(54) Title of the Invention: A fishing line length device
   Abstract Title: A Fishing Line Length Measuring Device

(57) According to the present invention there is provided a fishing line length device, comprising a robust body with a stand attachment means 1,2,8, a reeling mechanism 7, a line entrance and line entrance guide 6, line measurement counter apparatus 9 (15,22 Fig. 5) and a user display portion 3.
A FISHING LINE LENGTH DEVICE

Field of the Invention

5 The present invention relates to a fishing line length device, particularly for indicating or recording line lengths, and more particularly but not exclusively for carp fishing.

Background

10 Set-up time for carp anglers can take between 1 to 1 \( \frac{1}{2} \) hours.

Carp anglers generally carry 5 rods and reels, namely a marker rod, spod rod, and three fishing rods. The marker rod is for casting around the lake to find and locate a spot to present bait, also to determine the depth of that spot, wherein the marker rod doesn't fish merely dragging across the lake bed for identification of bed surfaces. The spod rod is fitted with a spod that is repeatedly cast at the predetermined area to spread bait about the area.

A carp angler typically identifies a feature such as a clear weed free or gravel area on the lake bed as his/her spot and will be aiming to achieve this spot with his/her subsequent casts with the fishing rods. Said rods are typically equipped with 'clips' that prevent reeling of the line beyond a definable length.

In order to coordinate the length of the fishing lines, they may be laid out with the marker rod line, and 'clipped up' accordingly, with obvious logistical problems. Alternatively, but time consuming, a user may wind the relative lines about poles and clip up accordingly.

Typically a carp angler will load a spot with a significant value of bait, and will return on different sequential days to fish that spot.

Prior Art

35 Accordingly a number of patent applications have been filed in an attempt to resolve the problem or similar, including the following:
Japanese patent application JP 2003 088 281 (TERAUCHI) provides a device for measuring line lengths capable of measuring the line lengths without requiring a separate detector such as a measuring roller even when the lower winding diameter is changed with the amount of a wound lower line in relation to the device for measuring the line lengths of a reel for fishing. This device for measuring the line lengths is equipped with the following. A means for detecting the number of revolutions capable of detecting the number of revolutions of a spool, a mode changeover means capable of inputting the line lengths of the lower line and an upper line wound onto a spool, an inputting means for inputting the line lengths of the lower line and the upper line to a storing means by external operation, the storing means capable of prestoring a line length computational formula determined from the line lengths of the lower line and the upper line and the number of revolutions of the spool detected with the means for detecting the number of revolutions during winding of the lower line and the upper line, a computing means for determining the line length computational formula from the line lengths of the lower line and the upper line inputted with the inputting means and the number of revolutions of the spool detected with the means for detecting the number of revolutions during the winding of the lower line and the upper line and computing the line lengths based on the actual number of revolutions of the spool detected with the means for detecting the number of revolutions during actual fishing and a display device for displaying the computed line lengths.

United States patent application US 5 286 972 (FALK et al) discloses an optical measuring device comprising: (a) a casing; (b) a reel mounted within the casing; (c) a line wound on the reel and extending through an opening in the casing, said line having a plurality of elongated marks spaced at predetermined increments from one another; (d) first and second sensors mounted within the casing for detecting the elongated marks on the line and producing detection signals as the line passes through the casing, wherein the spacing between the first and second sensors is such that elongated marks are detected by both sensors simultaneously as the line passes by said sensors; (e) a comparator circuit operatively connected to the first and second sensors for processing the detection signals from the first and second sensors and producing an "up" signal when the marks on the line pass from the first sensor to the second sensor, and a "down" signal when the marks on the line pass from the second sensor to the first sensor; (f) a counter circuit responsive to the "up"
and "down" signals from the comparator circuit for maintaining a count indicative of
the length of the line; and (g) display means operatively connected to the counter
circuit for displaying the length of the line.

5 United States patent application US 5 503 341 (KANEKO et al) discloses a fishline
length measurement device for a fishing reel having a spool rotatably mounted on a
reel main body, comprising: spool rotation detecting means for detecting and
counting a number of rotations of said spool; diameter measurement means for
measuring a diameter of an outer circumferential surface of a fishline wound on said
spool; first memory means for storing therein both a first linear equation and a
second linear equation, said first linear equation relates both the number of rotations
and the diameter of said outer circumference to a set of coefficients for each
detected spool rotation, said second linear equation relates a length of the fishline
fed from or wound onto said spool to both the number of rotations and said set of
coefficients; first calculation means for calculating said set of coefficients for each
detected spool rotation based on said first linear equation using both the number of
rotations detected by said detecting means and the diameter of said outer
circumferential surface measured by said measurement means, wherein a plurality of
sets of coefficients corresponds to a plurality of detected spool rotations at which
both the number of rotations are detected and the diameter is measured; second
memory means for storing therein said set of coefficients for each detected spool
rotation determined by said first linear equation; and second calculation means for
calculating the length of the fishline fed from or wound onto said spool based on said
second linear equation using both the number of rotations detected by said detecting
means and said set of coefficients that correspond to the number of rotations.

Summary of the Invention

According to the present invention there is provided a fishing line length device
comprising: a robust body with a stand attachment means; a reeling mechanism; a
line entrance and line entrance guide; line measurement counter apparatus: and a
user display portion.

In preferred embodiments the body is unitary and self-contained wherein the device
is for use with a plurality of separate fishing poles, allowing the line from these poles
to be fed into the device at said entrance.
In preferred embodiments the device is enabled to be attached to a stand at said attachment means wherein the device is maintained stationery by the stand. The stand may comprise a pole rest. The attachment means comprises a 3/8 inch screwthread.

The attachment means may comprise a screwthread female part, wherein the rest screws into said part.

The reeling mechanism in preferred embodiments is internally situated in the body. The line for measuring is inserted into the body and wound onto the mechanism.

In preferred embodiments the guide comprises an entrance into the body or onto the reeling mechanism, through which the line passes in use. Typically said entrance includes a catch and said guide a positioned. In preferred embodiments the positioner slides or moves to accommodate reeling variation or variation in reeled positioning.

The guide may provide a guiding means, for example arms or projections, ring or loop or funnelling at the entrance. In all preferred embodiments said means acts to ensure that line entering onto the mechanism is guided into a definable orientation, minimising snags and possibilities of miswinding.

In preferred embodiments the mechanism includes an automated winder or motorised spindle. In other embodiments the mechanism may include a handle for winding the mechanism.

Ideally the motorised spindle is internally maintained wherein exterior use is not liable to damage the mechanism or more particularly the motorised spindle is not subject to damage. In some embodiments a displaceable lid may be used, being partly or wholly transparent in some further embodiments, aiding in ensuring minimal ingress of water.

In some embodiments at least part of the mechanism is visible or uncovered or external in use, in order that a user is enabled to monitor winding. For example the wound line or mechanism reel or barrel is partly or wholly uncovered. In this way the
guide may be externally situated in order that the line can be reliably and visibly wound onto the barrel with oversight possible.

In preferred embodiments the guide includes an operative part of the counter wherein the counter includes apparatus for recordal of sequential values of length. In some embodiments for example the line is measured by a mechanical wheel or wheels against which the line is passed prior to or previous to the mechanism, revolutions of which are counted by a further mechanical or electronic apparatus part.

In some further embodiments magnets may be included at the mechanism or barrel and a reed switch located within the body and enabled to sense every time a magnet passes through. Line length may be calculated by using the circumference of the barrel and revolutions.

In other embodiments the mechanism may include or comprise the apparatus, wherein rotation of the barrel is counted by the apparatus to indicate length of the line. In such embodiments the guide means may advantageously move in order to ensure that spread of the line is even across the barrel. For example wherein the guide moves horizontally as the barrel rotates about a horizontal axis or wherein the barrel rotates about a vertical axis and the guide means moves vertically to disperse the line about the barrel.

In other embodiments where the counting apparatus is measured at or included in the mechanism or barrel the device may include circuitry enabled to calculate variance in barrel width when loaded with line, operating to an algorithm calibrated and corresponding to measured line length to date.

In preferred embodiments the device includes a printed circuit board wherein in preferred embodiments the display means comprises a visual display unit, light emitting diode screen, liquid crystal display, or other electronic or digital display.

In this way the user is enabled to easily read indications of length and advantageously stored parameters, histories and/or lengths already measured.
In this way and according to an objection of the present invention the user is enabled to record the length of their casting line as used on the marker rod, so as to ensure that the line length of their fishing rods is appropriate and equal.

According to this object in preferred embodiments the device includes a memory. In typical embodiments this will comprise digital memory and data processing capability, operative in tandem with the display, so as to allow access to and recordal of user definable parameters or data.

In some further embodiments the memory may be mechanical or analogue. A mechanical counter or dial may be able to display a line's recorded length. The counter or dial may comprise a display portion, namely a number or figure indicating the length of winding, for example counting turns of a handle.

In preferred embodiments the apparatus comprises an optical counting apparatus disposed at the line entrance, line entrance guide, and/or mechanism.

In some embodiments the line entrance and line entrance guide may be composed as a piece, or synonymous, wherein the line enters and is guided in said entrance. For example in some embodiments the entrance may comprise a channel into which the line is fed in use.

In preferred embodiments there is provided a line catch or grip, wherein the line is entered into the entrance and gripped to the mechanism.

In preferred embodiments the mechanism includes an automatic cease mode, wherein the user can define a line length for winding in and allow the mechanism to wind the line to that length automatically.

Advantageously a preferred automatic cease mode may comprise a resistance based mechanism which mechanism ceases winding on encountering resistance against winding of the line.

In this way the apparatus in such embodiments is enabled to account for hindrances or extraneous interferences with winding as well as ensuring that where clips are in use the clip will prevent further winding of the mechanism. In this way the clips may
be used as a means of measuring the line length for a marker rod that has already been clipped to a correct length; wherein the device is capable of recording that length and the fishing lines may be measured to that length by the device.

5 The length of line wound in prior to the clip can be remembered by the memory, and can be used for subsequent uses on the lines for fishing wherein an automatic cease function can be operated to stop winding.

In some embodiments the length of the first line under the automatic cease mode is stored automatically and used on subsequent line lengths via the automatic cease function, until the device is turned off and/or the memory reset.

Ideally the display means includes controls wherein the user is enabled to read the line length and/or allow entirely automatic operation of the mechanism.

15 In some embodiments the device may include global positioning software (GPS) and hardware in order that the device may be interfaced or tagged with a GPS location or locational data.

20 In preferred embodiments the device includes a magnetic compass and/or spirit level in order that the device can be used to aid in situating the fishing lines on different days and/or times.

In some further embodiments the device may include a framing device for example wherein the user may be enabled to look through the device to frame their situation and aid in memorising the location for later use to aid in situating the fishing lines on different days and/or times.

30 **Brief Description of Figures**

Figure 1 shows an isometric view of an embodiment of the device exploded from a stand;

35 Figure 2 shows a reverse isometric view of the embodiment shown in Figure 1 without the stand;
Figures 3 show side views of the embodiment shown in Figure 1;

Figures 4 show rear and front views of the embodiment shown in Figure 1;

And

Figure 5 shows an isometric exploded view of the embodiment shown in Figure 1.

Detailed Description of Figures

With reference to the figures a display screen 3 is used to display details regarding for example the line length, recorded line length data, positional data or any audiovisual features.

The device is supported in use on a rest 1, having a screwthreaded mount 2 and a sprung collar or cam clamp 8 allows the device to be positioned on the top of a standard 3/8 inch thread rod rest.

A number of controls 4 are provided namely a winding control, reset control, input line length, record line length, delete line length, and on/off control 5. The device takes two AA batteries under a displaceable and ideally weatherproof hatch 10. Ideally the device is entirely ruggedized or waterproof.

A guide 6 acts to guide the spooling line into and onto the reel 7 and comprises positioning hoops 12, through which the line is passed, and a positioning slide slot 13 in which the guide 6 moves.

If the reel is manually rotated while the motor is off, the clutch spring on the crown wheel axle will compress, disconnecting the crown wheel from the mechanism.

The line passes through holders 11 and the disc counter 9, wherein the line is passed between an inner disc 15 with magnets, and an outer disc 22, wherein an extension spring 23 grips the two together so that when the line is pulled through, the
disc rotates, the magnets attached trigger the reed switch sensor 16. This can be
used to work out exactly how much line has been wound, to the nearest half turn.

An internal motor 17 drives a gearing system 20, clutch spring 14, and a series of
cogs connecting the motor to the reel and making it rotate, wherein a last gear also
drives a crown wheel 21, and slider 19 which in turn pushes the guide backwards
and forwards, guiding the line to wrap evenly around the reel.

In use therefore sequence of events is as follows once the marker rod has been used
to find a suitable lake position, and the line has been clipped at this length:

Screw the mount on to the top of a rod rest, staked one rod length from the bank.
Clamp the device to this. Turn the marker rod so that the end is next to the device.
Press the power button to turn on the device. Clip or slot the end of the line into the
reel, guiding the line through the locating hoops and sprung roller on the back so that
it is held in tension. Press the Forward Wind button on the device. Wind the line onto
the spool until resistance from the line clip stops it. The main reading on the display
will give the length of the marker rod line. This can then be entered into the memory
by pressing the Memory Input button. Unwind the marker rod line using the
Backward Wind button. Wind the line back onto the rod reel.

Reset the distance reading by pressing the Reset Button. (All memory input can be
erased by holding this button in for 3 seconds, otherwise they will be stored for use
next time). Ensuring that all the rest of the rods are on 'free spool' reattach a new rod
and follow the same process to wind this line out to a matching length. If the line is
over-wound, the Backward Wind button can be used to correct it. Clip the rod at this
length and use the Backward Wind button to unwind the line, winding it back up on
the rod reel. Repeat with all rods. Lines can now be cast in the same direction as the
marker rod, and should land at the same distance. After use, turn off the device,
unscrew from the rod rest and store with other fishing equipment.

In use once the marker rod has been used and clipped up the user places the rod on
a rest and attaches the line to the device and pulls the line off the marker rod until the
clip is hit. The distance of the spot is therefore registered.
The device is then staked into the ground and the marker rod line reeled back onto the marker rod reel. The spod rod and fishing rods are placed on rests and the lines pulled until a required length of line, typically 88.6m, has been drawn and each rod is clipped up. The user then reels in the lines and in addition has a record of the measurement for a fishing diary.

The invention has been described by way of examples only and it will be appreciated that variation may be made to the above-mentioned embodiments without departing from the scope of invention.

With respect to the above description then, it is to be realised that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as set out in the accompanying claims.
Claims

1. A fishing line length device comprising: a robust body with a stand attachment means; a reeling mechanism; a line entrance and line entrance guide; line measurement counter apparatus; and a user display portion.

2. A device according to claim 1 wherein the reeling mechanism is motorised.

3. A device according to claims 1 or 2 wherein the user display portion is electronic.

4. A device according to claims 1 or 2 wherein the user display portion is mechanical.

5. A device according to any of the preceding claims wherein the apparatus includes a memory function.

6. A device according to claim 5 wherein the memory function comprises a printed circuit board.

7. A device according to claim 5 wherein the memory function comprises a mechanical dial.

8. A device according to any of the preceding claims wherein said guide is capable of movement with respect to the reeling mechanism.

9. A device according to any of the preceding claims wherein said apparatus comprises a reed switch.

10. A device with reference to the figures and substantially as described herein.
Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

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<th>Relevant to claims</th>
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Categories:

X Document indicating lack of novelty or inventive step
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A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
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Field of Search:
Search of GB, EP, WO & US patent documents classified in the following areas of the UKC:

A01K; G01B

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

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

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