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**D E C I S I O N**  
of 25 November 1993

**Case Number:** T 0049/92 - 3.2.4

**Application Number:** 87901286.2

**Publication Number:** 0258318

**IPC:** A01M 1/22

**Language of the proceedings:** EN

**Title of invention:**  
An insect or vermin trap

**Applicant:**  
Stone, Lawrence Victor Mond, et al

**Opponent:**

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**Headword:**

-

**Relevant legal norms:**  
EPC Art. 56

**Keyword:**  
"Inventive step (yes)"

**Decisions cited:**  
T 0229/85, T0002/83

**Catchword:**

-



Case Number: T 0049/92 - 3.2.4

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.4  
of 25 November 1993

**Appellant:**

STONE, Lawrence Victor Mond  
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**Representative:**

Gee, David William  
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**Decision under appeal:**

Decision of the Examining Division of the European  
Patent Office dispatched on 20 September 1991  
refusing European patent application  
No. 87 901 286.2 pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** C.A.J. Andries  
**Members:** M.G. Hatherly  
J.-P.B. Seitz

## Summary of Facts and Submissions

- I. European patent application No. 87 901 286.2, filed on 19 February 1987 as PCT/AU87/00046 and published under the publication No. WO 87/04901, was refused by a decision of the first instance dispatched on 20 September 1991.
- II. The reason given for the refusal was lack of inventive step of the subject-matter of Claim 1 and of all the dependent claims having regard to the prior art documents:
- (A1): AU-B-55931/80;  
(US1): US-A-4 422 015; and  
(US2): US-A-3 827 176.
- III. An appeal was lodged against this decision on 4 November 1991, the appeal fee was paid on 14 November 1991 and the Statement of Grounds of Appeal received on 28 November 1991.

In the Statement of Grounds of Appeal the Appellant submitted amended claims and argues that the prior art documents A1 and US2 would have been rejected individually by the person skilled in the art and their combination could only be the result of hindsight. The shape, size and location of the electrodes of the present trap give better results than those of the trap of document A1, particularly with cockroaches and other insects with feelers. The present trap's high voltage is activated and deactivated automatically rather than by using the animal as in document US2. The housing of the present trap provides a dark area attractive to light avoiding insects such as cockroaches. The voltage of 1 kV to 7 kV specified in document US1 leads to the

false conclusion that voltages below 3.5 kV are effective for electrocuting insects.

Subsequently the Appellant submitted newspaper articles and a page from a mail order catalogue as evidence of the commercial success of the invention.

After a telephone call from the Board the Appellant submitted new application documents with a letter dated 12 November 1993. Minor amendments were agreed during a further telephone call and confirmed by facsimile.

IV. Claim 1 now reads as follows:

"An insect trap (10) which includes a housing (11), two electrodes (18,20) within the housing, said electrodes being planar, spaced from each other and extending substantially along the housing, at least one entry (14) into the housing to allow insects to enter the housing at any time, means (D9, C5 to C34) to generate a voltage, and timing and control means (R8,C4; R3,C3; B; D6; RC,RL1; C43,C44) to provide controlled alternation between an off period during which the electrodes are not supplied with voltage from the voltage generating means and an on period during which the electrodes are supplied with the said voltage, characterised by means to generate a voltage of 3.5 kV or higher, for exterminating insects entering the trap, each electrode (18,30) extending both substantially along and substantially across the housing (11), the electrodes being located in different, but substantially parallel planes spaced to allow the insects to enter between the electrodes, and the on period being an extermination period during which the insects which bridge the space between the electrodes are exterminated."

V. The Appellant requests that the appeal be allowed or that the application be remitted to the Examining Division for further prosecution. This is interpreted as a request for the decision to be set aside and for the grant of a patent or remittal to the Examining Division on the basis of the following documents:

Claims: Claims 1 to 12 filed with the letter dated 12 November 1993;

Description: pages 1 and 9 as originally filed, wherein on page 1 the words "or vermin" are removed from the title and from line 1, and the words "vermin and" are removed from line 7;  
pages 2, 3, 3a, 4 to 8, 10 and 11 filed with the letter of 12 November 1993; wherein on page 3 the word "vermin" in line 8 is amended to "insect"; the words "or vermin" in line 12 are deleted; the words "particularly for insects such as cockroaches," in line 13 are deleted; and the word "electrodes" in line 24 is amended to "electrode"; and  
page 3b filed with the letter of 6 August 1990;

Drawings: sheets 1/3 to 3/3 as originally filed.

#### Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC; it is admissible.

2. *Amendments*

2.1 The present Claim 1 is based on the originally filed Claim 1 supplemented by information from:

- Figure 2; page 5, lines 15 to 19 and page 6, lines 6 to 15 of the originally filed description; and the originally filed Claim 8 concerning the extent, planarity and spacing of the electrodes;
- Figure 2 and page 3, lines 25 to 27 of the originally filed description concerning the entry;
- page 4, lines 3 to 6 of the originally filed description concerning the extermination voltage;
- the originally filed Claim 12 concerning the timing means; and
- page 11, lines 7 to 9 of the originally filed description for extermination of insects bridging the electrodes during the on period.

2.2 The present Claim 2 corresponds to the originally filed Claim 2; the present Claim 3 is derivable from lines 2 to 6 of the originally filed Claim 1 or from page 3, lines 15 to 17 of the originally filed description; the present Claim 4 corresponds to the originally filed Claim 3; and the present Claims 5 to 12 correspond to the originally filed Claims 6 to 13 respectively.

2.3 The present description is merely an adaptation of the originally filed description to take account of changes in Claim 1 and to acknowledge the prior art.

2.4 The drawings are as originally filed.

2.5 Thus there are no objections under Article 123 EPC to the amended claims and description.

3. *Novelty*

After examination of the cited documents, the Board is satisfied that none of them discloses an insect trap having all the features set out in Claim 1. Novelty was not disputed by the Examining Division. The subject-matter of Claim 1 is thus to be considered as novel within the meaning of Article 54 EPC.

4. *Closest prior art*

4.1 Animal traps generally kill one animal at a time and then either need emptying (see document US2) or have a complicated automatic emptying mechanism (see document US-A-3 815 278). While this may be satisfactory for animal pests, insect pests are normally more numerous so that killing only one before needing to empty the trap is insufficient. Thus the trap according to document A1 in being effective for a plurality of insects at one time is more suitable. Instead of attracting the insects by light to an electrified grid (see document US1) which would be unsuitable for cockroaches, the prior art trap according to document A1 has a housing for the electrodes.

Thus the Board, like the Examining Division, considers the prior art insect trap closest to the present invention to be that disclosed by the document A1.

4.2 The subject-matter of Claim 1 differs from the disclosure of the document A1 in various ways:

- 4.2.1 Means to generate a voltage of 3.5 kV or higher: the highest value disclosed by document A1 (see page 3, line 29) is 1 kV.
- 4.2.2 Each electrode extends both substantially along and substantially across the housing:

While it is sometimes difficult to determine whether the expression "substantially" truly applies to some property of some arrangement, no doubt arises when examining the prior art document A1. The conductors 3 of the prior art trap are strips and presumably extend substantially along the housing (into the paper of the Figure). However, concerning the other direction, it must first be considered that each panel carries the conductors for both electrodes so that, even if - rather unrealistically - the conductors abutted each other, each electrode could even then only occupy one half of the width of the panel. Secondly it can be seen from the Figure that even the panels themselves occupy only a small proportion of the width of the trap since for example a large gap must be left between the panels 2 so that dislodged cockroaches can fall into the tray 4. Thus the prior art electrodes do not extend substantially across the housing.

In the present trap the insects enter between the electrodes located in different planes and these electrodes are substantially the same size as the housing so that insects in the housing are liable to be between the electrodes for electrocution when the voltage is turned on. Seen in this light the word "substantially" applied to the relative dimensions of electrodes and housing is clear and applies to the present arrangement but not that of the document A1.



4.2.3 The electrodes are located in substantially parallel planes spaced to allow the insects to enter between the electrodes: In the prior art trap the two electrodes of one panel 2 are located in the same plane and the insects stand on the electrodes rather than entering between the electrodes.

4.2.4 The on-period is an extermination period during which the insects which bridge (or substantially bridge) the space between the electrodes are exterminated: Document A1 specifically teaches that the pulses merely dislodge pests on the panels 2 and do not kill them (see page 4, lines 30 to 34).

5. *Problem and solution*

The problem stated in sections 3 to 3.4 of the decision under appeal is to provide a sufficiently high voltage and suitable electrodes to kill animals. However this formulation impermissibly contains direct pointers to the solution (see decision T 229/85, OJ EPO 1987, 237). The Board sees the objective problem as being to provide an improved insect trap.

The Board is satisfied that the features in Claim 1 and in particular in the characterising portion of Claim 1 provide an improved insect trap.

The area of each electrode is substantially that of the housing so that it is more likely that an insect in the housing is in a position between electrodes and thus subject to the voltage when turned on. The insects use their feelers when moving and these tend to bridge the gap between the parallel electrodes. The high voltage kills the insects so that later escape is impossible and tends to disintegrate the insects leaving more room for others to follow, disintegrated insects would fall onto

the lower electrode and thus no longer form a current path between the two electrodes.

6. *Inventive Step*

6.1 The first point to be considered is whether the skilled person would find it obvious to modify the trap disclosed by document A1 to kill rather than dislodge.

6.1.1 Document A1 teaches that the electrification of the panels 2 "is not intended to kill the pests but merely to dislodge them from the surface into the trapping zone where they subsequently die or where they are removed for extermination and disposal", see page 4, lines 30 to 34. Both the independent Claims 1 and 10 also include this feature of dislodging from the surface but not killing thereon. The title of the document refers to dislodging without mentioning killing and nowhere does the document even hint that it might be intended to use the electrification of the panels 2 to kill the pests. Thus an essential part of the teaching of document A1 is that the pests are dislodged but not killed when the panels are electrified.

6.1.2 The person skilled in the art, when told in no uncertain terms by document A1 that he must dislodge the pests from the panels but that he is not allowed to kill them on the panels, might well rebel and ask "Why not?" He would realise that the voltage pulses employed in the prior art trap (300 V to 500 V is preferred but 100 V to 1 kV can be used, see page 3, lines 24 to 35) are insufficient to kill insects but that killing could be achieved if the voltage were increased. Considerably higher voltages are employed in the insect traps of US-A-3 708 907 (see column 3, line 10: 4500 V) and US-A-4 422 015 (see column 4, lines 8 and 9: 1000 to 7000 V). He would also realise however that the designer

of the trap known from document A1 must have considered the possibility having the pests killed on the panels 2 but had rejected it in favour of merely dislodging them. The skilled person would therefore ask himself just why the designer had chosen to merely dislodge the pests from the panels. The Board considers that the skilled person would realise that voltages sufficient to kill would be likely to produce burning of the pests, resulting in:

- smells which would deter further pests from proceeding to the panels; and
- burnt remains on the panels which would also deter further pests, complicate emptying and cleaning of the trap, and increase power consumption by short circuiting the electrodes.

6.1.3 The skilled person would realise why the designer of the prior art trap had chosen a lower voltage, namely to dislodge without killing and without producing smells and without leaving remains on the panels. Use of a higher killing voltage rather than a lower dislodging voltage would therefore lower the effectiveness of the prior art trap and in particular the dislodging operation.

6.1.4 For the foregoing reasons the Board considers it likely that the skilled person would have remained with respect to the use of a higher voltage with the clear teaching of document A1 to merely dislodge pests from the panels and, despite his knowledge of insect traps using higher voltages, would not have contravened the teaching of document A1 by having the pests killed on the panels.

6.2 However the person skilled in the art could recognise some disadvantages of the prior art trap. Alternate

strip conductors 3 are pulsed i.e. a potential difference then occurs between all the strips making up one electrode and all the strips making up the other electrode; if an insect has all its legs on strips of one electrode and/or on the insulated panel when a pulse occurs then it will not be dislodged. Furthermore it is cruel that live insects remain in tray 4 until emptying. The capacity of the tray is limited, when full perhaps some insects could crawl back out.

6.3 Therefore, although document A1 is clear in its rejection of killing, it is possible that the skilled person might realise that killing rather than dislodging would be advantageous. He would then immediately realise that a higher voltage is necessary to do this. Higher voltages are known for insect traps. Document US1 teaches 1 kV to 7 kV, by experiment the skilled person might well find that 1 kV is too low for killing insects and he could arrive at a suitable voltage, the claimed "3.5 kV or higher" then being the routine result thereof. Moreover document US-A-3 708 907 teaches 4.5 kV. Even if, against the clear teaching of document A1, the person skilled in the art were intending to increase the voltage used, there is still no indication in document A1 to lead towards the specific construction claimed. Furthermore increasing the voltage used neither necessitates nor even leads towards a change in the construction of the pest trap according to document A1.

6.4 Spaced electrodes in parallel planes allowing a pest to enter therebetween are known *per se* from the animal trap of document US2. However this is plainly an animal trap, uses only 115 V (and so teaches a lower voltage even than document A1), has no housing (so is not dark for cockroaches which is the primary target of the trap according to document A1), kills one animal at a time and then needs emptying (one cockroach at a time is of

little help) and the voltage is turned on when animal moves the door 12 (an insect could not move the door).

In the Board's opinion, to argue that the skilled person would consider this trap of document US2 and then select from it only the spaced parallel electrodes and leave behind all the other features has to be considered as being the result of an ex post facto analysis.

Moreover the physical construction of the insect trap specified in the present Claim 1 differs from that of the insect trap according to document A1 in two ways:

- Each electrode extends substantially across the housing: This would not be an obvious modification of the trap known from document A1 since there would then be no gap for the insects to fall through to land in the tray 4. The person skilled in the art would not be given a hint to modify the trap according to document A1 in this way from document US2 since the trap thereof does not have a housing around the electrodes.
  
- The electrodes are located in substantially parallel planes spaced to allow the insects to enter between the electrodes: This arrangement is known *per se* from the animal trap of document US2. While it would be possible to redesign the trap according to document A1 to have four panels 2, each carrying only one electrode so that insects proceeded from the inclined entry gaps (between surfaces 6 and cover 8) into a gap between double-decker panels, this would be something the skilled person **could** do rather than something he **would** do (see decision T 2/83, OJ EPO 1984, 265: "could-would approach").

6.5 The Board thus considers that it would not be obvious to combine the documents A1, US1 and US2 and that, even if this were done, the result would not correspond to the insect trap of Claim 1. The Board also considers all the other cited documents to be non-prejudicial to Claim 1, either alone or in combination with each other.

The insect trap according to Claim 1 thus involves an inventive step within the meaning of Article 56 EPC.

There is accordingly no need to consider the newspaper articles and the mail order catalogue page.

7. The subject-matter of Claim 1 is thus patentable as required by Article 52 EPC. A patent may therefore be granted based on this allowable independent claim, dependent Claims 2 to 12 which concern preferred embodiments of the insect trap according to Claim 1, the amended description and the drawings.

**Order**

**For these reasons, it is decided that:**

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent in the version as set out in section V above.

The Registrar:



N. Maslin

The Chairman:



C. Andries