
We, being the person(s) identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification.

Full application details follow:

**Applicant**

<table>
<thead>
<tr>
<th>Name(s) of Actual Inventor(s)</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEORGE THOMAS GLASSON</td>
<td>RMB 8110 MATCHAM ROAD MATCHAM State NSW Postcode 2250</td>
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</tbody>
</table>

**Nominated Person**

<table>
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<tr>
<th>Name(s) of Actual Inventor(s)</th>
<th>Address</th>
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<tr>
<td>G. T. GLASSON</td>
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**Invention Title**

| Wire Tension Indicator |

**Address for Service in Australia**

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**Contact**

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<tr>
<th>Phone No.</th>
<th>Attorney Code</th>
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<td>(03) 677421</td>
<td></td>
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**Associated Provisional Application(s) Details**

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**Basic Convention Application(s) Details**

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**Divisional Application Details**

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**Patent Invention Details (Patent of Addition requests only)**

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**Drawing Number recommended to accompany the abstract**

Figure 2

**Signature**

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</table>
AUSTRÁLIA
Patents Act 1990
Notice of Entitlement
(To be filed before acceptance)

*Delete if not applicable

Name: G. T. GLASSON
ACN/ARBN

of
RMB 8110 MATCHAM ROAD
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being the applicant in respect of Application No:
state the following:-

Part 1 - Must be completed - For all Applicants

The person(s) nominated for the grant of the patent:

☑ *is/are the actual inventor(s)

or

☐ *has entitlement from the actual inventor(s) (please insert name(s))

Part 2 - Must be completed - If the Application is Associated with one or more Provisional Applications

The person(s) nominated for the grant of the patent:

☑ *is/are the applicant(s) of the provisional application(s) listed on the patent request form

or

☐ *has entitlement to make a request under Section 113 in relation to the provisional application(s) listed on the patent request form:

Contact
Phone No (043) 677 921  Fax No (043) 677 921

Signature(s)  3/10/96  Date

Note: Use Form P/00/008(b) where details for PCT, convention priority, microorganism deposit, additional or divisional application, are required.
1. A wire tension indicator having means of contact with the wire at two or more positions, at least one substantially elongated member such that its weight causes it to rotate in the vertical plane resulting in flexure of the wire between the contact positions, and means for determining the amount of rotation of that member which provides a measure of the tension in the wire.

7. The wire tension indicator of any one of claims 1 to 6 wherein there is an additional weight attached to the elongated member such that the weight may be fixed or movable to various positions along the elongated member.
The following statement is a full description of this invention, including the best method of performing known to me:-

**WIRE TENSION INDICATOR**
WIRE TENSION INDICATOR

The present invention relates to appliances for indicating the tension of wires used for fences, trellises, or other purposes.

Presently known methods for indicating the tension in such types of wires consist of force applied perpendicularly to the wire by means of a spring at a central position causing the wire to deflect between fixed contact points with the amount of deflection related to the wire tension. By means of a lever system to augment the amount of deflection the tension is indicated on a scale.

The disadvantages of these methods are the significant cost resulting from the number of separate components required, the variation in tension readings due to the inherent friction involved in this spring-lever system, and the possibility of incorrect readings due to wear of the device or change of the spring characteristics with time.

The present invention comprises a wire tension indicator having means of contact with the wire at two or more positions, at least one substantially elongated member such that its weight causes it to rotate in the vertical plane resulting in flexure of the wire between the contact positions, and means for determining the amount of rotation of that member which provides a measure of the tension in the wire.

The invention is particularly useful as a simple,
low cost means for determining that the tensions of wires have been set to the required values. As the tension indication depends only on the weight and geometry of the device there is no change of accuracy with time and the device can readily be made sufficiently durable to withstand rough handling and exposure to the weather.

The invention together with advantages and applications may best be understood by reference to the accompanying drawings in the several figures of which like reference numbers identify like elements.

Figure 1 is a pictorial view of a first embodiment of the present invention.

Figure 2 illustrates the appliance in Figure 1 applied to a wire for the purpose of determining its tension.

Figure 3 is a pictorial view of a second embodiment of the present invention attached to a wire for the purpose of measuring its tension.

Figure 4 is a pictorial view of a third embodiment of the present invention attached to a wire for the purpose of measuring its tension.

Figure 5 is a pictorial view of a fourth embodiment of the present invention attached to a wire for the purpose of measuring its tension.

Referring now to Figure 1, the appliance 40 there illustrated comprises an elongated member 41 having means for contacting the wire in the form of two pins 44 and 45
near one end. At the other end of the elongated member 41 is attached a bent strap 54 which has a closed end 55 and an opening 56. The strap is marked with a band 49 to indicate the required position of the wire when its tension is within the required range. A weight 58 is attached to the elongated member 41 by means of a pin or bolt 59 through one of the holes 53 in the elongated member 41. For convenience in use the holes 53 have marks 48 to indicate the required position of the weight for the size and type of wire whose tension is to be measured.

In Figure 2 the tension indicating appliance 40 is shown attached to a wire 5 such that the wire passes over the pin 45, under the pin 44, and through the opening 56 in the strap 54. The weight 58 is positioned at the hole corresponding to the particular size and type of that wire.

The total weight of the appliance causes the elongated member 41 to rotate in a downwards direction until it is balanced by the opposing rotational force due to the tension in the wire 5 acting on the pins 44 and 45. At this balance point the position of the wire 5 relative to the strap 54 indicates the tension in the wire. With suitable dimensions of the appliance and position of the weight 58 the wire 5 will be located within the marked band 49 when its tension is at the predetermined value for that particular size and type of wire.

Various forms of this embodiment are possible. For example, the pins 44 and 45 may be in the form of various protrusions
or hooks that may engage the wire, the strap 54 may be marked with a scale instead of a single band, and the attachment of the weight 58 to the elongated member 41 may be in a fixed position or in a captive arrangement which would permit movement of the weight along the elongated member but not readily complete removal from the elongated member.

Referring now to Figure 3, the appliance 10 there illustrated comprises an elongated member 11 having a contact on to the wire 5 in the form of a hook 14 at one end and a second contact 15 to the underside of the wire at an intermediate point along the member 11. A second elongated member 12 is joined to the member 11 by a pin or screw 13 near the other end which allows for rotational movement between members 11 and 12.

A third contact on to the wire 16 is attached near the pivot end of member 12, preferably by a pin or screw 17 which allows for rotation. The member 12 is provided with a scale 18 marked with bands for each of the required wire sizes and tensions and so arranged that each of those bands is aligned with a band 19 marked on the member 11 for a particular degree of rotation between members 11 and 12.

When installed on a wire 5 as shown, the weight of member 12 results in an increased downward force applied to the wire at contact 16 due to the ratio of the distance between the centre of gravity of member 12 and pivot point 13 to the distance between the pivots 17 and 13.
This downward force causes the wire to bend about the contact 15 but such bending is limited by the tension in the wire which tends to keep the wire straight. Consequently the degree of rotation between members 11 and 12 which is related to the amount of bending of the wire is an inverse measurement of the tension in the wire. With a suitably marked scale a direct measurement of tension can be obtained for each required wire type.

In Figure 4, the appliance 20 there illustrated comprises an elongated member 21 having at each end a hook shaped contact 24 and 26. A second elongated member 22 is joined to the member 21 by a pin or screw 23 at an intermediate point between the ends of member 21, such that there is rotational movement between members 21 and 22.

A third contact 25 to the underside of the wire 5 is attached at that end of member 22 which is close to the pivot 23. The member 22 is provided with a scale 28 marked with bands for each of the required wire sizes and tensions and so arranged that each of those bands is aligned with a band 29 marked on the member 21 for a particular angle of rotation between members 21 and 22.

When installed on a wire 5 as shown, the weight of member 22 results in an increased upward force applied to the wire at contact 25 due to the ratio of the distance between the centre of gravity of member 22 and pivot point 23 to the distance between the contact 25 and pivot point 23.
This upward force causes the wire to bend about the contact 25 but such bending is limited by the tension in the wire which tends to keep the wire straight. Consequently the degree of rotation between members 21 and 22 which is related to the amount of bending of the wire is an inverse measurement of the tension in the wire. With a suitably marked scale a direct measurement of tension can be obtained for each required wire type.

In Figure 5, the appliance 30 there illustrated comprises an elongated member 31 having at one end a contact 35 to the underside of the wire 5 and a second contact 34 in the form of a hook at an intermediate point along the member 31. A second member 32 is connected to the other end of member 31 by a pin or screw 33 which allows for rotational movement between members 31 and 32.

A third contact 36 to the wire is attached to member 32, preferably by a pin or screw 37 which allows for rotation. The member 31 is provided with a scale 38 marked with bands for each of the required wire sizes and tensions and so arranged that each of those bands is aligned with a pointer 39 attached to member 32 for a particular angle of rotation between members 31 and 32.

When installed on a wire 5 as shown, the weight of member 31 results in the wire bending between contacts 35 and 34 but such bending is limited by the tension in the wire which tends to keep the wire straight. Consequently the rotation of member 31 is related to the tension in the
As member 31 rotates it causes member 32 to rotate in the opposite direction due to its attachment to the wire by contact 36. If the distance between pivot points 33 and 37 is less than the distance between contact 34 and pivot point 33 then the angle of rotation of member 32 will be greater than that of member 31. Consequently with the pointer 39 attached to member 32 it is possible to detect relatively small changes in the rotation of member 31 and with a suitably marked scale a direct measurement of tension can be obtained for each required wire type.

Various forms of this embodiment are possible. For example with suitable distribution of mass of member 32 about the pivot point 33 the contact 36 may be located on the pointer 39 side of the pivot 33, or the contact 36 may push up on the wire 5 instead of pulling down as depicted.

While particular embodiments of the present invention have been shown and described it is apparent that various changes and modifications may be made that will still fall within the true spirit and scope of this invention.
The claims defining the invention are as follows:

1. A wire tension indicator having means of contact with the wire at two or more positions, at least one substantially elongated member such that its weight causes it to rotate in the vertical plane resulting in flexure of the wire between the contact positions, and means for determining the amount of rotation of that member which provides a measure of the tension in the wire.

2. The wire tension indicator of claim 1 wherein there is one substantially elongated member having means of contact with the wire at two positions near one end and means for determining the position of the wire relative to the elongated member at the other end to provide an indication of the tension in the wire.

3. The wire tension indicator of claim 1 wherein there is a first member having means of contact with the wire at two positions; a second member which is pivotally joined to the first member and having means of contact with the wire at a third position, and means for determining the amount of rotation between the two members to provide an indication of the tension in the wire.

4. The wire tensioner of claim 3 wherein both members are substantially elongated, the first member having means for contacting the upper side of the wire near one end and means for contacting the lower side of the wire at an intermediate position, and the second member being pivotally joined to the other end of the first member and
having means for contacting the upper side of the wire near
the pivot end.

5. The wire tensioner of claim 3 wherein both members
are substantially elongated, the first member having means
for contacting the upper side of the wire near both ends,
and the second member being pivotally joined at an
intermediate position along the first member and having
means for contacting the lower side of the wire near the
pivot end.

6. The wire tensioner of claim 3 wherein one member is
substantially elongated with means for contacting the lower
side of the wire near one end and means for contacting the
upper side of the wire at an intermediate position and the
second member being pivotally joined to the other end of the
first member and having means for contacting either the
upper or lower side of the wire near the pivot end and
having a pointer to indicate the amount of rotation with
respect to the first member.

7. The wire tension indicator of any one of claims 1 to
6 wherein there is an additional weight attached to the
elongated member such that the weight may be fixed or
movable to various positions along the elongated member.

8. A wire tension indicator substantially as herein
described with reference to the accompanying drawings.
ABSTRACT

A device (40) for indicating the tension in a wire (5) is disclosed. This has at least two projections or hooks (44,45) in contact with the wire (5), at least one substantially elongated member (41) such that its weight causes it to rotate in the vertical plane resulting in flexure of the wire (5) between the contact positions (44,45) and means (49) for determining the amount of rotation of that member (41) which provides a measure of the tension in the wire. An additional weight (58) may be attached to the elongated member (41).
The claims defining the invention are as follows:

*Note: If there is insufficient space above to type the statement of claim, do not use this sheet, but use separate sheets of paper beginning with the words "The claims defining the invention are as follows:" and ending with the date and name of applicant in block letters.