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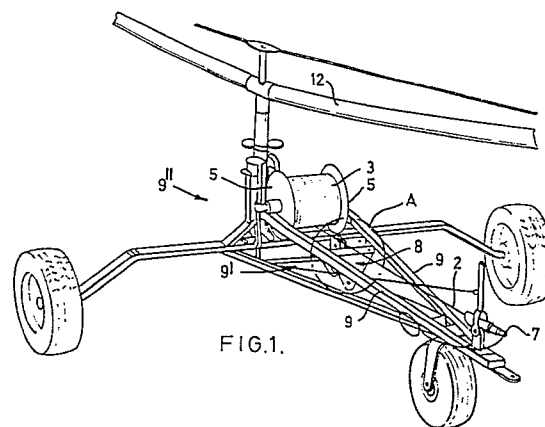
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## 54 **Apparatus for layering a cable.**

57 The apparatus is a guide (1) for layering a cable (2) on a drum (3) mounted on a frame (9'), the guide (1) being pivotable in a direction transversely of the (longitudinal) frame (9'), the guide (1) comprising a pulley (6) over or under which the cable (2) runs prior to being wound onto the drum (3). The guide (1) is mounted for free reciprocation under gravity.



## Description

### APPARATUS FOR LAYERING A CABLE

The invention relates to apparatus for layering a cable and more particularly to such apparatus for layering cable as it is wound onto a cable drum, for example, on a travelling irrigator which is pulled over the ground by winding up a cable onto the drum.

At present in some situations when a cable or line is being wound onto a reel or drum it is a problem to ensure that the wire is layered evenly on the drum thereby to minimise build-up on one side of the drum which can cause, when feeding out, jamming of the cable. A cable unevenly wound onto the drum also takes more space and is, of course, unsightly.

It is accordingly an object of the invention to seek to mitigate these disadvantages.

According to the invention there is provided apparatus for layering a cable, comprising a drum for winding up a cable carried by a frame, characterised in that there is a guide for the cable mounted on the frame, in that the guide is spaced forwardly of the drum, and in that the guide is mounted for reciprocation from side to side of the frame as a cable in use runs thereover, thereby to guide the cable in a layered manner onto the drum.

Using the invention, the guide may harness gravitational force to reciprocate from side to side.

The guide may include a pulley over or under which the cable runs to reduce friction between the guide and cable.

The guide and cable drum may be supported on a frame with a spacing of about 30cm between their axles.

The frame may be the frame of a small scale travelling irrigator or effluent spreader machine the cable of which is adapted to pull the machine. The frame may support at a forward end thereof a steering means which acts as a forward guide which directs the cable toward the cable drum.

Apparatus for layering a cable is hereinafter described, by way of example, with reference to the accompanying drawings.

Fig. 1 is a perspective view from the side at the front of an effluent or irrigator spreading machine incorporating apparatus for layering a cable according to the present invention;

Fig. 2 is a detailed plan to an enlarged scale of the region A of Fig. 1;

Fig. 3 is a side elevation of the region A of Fig. 1;

Fig. 4 is a perspective view (exploded apart) of the region A indicated in Figs. 1, 2 and 3; and

Fig. 5 is a schematic perspective view of part of an irrigator incorporating a second embodiment of apparatus according to the invention.

The embodiments of the invention are described with reference to the apparatus being attached to a mobile irrigator or effluent spreader. It is however to be understood that the invention can be adapted for use with any cable drum or reel onto which a cable, chain, wire, rope, braid of the like (herein referred to as a "cable") is to be wound.

In both embodiments shown, the position of the

apparatus, just in front of or upstream of the drum, is indicated as A in Fig. 1.

In the drawings, like parts are indicated by like numerals.

The apparatus shown in Figs. 1 to 4 comprises a guide (1) which, relative to its mounting, is reciprocable in a direction generally normal to the general line of a cable (2) being wound onto a cable drum (3). That is the guide (1) reciprocates in the direction of the arrows (4) relying on gravity to sustain the reciprocating motion assisted by the sideways pressure component of the wire building up on the drum and its side walls (5).

The guide (1) includes a pulley (6) over which the cable (2) runs between a forward guide (7) to the drum (3).

The guide (1) is, in Figs. 1-4, mounted on a sub-frame (8) which is suspended from frame members (9) of a main frame or chassis (9') of the irrigator (9''). In the embodiment of Figs. 1-4, the sub-frame (8) is formed from a pair of cheek members (10) between which a pivot pin (11) extends, the pulley (6) being between the members (10) which hold it spaced from tubular members (10') through which the pivot pin (11) passes.

Alternatively, the guide (1) may hang from a support subframe comprising two yokes (10'') positioned above the main frame member (9) of the irrigator (9'') in which case the cable (2) runs under the pulley (6) and is held in place by a transverse retainer (6'), as shown in Fig. 5.

In use of both embodiments, a free end of the cable (2) is fixed after the cable is run out and operation of a rotating boom (12) of the irrigator causes the main frame (9) to be pulled along the cable as it is wound onto the drum (3).

The cable when first fixed to the drum case which may be a 12.5cm drum case is fixed in the centre of the drum (3). When the cable is taut and is being wound onto the drum it moves away from the centre to one wall when it reverses, the weight of the guide causing it with the taut cable to pass over centre to wind each successive length against the preceding across the drum until eventually it contacts the other side wall and the direction is reversed.

The applicants' experiments with a 12.5cm diameter drum have shown that the wire wound onto the drum which when the cable is taut is spread evenly provided the spacing between the axles of the drum (3) and the pulley (6) are about 30cm apart.

It is preferred that the forward guide be about 1 m in front of the axle of the drum (3).

Thus by this invention there is provided a means for layering cable as it is wound onto a cable drum.

In both embodiments there has been described apparatus for layering a cable as it is wound onto a drum which does not cause a bulge in the middle of the drum, nor does it cause additional strain on the cable which might lead to fraying, and at all times provides a smooth take up onto the drum so that there is no tangling or snagging of the cable and the

cable can therefore be unwound easily from the drum.

In every embodiment, the guide is, if not for the cable, fully pivotable in the direction of both arrows (4).

#### Claims

1. Apparatus for layering a cable comprising a drum for winding up a cable carried by a frame, characterised in that there is a guide (1) for the cable (2) mounted on the frame (9'), in that the guide (1) is spaced forwardly of the drum (3), and in that the guide (1) is mounted for reciprocation from side to side of the frame (9) as a cable (2) in use runs thereover, thereby to guide the cable (2) in a layered manner onto the drum (3).

2. Apparatus according to Claim 1, the guide (1) being characterised in that there is a pulley (6) over or under which the cable (2) runs in use.

3. Apparatus according to Claim 2, characterised by a pivot means (10', 11) from which the guide (1) extends for reciprocation from side to side of the frame (9').

4. Apparatus according to Claim 3, characterised in that the pivot means (10', 11) comprises a pivot pin (11) extending in a direction substantially at right angles to the axis

of rotation of the drum (3) and in that the pivot pin (11) mounts a tubular member (10') for reciprocable movement.

5. Apparatus according to Claim 4, characterised by two side cheeks (10) which support the pulley (6) at a position spaced from the tubular member (10').

6. Apparatus according to any of Claims 3 to 5, characterised in that the pulley (6) in use is below the pivot means (10', 11).

7. Apparatus according to any of Claims 3 to 5, characterised in that the pulley (6) in use is above the pivot means (10', 11).

8. Apparatus according to any preceding Claim, characterised by a sub-frame (8) carried by the frame (9') and in that the guide (1) is carried by the sub-frame (8).

9. Apparatus according to Claim 8, characterised by the sub-frame (8) comprising spaced bridge members (10'', 10'') extending between frame members of the frame (9').

10. An irrigator or effluent spreader comprising a frame mounted on wheels for travelling over ground to be irrigated, a drum carried by the frame for winding up a cable by which the machine draws itself over the ground when a boom rotates to drive a drum rotation mechanism, characterised by a guide (1) according to any preceding Claim carried by the frame.

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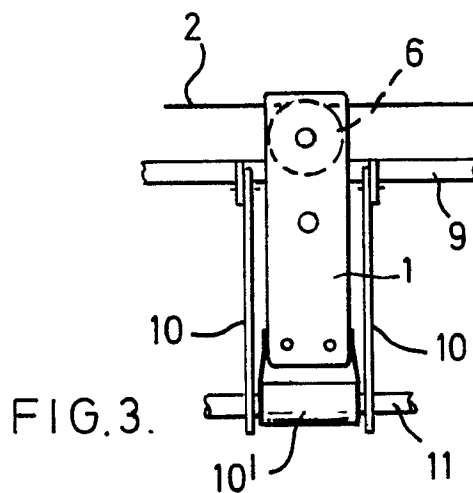
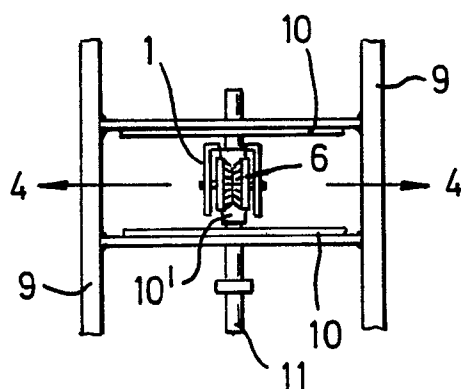
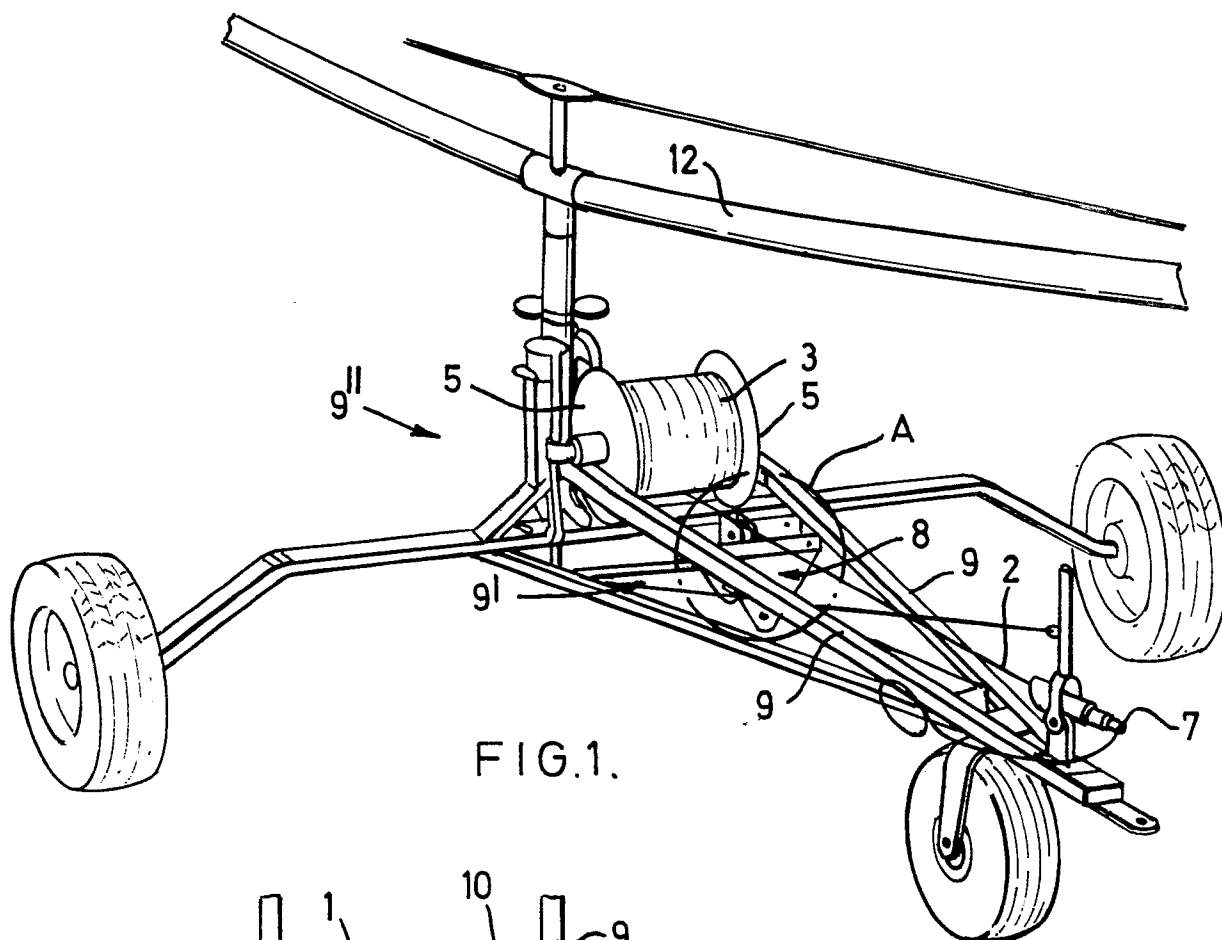
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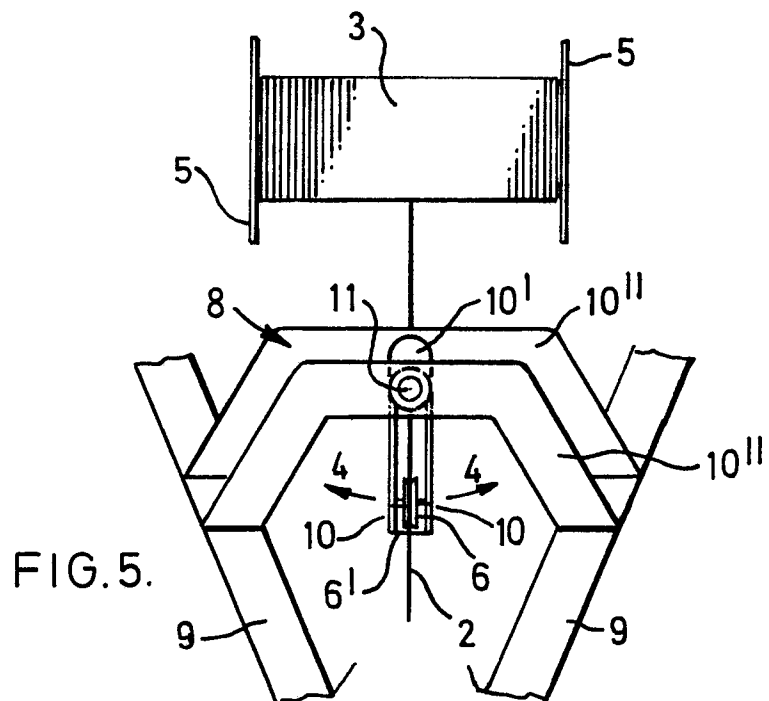
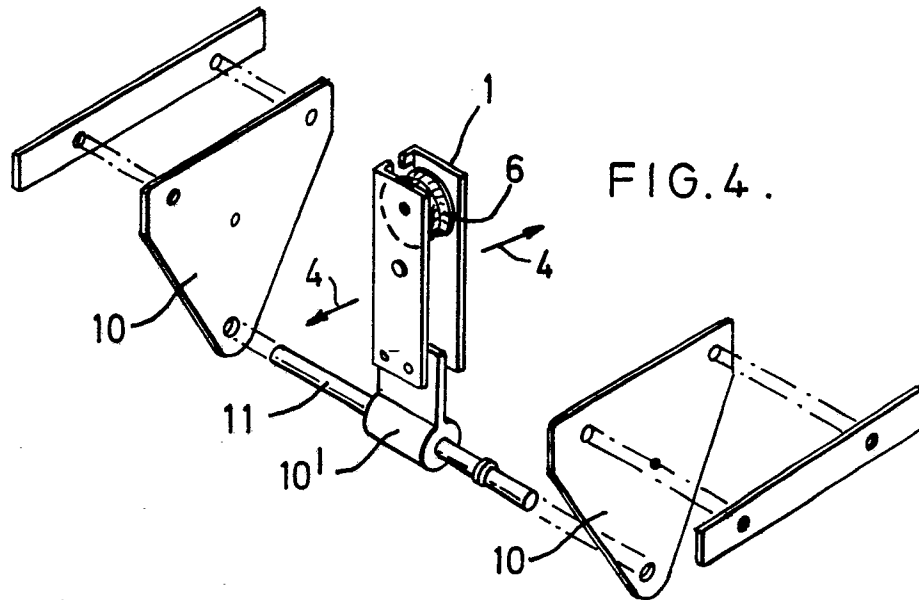
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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                  |                                                | EP 89303683.0                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Citation of document with indication, where appropriate, of relevant passages    | Relevant to claim                              | CLASSIFICATION OF THE APPLICATION (Int. Cl.4)                                                               |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | WO - A1 - 84/03 876<br>(J. MINNEE)                                               | 1, 2, 3, 4                                     | B 65 H 54/04<br>B 65 H 75/34<br>B 66 D 1/38                                                                 |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | * Fig. 2 *<br>--                                                                 | 10                                             |                                                                                                             |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | EP - A1 - 0 145 271<br>(GQ DEFENCE EQUIPM. LTD.)                                 | 1, 2, 3, 4                                     |                                                                                                             |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | * Fig. 1 *<br>--                                                                 | 10                                             |                                                                                                             |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | GB - A - 2 130 163<br>(ELKEM A/S)                                                | 1, 2, 3, 4                                     |                                                                                                             |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | * Fig. 1, 2 *<br>--                                                              | 6, 8, 10                                       |                                                                                                             |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | US - A - 2 596 709<br>(D. R. MOORE)                                              | 1, 2, 3, 4                                     |                                                                                                             |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | * Fig. 1, 2 *<br>--                                                              | 8, 10                                          |                                                                                                             |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | FR - A - 2 159 816<br>(R. AUNE)<br>* Page 3, lines 3-17;<br>fig. 1, 3 *<br>----- | 1, 10                                          | TECHNICAL FIELDS<br>SEARCHED (Int. Cl.4)<br><br>B 65 H 54/00<br>B 65 H 75/00<br>B 66 D 1/00<br>A 01 G 25/00 |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                  |                                                |                                                                                                             |
| Place of search<br>VIENNA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                  | Date of completion of the search<br>07-07-1989 | Examiner<br>JASICEK                                                                                         |
| <b>CATEGORY OF CITED DOCUMENTS</b><br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br><br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br><br>& : member of the same patent family, corresponding document |                                                                                  |                                                |                                                                                                             |