BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS | BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE | CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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File Number: T 577/92 - 3.5.1

Application No.: 85 304 700.9

Publication No.: 0 170 423

Title of invention: Fail-safe digital phone

Classification: H04Q 11/04

D E C I S I O N
of 8 December 1992

Applicant: HONEYWELL INC.

Headword:

EPC Article 56

Keyword: "Inventive step (no)"

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 577/92 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 8 December 1992

Appellant : HONEYWELL INC.
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Decision under appeal : Decision of the Examining Division of the European Patent Office dated 17 January 1992 refusing European patent application No. 85 304 700.9 pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : P.K.J. van den Berg
Members : A.S. Clelland
F. Benussi

Summary of Facts and Submissions

I. The Appellant contests the decision of the Examining Division dated 17 January 1992, refusing European patent application No. 85 304 700.9.

II. The reason given for the refusal was that the subject-matter of Claim 1 lacked an inventive step having regard to the prior art known from the following documents:

D1: FR-A-2 224 958,
D2: EP-A-0 096 409,

III. On 27 March 1992 the Appellant filed a notice of appeal and paid the appeal fee. Cancellation of the decision and grant of a patent was requested. A Statement setting out the Grounds of Appeal was subsequently filed on 26 May 1992.

IV. In a communication dated 16 October 1992 the Rapporteur expressed the preliminary opinion that the subject-matter of Claim 1 lacked an inventive step. Reference was directed to the following, additional, documents:

D3: ELECTRICAL COMMUNICATION, 58, No. 2, 1983, pages 240 to 243, PAPADOPOULOS: "Small Electronic PABX",
D4: ELECTRICAL COMMUNICATION, 52, No. 4, 1977, pages 293 to 298, HOWETT et al "Novakey Data Controlled Key System", and
D5: DE-A-2 828 583.

D2-D5 were cited in the European Search Report but not referred to by the Examining Division in its decision.

V. Oral proceedings were held on 8 December 1992. At the oral proceedings the Appellant requested the grant of a patent on the basis of the following claims:

Main request

Claims 1 and 2 as filed on 26 November 1991, with replacement of the word "public" by "private" at lines 2, 7 and 16 of Claim 1.

Claim 3 as filed on 26 May 1992 with some clarifying amendments proposed in the course of the oral proceedings.

Auxiliary request

Claims 1 to 3 as handed over at the oral proceedings.

VI. Claim 1 of the main request reads as follows:

"Fail-safe phone which in normal operation is connected via a digital private branch exchange (PBX 10) to a telephone line (6) of a central office having an analogue protocol, said phone (30) comprising digital logic (D/PH N 32) which performs the function of a digital phone for providing digital communication of voice information with the private branch exchange (PBX 10) which itself interfaces with said telephone lines (6) to said central office,
characterized in that said phone (30) comprises analog logic (A/PH 34) which performs the function of an analog phone for providing analog communication of voice information with said telephone lines (6) to said central office, said analog logic (A/PH 34) in normal operation being unconnected and being activated upon malfunctioning of the private branch exchange (PBX 10) to the effect that said analog logic is connected to said telephone lines (6), and further comprises switch means (36, 38) responsive to a control signal indicative of a PBX failure, said switch means (36, 38), upon occurrence of

said control signal, disconnecting said digital logic (D/PH N 32) from the PBX (10) and simultaneously connecting said analog logic (A/PH 34) to said telephone lines (6)."

VII. Claim 1 of the auxiliary request differs in substance from that of the main request only in being directed to a communication system comprising a local PBX, rather than a fail-safe phone which in normal operation is connected via a digital PBX to a telephone line.

VIII. At the oral proceedings the Appellant's representative argued that the documents D1, D3 and D4 referred to by the Rapporteur in the communication each showed a system in which an analog phone could be connected directly to an exchange line in the event of failure of the digital exchange to which the phone was connected. This was achieved by a reconfiguration of the exchange in the event of failure so as to allow a clear path between the one phone and the exchange line, the phone itself not being altered in any way. None of the documents suggested, or were concerned with, true digital phones. These documents lead the skilled man in the direction of modifications to the exchange and would not lead him to modify the phone itself so as to enable a digital phone to be used with analog exchange lines. D5 was not concerned with fail-safe phones. It related solely to the situation which could arise when a subscriber could access both digital and analog exchange lines; for this situation the D5 phone enabled the subscriber to switch between digital and analog circuitry for connection to the digital and analog exchanges respectively, the connections to these exchanges being permanent. This known phone was a true dual-purpose phone and nowhere suggested that it might be used in a fail-safe arrangement of a digital PBX system.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 68 EPC and is, therefore, admissible.

2. Claim 1 of both the main and auxiliary requests includes all the features of the originally filed independent claim, Claim 1. Both the main and auxiliary requests are accordingly admissible.

3. The only issue in the present appeal is whether the subject-matter of Claim 1 of the main request or of the auxiliary request involves an inventive step.

4. Main request

4.1 The present application is concerned with a specific problem arising from the application of digital technology to telephone systems. Digital technology is increasingly being applied not only to the public telephone network but also to the design of private branch exchanges (hereinafter referred to as a "PBX"). Examples of such a PBX are shown in D1, D3 and D4, the exchange in each of these documents providing for digital switching, for example by means of a switching matrix and appropriate control lines, whilst maintaining the standard analog speech circuits and thus enabling the use of the standard analog telephone sets. The application is not however concerned with such systems but with a fully digital system, in which not only the switching control circuits but the speech circuits themselves are implemented by digital technology.

4.2 One of the desiderata in the design of a PBX is that in the event of catastrophic failure of the system provision must be made for continued communication with the outside world. This is done by means of a "fail-safe" phone set,

"fail-safe" in this context not referring to a phone design but to a configuration of system which is automatically effected in the event of, for example, power supply failure. In each of D1, D3 and D4 the exchange is so arranged that the or each exchange line is connected to a respective phone set in the event of failure. Since the phones in these known systems are analog, their interfacing directly to analog exchange lines presents no problems. The Board is satisfied from consideration of the cited art - as well as the prior art acknowledgement in the application - that the skilled man would, when designing a PBX, regard the provision of the fail-safe feature as an essential design aspect.

4.3 The present application is concerned with the specific problem which arises when a fully digital PBX is connected to the traditional analog network. In this situation some form of analog/digital interface is necessary which will however also be affected in the event of exchange failure. In such a situation the mere reconfiguration of the exchange to connect an exchange line to a fail-safe phone will not work, since the phone set itself is digital and cannot interface directly with the analog network. The skilled man is accordingly faced with the problem of providing some form of fail-safe phone in this specific situation.

4.4 In accordance with Claim 1 of the main request this problem is solved by the provision of a phone which, in addition to the digital logic necessary for operation in a digital PBX, also includes analog logic to enable analog communication with the lines of the analog network (referred to as the "central office" in the claim), switch means responsive to a control signal indicative of a PBX failure causing the digital logic to be disconnected and the analog logic activated and connected to the telephone lines.

4.5 The Board accepts that the skilled man would not derive this solution from the disclosures of documents D1, D3 and D4; as explained above, in each of these documents an analog phone set is used, so that a fail-safe phone can be provided by reconfiguration of the PBX to give direct access to an outside line in the event of exchange failure. The Board considers that the skilled man would derive from these documents merely the requirement that some form of fail-safe phone be provided and would be thrown back on the need to provide a separate analog phone exclusively for use in the event of exchange failure.

4.6 However, D5, cited in the European Search Report but not referred to by the Examining Division in its decision, discloses a hybrid telephone operable with both digital and analog protocols. As can be seen from Figure 1 of D5, the hybrid telephone sets 14, 15 can be connected both to analog exchanges 6, 7 and digital exchanges 9, 11. Figure 2 of D5 shows the construction of such a telephone; the switch 22 has an analog position, switch position "a", in which the microphone 23, speaker 24 and dial 25 are connected to an analog exchange line 18, and a digital position, switch position "b", in which these components are connected to digital lines 19 by way of appropriate circuitry. From the description of Figure 2 it appears that switch 22 can either be operated manually or - as can be seen from page 12, lines 22 to 32 - automatically in dependence upon the nature of an incoming call.

4.7 The Board considers that the skilled person, faced with the Applicant's problem and made aware of the teaching of D5, would find in this document the solution to his problem. D5 not only discloses a hybrid phone but also the provision of switching between modes either manually or partly automatically. The use of this phone to enable operation with an analog exchange would thus suggest

itself to the skilled man. The Board moreover considers that once the skilled man appreciates that the D5 phone is usable as a fail-safe phone he would as a matter of course provide automatic switching, for example by operation of the switch in D5 in response to detection of exchange failure, the provision of such a detection signal being well known as can be seen from D1, D3 and D4. The skilled person would thus, without the exercise of invention, arrive at the Applicant's claimed solution. The subject-matter of Claim 1 of the main request accordingly does not involve an inventive step.

5. Auxiliary request

Claim 1 of this request differs in substance from that of the main request primarily in being directed to a "communication system comprising a local PBX with a number of local-protocol phones and with one emergency dual-protocol phone". Thus, whereas the main request is concerned with a single fail-safe phone the auxiliary request relates to a PBX including, inter alia, such a phone. Since it has been shown to be common general knowledge in the telephone art to provide a fail safe phone in a PBX it follows that Claim 1 of the auxiliary request must share the fate of that of the main request. The subject-matter of Claim 1 of the auxiliary request accordingly also lacks an inventive step.

6. In the course of the oral proceedings the Appellant's representative argued that D5 would not be taken into account by the skilled person faced with the problem of providing a fail-safe phone in a wholly digital PBX. D5 was said to be exclusively concerned with the problem of enabling communication with both an analog and a digital exchange, there being no suggestion that the phone could be connected on the one hand to a digital PBX and on the other hand to an analog central station. Even if the

skilled person were to take this step the D5 phone would not function in an emergency unless the operator realised that an exchange malfunction had occurred and switched the phone manually to analog operation. No suggestion could be derived from D5 that automatic fail-safe circuitry be incorporated in the hybrid phone.

Although D5 is not directly concerned with the specific problem to be solved the Board does not doubt that the skilled person, faced with this problem, would give serious consideration to the disclosure of D5. D5 would show the skilled person that there is no need to provide a separate, analog, fail-safe phone and that a single hybrid phone could be used for connection to the analog network in the event of exchange failure. Once the skilled person has derived this appreciation all other claimed features fall into place as a matter of course. Since - as has been shown - all exchanges must provide some fail-safe mechanism it would be evident to the skilled person that the internal reconfiguration carried out in the event of exchange failure should connect the exchange lines to this phone. Since the D5 phone already has a semi-automatic switch for switching between the analog and digital lines it would be self-evident to make use of this switch in the event of exchange failure.

The representative also argued that D5 was only relevant with the benefit of hindsight and by reliance on an ex post facto analysis. The Board however consider that the skilled person would immediately see the relevance of D5 to his problem and, as already discussed, once he had appreciated this relevance he would be led to adapt D5 in a manner giving rise to the claimed arrangement.

7. Accordingly the Board finds that, for the reasons set forth above, the subject-matter of the only independent claim of the main and auxiliary requests, in each case

Claim 1, lacks an inventive step. No other request having been made, it follows that the appeal must be dismissed.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Kiehl P.K.J. van den Berg