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D E C I S I O N
of 17 November 2000

Case Number: T 0927/96 - 3.4.1

Application Number: 92112339.4

Publication Number: 0523742

IPC: G07F 17/24

Language of the proceedings: EN

Title of invention:

A system for monitoring parked vehicles

Applicant:

EASY PARK LTD.

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 123(2), 54, 56

Keyword:

"Amendments - added subject-matter (no)"

"Novelty - (yes)"

"Inventive step - (yes) after amendment"

Decisions cited:

T 0689/90

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0927/96 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 17 November 2000

Appellant: EASY PARK LTD.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 31 May 1996
refusing European patent application
No. 92 112 339.4 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: G. Davies
Members: G. Assi
M. G. L. Rognoni

Summary of Facts and Submissions

I. The appellant (applicant) lodged an appeal, received on 8 August 1996, against the decision of the Examining Division, dispatched on 31 May 1996, refusing the European patent application No. 92 112 339.4 (EP-A-0 523 742). The fee for the appeal was paid on 8 August 1996. The statement setting out the grounds of appeal was received on 2 October 1996.

In its decision, the Examining Division held that the application did not meet the requirements of Articles 123(2), 83 and 84 EPC (main, first and second auxiliary requests) as well as Articles 52(1) and 56 EPC (third auxiliary request) having regard to the following documents:

(D1) FR-A-2 562 291 and

(D2) US-A-4 845 347.

II. Oral proceedings were held on 25 October 2000.

At the oral proceedings, the appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the following documents:

Claims: No. 1 to 18 as filed during the oral proceedings,

Description: Pages 1 to 6, 6a, 7 to 20 as filed during the oral proceedings,

Drawings: Figures 1 to 8 as originally filed.

III. The wording of claim 1 reads as follows:

"A system (10) for monitoring a plurality of parked vehicles, the system comprising a respective portable parking tag (11) for placing in each of said vehicles and a reading device (12),

wherein the portable parking tag (11) includes:

a parking tag memory (17) for storing parking parameters such as a parking tariff and a parking credit,

a non-contact data communications circuit (15) for effecting data transfer by means of mutual inductive coupling with the reading device (12), the data communications circuit (15) modulating an interrogation signal received from the reading device (12) with a signal representative of the parameters stored in the parking tag memory (17),

a parking tag antenna (22) coupled to the data communications circuit (15) for receiving said interrogation signal from the reading device (12),

electrical supply means (21) coupled to the parking tag memory (17) for supplying electrical power thereto, said electrical supplying means including a battery (21),

a timer means (18) coupled to the battery (21) and responsive to respective start and stop signals for measuring an elapsed time period, said start and stop signals being entered manually to the portable parking tag (11) and said timer means (18) being responsive to start and stop signals modulated onto the interrogation signal by the reading device (12) so as to activate the timer means (18) and to terminate operation thereof,

a processing means (16) coupled to the parking

tag memory (17), the data communications circuit (15), the timer means (18) and the battery (21), and responsive to the elapsed time period, the parking tariff and the parking credit for computing a parking debit and an available parking credit,

said data communications circuit (15) being inactive until being initiated by the interrogation signal transmitted to the portable tag (11) by the reading device (12),

and wherein the reading device (12) includes:

a reading device antenna (25) for transmitting said interrogation signal,

a reading and writing circuit (26) coupled to the reading device antenna (25) and responsive to the modulated interrogation signal for reading said parking parameters stored in the parking tag memory (17), and for modulating the interrogation signal,

validity verification means (27) coupled to the reading and writing circuit (26) for generating a validity signal,

output means (28, 31) coupled to the validity verification means (27) and responsive to the validity signal for producing a validity indication."

Claims 2 to 18 are dependent claims.

IV. The appellant argued essentially as follows:

Claim 1 was amended so as to recite the feature that the data transfer between the portable parking tag and the reading device was effected by means of mutual "inductive coupling" rather than by mutual "electromagnetic coupling". In the context of the original application, the term "electromagnetic" was,

indeed, confusing and coupling could only be understood as being of inductive kind. The original description, page 10, line 26, to page 12, line 11, not only explained the meaning of mutual inductive coupling in the context of the cited prior art but also disclosed that the data transfer in the system of the present invention was accomplished in accordance with this generally known effect. Moreover, the skilled person would immediately recognize the inappropriateness of the term "*electromagnetic coupling*" and would understand that the present system had to rely on mutual "*inductive coupling*" to effect the required data and energy transfer. Further amendments to the claims and the description were also based on the original disclosure. Therefore, the amended application did not contravene Article 123(2) EPC.

The claimed invention differed from the system disclosed by document D1, which was considered to represent the closest state of the art, in that the data transfer was accomplished by mutual inductive coupling, whereas in D1 this was carried out by means of electromagnetic waves. A further difference consisted in that, according to the invention, the timer means in the parking tag was responsive to start and stop signals modulated on the interrogation signal. The latter feature was particularly important when integrating the system in a parking management system. In this case, it allowed automatic monitoring of the parking time and avoided tampering or fraud. None of the cited prior art documents gave any hint at the feature relating to the timer means.

Reasons for the Decision

1. The appeal is admissible.
2. *Article 123(2) EPC*
- 2.1 *Amendment "producing a validity indication" of claim 1*

Claim 1 as originally filed recites the feature that the output means 28, 31 is responsive to the validity signal for producing a "*visual or audible output*". This feature has been replaced by "*validity indication*".

In the decision under appeal, No. 1.1(a) of the reasons, the Examining Division considered that only the portable printer 28 is disclosed as being responsive to the validity signal (see original page 10, lines 12 to 15, and Figure 1) and, therefore, the amendment represented a generalisation for which no basis could be found in the original application.

As pointed out by the appellant, the printer 28 is but one example of a device coupled to the microprocessor 27 and responsive to the validity signal. Although it is true that both the printer 28 and the display 31 are responsive to the validity signal for producing a visual output, it is also clear that the validity signal effects a modification of the memory 29 of the reading device 12 as well as of the memory 17 in the parking tag 11 (see original page 16, lines 21 to 26), which modification is neither visual nor audible. The memories 29, 17 may thus be considered as "*output means*" and a modification to their contents constitutes a "*validity indication*" within the context of the present invention.

The Board considers the appellant's arguments

convincing, and the amendment is thus admissible.

2.2 Amendment "mutual inductive coupling" of claim 1

Whereas in the original claim 1 the data transfer between the reading device and the parking tag is effected via "*mutual electromagnetic coupling*", the amended claim 1 recites the feature of a "*mutual inductive coupling*".

The Board disagrees with the negative conclusion reached by the Examining Division as to the admissibility of this amendment for the following reasons.

- 2.2.1 According to the original page 9, lines 17 to 20, "*the portable parking tag 11 includes a non-contact data communications circuit 15 for effecting data transfer via mutual electromagnetic coupling with the reading device 12.*" An explanation of what is meant by "*non-contact data communications circuit*" is given on the original page 10, line 26, to page 12, line 7. In particular, it is stated that "*non-contact data communication systems per se are known in the art*", as shown in the three documents acknowledged in the description. On the original page 12, lines 8 to 11, it is then concluded that "*data transfer between the portable parking tag 11 and the reading device 12 may be accomplished in accordance with the teachings of any of the above mentioned references all of which are incorporated herein by reference.*" Even though the use of the verb "may" could be understood as implying a certain degree of freedom as regards the mutual coupling for effecting the data transfer, it cannot

nevertheless be denied that the quotations cited, when read in relation to each other, explicitly envisage the inductive coupling.

2.2.2 Furthermore, the original description, page 9, line 25, to page 10, line 8, discloses technical features permitting to better understand the actual meaning of "*electromagnetic coupling between the two antennae 22 and 25*" in the context of the present invention (see the sentence bridging pages 9 and 10). Of particular relevance is the fact that the data communications circuit 15 in the parking tag "*modulates*" the interrogation signal received by the antenna 22 with a first signal representative of the data stored in the memory 17 (see page 9, lines 27 to 31). In other words, the interrogation signal from the reading device "*functions as a carrier signal for effecting data communication between the portable parking tag 11 and the portable reading device 12*", when it is modulated by the data communications circuit (see page 10, lines 5 to 8). This way of exchanging information indeed corresponds to that disclosed in document D2 which is acknowledged in the original description on page 11, lines 18 to 23. According to D2 (see the abstract), a portable token is inductively coupled to a terminal. A carrier signal is transmitted from the terminal to the token, whereas data is sent from the token to the terminal by modulating the power driven by the token from the terminal.

The features concerning the data transfer between the parking tag and the reading device, as disclosed on the original pages 9 and 10, are, therefore, consistent with the further statements on pages 9, 10 to 12 referred to in No. 2.2.1 above. It is thus clear that

the original description is, in this respect, coherent and supports the amendment in suit, which is thus admissible.

2.2.3 As regards T 689/90 (EPO OJ 1993, 616) relied upon by the Examining Division, it is true that this decision (see No.1.2 of the reasons, first sentence) deals with "*a general question as to the circumstances in which it is permissible for a European patent application to include a cross-reference to another document, and as to the effect of such a cross-reference, in particular when some of the contents of the cross-referenced documents are sought to be included in the main claim of the application by way of amendment.*" Nevertheless, the circumstances underlying T 689/90 are quite different from those of the present case. Indeed, in the original application considered in T 689/90 (see No. 3.2(b), last sentence, and No. 3.2(c) of the reasons), there was no disclosure enabling a skilled reader to recognise that features to be found in the cross-referenced document and to be included in the main claim of the application might be essential or advantageous in order to solve the technical problem, or that said features were intended to identify technical aspects of the invention for which protection might be sought, or that such features implicitly clearly belonged to the description of the invention. On the contrary, in the present case, the feature "*mutual inductive coupling*" described in the three cross-referenced documents clearly belongs to the description of the invention contained in the application as filed (see Nos. 2.2.1 and 2.2.2 above).

However, in its decision (see No. 1.1(b) of the reasons), the Examining Division considered T 689/90

relevant to the present case and came to the conclusion that the amendment in suit was inadmissible in view of the fact that "at least" the condition 2(b) mentioned in the Headnote to T 689/90 was not satisfied.

The Board disagrees with this conclusion. First, the statement that "at least" the condition 2(b) is not satisfied, suggests that, apart from 2(b), other conditions among those mentioned in the Headnote might also not be satisfied. No reasons are, however, given in this respect. Moreover, the Examining Division's conclusion is based on the view that the feature in suit *"does not contribute to achieving the technical aim of the present invention such as it is mentioned on page 6, lines 22 to 25 of the original description"*, which view does not appear to be based on a correct interpretation of the condition 2(b). In fact, according to the Headnote, the condition 2(b) concerns features which *"contribute to achieving the technical aim of the invention and are thus comprised in the solution of the technical problem underlying the invention which is the subject of the application"*; the same wording can be found in the reasons of T 689/90, No. 2.2(b). The problem is not said to be that defined in the original application. On the contrary, if one considers the problem as reformulated on page 6 filed at the oral proceedings, it is clear that the feature of mutual inductive coupling contributes to achieving a reduction of the power consumption of the portable tag, as it allows self-powering of the tag (see the original page 13, lines 2 to 6, second alternative, as well as No. 5.1 below). Hence, the condition 2(b) is indeed satisfied.

2.3 Further amendments

Further amendments to the claims and the description are of minor import and do not require a detailed discussion. They are intended to clarify the claims, to bring the description into conformity with the new claims, and to acknowledge D1 according to Rule 27(1)(b) EPC. In the Board's judgment, all these amendments are admissible.

2.4 Therefore, all amendments are admissible under Article 123(2) EPC.

3. *Clarity*

The Board is satisfied that the claims are clear to the skilled person.

4. *Novelty*

4.1 Claim 1

4.1.1 Document D1, which is considered to represent the most relevant state of the art, discloses a system for monitoring a plurality of parked vehicles. According to Figure 1 (see also page 2, line 31, to page 3, line 18), the system comprises a portable parking tag 1, 2, 3 to be placed in each of the vehicles and a reading device 20.

The parking tag includes (see page 3, line 19, to page 6, line 45, and Figure 2):

- a parking tag memory 41 for storing parking parameters such as a parking tariff and a parking credit,

- a non-contact data communications circuit 38 for effecting data transfer by means of mutual coupling with the reading device,
- a parking tag antenna 40 coupled to the data communications circuit for receiving an interrogation signal from the reading device,
- electrical supply means, including a battery 30, coupled to the parking tag memory for supplying electrical power thereto,
- a timer means coupled to the battery and responsive to respective start and stop signals for measuring an elapsed time period, wherein the start and stop signals can be entered manually by means of a user interface 42,
- a processing means 34 coupled to the parking tag memory, the data communications circuit, the timer means and the battery, and responsive to the elapsed time period, the parking tariff and the parking credit for computing a parking debit and an available parking credit,
- the data communications circuit being inactive, in the sense that the parking data transfer is not effected, until being initiated by the interrogation signal transmitted to the portable tag by the reading device, as can be inferred from the operation of the system as disclosed on page 7, line 31, to page 8, line 46.

The reading device includes (see page 6, line 46, to page 7, line 30, and Figure 3):

- a reading device antenna, considered to be comprised in circuit 50, for transmitting the interrogation signal,
- a reading and writing circuit 50 coupled to the reading device antenna for reading the parking parameters stored in the parking tag memory,
- validity verification means 56 coupled to the reading and writing circuit for generating a validity signal,
- output means 52, 53, 54, 55 coupled to the validity verification means and responsive to the validity signal for producing a validity indication.

The subject-matter of claim 1, therefore, differs from the system according to D1 in that:

- (i) the non-contact data communications circuit effects data transfer by means of mutual inductive coupling with the reading device,
- (ii) the data communications circuit modulates the interrogation signal received from the reading device with a signal representative of the parameters stored in the parking tag memory,
- (iii) the reading and writing circuit is responsive to the modulated interrogation signal, and
- (iv) the timer means is responsive to start and stop signals modulated on the interrogation signal by the reading and writing circuit.

As a matter of fact, the features (ii) and (iii) are strictly related to (i), because the modulation of the interrogation signal is typical of the technique of mutual inductive coupling. This means that the two essential differences between the subject-matter of claim 1 and the system disclosed in D1 consist in the feature of mutual inductive coupling and in the automatic operation of the timer means.

4.1.2 Document D2 (see column 1, lines 5 to 8) discloses a transaction system in which a portable token is used in conjunction with a terminal. The data transfer between the token and the terminal is effected by mutual inductive coupling (see the paragraph bridging columns 1 and 2). Although the document suggests the possibility of using the system for collecting fares or exacting tolls with regard to vehicles (see column 1, lines 51 to 54 and column 6, lines 29 to 35), it does not disclose a system for monitoring a plurality of parked vehicles comprising the features of claim 1.

4.1.3 Therefore, the subject-matter of claim 1 is novel having regard to the documents D1 and D2.

5. *Inventive step*

5.1 According to the original application (see page 6, lines 22 to 25), "*it is an object of the invention to provide a system for monitoring a plurality of parked vehicles in which the drawbacks associated with hitherto proposed systems are substantially reduced or eliminated.*" This general statement of the technical problem has been amended during the procedure in order to take account of the closest prior art document D1 (see page 6 as filed during oral proceedings). In

particular, the reformulation consists in that a system has to be provided, "*which allows a reduction of the power consumption of the portable tag*", and, moreover, "*which can be included in a parking management system*". Thus, the problem as reformulated comprises two different specific problems, of which the technical relationship to each other is not so close that they ought to be taken into account together for deciding the issue of inventiveness.

Following what is stated in No. 4.1.1 above, the first specific problem is solved by the combination of the features (i), (ii) and (iii) relating to the mutual inductive coupling, whereas the feature (iv), concerning the automatic operation of the timer means, represents the solution of the second specific problem.

5.1.1 Features (i), (ii) and (iii)

In the system according to D1, the data exchange between the parking tag and the reading device is effected by means of mutual coupling by electromagnetic transmission (see D1, page 2, lines 39 to 45, page 5, lines 1 to 9). The parking tag is thus provided with means for emitting electromagnetic waves (see page 3, lines 33 to 38), which requires a power supply in the form of a battery or an external source like the battery of the vehicle in which the parking tag is placed (see page 3, lines 23 to 27). When electromagnetic transmission (Far Field) is used to effect the data transfer, it is not possible for the interrogation signal to provide energy for energizing the parking tag, which means that the power supply of the parking tag must alone provide the energy necessary for exchanging the secret identity code and for

transmitting the parking data to the reading device (see page 7, line 44, to page 8, line 6). This fact is at the origin of the problem of reducing the power consumption, when considering the system according to D1.

As mentioned above (see No. 4.1.2), document D2 discloses a transaction system in which a portable token exchanges data with a terminal by mutual inductive coupling, the token taking the form of a card having data processing capability (see column 1, lines 35 and 36). In particular, the token receives data from the terminal via a frequency modulated carrier signal, whereas data is sent from the token to the terminal by amplitude modulation of the carrier signal (see the abstract and column 1, lines 38 to 43). The power needed by the token is obtained via said inductive coupling from the terminal, although, if the token includes a volatile memory, a small back-up supply may be necessary to ensure preservation of data during intervals between transactions (see column 1, lines 58 to 65).

It is thus clear that D2 discloses a system which is based on features (i), (ii) and (iii) mentioned above, and which is suitable to solve the specific problem of reducing power consumption of the portable tag of the system according to D1. Hence, the modification of the monitoring system disclosed in D1 by effecting the data transfer between the parking tag and the reading device via mutual inductive coupling as disclosed in D2 is regarded as an obvious measure.

5.1.2 Feature (iv)

On the contrary, the further feature (iv), which distinguishes the subject-matter of claim 1 from the system of D1, is neither known from, nor suggested by, D1 or D2 or any other document cited during the examining procedure. Hence, the Board has no evidence which would deprive this feature of inventive merit.

5.2 In conclusion, the subject-matter of claim 1 involves an inventive step. Since claims 2 to 18 are dependent, their subject-matter also meets the requirements of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of the first instance with the order to grant a patent on the basis of the following documents:

Claims: No. 1 to 18 as filed during the oral proceedings,
Description: Pages 1 to 6, 6a, 7 to 20 as filed during the oral proceedings,
Drawings: Figures 1 to 8 as originally filed.

The Registrar:

The Chairman:

R. Schumacher

G. Davies