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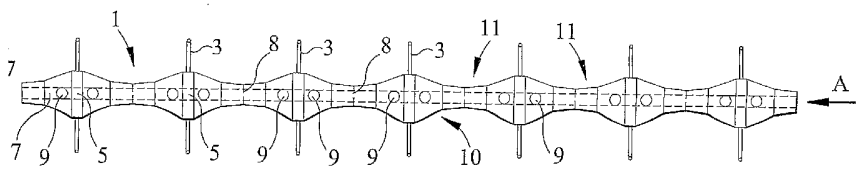
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(54) Title: BIRD DETERRENT DEVICE



(57) Abstract: An improved method of manufacturing a bird deterrent device comprising an elongate base (1) and a plurality of elongate rods (3) which occupies less space for transportation and storage purposes prior to installing for use. The improved method according to one embodiment comprising disposing the rods in a mould in a common place in spaced side by side relation and moulding the base around the rods to form a generally planar device. In another embodiment the base is formed with reception locations for the rods which are aligned to position the rods in a common plane substantially parallel to a mounting surface of the base on initial insertion. The rods are bent up subsequently. The base is configured to provide one or more offset rows of rods when bent. Also described is a novel construction of base (1) which has a plurality of through holes (9), for capturing location means (adhesive) for the device. Preferably the base has an elongate groove on the underside thereof interconnecting the through holes.

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TITLE : Bird deterrent device.

DESCRIPTION

The present invention relates to a bird deterrent device and a method of producing same.

A known bird deterrent device comprises relatively thin elongate base member made of plastics and a plurality of thin elongate rods (spikes) that extend from the base. In one known example a free end of each rod is captured in the base during the moulding process to extend upwardly from the base in one or more planes that are disposed perpendicular to the plane of a mounting surface of the base member. The spokes may be bent subsequently to define two or more rows of spikes that are inclined relative to the base and one another. In a variation, pairs of spikes are formed as U-shaped or V-shaped elements with the connecting portion being captured in the base. Again they may be bent subsequent to their association with the base.

It has been found that bird deterrents of this general type can be more effective when there are multiple rows of spikes extending upwards at different angles from the base so as to give a wide range of coverage at the free end of the spikes from a relatively small elongate base. However, with the known designs, increasing the number of rows of spikes necessarily increases the volumetric space occupied by the deterrents even before the rows are bent into their position of use, and this is true even in relation to a single row of spikes according to the above design where the width of the base dictates the minimum width, and the breadth being dictated by the length of the spikes. Thus existing designs do not present the most efficient use of volumetric space as far as packaging, storage and transportation of the product is concerned.

Accordingly, a first aspect of the invention aims to provide a more space effective construction.

The elongate base of the above-mentioned bird deterrent is provided with through apertures at spaced intervals along the length thereof to receive fixing means, be it for conventional screws or nails, or to capture adhesive applied to the base at spaced intervals coinciding with said apertures. Applying the fixing means at discreet positions is time consuming and another aspect of the invention aims to provide a solution.

Accordingly, a first aspect of the invention provides a method of manufacturing a bird deterrent device for deterring birds from landing on a selected surface, the method comprising positioning a plurality of elongate rods (spikes) in spaced side by side relation with a portion thereof in a mould for an elongate base member, and with said rods being disposed in a plane substantially parallel to mounting surface of said elongate base member, causing moulding material to be introduced into the mould to form the base around said portions, and allowing the moulding material to set at least sufficiently to allow removal from the mould.

The resulting product is a generally planar structure. Since the rods are thinner than the depth of the elongate base member, it is the latter that determines the storage/transportation space occupied by the product in conjunction with the length of the elongate member and the length of the spikes. Consequently it occupies less space than the known devices where the width of the base rather than its depth represents one of its minimum dimensions.

Said portion may be an end portion. More particularly, said portion is a portion intermediate the opposite ends of the rods.

The method further comprises bending the opposite ends of the rods to dispose the ends of the rods at a desired angle displaced from the as formed position parallel to the mounting surface of the base, to planes that are inclined with respect to the base. Most usually for the further preferred embodiment the opposite ends of one rod are displaced in two different planes, and, most usually still, planes that are also inclined relative to one another. Exceptionally at least one end may be displaced to be in a plane perpendicular to the base.

More particularly, to benefit from the reduced packaging, storage and transportation space of the device as moulded, it is preferred that the step of bending is performed on site prior to installation, or at least at a location remote from that of initial production. The plurality of rods may be of all the same length or of different lengths.

In one embodiment, the rods are positioned in the mould so that the said intermediate portions are disposed in side by side alignment. However in a preferred embodiment the intermediate portions occupy two or more different laterally disposed positions relative to a longitudinal axis of the elongate base member. In such a preferred embodiment, the elongate base member is configured such that the rods emerge from the opposite sides thereof at different lateral positions according to the positions of the intermediate portions. More particularly, there will be a plurality of rods disposed in each of the displaced lateral positions. By this means, when the projecting ends of the rods are subsequently bent, each projecting end forms a distinct row for each lateral position.

In another embodiment, of the method the elongate base is defined by a lower mounting surface, an up side and opposite side edges and the base has apertures

moulded therein to receive elongate rods (spikes), and wherein the apertures are disposed in at least one side edge of the elongate base and extend in a plane that is substantially parallel to the base to receive the rods in a direction with the free ends projecting outwardly from said sides. The apertures may be through apertures whereby a rod is inserted into opposite ends thereof, or more particularly where one rod inserted therein projects from both ends thereof.

Accordingly, the present invention also proposes a method of manufacturing a bird deterrent device comprising the step of moulding an elongate base member with a base defined by a lower mounting surface, an up side and opposite side edges, forming during moulding or subsequently, aperturing in the base accessed from at least one side edges and orientated to be substantially parallel with the plane of said mounting surface, and subsequent to formation of the base member inserting a plurality of rods into respective apertures.

This aspect of the present invention also provides a bird deterrent device comprising a relatively thin elongate base (conveniently made of plastic), and having a plurality of substantially straight elongate rods (spikes) projecting from the base and disposed in a substantially parallel plane with a mounting surface of the base.

In a preferred embodiment the rods are disposed in a plane that is parallel to the plane of the mounting surface of the base. However, it will be appreciated that the plane of the rods could be inclined to a relatively small degree, eg: by up to 15° without departing from the essence of the invention and compromising the volumetric efficiencies of the construction.

Preferably the rods project from at least one side of the base. More preferably there are rods that project from opposite sides of the base. More preferably still each

rod projects from opposite sides of the base. Yet more preferably the rods have two or more laterally displaced positions relative to the base to form a respective row of spikes when the rods are bent into their operative position. In this context rows are determined by the position that the rods emerge from the base, although the rows will usually be bent to have the spikes thereof disposed at substantially the same inclination relative to the base.

According to a second aspect of the invention there is provided a bird deterrent device comprising a moulded elongate plastics base and a plurality of elongate rods (spikes) extending therefrom, and wherein the base is provided with a plurality of through apertures (keying means) for capturing location means for the device, and characterised by a groove extending along the length of the elongate base and communicating directly or indirectly with at least some of said plurality of through apertures (keying means).

Preferably the said groove is on the underside of the base. Said groove may intersect with a plurality of said through apertures. Said through apertures may have relieving associated with same on the underside, ie: on the mounting surface side of the base, and the groove may intersect with said relieving.

The present invention will now be described further hereinafter, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a plan view of a bird deterrent device according to the invention,

Figure 2 is a view on (A) of Figure 1,

Figure 3 is a side view of apparatus using manufacturing a bird deterrent device according to the invention,

Figure 4 is a view on the (B) Figure 3,

Figure 5 is an end view of a bird deterrent device according to the embodiment of Figures 1 and 2 as it emerges from the manufacturing apparatus prior to bending of the bird spikes,

Figure 6 is a plan view of a fragment of bird deterrent device according to a second embodiment,

Figure 7 is a view on (C) of Figure 6,

Figure 8 is a plan view of a fragment of a third embodiment of a bird deterrent device according to the invention, and

Figure 9 is a view on (D) of Figure 8.

Referring firstly to figures 1 and 2, a bird deterrent device according to the invention comprises an elongate base member 1 moulded from plastics material and plurality of thin elongate rods 3 having a portion 5 thereof intermediate the ends thereof captured in the base member. In the illustrated embodiment the base member has a groove 7 running along the underside of the base member in the longitudinal direction thereof. The base member has a plurality of through bores 9 which communicate directly with the groove 7. In the illustrated embodiment the base is formed in discrete lengths consisting of seven rod receiving portions 10 with intervening connecting portions 11 of reduced width. The increase in width of the elongate receiving portions serves to stabilise the elongate base in its position of use, whilst the wasted portions reduce the amount of material required for the base member. Lines of weakness 8 may be formed in the wasted portions to facilitate reproducing the length of standard unit from the seven units illustrated to any lesser

desired number to make up the require length for a particular application. Several of the devices would be used in combination to fit the desired space to be protected.

According to one embodiment the base member is formed as a plastic moulding and conveniently the mould comprises upper and lower halves 12,13 which are axially vertically separable as represented by arrow X in figures 3 and 4. The shape of the elongate body member is formed by recessing in the two halves with the split line being aligned with location of the elongate rods for which purpose the upper and lower halves have semi circular grooves 15,17. According to the preferred method of manufacture the plurality of elongate rods are placed into the grooves of the lower mould and the top mould closed down onto the bottom mould. Alternatively the rods which are straight elongate rods maybe introduced after closure of the moulds by insertion in an axial direction as represented by arrow Y. With the rods in position and the moulds closed, moulding material is introduced to capture the rods. When removed from the mould the device looks as illustrated in figure 5 from which it can be seen that the product is substantially planar. When the product is required for use the opposite ends of the rod are bent up to the desired angle an example of which is shown in figure 2. Thus it will be appreciated that that the product emerging from the mould occupies less space than the finished product which is extremely advantageous for the purposes of packing, storage and transportation prior to configuration for use.

Figure 6 and 7 show an alternative embodiment in which the elongate base member has the portions 31 for capturing the rods 33 disposed in alternating staggered rows and disposed to one and the other side of the longitudinal centre line of the elongate base. The construction enables four rows of bird spikes to be created

much in the same manner as that for the embodiment for figures 1 and 2 and the device has corresponding features such as the elongate groove 7 aligned with through bores 9, lines of weakness 37 defined by each polygonal rod mounting portion 31 for trimming the elongate member to any desired length. The polygonal (six sided in the illustration) portions 31 are separated by connecting portions 35. The connecting portions have the through bores 9.

Finally, figures 8 and 9 show an alternative embodiment in which the connecting portions 35 of figures 6 and 7 embodiment are omitted and the rod receiving portions 31 mate directly within an adjacent rod receiving portion 31 with the lines of weakness 43 there between. This embodiment provides increased lengthwise density for the bird spikes. Again the device has features in common with the other embodiment with regard to the longitudinal groove aligned with through bores. The method of manufacture is the same as that for the embodiment of figures 1 and 2.

CLAIMS

1. A method of manufacturing a bird deterrent device for deterring birds from landing on a selected surface, the method comprising positioning a plurality of elongate rods (spikes) in spaced side by side relation with a portion thereof in a mould for an elongate base member, and with said rods being disposed in a plane substantially parallel to a mounting surface of said elongate base member, causing moulding material to be introduced into the mould to form the base around said portions, and allowing the moulding material to set at least sufficiently to allow removal from the mould.

2. A method as claimed in claim 1 in which said portion is an end portion.

3. A method as claimed in claim 1 in which said portion is a portion intermediate the opposite ends of the rods.

4. A method as claimed in any one of the preceding claims and comprising bending the opposite ends of the rods to dispose the ends of the rods at a desired angle displaced from the as formed position parallel to the mounting surface of the base, to planes that are inclined with respect to the base.

5. A method as claimed in claim 3 and further comprising displacing the opposite ends of one rod into two different planes.

6. A method as claimed in claim 5 and further comprising displacing the opposite ends so that they lie in planes that are inclined relative to one another.

7. A method as claimed in claims 4, 5 or 6 in which at least one end is displaced to be in a plane perpendicular to the base.

8. A method as claimed in any one of claims 4 to 7 in which the step of bending is performed on site prior to installation, or at least at a location remote from that of initial production.

9. A method as claimed in any one of the preceding claims comprising the step of using rods that are all the same length or of different lengths.

10. A method as claimed in claim 3 and further comprising positioning the rods in the mould so that the said intermediate portions are disposed in side-by-side alignment.

11. A method as claimed in claim 3 and further comprising positioning the intermediate portions to occupy two or more different laterally disposed positions relative to a longitudinal axis of the elongate base member.

12. A method as claimed in claim 3 and further comprising configuring the elongate base member such that the rods emerge from the opposite sides thereof at different lateral positions according to the positions of the intermediate portions.

13. A method as claimed in claim 12 and further providing a plurality of rods disposed in each of the displaced lateral positions.

14. A method as claimed in claim 13 and further comprising bending the projecting ends of the rods so that each projecting end forms a distinct row for each lateral position.

15. A bird deterrent device comprising an elongate base defined by a lower mounting surface, an up side and opposite side edges and wherein the base has apertures moulded therein to receive elongate rods (spikes), and wherein the apertures are disposed in at least one side edge of the elongate base and extend in a plane that is

substantially parallel to the base to receive the rods in a direction with the free ends projecting outwardly from said sides.

16. A bird deterrent device as claimed in claim 15 in which the apertures are through apertures whereby a rod is inserted into opposite ends thereof.

17. A bird deterrent device as claimed in claim 15 in which the apertures are through apertures and one rod inserted therein projects from both sides thereof.

18. A method of manufacturing a bird deterrent device comprising the step of moulding an elongate base member with a base defined by a lower mounting surface, an up side and opposite side edges, forming during moulding or subsequently, aperturing in the base accessed from at least one of the side edges and orientated to be substantially parallel with the plane of said mounting surface, and subsequent to formation of the base member inserting a plurality of rods into respective apertures.

19. A method as claimed in claim 18 and comprising forming the apertures for the rods in a plane that is parallel to the plane of the mounting surface of the base.

20. A method as claimed in claim 18 or 19 and further comprising forming the apertures for the rods to at an angle of up to 15° to the plane of the base.

21. A method as claimed in claim 18, 19 or 20 in which the rods are inserted to project from at least one side of the base.

22. A method as claimed in claim 18, 19, 20 or 21 in which the rods are inserted to project from opposite sides of the base.

23. A method as claimed in claim 18 in which each rod is positioned to project from opposite sides of the base.

24. A method as claimed in claim 18 in which the rods are positioned to have two or more laterally displaced positions relative to the base to form a respective row of spikes when the rods are bent into their operative position.

25. A method as claimed in claim 24 in which the positioning of the rows are determined by the position that the rods emerge from the base.

26. A method as claimed in claim 24 or 25 in which the rods are bent to have at least one row of spikes disposed at substantially the same inclination relative to the base.

27. A bird deterrent device comprising a moulded elongate plastics base and a plurality of elongate rods (spikes) extending therefrom, and wherein the base is provided with a plurality of through apertures (keying means) for capturing location means for the device, and characterised by a groove extending along the length of the elongate base and communicating directly or indirectly with at least some of said plurality of through apertures (keying means).

28. A bird deterrent device as claimed in claim 27 in which said groove is on the underside of the base.

29. A bird deterrent device as claimed in claim 28 in which said groove intersects with a plurality of said through apertures.

30. A bird deterrent device as claimed in any one of claims 27 to 29 in which said through apertures have relieving associated with same on the underside.

31. A bird deterrent device as claimed in claim 30 when dependant on claim 28 in which the groove intersects with said relieving.

32. A method of manufacturing a bird deterrent device as claimed in any one of claims 1 to 14 in which the rods are disposed at up to 15° to the plane of the base.

33. A method of manufacturing a bird deterrent device according to any one of the embodiments substantially as hereinbefore described with reference to the accompanying drawings.

34. A bird deterrent device constructed and arranged substantially as hereinbefore described to and as illustrated in one or more of the accompanying drawings.

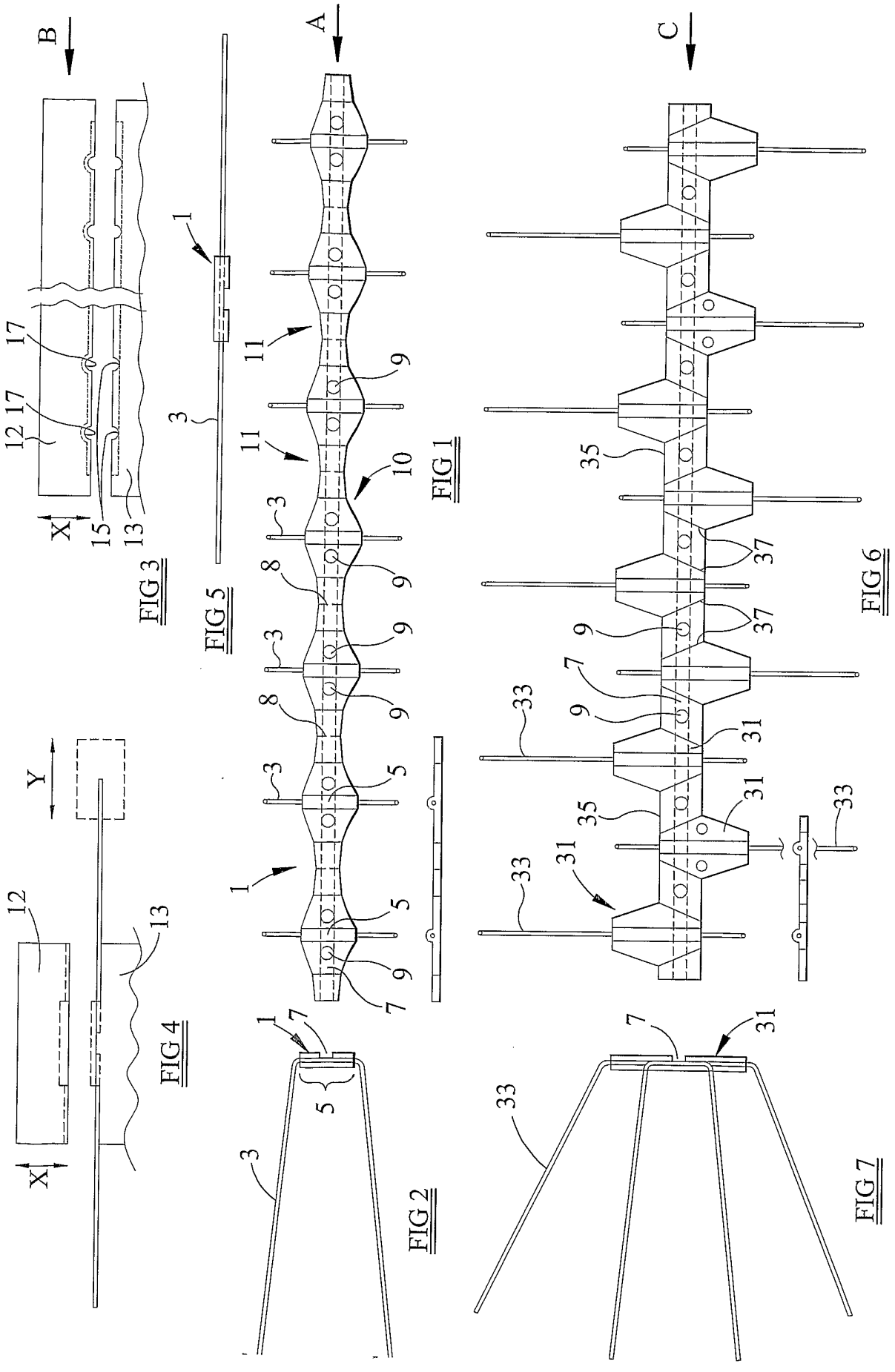


FIG 1 FIG 2 FIG 3 FIG 4 FIG 5 FIG 6 FIG 7

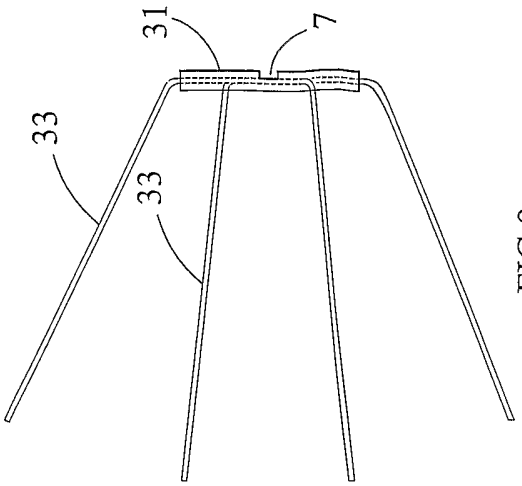


FIG 9

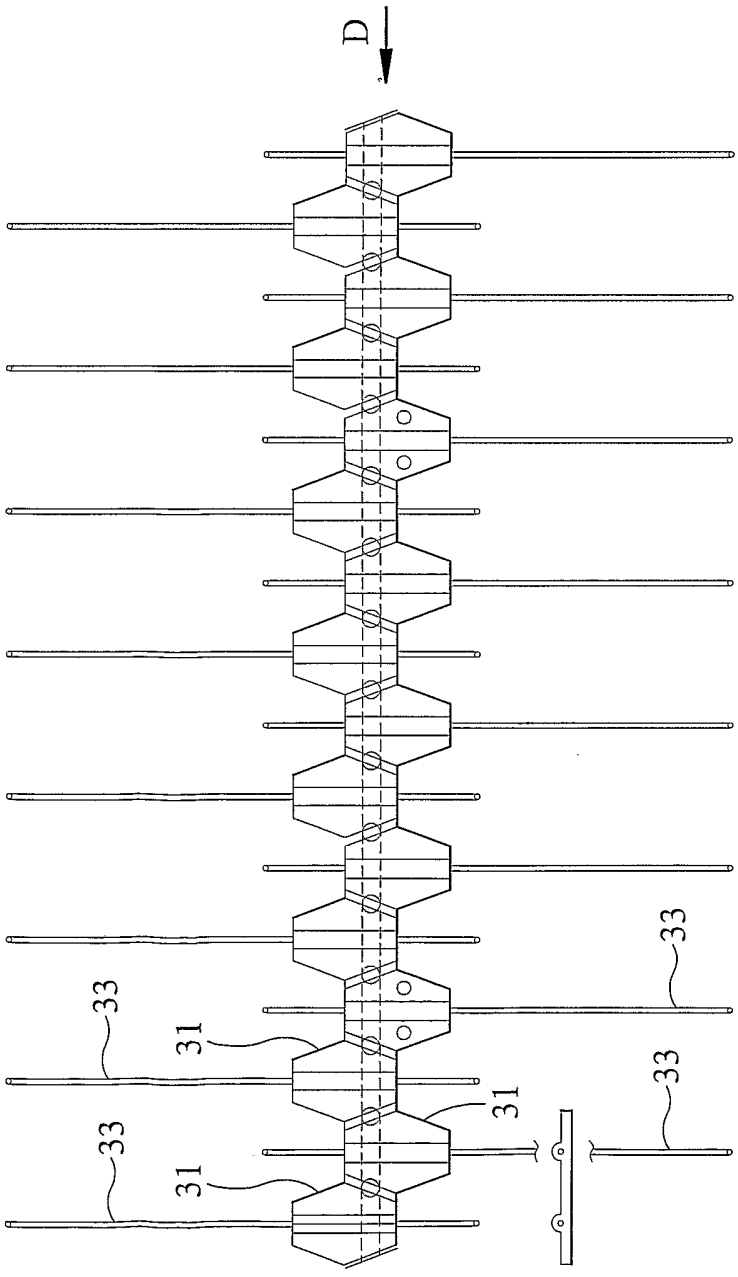


FIG 8

INTERNATIONAL SEARCH REPORT

Inte nal Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A01M29/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 92 12 573 U1 (NIEWOLLIK, PETER, 3303 VECHELDE, DE) 26 November 1992 (1992-11-26)	1
X	page 2, paragraph 6; claim 1; figure 1	15-26
A	US 3 282 000 A (SHAW JOHN B ET AL) 1 November 1966 (1966-11-01) column 2, line 39 - line 45 column 3, line 45 - line 67	1,15,18
X	column 4, line 10 - line 11; figures 1-4	27-31
P,A	WO 2004/017730 A (NETWORK PEST CONTROL SYSTEMS LIMITED) 4 March 2004 (2004-03-04) page 5, paragraph 7 - page 6, paragraph 4; figures 5-11	1,15,18

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
10 February 2005	22/02/2005

Name and mailing address of the ISA	Authorized officer
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INTERNATIONAL SEARCH REPORT

Inte ›nal Application No
PC1/GB2004/004091

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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