

PATENTS ACT 1977

IN THE MATTER OF

Application No. GB 9913529.5

in the name of John Quentin Phillipps

DECISION

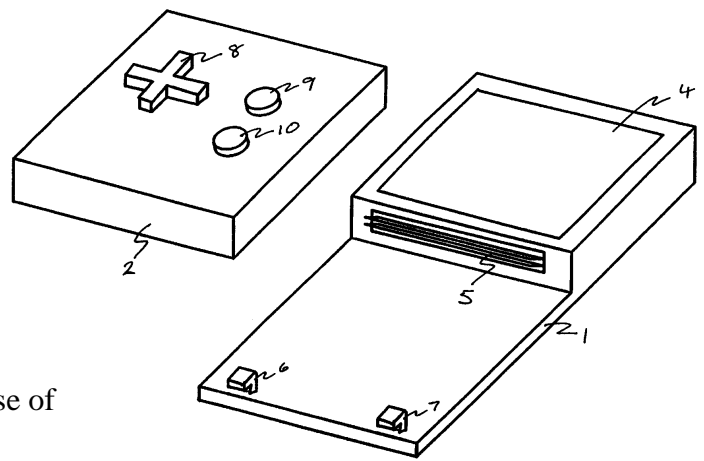
Introduction

1. Patent application number GB 9913529.5 entitled, “Combined memory and user input device”, was filed on 10 June 1999.
2. In very general terms, the application relates to a handheld computer games console of the type in which a Read Only Memory (ROM) cartridge carrying the game software is inserted into the console.
3. A combined search and examination report issued on 25 January 2000; no relevant prior art was found during the original search. The application was then published as GB 2350913 A on 13 December 2000. In January 2001, following publication of the application, third party observations were filed under section 21, indicating a Japanese patent abstract that was subsequently used to support a novelty objection during substantive examination.
4. The applicant amended his claims to avoid the prior art, but while the examiner was updating the search in respect of the amended claims, a further two examples of relevant prior art were found. However, none of the cited prior art disclosed one particular feature of the invention as claimed in the amended claims, but the examiner considered that the ‘missing’ feature was common general knowledge and he therefore objected that the claims as amended did not involve an inventive step. The applicant did not accept that the ‘missing’ feature could be described as common general knowledge, and consequently the examiner cited a several examples of patent specifications based upon a partial supplementary search.
5. The file shows that there have been several further rounds of correspondence between the examiner and the agent representing the applicant, but these further exchanges do not appear to have taken the position much further forward. The examiner and the applicant’s agent then concluded that further correspondence was unlikely to resolve the matter, and the applicant duly requested a hearing. That hearing took place on 22 January 2002, using a video conferencing facility. The applicant and inventor, Mr John Phillipps, attended the hearing and was represented by Mr Stuart Geary of Venner, Shipley & Co.

The Invention

6. As originally filed, the invention concerned a handheld computer games console, having a removable portion which includes both the program and the user input means (control switches) for operating the program. By combining the control switches and the program in a single removable portion, the invention enables the designer to provide input controls that are optimised for a particular game.

7. Figure 2 of the patent application, shown right, illustrates one embodiment of the fundamental concept of the invention as filed.



8. During the course of examination, the claims were amended to specify a particular method of communication between the main portion and the subsidiary (or removable) portion, involving the use of an interrupt signal.

9. Rather than require the processor to check repeatedly for any activity from the input switches, an interrupt signal notifies the processor in the main portion whenever there is data to be read from the user input means of the subsidiary portion. To reduce the number of interconnections between the main and subsidiary portions, in the embodiments, circuitry in the subsidiary portion reads the input switches and stores the result in a register or latch which can be read later by the processor in the main portion when it receives the interrupt signal.

10. At the time of the hearing, there were two independent claims, which read as follows:

1) A program-controlled apparatus comprising:
a main portion, including a processor having an interrupt port and a display device controllable by the processor for displaying images, and
a subsidiary portion including memory means, storing a program for the processor, user input means and interrupt signal generating means responsive to operation of the user input means to generate an interrupt signal, wherein the subsidiary portion can be temporarily arranged relative to the main portion for the communication of codes of said program to the main portion and communication of said interrupt signal and data, generated by operation of the user input means, to the main portion, said data being read by the processor, in response to said interrupt signal, to provide inputs for said program when being run by the processor.

2) A program-controlled apparatus comprising:
a main portion including
a processor having an interrupt port, and
a display device controllable by the processor for displaying images, and first and second subsidiary portions, each including
memory means, storing a respective program for the processor,
user input means, and
interrupt signal generating means responsive to operation of the user input means to generate an interrupt signal,

wherein

the subsidiary portions can be interchangeably, temporarily arranged relative to the main portion for the communication of codes of said programs to the main portion and communication of said interrupt signal and data, generated by operation of the user input means, to the main portion, said data being read by the processor, in response to said interrupt signal, to provide inputs for said program when being run by the processor,

the user input means of the first subsidiary portion is different from the user input means of the second subsidiary portion, and

data capable of being communicated from the first subsidiary portion has the same form as data capable of being communicated from the second subsidiary portion.

The Law

11. The relevant part of section 1 reads:

“(1) A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say —

- (a) ...
- (b) it involves an inventive step;”

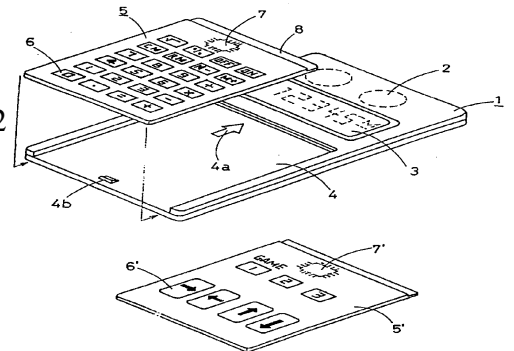
Section 3 reads:

“An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).”

The Prior art

12. The prior art cited by the examiner in support of the inventive step objection comprises three documents. The first, Shingo - JP 050337252, is a Japanese patent abstract published on 21 December 1993. It discloses a computer game machine comprising a main body and a detachable game cartridge. The cartridge is provided with an electronic circuit board in which a game software is stored and minimum operating buttons for operating the game. By replacing the cartridge, various different games can be played. Each cartridge provides the optimum number and configuration of controls for the game.

13. The second and third documents relied upon by the examiner are US4890832 & US5601489, both in the name of Komaki, dated 2 January 1990 and 11 February 1997 respectively. As far as the examiner’s objection is concerned, both Komaki patents are broadly similar to Shingo in terms of what they disclose. The figures from the front page of US5601489 are shown on the right.



14. None of the prior art documents gives any indication as to how the processor in the main body reads the status of input switches located in the detachable portion. At the hearing, Mr Geary submitted that in each case, the devices used scanning lines generated directly by the processor, and which would cross the boundary between the two parts of the device through the connector that electrically joins the two parts. In his view, it was highly unlikely that the skilled person would read Shingo and/or either of the Komaki documents and consider using an interrupt to control the transfer of input data. When I pressed him, he conceded that his submission was based partly on inference, and partly on the evidence of an expert, Dr McArdle, whose opinions he had sought during the processing of this application.

Common General Knowledge

15. The examiner has maintained that the use of interrupts in microprocessor circuits is common general knowledge. Consequently, even though the three prior art documents mentioned above do not disclose the use of an interrupt, the examiner has maintained his objection because he

considers that the skilled person, upon reading Shingo or either of the Komaki documents, would appreciate that one way of controlling or initiating the transfer of input data between the processor and the detachable portion is to use an interrupt. On the other hand, as I understood him, the applicant says that although interrupts may be widely used in microprocessor systems to handle input data from a range of input devices, such systems are not comparable with the handheld devices which are the subject of this application. The applicant's position is that the skilled person would not have seen interrupt-driven user input means as appropriate in the context of Shingo or Komaki.

16. Accordingly the examiner conducted a partial supplementary search and identified three further patent specifications, each of which disclose the use of interrupts in connection with keypads in simple microprocessor systems. The three documents were:

GB 2279162 A	IBM Corporation
EP 0580347 A1	AMD Inc
US 5760714	Zimmerman

17. The examiner considered that each of these documents was comparable with Shingo and Komaki, and cited them as examples of what was common general knowledge in this field, but I think it is fair to say that the applicant does not regard these three documents as giving an accurate picture of what was common general knowledge at the filing date of this application. At the hearing, Mr Geary submitted that the proper way to establish what was common general knowledge was to turn to an engineering handbook or similar text book rather than a few samples of patent documents.

The Windsurfing Test

18. Mr Geary drew my attention to the decision of the Court of Appeal in *Windsurfing International Inv v Tabur Marine (Great Britain) Ltd*¹, and in particular to the fourfold test set down by the Court as an aid to determine whether or not an inventive step exists. Using the helpful summary in the headnote of the reported case, the four steps are:
- i) identifying the inventive concept embodied in the patent;
 - ii) imputing to a normally skilled but unimaginative addressee what was common general knowledge in the art at the priority date;
 - iii) identifying the differences if any between the matter cited and the alleged invention;
 - iv) deciding whether those differences, viewed without any knowledge of the alleged invention, constituted steps which would have been obvious to the skilled man or whether they required any degree of invention.

Step 1 — The Inventive Concept

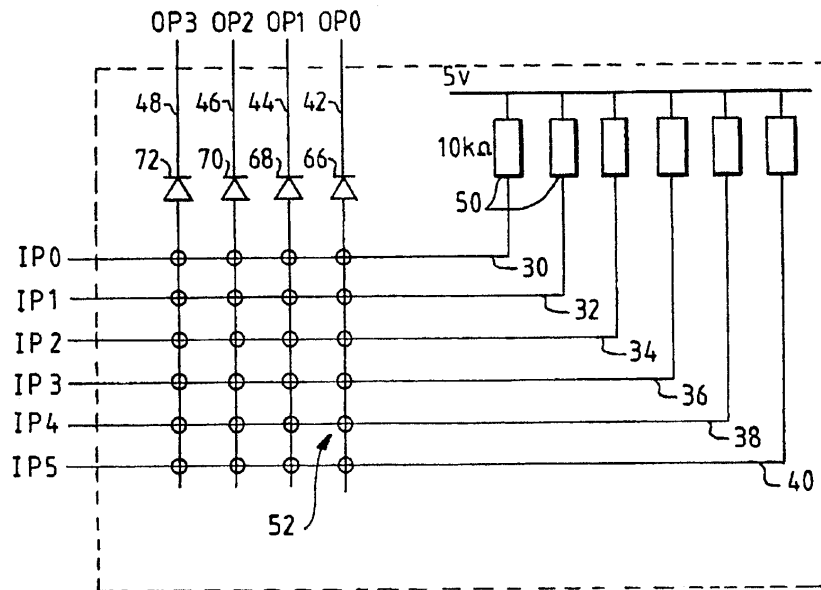
¹*Windsurfing International Inc v Tabur Marine (Great Britain) Ltd*, [1985] RPC 59.

19. To determine the inventive concept, I must construe the claims. Mr Geary drew my attention to the decision of the Court of Appeal in *Hoechst Celanese v BP Chemicals*², where it is made clear that in doing so, I should take a purposive approach to the meaning of words, and consider the specification as a whole to determine the scope of the claim.
20. Mr Geary went on to submit that the inventive concept is the idea of providing a program-controlled apparatus having a detachable module with user input means, wherein the detachable module has the ability to process the inputs and make the input data available to be read by the main processor in response to an interrupt that is generated by the detachable module when there is input data to be collected.
21. However, I do not consider that the clear meaning of the wording presently adopted for claims 1 and 2 carries quite the restrictive meaning that Mr Geary argues for. I construe claim 1 to embrace a program-controlled apparatus having a main portion with a display and a detachable module, the module having storage for a programme, user input means and being capable of providing an interrupt signal when there is input data to be collected, to which the main portion responds to read inputs to the module. I specifically do not construe the claim as requiring the module to process and make available the input data for the main portion in the way that he represents. I give an analogous construction to Claim 2.
22. Whilst there may well be support for an arrangement as argued for by Mr Geary in the application, in my judgement claims 1 and 2 are not quite so specific about the manner in which the input data is transferred from the detachable module to the main processor.
23. In coming to this conclusion, I have taken full account of the Hoechst case, but in my view, there is no doubt as to the meaning of any particular word or phrasing in claims 1 and 2, and in my view it would be wrong in this circumstance to import limitations into the claim based upon the way in which embodiments work.

Step 2 — Common General Knowledge

24. The examiner asserts that it is common general knowledge to use interrupts to signal to a microprocessor that there is input data to be read. On the basis of a partial search, he has pointed to three patent specifications each of which discloses the use of interrupts in connection with keypads in simple microprocessor systems. If I understood him correctly, Mr Geary did not disagree that the general concept of using an interrupt to enable a microprocessor to read inputs was well known, but he argued that only one of the three examples identified by the examiner showed a method of processing the input data similar to that described in this application.
25. More specifically, Mr Geary submitted that although GB 2279162A (IBM) and US 5760714 (Zimmerman) disclose the use of an interrupt to advise the microprocessor that there is input data waiting, in both cases the microprocessor responds to the interrupt by generating scanning signals on outputs connected to the input switches, and then looks at input signals coming from the switches to identify which particular button has been pressed. The diagram below, taken from the IBM specification, illustrates the basic principal of operation:

² Hoechst Celanese Corporation v BP Chemicals (1999) FSR 319



26. Scanning line outputs OP0 to OP3 are directly controlled by the processor, each output in turn being set to a logical '0', while the processor monitors the inputs IP0 to IP5 to see which of the keypad switches (52) is being depressed.
27. Only in EP 0580347A1 (AMD) is there any disclosure of a pre-processing circuit that generates the scanning signals independently of the processor, and stores the inputs in a latch which can then be read by the microprocessor in a simple read operation.
28. However, Mr Geary argued that the teaching of EP 0580347A1 (AMD) is in the context of a cordless mobile telephone, and is not sufficient evidence to establish the state of common general knowledge in this area. He added that it was also not in the context of a plug-in or detachable module, and that there was no reason why the skilled person would think of adopting such a design in apparatus such as that disclosed in Shingo or Komaki.
29. The distinction that Mr Geary has drawn between the examples of common general knowledge cited by the examiner undoubtedly exists, but as I have said above, the distinction is not made in the claims that were considered at the hearing. Consequently, for the purpose of determining the patentability of claims 1 and 2, I need only say that on balance I am satisfied that the use of interrupts to initiate or control the reading of input switches was common general knowledge at the priority date of this application. Whether the specific method disclosed in EP 0580347A1 (AMD) was also common general knowledge I am not in a position to decide, but since I have found that claims 1 and 2 are not confined to such a method, I do not need to decide the point.

Step 3 — The Differences

30. I now need to consider the difference between the matter cited and the alleged invention. I believe Mr Geary accepted that Shingo and the two Komaki documents disclose apparatus that is broadly similar to the alleged invention in this application. If he didn't, I certainly find this to be the case. The difference, according to Mr Geary, is that neither Shingo nor either of the Komaki documents disclose a method of reading the input data in response to an interrupt and this was not disputed by the examiner. In this context, and having regard to what I have

already found to be common general knowledge, Mr Geary was inviting me to put a particular interpretation on the word ‘reading’ that would specifically require some form of pre-processing of the input data. But I have already found this not be the case in my consideration of the first of the Windsurfer tests above.

31. Whilst the examiner has referred to six documents in formulating his objection, he has always presented his case as being fundamentally based on three of these viz the Shingo or either of the Komaki documents. All of these, in my judgement, disclose all features of claims 1 and 2 save that none of them disclose how the input data is transferred to the microprocessor.
32. Thus, I find the difference between them and the alleged invention to be the use of an interrupt to signal to the processor in the main portion that there is input data to be read.

Step 4 — Is the difference obvious to the skilled man

33. The only difference that I could identify between the matter cited and the alleged invention corresponds to the common general knowledge that I have identified above.
34. Furthermore, the difference that I have determined is also clearly shown in the three other documents. All of these three show that, in small, hand-held devices, the use of an interrupt signal to alert a processor that there is data to be read from an input means is known.
35. Mr Geary argued that just because the skilled person *could* have used an interrupt to control the transfer of input data, it did not necessarily follow that he or she *would* have adopted such a solution. In his view, the skilled person would not have been led to travel along that particular road. He or she would have had no reason to do so. In support of this line of argument, he referred me to the decisions in *Hickman v Andrews*³, *Technograph Printed Circuits Ltd v Mills & Rockley (Electronics) Ltd*⁴, and *Dyson v Hoover*⁵
36. Attractive though this argument appeared to me at first, I am reminded that the Shingo and Komaki documents are silent as to the method used by the processor to receive the input data so that, in my view, it leaves the skilled man to determine, without invention, what might be the appropriate way of doing this. Mr Geary sought to persuade me, partly on the basis of Dr McArdle’s evidence, that they would not have used interrupts and he drew my attention to three specific parts of the decisions I mentioned above. These specific parts refer to the propositions that a skilled man in developing from a particular device needs to have some specific problem in mind to solve, and that he would only be expected to try options which would appear to him to “..give any prospect of valuable results..” (Technograph page 356) or have a “..reasonable expectation of a dividend..” (Dyson para 64). It is clear to me that, were a skilled man asked to produce a device according to the Shingo or Komaki patents, he would need to decide how the processor and input device should communicate, without guidance from the disclosure of those patents, and this is the problem which he needs to solve.
37. But as I have concluded that it was common general knowledge that interrupts could be used to initiate or control the data transfer process, I am of the opinion that this option is one which would naturally be considered, and am not persuaded by Mr Geary’s submission that it would

³Hickman v Andrews (1983) RPC 147

⁴Technograph Printed Circuits Ltd v Mills & Rockley (Electronics) Ltd (1972) RPC 346

⁵Dyson Appliances Limited V Hoover Limited Court of Appeal case no: A3/2000/3459

not. In theory, the skilled person upon reading Shingo and Komaki, might, in my view, equally well have started from the viewpoint that using an interrupt was the most convenient solution. This would in my view, be reinforced by the specific disclosures of the other three documents. I am therefore firmly of the opinion that the invention defined by the current forms of claims 1 and 2 does not involve an inventive step.

Summary

38. Having applied the Windsurfer test to the facts of this application, I reach the conclusion that claims 1 and 2, in their current form, do not involve an inventive step. However, that is not the end of the matter. Mr Geary did not address me in relation to the subsidiary claims of the application. What he did say, was that if I were to decide that claims 1 and 2 lacked an inventive step, he would appreciate an opportunity to suggest, in the light of the reasons for my decision, an amendment that might introduce the necessary inventive step.
39. In the circumstances of this particular application, I am content to allow the applicant an opportunity to amend the claims further. However, if amended claims are not filed within six weeks of the date of this decision, the application will be refused under section 18(3) on the grounds that the invention claimed therein is excluded by section 1(1)(b).

Appeal

40. This being a substantive matter, any appeal from this decision must be lodged within six weeks of the date of this decision.

Dated this 14th day of February 2002

Bruce Westerman
Deputy Director, acting for the Comptroller

PATENT OFFICE