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G1N NCCC N19B2Q N19X5

(56) Documents Cited:
GB 2353360 A **GB 2221036 A**
DE 102004037240 A **JP 2004279394 A**
US 4020417 A **US 20040140902 A1**

(58) Field of Search:
UK CL (Edition X) **G1N**
INT CL **A01G, G01N**
Other: **Online: EPODOC, WPI.**

(54) Abstract Title: **Plant soil dryness detector**

(57) A resistive moisture detector measures the dryness of soil around the roots of a plant to indicate when the plant needs watering. The probe comprises an upper shaped section 2 having an LED indicator 4 and measurement circuitry 5-8, and a lower probe section which is pushed seep into the soil. The resistance of copper tracking 7 varies with wetness of the soil. When the soil becomes dry the LED 4 is lit. The detector may be pushed back against the soil so that water can be poured down the detector in order to directly water mid and root soil. The upper section 4 may be formed in one of a variety of shapes.

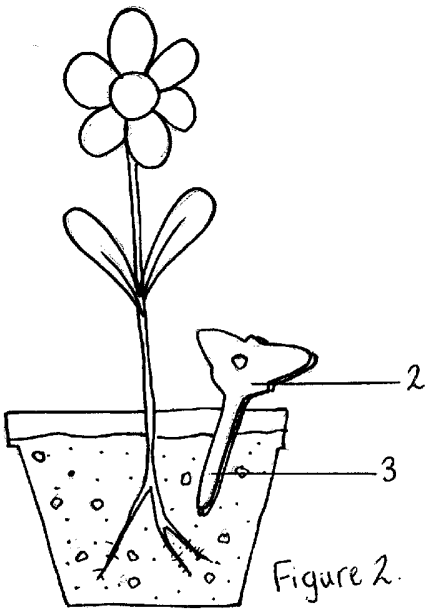

Figure 2.

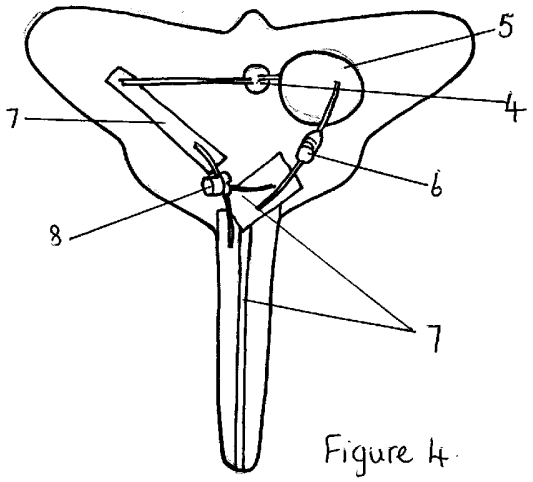

Figure 4.

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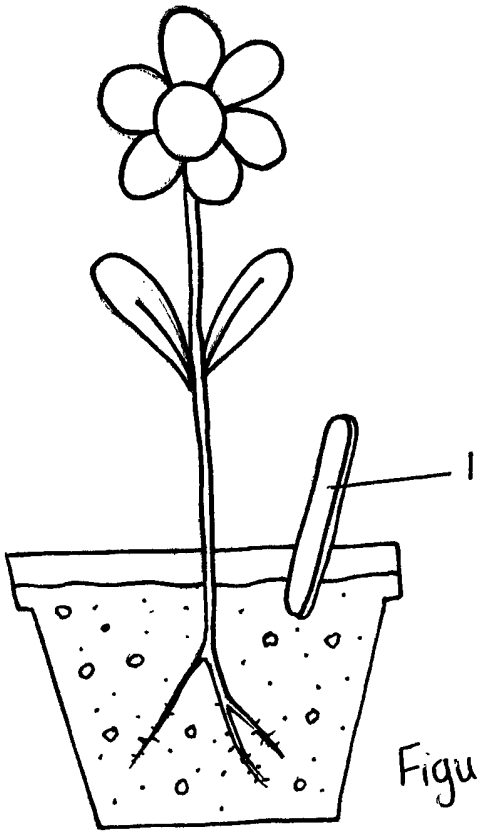

Figure 1

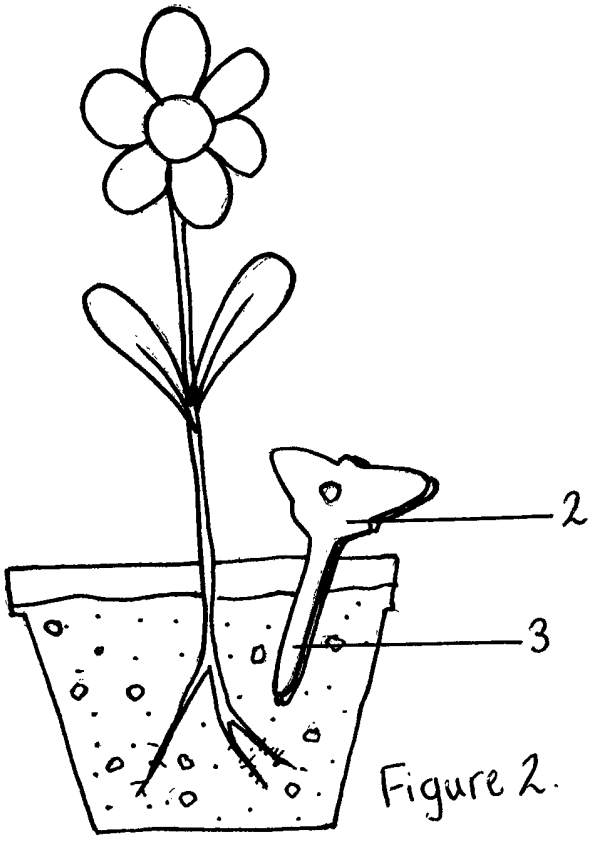

Figure 2.

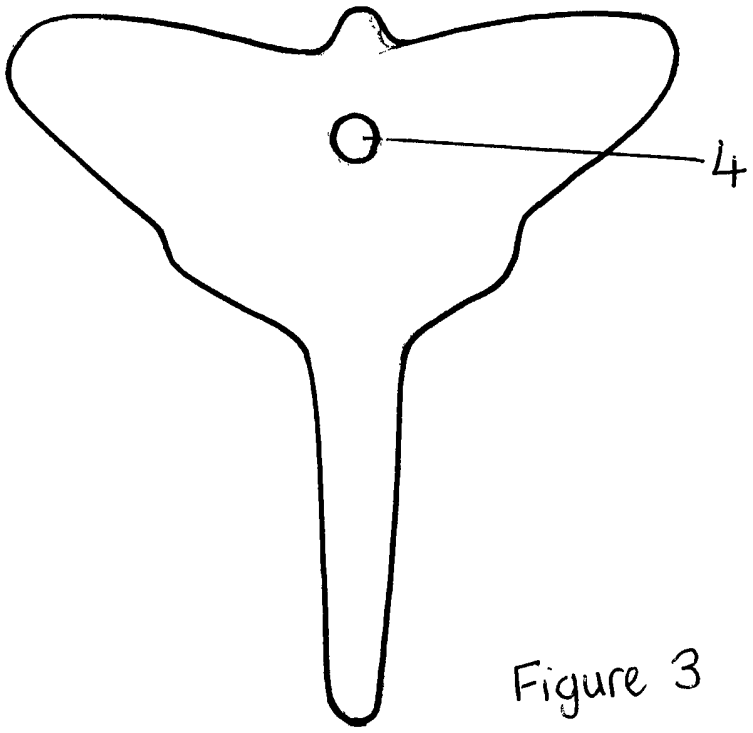

Figure 3

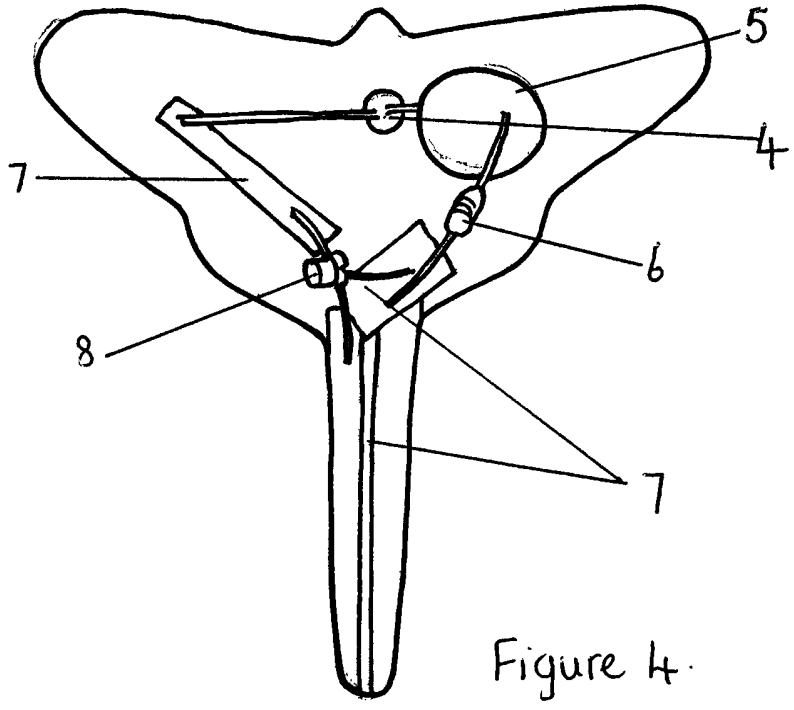

Figure 4.

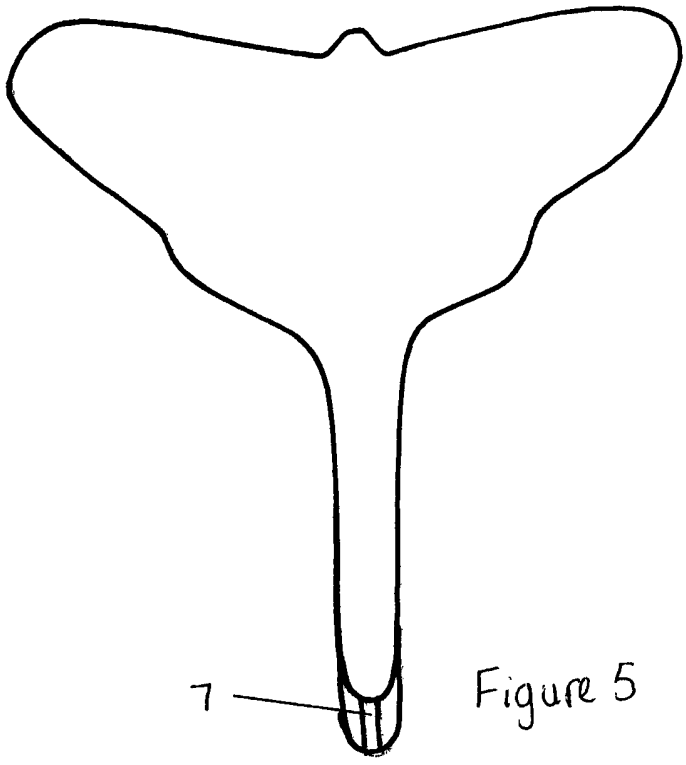

Figure 5

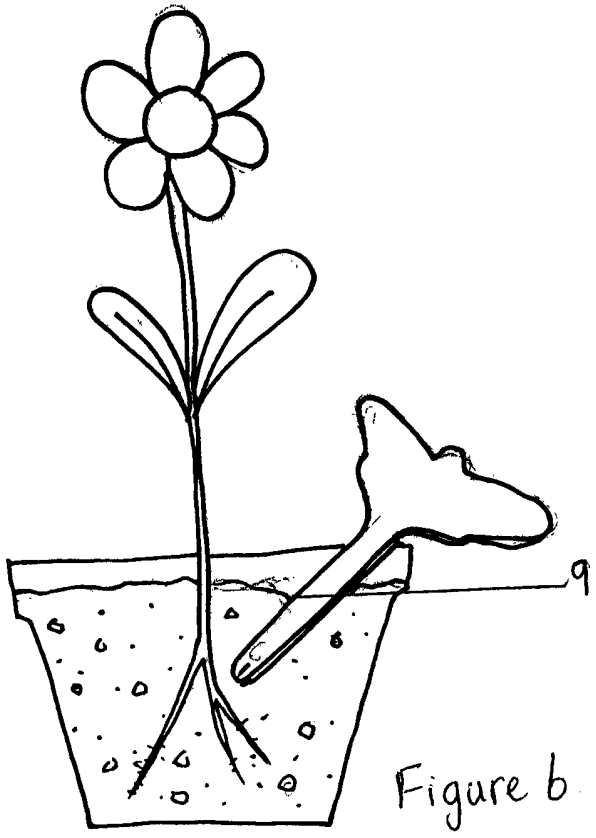

Figure 6

PLANT ROOT SOIL DRYNESS DETECTOR.

This invention relates to a deep soil dryness detector. Watering plants effectively is vital for plants to survive.

Watering plants routinely can lead to permanently wet compost and problems associated with over watering. Watering plants less frequently, but deeply and thoroughly helps them to develop healthy root systems. Soil moisture detectors indicate when the topsoil becomes dry and not the area around the roots.

An object of this invention is to provide a warning that indicates when the mid and root soil of a plant needs water.

Accordingly this invention targets the specific area of the plant that needs water – the roots. The base of the invention is pushed into the soil. When the root soil becomes dry a light will come on indicating that the plant needs watering. The detector is pushed back against the soil so that water can be poured down the detector straight into the mid and root soil. Preferably, the invention is made from foamex in a variety of shapes.

An example of the invention will now be described by referring to the accompanying drawings:

FIGURE 1 shows a plant with a soil moisture detector;

FIGURE 2 shows a plant with a root dryness detector;

FIGURE 3 shows the warning light indicator;

FIGURE 4 shows the circuit inside the detector;

FIGURE 5 shows the rear of the detector.

FIGURE 6 shows the root dryness detector pushed back.

Figure 1 shows a plant with a soil moisture detector (1) pushed into the soil.

Figure 2 shows a plant root dryness detector (2) according to the invention. The probe (3) of the invention is pushed into the depth of the soil. The probes vary in length according to the size of the plant.

As shown in Figure 3 a Light Emitting Diode (LED) will light up (4) when the mid and root soil becomes dry.

Figure 4 shows the circuit, which is placed on the reverse of the invention and on the probe. The circuit consists of, an LED (4), a Lithium 3v battery (5), a resistor (6), copper tracking (7) and a transistor BC108 (8). The two copper track strips on the probe react to changes in moisture. This resistance is high in the wet and low when in the dry. In this circuit when it gets wet the resistance of the copper track will increase. As it increases the input voltage to the transistor will go above 0.6 volts. When this happens the transistor switches the LED on.

In Figure 5 the copper track (sensor) can be seen at the base of the detector.

Figure 6 shows the invention pushed back (9) to allow for plants to be watered deeply to develop healthy root systems.

CLAIMS

1. A soil dryness detector which targets the area of soil around the roots of a plant.

2. A plant soil dryness detector as claimed in 1 in which the probe varies in length according to the size of the plant.

3. A plant soil dryness detector as claimed in 2 that can be pushed back against the soil to allow water to run down the length of the probe in order to water directly into the mid and root soil.

4. A plant soil dryness detector as claimed in 2 which is made from foamex in a variety of shapes – butterfly, ladybird, flower, snail, flag, insects.

Application No: GB0523859.7 **Examiner:** Eleanor Hogan

Claims searched: 1-4 **Date of search:** 17 January 2006

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-4	JP 2004279394 A (ASAHI) see EPODOC & PAJ abstracts, WPI abstract accession number 2004-713212 [70] and figs.
X	1, 3 & 4.	DE 102004037240 A (FLORASYS) see WPI abstract accession number 2005-523766 [54], page 2 and fig.
X	1, 3 & 4	US 2004/140902 A1 (STAPLES) see abstract, paras. 21 & 22 and fig. 2.
X	1, 3 & 4.	GB 2353360 A (BOOTH) see whole document.
X	1, 3 & 4	GB 2221036 A (CROSS) see abstract, page 5 and fig. 2.
X	1, 3 & 4.	US 4020417 A (BREHOB et al) see abstract, col. 1 lines 66-68 and figs. 1 & 2.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

G1N

Worldwide search of patent documents classified in the following areas of the IPC

A01G; G01N

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI.