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BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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File Number: T 454/90 - 3.2.1

Application No.: 83 307 703.5

Publication No.: 0 112 703

Title of invention: Vehicle lighting system

Classification: B60Q 1/14

D E C I S I O N
of 2 June 1992

Proprietor of the patent: Danor Electronics Ltd.

Opponent: Hella KG Hueck & Co.

Headword:

EPC Articles 54 and 56

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

Headnote

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 454/90 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 2 June 1992

Appellant : (Opponent)
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Respondent : (Proprietor of the patent)
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Representative :
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Decision under appeal :
Interlocutory decision of the Opposition Division of the European Patent Office dated 11 May 1990 concerning maintenance of European patent No. 0 112 703 in amended form.

Composition of the Board :

Chairman : F. Gumbel
Members : P. Alting van Geusau
F. Benussi

Summary of Facts and Submissions

I. European patent No. 0 112 703 was granted with effect from 10 December 1986 on the basis of European patent application No. 83 307 703.5.

II. The Appellant (Opponent) filed a notice of opposition against the patent on 1 September 1987 requesting that it be revoked in its entirety because of lack of novelty or inventive step of its subject matter in view of the prior art disclosed in the following documents:

D1: FR-A-2 497 484
D2: DE-A-1 962 093
D3: Kraftfahrzeug-Elektriker, Heft 8, 41
D4: DE-U-1 696 455
D5: DE-A-2 258 314
D6: DE-A-2 431 313

III. By a decision issued on 11 May 1990 the Opposition Division held that there were no grounds of opposition opposing the maintenance of the patent in amended form on the basis of the documents comprising new Claims 1 to 22 filed with letter of 12 July 1989.

IV. Against this decision the Appellant filed a notice of appeal on 5 June 1990 and paid the appeal fee on 7 June 1990. The Statement of Grounds of appeal was filed on 25 July 1990.

V. In a communication dated 27 August 1991 the Board expressed the provisional opinion that the independent claims filed with letter of 12 July 1989 did not appear acceptable for reasons of Article 123(3) EPC because of replacement of the feature relating to the "charging

circuit" in the granted independent claims by "ignition/starting circuit" in the new claims.

However, since no lead to the underlying principle of the patent i.e. a three-point detection of voltages for generation of a switching signal could be derived from the cited documents, re-drafted formally acceptable claims could probably form the basis for maintenance of the patent in amended form.

VI. At the oral proceedings held on 2 June 1992 the Respondent submitted new patent documents comprising new independent Claims 1 to 22 and the description.

Independent Claims 1 and 22 read as follows:

"1. A lighting system for a vehicle having an engine and a charging circuit therefore, the lighting system comprising sidelights (10) in a sidelights circuit, headlamps (11) having main beam filaments (12) in a main beam circuit and dipped beam filaments (13), sensor means (20, 40) responsive inter alia to a first voltage at a predetermined point (37) in the charging circuit and to a second voltage at a predetermined point (27) in the main beam circuit, and switching means (28, 41) responsive to the sensor means (20, 40) to control current flow to the dipped beam filaments (13) such that these filaments are automatically energised when the sidelights (19) are energised and are automatically de-energised when either the sidelights (10) are subsequently de-energised or the main beam filaments (12) are energised, characterised in that the predetermined point (37) in the charging circuit is a point at which the voltage varies as the speed of the engine increases, in that the sensor means (20, 40) is also

responsive to a third voltage at a predetermined point (15) in the sidelights circuit, and in that the sensor means (20, 40) is connected to said predetermined point (15) in the sidelights circuit by way of a diode (21, 46) which places a voltage clamp on the sensor means (20, 40) to prevent the switching means (28, 41) from operating until the speed of the engine is sufficient to cause the first voltage to pass through a pre-selected level, the second voltage is at a level corresponding to the main beam filaments being de-energised and the third voltage is at a level corresponding to the sidelights (10) being energised".

"22. A lighting system for a vehicle having an engine and a charging circuit therefore, the lighting system comprising sidelights (10) in a sidelights circuit, headlamps (11) having main beam filaments (12) in a main beam circuit and dipped beam filaments (13), sensor means (20) responsive inter alia to a first voltage at a predetermined point (37) in the charging circuit and to a second voltage at a predetermined point (27) in the main beam circuit, and switching means (28) responsive to the sensor means (20) to control current flow to the dipped beam filaments (13) such that these filaments are automatically energised when the sidelights (10) are energised and are automatically de-energised when either the sidelights (10) are subsequently de-energised or the main beam filaments (12) are energised, characterised in that the predetermined point (37) in the charging circuit is a point at which the voltage varies as the speed of the engine increases, in that the sensor means (20) is also responsive to a third voltage at a predetermined point (15) in the sidelights circuit, and in that the sensor means (20) is connected

between said predetermined point (15) in the sidelights circuit and the main conduction path of a transistor (35), the base of the transistor (35) being connected to said predetermined point (37) in the charging circuit, the voltage drop across the sensor means (20) being insufficient to cause the switching means (28) to operate unless the speed of the engine is sufficient to cause the first voltage to pass through a pre-selected level, the second voltage is at a level corresponding to the main beam filaments being de-energised, and the third voltage is at a level corresponding to the sidelights (10) being energised".

The Respondent requested maintenance of the patent in the amended form on the basis of the documents submitted during the oral proceedings and the drawings as granted.

The Appellant requested that the impugned decision be set aside and that the patent be revoked in its entirety.

VII. In support of his requests the Appellant essentially submitted the following arguments:

A comparison between the disclosure of D1 and the lighting system in accordance with Claim 1 shows that in addition to the pre-characterising features most of the characterising features are also known from D1 except for the features relating to the prevention of the switching means from operating until the speed of the engine is sufficiently high to cause the first voltage to pass through a pre-selected level.

The latter feature is however known from D2 and D3, documents lying in the same technical area as the claimed invention, which would thus lead the skilled person to

combine the teachings of D1 with those of D2 and/or D3 and thus to arrive, in essence, at the subject-matter of independent Claim 1.

Also when starting from D2, only one feature i.e. the feature that a voltage clamp is placed on the sensor means by means of a diode, remains as a difference. The use of a diode is known from D1 so that also in this respect the combination of the teachings of D1 and D2 immediately leads the skilled person to the subject matter of Claim 1.

The same line of argument applies to Claim 22 because it is well known to the skilled person that sensing means in the form of a relay coil can be replaced by electronic means such as a switching transistor.

Even considering that the sensor means and switching means might be seen as fully separate units - which is not clear from the present independent claims - the skilled person would easily derive from both D1 and D2 that in particular three predetermined points in the known circuit are essential to the functioning of these systems and he would therefore be led in an obvious manner to use the signals at these points for the sensing means.

In view of the embodiment defined in Claim 6 of the current set of claims, attention is also drawn to Figure 3 of D1 from which the skilled person would immediately recognise three relevant sensing points for the relay coils of the switching means.

Turning to D3, which must be regarded as background knowledge of the skilled person in this technical field, a number of possibilities are shown for avoidance of current drain during standstill of a motor vehicle engine.

The skilled person had nothing else to do then applying this knowledge to the circuit shown in Figure 3 of D1 and would thus arrive in an obvious manner at the subject matter of Claim 1.

VIII. The counter arguments submitted by the Respondent can be summarised as follows:

In the pre-characterising part of the independent claims, it is specified that the sensor means is responsive to respective voltages in the charging circuit and in the main beam circuit, and that the switching means is responsive to the sensor means to control current flow to the dipped beam filaments. It is therefore clearly envisaged that the sensor means is a separate component from the switching means, with the latter being operationally dependent upon the former, and as a consequence the Appellants view, in particular with respect to additional characterising features of the independent claims being known from D1 or D2, cannot be accepted.

The Appellant's further submission that the diode 18 in Figure 4 of D1 is a clear equivalent of the diode 21 or 46 specified in the claims is not acceptable, since the diode 18 solely has the function of preventing back-flow of current and in this respect can only be compared to the diode 26 in Figure 1 of the patent. In view of this different function it cannot be said that it would be obvious to the skilled person to use the diode 18 in the Figure 4 arrangement to impose a voltage clamp on the sensor means.

Even when combining the teachings of D1, D2 and D3 one would still not arrive at the system of Claim 1 because

none of these prior art documents suggests the use of three predetermined points for voltage sensing purposes.

As regards D2, although this documents discloses switching means responsive to the generator voltage, the system functions in a different manner than that of the patent and may have the risk of unwanted dazzling of oncoming vehicles when the switch S2 is in the main beam position.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC. It is therefore admissible.

2. Amendments

2.1 The current independent Claims 1 and 22 relate to the embodiments clearly disclosed with respect to Figure 1, respectively 2 of the application as originally filed and are based on the granted Claims 1 to 3, respectively 1 to 3 and 26.

The dependent Claim 2 is based on the embodiments described in the original application with respect to Figures 1 and 2 when leaving out the resistor 34, and corresponds to Claim 4 of the granted patent.

Claims 3 to 5 essentially correspond to the original Claims 2 to 4, respectively Claims 5 to 7 of the granted patent.

The subject matter of Claim 6 is disclosed on page 24 of the application as originally filed and has its counterpart in the granted Claim 8.

Claims 7 to 18 and 19 to 21 are essentially repetitions of the original Claims 5, 6, 8 to 17 and 24 to 26, corresponding to Claims 9 to 20 and 27 to 29 of the granted patent.

All claims thus meet the requirement of Article 123(2) EPC and since the present claims are restricted in scope when compared to the granted claims also the requirement of Article 123(3) EPC is complied with.

2.2 The description filed in the oral proceedings has been adapted to the scope of the current claims and also further meets the requirements of the EPC.

3. Prior art

3.1 In the appeal procedure the Appellant essentially relied on the prior art disclosed in D1, D2 and D3. Since the other documents cited in the opposition procedure and European search report clearly lie further away from the subject matter of the current claims it is not considered necessary to discuss these other documents any further.

3.2 The closest prior art is disclosed in D1, describing a lighting system comprising the combination of features indicated in the pre-characterising part of Claims 1 and 22.

With this known lighting system it is ensured that the sidelights of a vehicle cannot be energised when the ignition switch is turned on without the dipped beam filaments being energised.

In the embodiment shown in Figure 4 a relay is used to automatically switch on the dipped beam when the ignition

switch is turned on, the sidelights are energised and the main beams are de-energised.

The Appellant submitted that further features of the independent claims of the contested patent are also disclosed in D1 but this opinion relies on the assumption that there is no real difference in functioning of the sensing- and switching means which may therefore be seen as one arrangement in which it does not matter whether the signals are sensed or switched.

However as is clearly specified in the independent claims the sensor means is a separate component from the switching means with the latter being responsive upon the former for its operation.

In D1 the sensor means (in the form of the coil 7 in Figure 4) is responsive to the voltage at the switch 8 and the voltage on line 12 only and not to a third voltage as defined in Claims 1 and 22. Moreover the diode 18 is for preventing current back-flow and as regards its function is comparable with the diode 26, 38 or 47 in the embodiments of Figures 1 to 3 of the contested patent rather than with a diode placing a voltage clamp on the sensor means as was alleged by the Appellant.

Therefore none of the characterising features of Claim 1 and 22 is disclosed in D1.

3.3 Document D2 relates to a lighting system for a vehicle in which, on the condition that the engine is started and the sidelights are switched on, the main- or dipped beams are automatically energised.

When comparing the content of the independent Claims 1 and 22 with the disclosure of D2 it is immediately clear that

the sensor means in D2, which are not described as such but may be considered to be constituted by a relay coil for actuation of the switch means M1 (see the Figure of D2), is neither responsive to a second voltage at a predetermined point in the main beam circuit nor to a third voltage at a predetermined point in the sidelight circuit because such a relay coil only need connections to a point in the charging circuit and to the vehicle chassis which was in fact also the view expressed by the Appellant in the oral proceedings. The system of D2 does further not comprise a diode or transistor.

3.4 D3 concerns the possibilities of practical use of the generator contact (61) normally controlling the charging warning light in a motor vehicle also for other purposes such as the automatic energising of a heater only when the motor vehicle engine is running ("Schaltbild 7") or automatic warning that the lights are still on when the motor vehicle is stopped ("Schaltbild 4").

Thus as regards D3 only "Schaltbild 4" relates to a lighting system for a vehicle and comprises some of the features of the independent claims under discussion. However any reference to a third voltage, a diode, switching means or a transistor is lacking in this embodiment.

4. Novelty

4.1 In view of the above analysis of the relevant prior art it is concluded that the subject matter of the independent Claims 1 and 22 is novel within the meaning of Article 54 EPC because none of the available prior art documents discloses the full combination of features of the claims which was in fact not contested any further by the Appellant in the appeal proceedings.

5. Inventive step

5.1 In the known lighting system according to D1 the dipped beam filaments are energised as soon as the ignition switch is closed, which imposes a considerable current drain on the vehicle battery and thus may give difficulties when trying to start the engine.

5.2 The lighting systems of Claims 1 and 22 overcome this problem by energising the dipped beam filaments not until the engine has been safely started thereby avoiding premature current drain on the battery (see also Column 1, lines 38 to 49 of the patent in suit).

Therefore in the light of the closest prior art, the technical problem underlying the patent in suit is to be seen in the provision of a system for automatically energising the filaments of the dipped beam of a vehicle when the side lights are switched on but in which current drain is avoided as long as the engine is not running.

5.3 In the lighting system of D2 the switch M1 may be a relay, the coil of the relay being connected to the generator so that when the engine is running and the generator is giving sufficient electrical power the switch M1 is automatically closed (see page 5, last paragraph of D2) and thus, when the sidelights are energised, automatically energises the main- or dipped beam.

The Board is the opinion that, in view of the above cited problem and the teaching of D2, the skilled person might adapt the system of D1 to include such a relay switch actuated by the generator to avoid unwanted current drain when the engine is not started.

However such an adaptation would not lead to a lighting system in accordance with Claims 1 or 22 of the patent in suit. The system in accordance with these independent Claims rely on the principle that the voltage at three different predetermined points in the lighting circuit is sensed and that depending upon a particular relationship of these voltages, as specified in the claims, the switching means are operated.

The systems disclosed in D1 and D2 rely for their automatic functioning on other conditions and it will be clear that the D1 system if adapted in accordance with the teaching of D2 would still be based on the principle of sensing the voltage at two pre-determined points. Furthermore it would have the drawback of continually keeping the relay switch closed as long as the engine is running irrespective whether the sidelights are energised or not. This is not the case in the systems in accordance with Claims 1 and 22 of the patent in suit because of the "third" point taken into account for the energising of the switching means.

5.4 The Appellant submitted that the skilled person would be led by the teachings of D1 and D2 to consider sensing the voltage at the three predetermined points specified in the patent because D1 and D2 teach that these points are essential to the functioning of the known systems.

The Board cannot accept this line of argument since the skilled person had no reason whatsoever to consider sensing of voltages at three different points in the known system because in both D1 and D2 and also in D3 the relay coil used as sensing means is connected to two points only.

As far as the sidelight circuit is concerned the prior art documents show nothing else than that this circuit is used as a power line only and no lead can be derived from any of the relevant documents to use the voltage in this circuit as a further (third) condition for actuation of the switching means.

In this respect attention is also drawn to the specific use of a diode or transistor in accordance with the features of the independent claims.

Clearly by applying these further components in the manner specified in the claims a three point sensing was first made possible. In view of the fact that the relevant prior art documents lack any disclosure or hint to similar arrangements of such components it cannot, in the Board's opinion, be maintained that the prior art contains an incentive to a three point sensing in the manner as claimed in the patent, let alone to the use of a diode to provide a voltage clamp or that a switching transistor would be considered in this case to be an obvious alternative for the relay coil of D1 or D2.

5.5 Summarising, the Board comes to the conclusion, that the cited prior art documents if taken alone or in any combination and considered by the skilled person having a general knowledge in the field of motor vehicle lighting systems, cannot be construed to give a lead to the subject matter of either Claim 1 or 22, which as a consequence must be considered to involve an inventive step within the meaning of Article 56 EPC.

6. Thus independent Claims 1 and 22 are suited to form the basis for maintenance of the patent.

Claims 2 to 21, which relate to preferred embodiments of the lighting system of Claim 1, are also acceptable.

The patent may therefore be maintained on the basis of the documents filed at the oral proceedings together with the drawings as granted.

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 maintain the patent on the basis of Claims 1 to 22 and the description submitted at the oral proceedings of 2 June 1992 together with the drawings as granted.

The registrar: The Chairman:

S. Fabiani F. Gumbel