the tensioning member (22) and the wire (not shown), and therefore less tension is able to be placed on the wire (not shown) when the wire is moving in the direction (35). The spring (28) continues to urge the head (not shown) of the tensioning member (not shown) against the wire (not shown).

[0133] 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.

Claims

1. A tensioner (14) for a fencing wire reel (4), which includes:

a tensioning member (22) comprising a head (23) at one end of the tensioning member (22), wherein the tensioning member (22) is provided with a biasing surface, and

a housing (21) for the tensioning member (22), the housing (21) including a biasing surface, wherein the biasing surface of the housing (21) is complementary to the biasing surface of the tensioning member (22),

characterised in that the tensioning member (22) comprises a hinge (24) at an opposing end of the tensioning member (22) to the head (23), the hinge (24) being pivotally mounted to the housing (21).

2. A tensioner as claimed in claim 1 wherein the housing (21) is:

a dedicated tensioner housing, or
part of an outer housing of a fencing reel.

3. A tensioner as claimed in either claim 1 or claim 2 wherein the hinge (24) of the tensioning member (22) is configured to fit into a recess in the tensioner housing (21).

4. A tensioner as claimed in any one claims 1 to 3

wherein the hinge (24) is:

an axle member passing through the tensioning member into a channel configured in the housing, or
is a peg located into a recess on the tensioner housing.

5. A tensioner as claimed in any one of claims 1 to 4 wherein the tensioning member includes a shaft (25) extending between the head (23) and the hinge (24) of the tensioning member, and, wherein the head of the tensioning member is configured to move along the shaft towards or away from the hinge.

6. A tensioner as claimed in claim 1 wherein the housing is configured with an aperture (32) passing through the housing, wherein the biasing surface of the tensioner housing forms at least a portion of a side of the aperture and the biasing surface of the tensioning member forms at least a portion of a side of the aperture.

7. A tensioner as claimed in any one of claims 1 to 6 wherein a biasing means (28) is configured to act upon the tensioning member (22).

8. A tensioner as claimed in claim 7 wherein the biasing means (28) is configured to act against:

the tensioning member (22) and the tensioner housing (21), or
the tensioning member and a protrusion or plate arising from the tensioning member.

9. A tensioner as claimed in either claim 7 or claim 8 wherein the biasing means (28) is an expansion spring.

10. A portable fence system for constructing a fence, which includes:

at least one fencing wire reel (4), and
a reel housing (3) for the at least one fencing wire reel, and
a main fence post (2),

characterised in that the reel housing includes a tensioner (14) as claimed in any one of claims 1 to 9.

11. A portable fence system as claimed in claim 10 wherein the main fence post (2) is configured with:

a carrying handle (11), or
a storage housing for storing additional fencing posts, or
a ground engaging member (5).

12. A portable fence system as claimed in either claim 10 or claim 11 wherein the main fence post carries a fencing wire reel (4) for each strand of the fence.
13. A portable fence system as claimed in any one of claims 10 to 12 wherein the fencing reel is:
- mounted on an axle, or
provided with a slip clutch.
14. A portable fence system as claimed in claim 12 wherein the reel housing (3) is secured to the main fence post (2) via a mounting, wherein the mounting is the carrying handle (11) for the fence post.
15. A portable fence system as claimed in claim 11 when the main fence post (2) is configured with a storage housing for storing additional fence posts, wherein the storage housing extends laterally from the lower portion of the main fence post, and wherein a portion of the storage housing is configured as a foot step.
16. A portable fence system as claimed in claim 11 when the main fence post (2) is configured with a storage housing for storing additional fence posts, wherein a bracket (10) extends laterally from the upper portion of the main fence post (2) in the same plane as the storage housing, wherein the bracket includes clips, apertures, or recesses complementary to the profile of the upper portion of additional fencing posts.

Patentansprüche

1. Spanngerät (14) für eine Zaundrahtrolle (4), das aufweist:
- ein Spanngerätelement (22), das an einem Ende des Spanngerätelements (22) einen Kopf (23) umfasst, wobei das Spanngerätelement (22) mit einer Vorspannfläche bereitgestellt wird, und
ein Gehäuse (21) für das Spanngerätelement (22), wobei das Gehäuse (21) eine Vorspannfläche aufweist, wobei die Vorspannfläche des Gehäuses (21) komplementär zu der Vorspannfläche des Spanngerätelements (22) ist,
dadurch gekennzeichnet, dass das Spanngerätelement (22) ein Drehgelenk (24) an einem zu dem Kopf (23) entgegengesetzten Ende des Spanngerätelements (22) umfasst, wobei das Drehgelenk (24) an dem Gehäuse (21) schwenkbar befestigt wird.
2. Spanngerät nach Anspruch 1, wobei das Gehäuse (21):

ein spezielles Spanngerätgehäuse, oder
Teil eines Außengehäuses einer Zaunrolle ist.

3. Spanngerät nach Anspruch 1 oder Anspruch 2, wobei das Drehgelenk (24) des Spanngerätelements (22) konfiguriert wird, um in eine Aussparung in dem Spanngerätgehäuse (21) zu passen.
4. Spanngerät nach einem der Ansprüche 1 bis 3, wobei das Drehgelenk (24):
- ein Achselement ist, das durch das Spanngerätelement in einem in das Gehäuse konfigurierten Kanal verläuft, oder
ein Stift ist, der sich in einer Aussparung auf dem Spanngerätgehäuse befindet.
5. Spanngerät nach einem der Ansprüche 1 bis 4, wobei das Spanngerätelement eine Welle (25) aufweist, die sich zwischen dem Kopf (23) und dem Drehgelenk (24) des Spanngerätelements erstreckt und wobei der Kopf des Spanngerätelements konfiguriert wird, um sich entlang der Welle hin zu dem Drehgelenk oder davon weg zu bewegen.
6. Spanngerät nach Anspruch 1, wobei das Gehäuse mit einer Öffnung (32) konfiguriert wird, die durch das Gehäuse verläuft, wobei die Vorspannfläche des Spanngerätgehäuses mindestens einen Abschnitt einer Seite der Öffnung bildet und die Vorspannfläche des Spanngerätelements mindestens einen Abschnitt einer Seite der Öffnung bildet.
7. Spanngerät nach einem der Ansprüche 1 bis 6, wobei ein Vorspannmittel (28) konfiguriert wird, auf das Spanngerätelement (22) einzuwirken.
8. Spanngerät nach Anspruch 7, wobei das Vorspannmittel (28) konfiguriert wird, dass es wirkt gegen:
- das Spanngerätelement (22) und das Spanngerätgehäuse (21), oder
das Spanngerätelement und einen Vorsprung oder eine Platte, die aus dem Spanngerätelement hervortreten.
9. Spanngerät nach Anspruch 7 oder Anspruch 8, wobei das Vorspannmittel (28) eine Spreizfeder ist.
10. Tragbares Zaunsystem zum Aufbauen eines Zaunes, das aufweist:
- mindestens eine Zaundrahtrolle (4), und
ein Rollengehäuse (3) für die mindestens eine Zaundrahtrolle und
einen Hauptzaunpfosten (2),
dadurch gekennzeichnet, dass das Rollengehäuse ein Spanngerät (14) nach einem der An-

sprüche 1 bis 9 aufweist.

11. Tragbares Zaunsystem nach Anspruch 10, wobei der Hauptzaunpfosten (2) konfiguriert wird mit:

einem Handgriff (11), oder
einem Aufbewahrungsgehäuse zum Aufbewahren zusätzlicher Zaunpfosten, oder
einem Bodeneingriffselement (5).

12. Tragbares Zaunsystem nach Anspruch 10 oder Anspruch 11, wobei der Hauptzaunpfosten eine Zaundrahtrolle (4) für jede Litze des Zauns trägt.

13. Tragbares Zaunsystem nach einem der Ansprüche 10 bis 12, wobei die Zaunrolle:

auf einer Achse befestigt oder
mit einer Rutschkupplung bereitgestellt wird.

14. Tragbares Zaunsystem nach Anspruch 12, wobei das Rollengehäuse (3) mittels eines Halters an dem Hauptzaunpfosten (2) gesichert wird, wobei der Halter der Handgriff (11) für den Zaunpfosten ist.

15. Tragbares Zaunsystem nach Anspruch 11, wobei der Hauptzaunpfosten (2) mit einem Aufbewahrungsgehäuse zum Aufbewahren zusätzlicher Zaunpfosten konfiguriert wird, wobei sich das Aufbewahrungsgehäuse seitlich von dem unteren Abschnitt des Hauptzaunpfostens erstreckt, und wobei ein Abschnitt des Aufbewahrungsgehäuses als eine Standfläche konfiguriert wird.

16. Tragbares Zaunsystem nach Anspruch 11, wobei der Hauptzaunpfosten (2) mit einem Aufbewahrungsgehäuse zum Aufbewahren zusätzlicher Zaunpfosten konfiguriert wird, wobei eine Halterung (10) sich seitlich von dem oberen Abschnitt des Hauptzaunpfostens (2) in derselben Ebene wie das Aufbewahrungsgehäuse erstreckt, wobei die Halterung Klammern, Öffnungen oder Aussparungen aufweist, die zu dem Profil des oberen Abschnitts zusätzlicher Zaunpfosten komplementär sind.

Revendications

1. Tendeur (14) pour un dévidoir de fil métallique de clôture (4), qui comprend :

un élément tendeur (22) comprenant une tête (23) au niveau d'une extrémité de l'élément tendeur (22), ledit élément tendeur (22) étant pourvu d'une surface de sollicitation, et
un logement (21) pour l'élément tendeur (22), le logement (21) comportant une surface de sollicitation, ladite surface de sollicitation du loge-

ment (21) étant complémentaire à la surface de sollicitation de l'élément tendeur (22),

caractérisé en ce que l'élément tendeur (22) comprend une articulation (24) au niveau d'une extrémité opposée de l'élément tendeur (22) à la tête (23), l'articulation (24) étant montée pivotante sur le logement (21).

2. Tendeur selon la revendication 1, ledit logement (21) étant :

un logement de tendeur dédié, ou
une partie d'un logement externe d'un dévidoir de clôture.

3. Tendeur selon la revendication 1 ou 2, ladite articulation (24) de l'élément tendeur (22) étant conçue pour s'adapter dans une cavité dans le logement (21) de tendeur.

4. Tendeur selon l'une quelconque des revendications 1 à 3, ladite articulation (24) étant :

un élément d'axe passant à travers l'élément tendeur dans un canal conçu dans le logement, ou
étant une cheville située dans une cavité du logement de tendeur.

5. Tendeur selon l'une quelconque des revendications 1 à 4, ledit élément tendeur comportant un arbre (25) s'étendant entre la tête (23) et l'articulation (24) de l'élément tendeur, et, ladite tête de l'élément tendeur étant conçue pour se déplacer le long de l'arbre en direction ou en s'éloignant de l'articulation.

6. Tendeur selon la revendication 1, ledit logement étant conçu avec une ouverture (32) traversant le logement, ladite surface de sollicitation du logement de tendeur formant au moins une partie d'un côté de l'ouverture et la surface de sollicitation de l'élément tendeur formant au moins une partie d'un côté de l'ouverture.

7. Tendeur selon l'une quelconque des revendications 1 à 6, un moyen de sollicitation (28) étant conçu pour agir sur l'élément tendeur (22).

8. Tendeur selon la revendication 7, ledit moyen de sollicitation (28) étant conçu pour agir contre :

l'élément tendeur (22) et le logement (21) de tendeur, ou
l'élément tendeur et une partie saillante ou une plaque provenant de l'élément tendeur.

9. Tendeur selon l'une quelconque des revendications 7 ou 8, ledit moyen de sollicitation (28) étant un res-

sort d'expansion.

complémentaires au profil de la partie supérieure des poteaux de clôture supplémentaires.

10. Système de clôture portatif pour construire une clôture, qui comprend :
- 5
- au moins un dévidoir de fil métallique de clôture (4), et
un logement de dévidoir (3) pour ledit au moins un dévidoir de fil métallique de clôture, et
un poteau de clôture principal (2),
- 10
- caractérisé en ce que** le logement de dévidoir comprend un tendeur (14) selon l'une quelconque des revendications 1 à 9.
11. Système de clôture portatif selon la revendication 10, ledit poteau de clôture principal (2) étant pourvu de :
- 15
- une poignée de transport (11), ou
un logement de stockage pour stocker des poteaux de clôture supplémentaires, ou
un élément de fixation au sol (5).
- 20
12. Système de clôture portatif selon la revendication 10 ou 11, ledit poteau de clôture principal portant un dévidoir de fil métallique de clôture (4) pour chaque fil de la clôture.
- 25
13. Système de clôture portatif selon l'une quelconque des revendications 10 à 12, ledit dévidoir de clôture étant :
- 30
- monté sur un axe, ou
doté d'un accouplement à glissement.
- 35
14. Système de clôture portatif selon la revendication 12, ledit logement de dévidoir (3) étant fixé au poteau de clôture principal (2) par l'intermédiaire d'une fixation, ladite fixation étant la poignée de transport (11) pour le poteau de clôture.
- 40
15. Système de clôture portatif selon la revendication 11, lorsque le poteau de clôture principal (2) est conçu avec un logement de stockage pour stocker des poteaux de clôture supplémentaires, ledit logement de stockage s'étendant latéralement depuis la partie inférieure du poteau de clôture principal, et une partie du logement de stockage étant conçue comme un repose-pied.
- 45
- 50
16. Système de clôture portatif selon la revendication 11, ledit poteau de clôture principal (2) étant conçu avec un logement de stockage pour stocker des poteaux de clôture supplémentaires, un collier (10) s'étendant latéralement depuis la partie supérieure du poteau de clôture principal (2) dans le même plan que le logement de stockage, ledit bracelet comportant des attaches, des ouvertures et des évidements
- 55

FIGURE 1

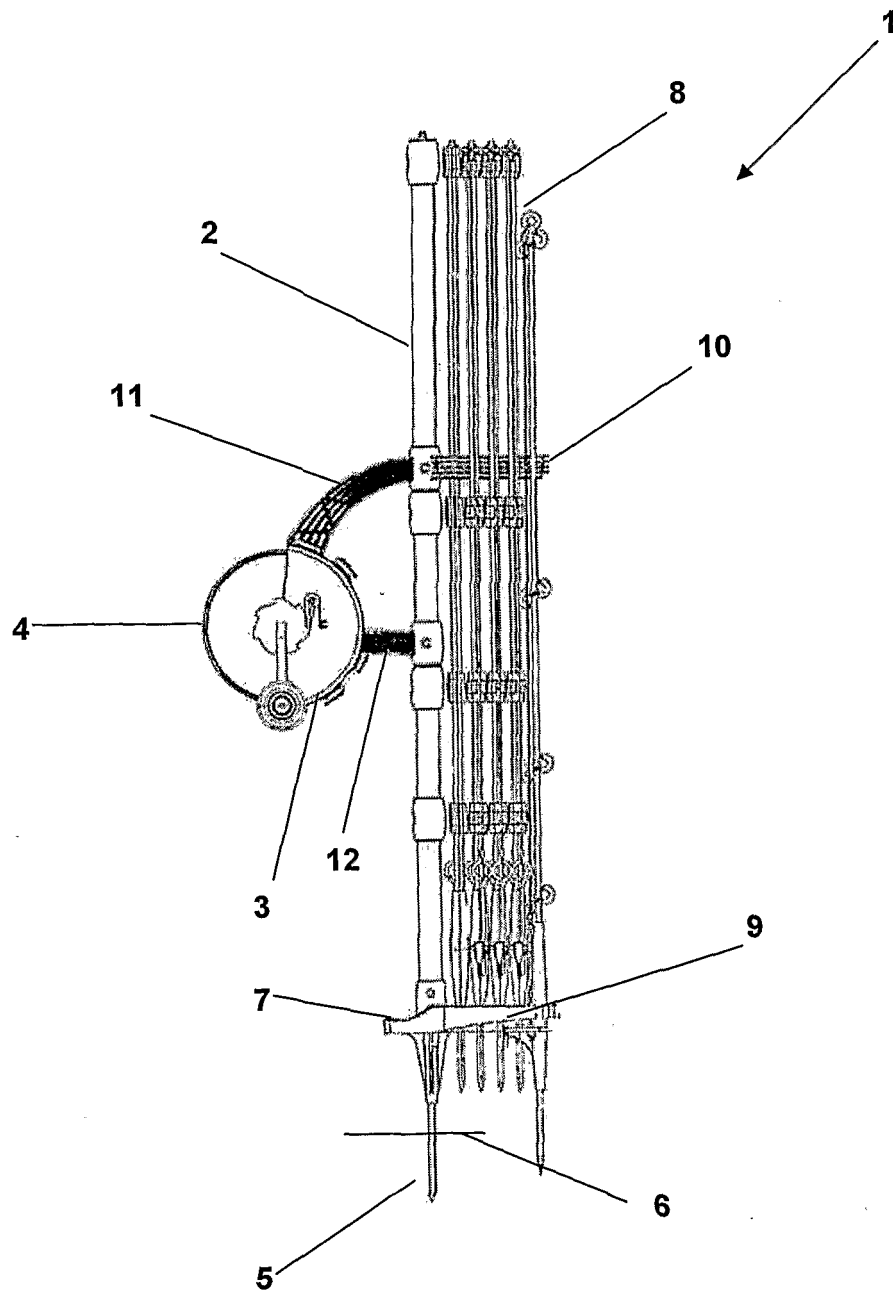


FIGURE 2

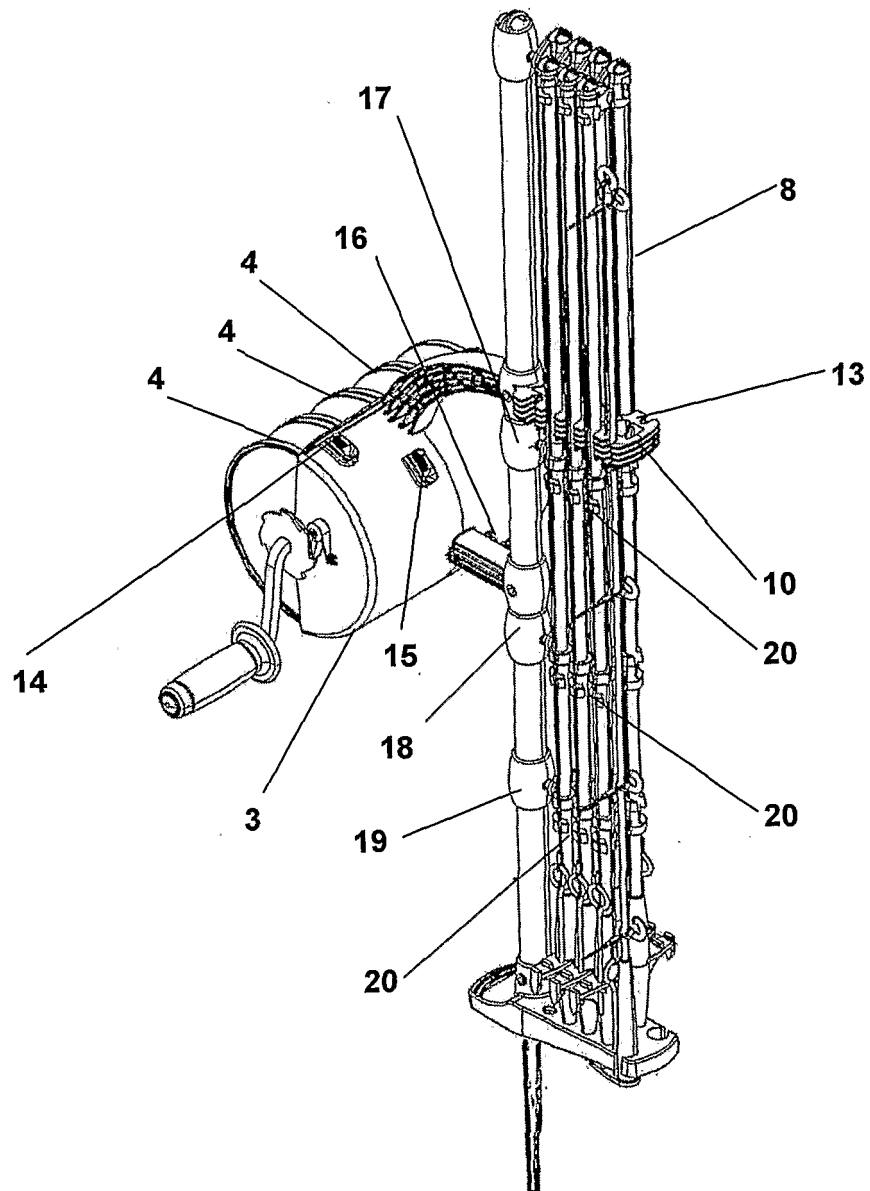


FIGURE 3

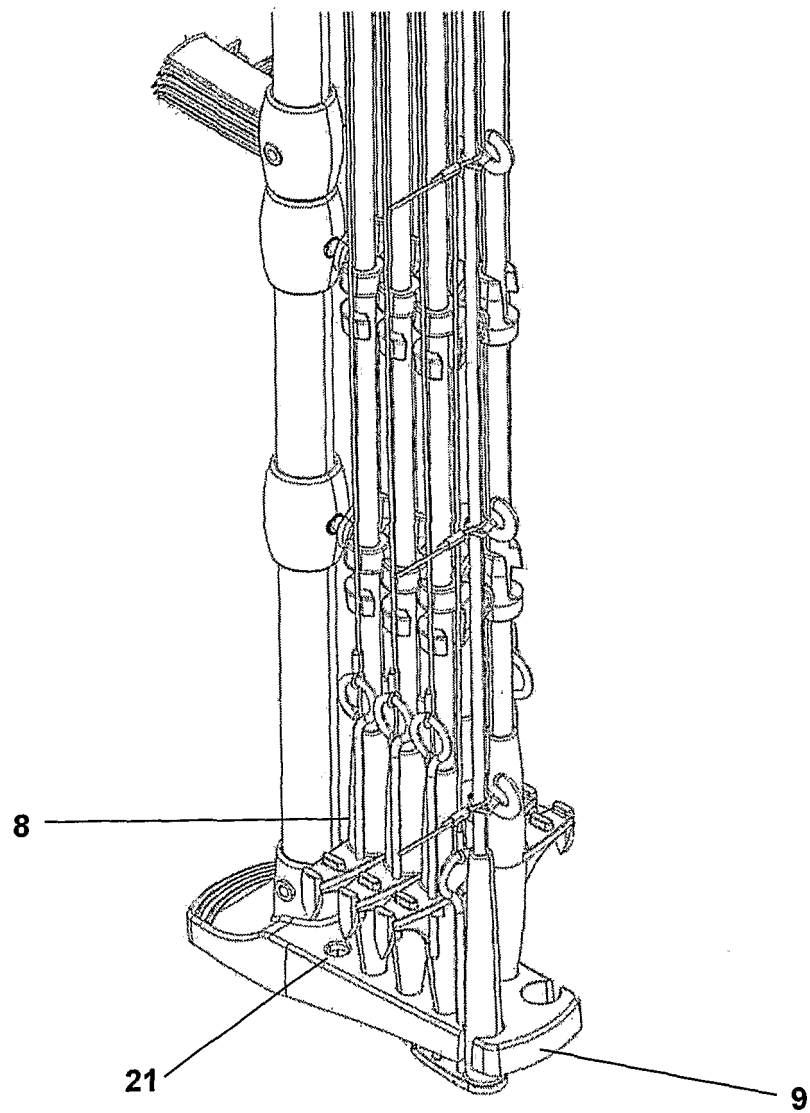


FIGURE 4

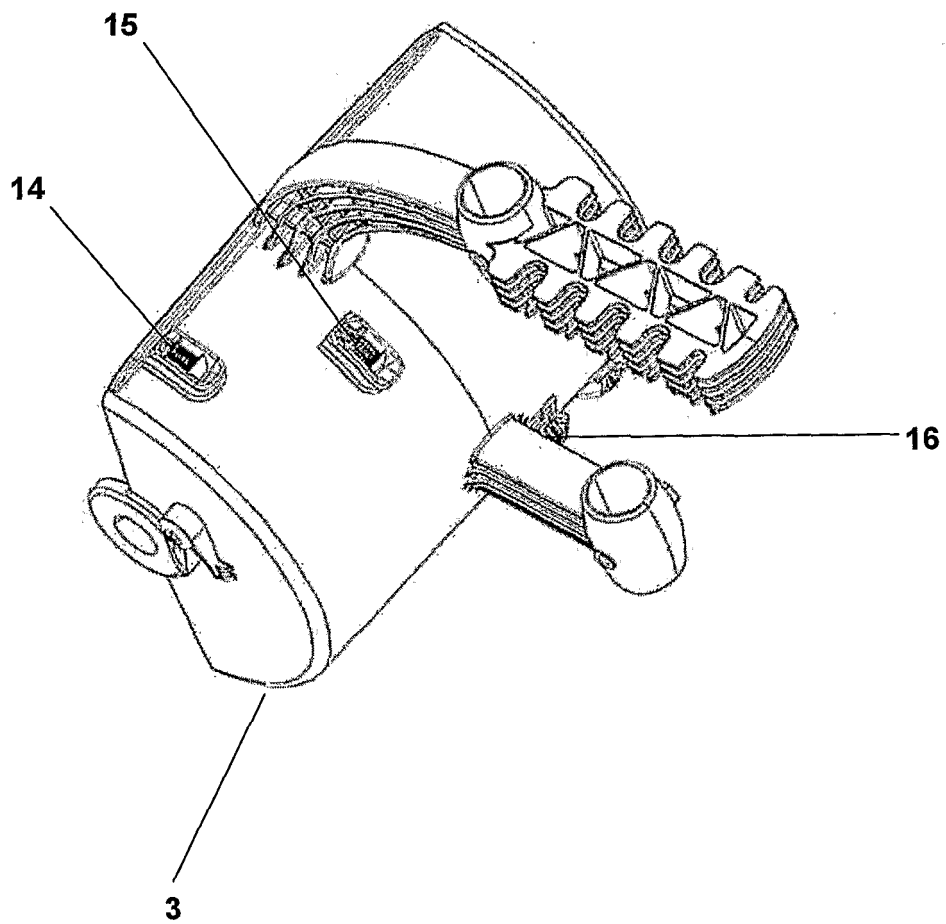


FIGURE 5

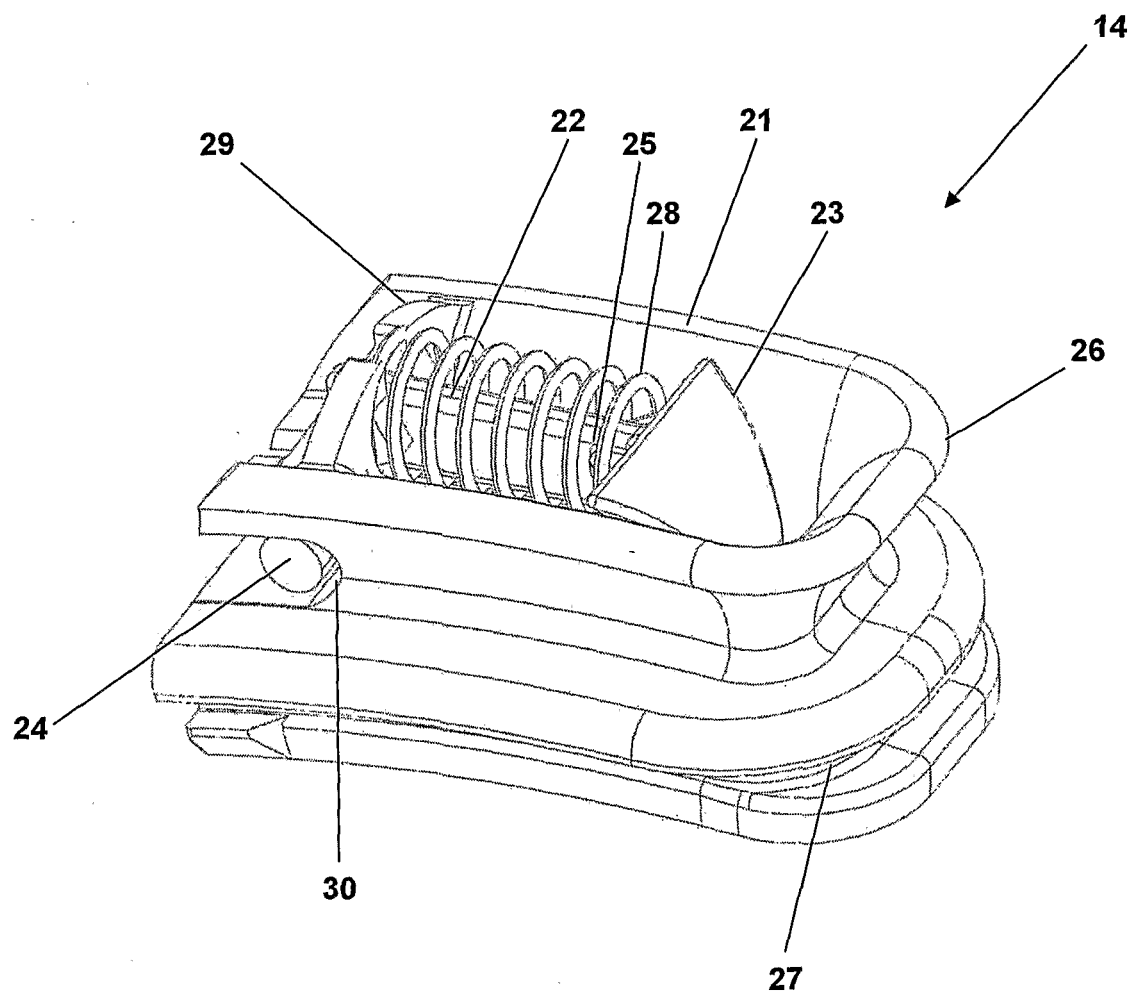


FIGURE 6

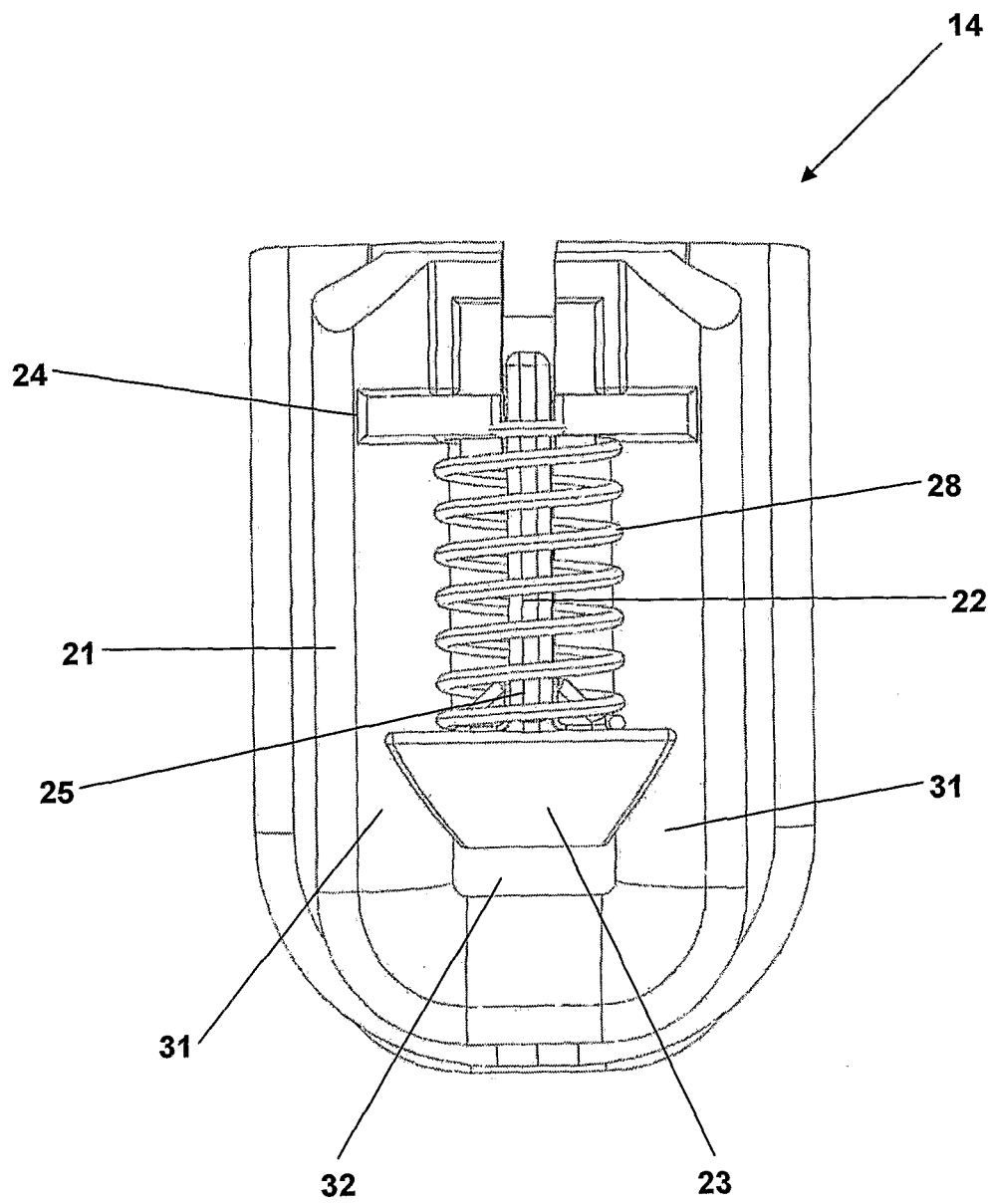
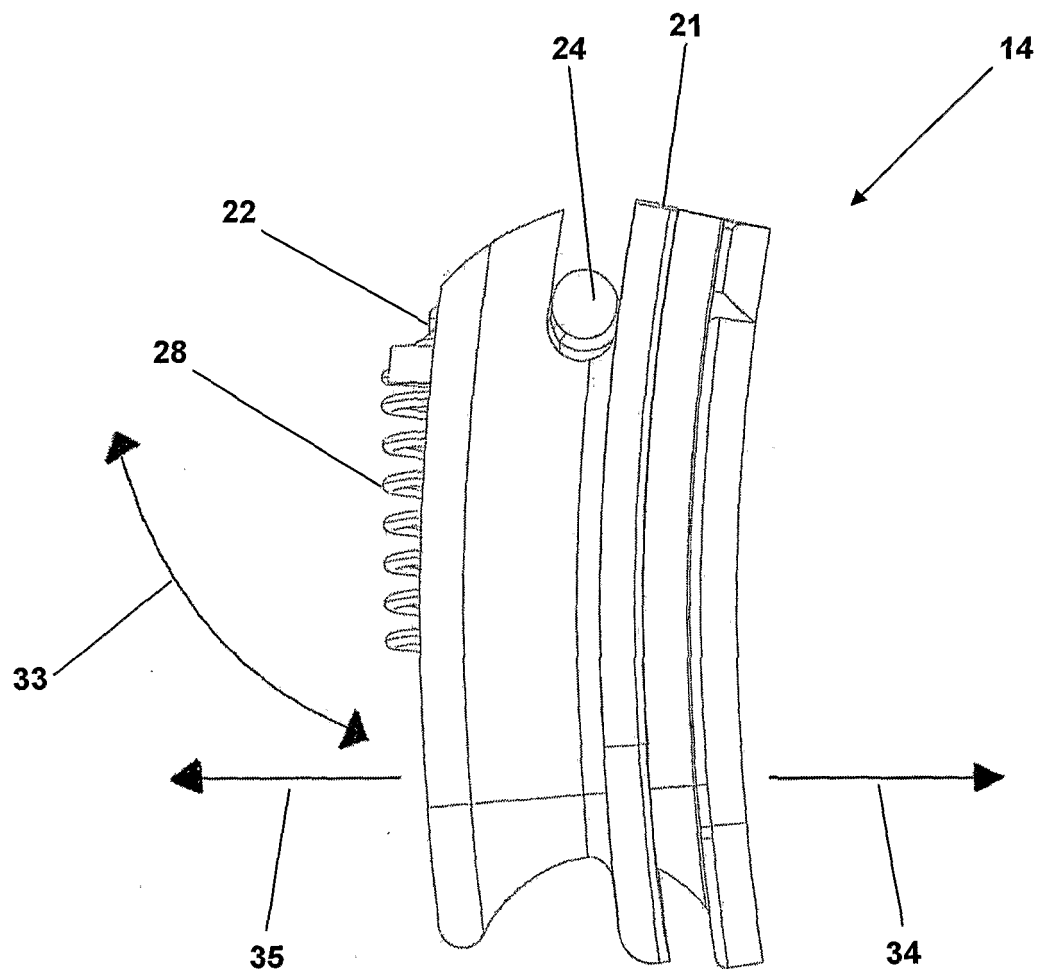


FIGURE 7



REFERENCES CITED IN THE DESCRIPTION

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