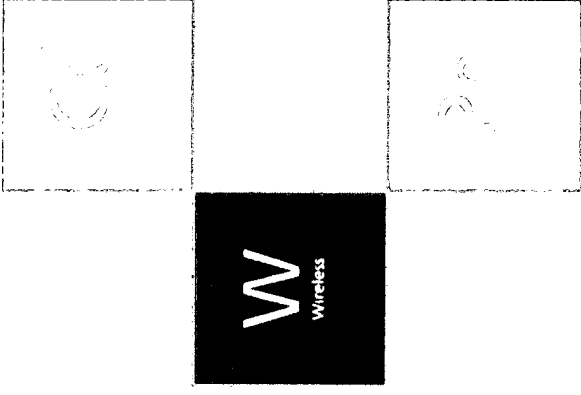


Exhibit 16

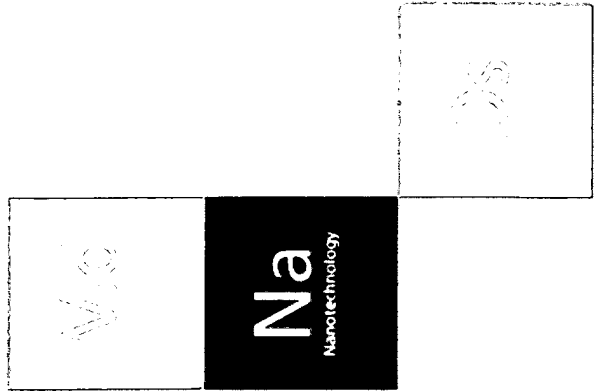


Apple Inc.

Ex Parte Reexamination 90/010,964

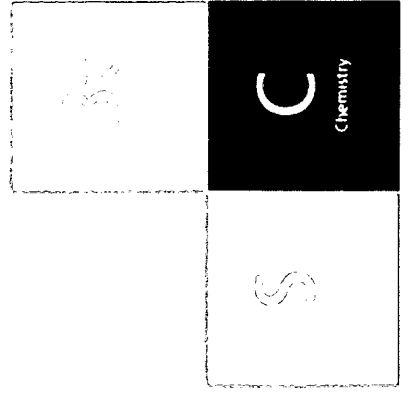
U.S. Patent No. 5,634,074 to Devon *et al.*

January 5, 2011



SKGF.COM

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Agenda

- I. Introductions**
- II. Status of the Litigation**
- III. Overview of Patentability**
- IV. Story of the Invention**
- V. Technical Overview of '074 Patent**
- VI. Discussion of the Office Action and the Riikonen Reference**

Introductions

- **Technical Expert:**
 - Ronald D. Williams, Ph.D.
- **Inventor:**
 - James B. Nichols
- **SKGF:**
 - Robert G. Sterne, Reg. No. 28,912
 - Glenn J. Perry, Reg. No. 28,458
 - Richard D. Collier III, Reg. No. 60,390
 - William P. Ladd, Reg. No. 64,646

Ronald D. Williams, Ph.D. (Expert)

- **Education:**
 - University of Virginia: BSEE (1977), MSEE (1978)
 - Massachusetts Institute of Technology: Ph.D. (1984)
- **Registration:**
 - Licensed Professional Engineer: Commonwealth of Virginia
- **Employment:**
 - Dept. of Electrical and Computer Engineering, University of Virginia: Associate Professor (1990-present), Assistant Professor (1985-1990)
 - MITRE Corporation: Member of the Technical Staff (1984)
- **Research Interests**
 - Embedded Computing, Engineering Instructional Technology
- **Inventions and Technical Innovations**
 - U.S. Patent Number 5,690,691
 - U.S. Patent Number 5,355,042
 - U.S. Patent Number 5,347,190
 - U.S. Patent Number 5,262,692
 - U.S. Patent Number 4,608,700
- **Publications and Lectures (full listing to be attached with response)**
 - 6 Books and/or Book Chapters
 - 26 Referred Journal Submissions
 - 44 Conference Proceedings and/or Presentations

James B. Nichols (Inventor)

- **Education:**
 - California State University, Northridge: B.S. Computer Science (1976)
 - University of California, Los Angeles: M.S. Computer Science (1980)
- **Employment:**
 - Apple Computer (1981-1995)
 - Hired by Steve Jobs
 - Distinguished Engineer (director)
 - Founded and headed the original Macintosh communications group
 - Developed GeoPort, the world's first software-based modem
 - Senior Member of Technical Staff (1981-1984)
 - Manager of Software Engineering (1986-1989)
 - Telebit Corporation: Manager, Network Software (1984-1986)
 - Digeo: Corporate Fellow (2000-2001)
 - Advanced Micro Devices: Senior Fellow (1995-2006)
- **U.S. Patents (12)**
 - U.S. Patent Numbers: 7,245,817; 7,200,859; 6,574,294; 6,343,263; 5,938,748; 5,799,190; 5,727,233; 6,634,074; 5,631,651; 5,627,539; 5,515,373; and 5,495,246
- **U.S. Patent Applications (7)**
 - full listing to be attached with response

Status of the Litigation

Nokia Corp. v. Apple Inc. (D. Del.)

**The '074 Patent is in concurrent litigation
(*Nokia v. Apple*, 1:09-cv-00791 (D. Del.))
before Chief Judge Sleet**

Apple's Business Model

Apple has adopted a business strategy based on the convergence of personal computers, mobile communications, and digital consumer electronics, and produced cutting-edge, technologically superior, and user-friendly devices.

See, *Nokia v. Apple*, 1:09-cv-00791, Apple Inc.'s First Amended Answer, p. 3 (Filed Feb. 19, 2010)

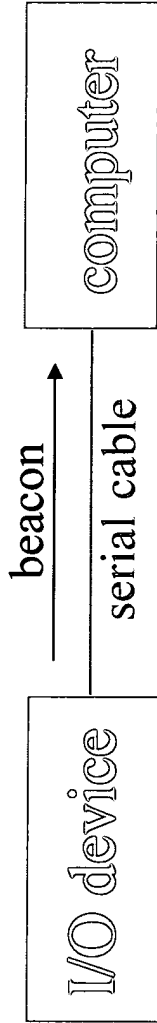
Overview of Patentability

There Are At Least 6 Arguments Why Claim 1 Should Be Confirmed And A NIRC Should Be Issued

- Riikonen fails to teach each of the features of claim 1 of the '704 Patent for at least the following reasons:
 - 1. Given that Riikonen's CPU 14 is interpreted by the Office Action to be the "computer" of claim 1, at least the following element of claim 1 is not taught: "in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device."
 - 2. Riikonen indicates that the device I.D. is fetched from the adapter in contrast to "sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device," as recited by claim 1 of the '074 Patent.
 - 3. Riikonen does not teach a serial cable as claimed.
 - 4. Regardless of whether Riikonen is read as sending a device I.D. from the device or from the adapter, Riikonen does not teach sending the device I.D. over a serial cable.
 - 5. If the computer is interpreted as encompassing the controller, Riikonen does not teach "in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal," as recited by claim 1.
 - 6. If the adapter of Riikonen were to be interpreted as the claimed I/O device, Riikonen does not teach "an I/O device connected to the computer through a serial interface by a serial cable," as recited by claim 1.

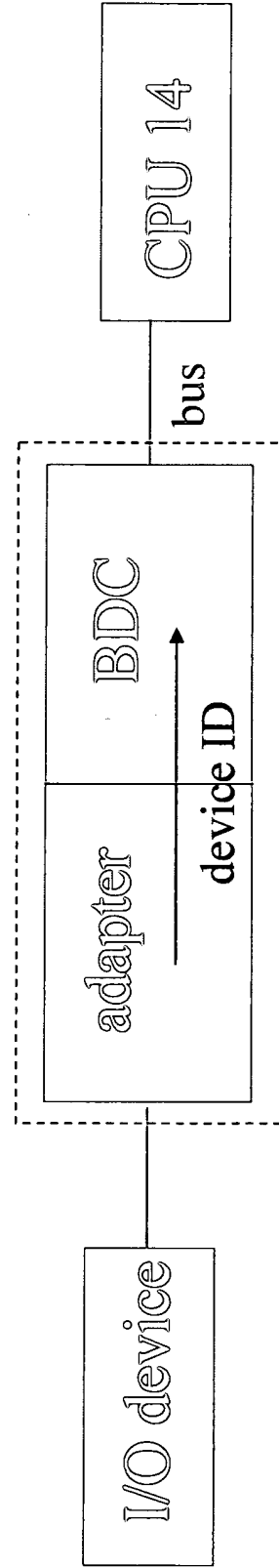
The '074 Patent vs. Riikonen

The '074 Patent – True “Plug-and-Play”



The Riikonen Reference – Requires Additional Special Purpose Hardware

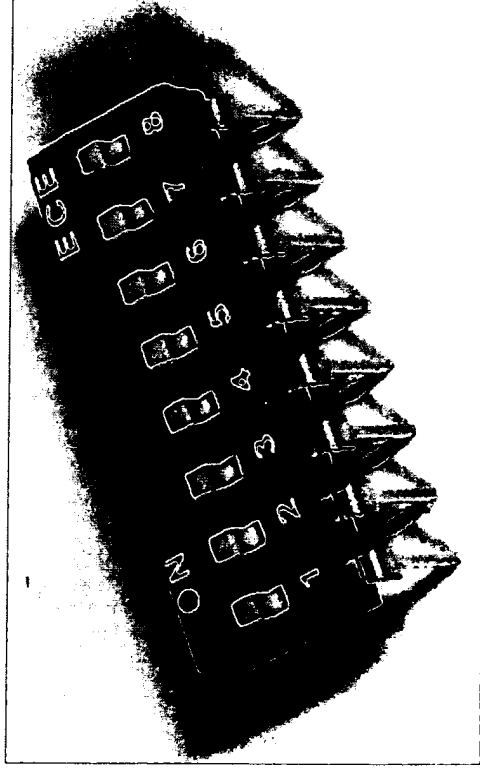
special purpose hardware “controller”



Story of the Invention

Background of the Invention

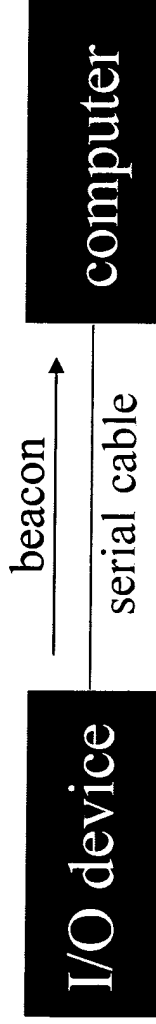
- Previous systems of identifying devices to a computer required manual configuration of the device by a user.
- For example, a computer user would use dedicated circuitry like a dual in-line package (DIP) switch (pictured below) to identify an attached device to the computer.
- This process was cumbersome and often resulted in interoperability problems among connected devices.



Example of a DIP switch

Story of the Plug-and-Play Invention

- Earlier generations of computer systems had limited processing capability. At the time of filing of the '074 patent, computer systems had more advanced capabilities to support high performance multimedia I/O interfaces.
- Apple invented a way for a device to identify itself to a computer using a plug-and-play beacon signal.
- The beacon signal sent from the connected device enables the computer to automatically identify and negotiate operation parameters with the device without additional *special purpose* hardware.



Benefits of Plug-and-Play

The Plug-and-Play Invention

An I/O device identifies itself to a computer using a plug-and-play beacon signal.

Key Advantages

- No need for the user to configure the I/O device for operation with the computer.
- Device configuration is enabled upon power-up of the I/O device
- No need for additional *special purpose* hardware for I/O device configuration.

Key Advantages Embodied in Claim 1 of the '074 Patent

1. In a system comprising a computer and an I/O device connected to the computer through a serial interface by a serial cable no more than a few feet in length, a method of identifying the I/O device, comprising the steps of:
 - in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device; and
 - in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device.

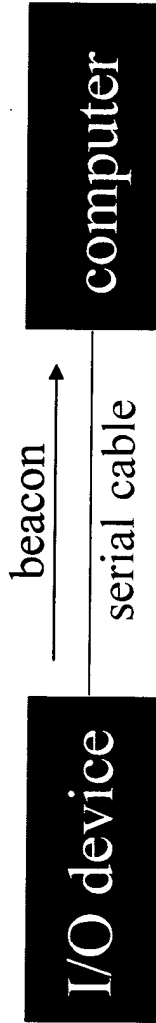
Success of the Plug and Play Invention

- James Nichols, one of the inventors, was promoted to “Distinguished Engineer” (only a handful at Apple) at least partially based on his work on this invention.

Technical Overview of the '074 Patent

Technical Overview of the '074 Patent

- The '074 patent discloses a self-configuring startup procedure whereby a device connected to a computer via serial port identifies itself using a plug-and-play **beacon signal**.
 - Beacon signal sent from the I/O device in response to a power-up reset signal or control signal.



- beacon signal (Fig. 3A below):
 - two bytes are used for the "Pod ID"
 - MSB byte - "family type" (i.e., telephony, digital image, or LAN)
 - LSB byte - "pod type" (i.e. POTS or ISDN)

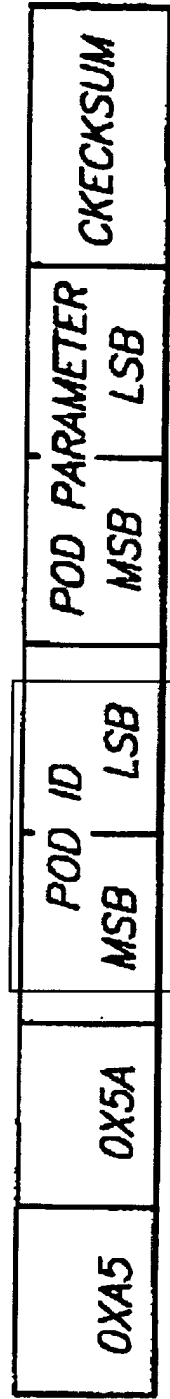


FIG. 3A

Technical Overview of the '074 Patent

- The "Pod ID" is used by the computer to identify the connected device.
- When the beacon signal is sent to the computer, the computer extracts the Pod ID. The Pod ID is then applied to a mapping function to obtain the address of the pod handler routine in memory.

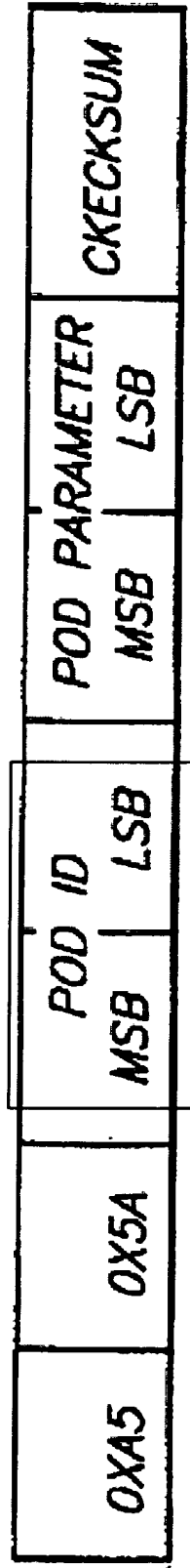


FIG. 3A

Discussion of the Office Action and the Riikonen Reference

Claim Status Overview

- **Claims 1-19 under *Ex Parte* Reexamination**
- **'074 patent contains one independent claim (claim 1)**
- **The Office Action rejected claim 1 under 35 U.S.C. §102(b) as being anticipated by Riikonen**
- **The Office Action confirmed the patentability of claims 2-19**

Claim 1 of the '074 Patent

1. In a system comprising a computer and an I/O device connected to the computer through a serial interface by a serial cable no more than a few feet in length, a method of identifying the I/O device, comprising the steps of:
 - in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device; and
 - in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device.

There Are At Least 6 Arguments Why Claim 1 Should Be Confirmed And A NIRC Should Be Issued

- Riikonen fails to teach each of the features of claim 1 of the '704 Patent for at least the following reasons:
 - 1. Given that Riikonen's CPU 14 is interpreted by the Office Action to be the "computer" of claim 1, at least the following element of claim 1 is not taught: "in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device."
 - 2. Riikonen indicates that the device I.D. is fetched from the adapter in contrast to "sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device," as recited by claim 1 of the '074 Patent.
 - 3. Riikonen does not teach a serial cable as claimed.
 - 4. Regardless of whether Riikonen is read as sending a device I.D. from the device or from the adapter, Riikonen does not teach sending the device I.D. over a serial cable.
 - 5. If the computer is interpreted as encompassing the controller, Riikonen does not teach "in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal," as recited by claim 1.
 - 6. If the adapter of Riikonen were to be interpreted as the claimed I/O device, Riikonen does not teach "an I/O device connected to the computer through a serial interface by a serial cable," as recited by claim 1.

Riikonen: Requires Additional Special Purpose Hardware

- Riikonen is an example of a type of device that existed before the invention of the '074 Patent, and the '074 Patent was invented to address the limitations present in devices like Riikonen.
- Riikonen uses additional *special purpose* hardware for device identification (Basic Device Controller [BDC] and associated adapters)
- In Riikonen, device identification is driven by the BDC and associated adapters (after a master clear) rather than by the device itself.

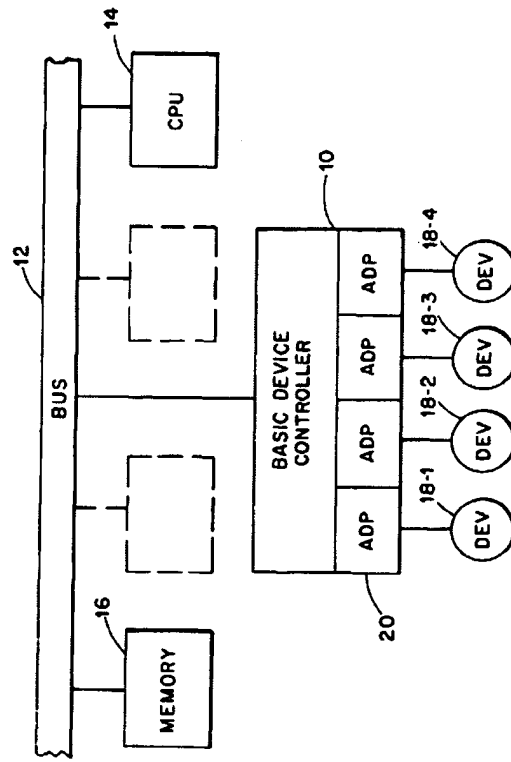
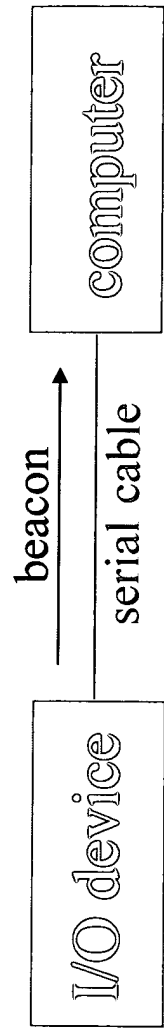


Fig. 1.

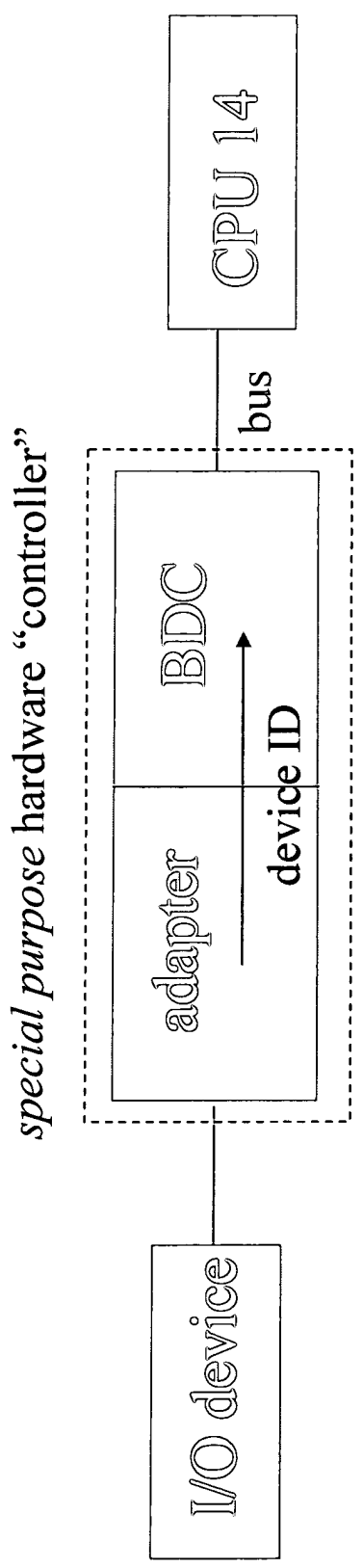
SOURCE: Riikonen, Fig. 1.

The '074 Patent vs. Riikonen

The '074 Patent – True “Plug-and-Play”



The Riikonen Reference – Requires Additional *Special Purpose Hardware*



Argument #1

Given that Riikonen's CPU 14 is interpreted by the Office Action to be the "computer" of claim 1, elements of claim 1 are not taught.

Riikonen – Routines Selected and Executed By I/O Controller

- The Office Action states that CPU 14 is the claimed computer.
- Claim 1 requires “in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device.”
- Riikonen does not teach determining within CPU 14 any manner of interaction of CPU 14 with the devices in Riikonen.

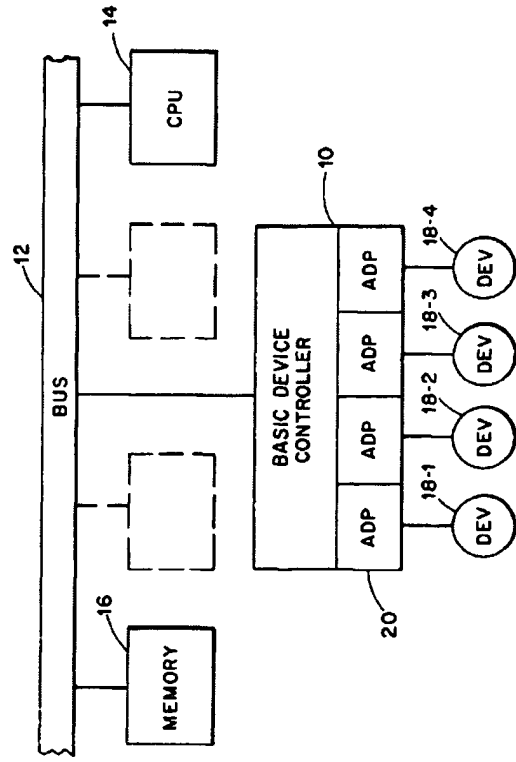


Fig. 1.

SOURCE: Riikonen, Fig. 1.

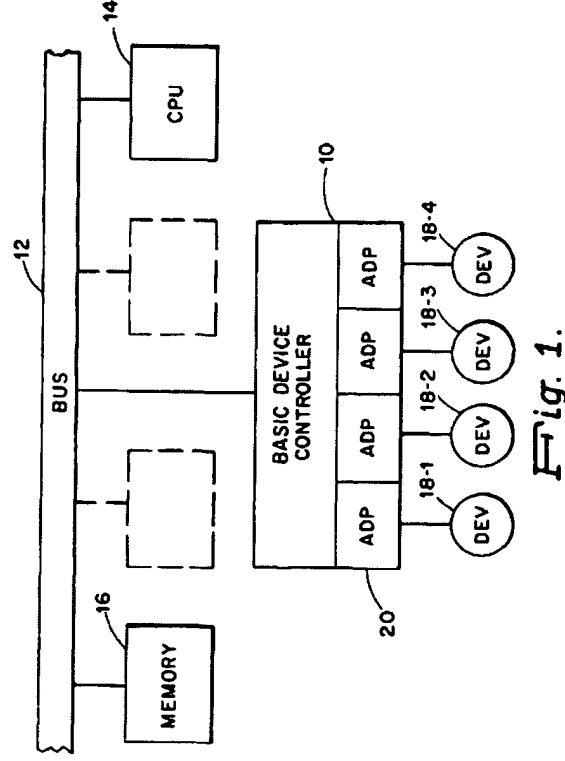
Claim 1 of the '074 Patent

...in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device; and

- *Riikonen: no teaching of I/O device sending device I.D. to CPU 14*

in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device.

- *Riikonen : no determining manner of interaction within CPU 14*



SOURCE: Riikonen, Fig. 1.

Argument #2

Riikonen indicates that the device I.D. is fetched from the adapter in contrast to “sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device,” as recited by claim 1 of the ‘074 Patent.

Riikonen – Static Device ID Fetched from Adapter

- The Office Action states that the device I.D. code in Riikonen is analogous to the beacon signal in claim 1.
- Claim 1 requires “sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device.”
- Riikonen indicates that the device ID is fetched from the adapter, but not the device itself.

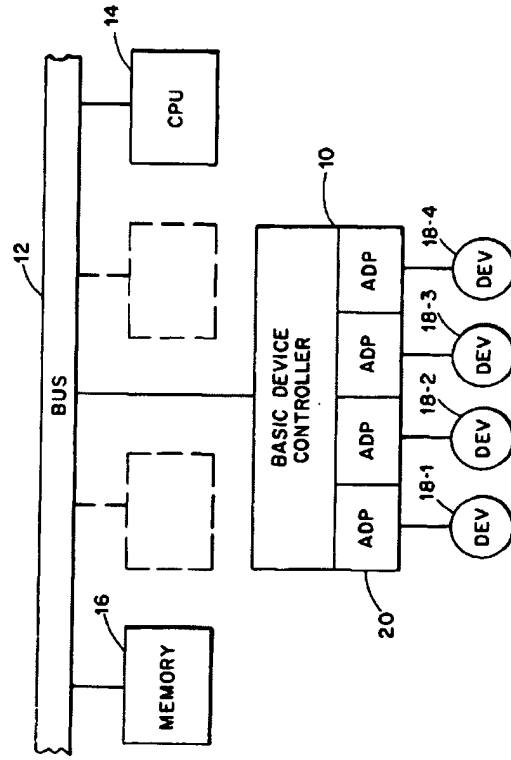


Fig. 1.
SOURCE: Riikonen, Fig. 1.

Riikonen – Static Device ID Fetched from Adapter

“Each different device has a particular I.D. code. For four different devices connected in the system, four different I.D. codes exist in the various adapters for the various devices.

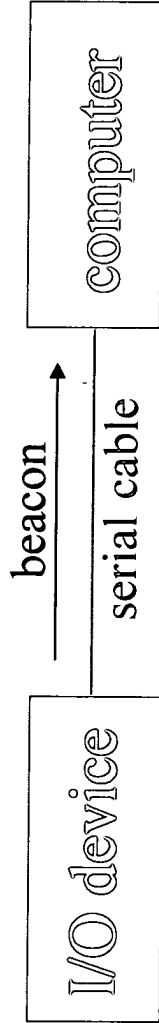
...

In order to enable ease of configuration of the system, that is to say, in order to allow the system builder to connect any device in any channel location”

SOURCE: Riikonen: col. 26, lines 44-62 (emphasis added).

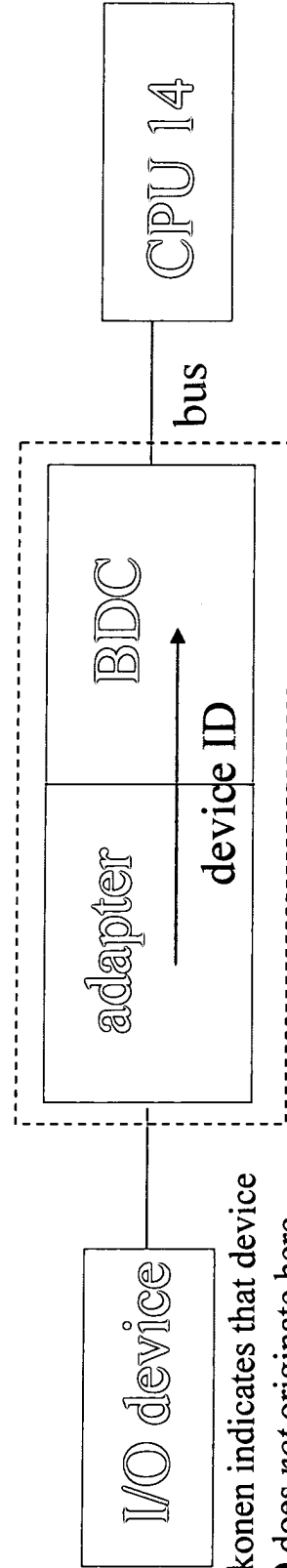
Riikonen – Static Device ID Fetched from Adapter

Claim 1 – True “Plug-and-Play”



Riikonen – Static Device ID Fetched from Adapter

special purpose hardware “controller”



* Riikonen indicates that device ID does *not* originate here

Summary of Argument #2

- The Office Action states that the device I.D. code in Riikonen is analogous to the beacon signal.
- Riikonen indicates that the device I.D. is fetched from the adapter, instead of from the device itself, as required by claim 1 of the '074 Patent.
- In Riikonen, the device I.D. codes “exist in the various adapters for the various devices.” Col. 26, lines 50-51.
- Riikonen indicates that the Device I.D. is configured into the adapter by the “system builder.” Col. 26, line 56.

Argument #3

*Riikonen does not teach a serial cable
as claimed.*

Riikonen Does Not Teach a Serial Cable as Claimed

- The Office Action states that the “serial printer” referenced in Riikonen teaches the claimed “serial cable.”
- However, there is no disclosure in Riikonen about cables at all.
 - Riikonen is not directed to communications over a serial cable.
 - The word “serial” is only used once in Riikonen -- only in the phrase “serial printer.”
- According to serial communications standards that existed at the time of the filing of Riikonen, there were no signal lines dedicated for providing device identification.
- There would need to be something more than a single serial cable as conventionally understood to provide both a device I.D. and data from the device connected to the adapter in Riikonen.

Riikonen Does Not Teach a Serial Cable as Claimed

- Thus, Riikonen fails to teach a serial cable as claimed because:
 - 1. The system in Riikonen would not function using a conventional serial cable to send both the device I.D. and data; and
 - 2. Riikonen provides no disclosure whatsoever regarding a special proprietary cable to send both device I.D. and data if this is what the system in Riikonen did use.

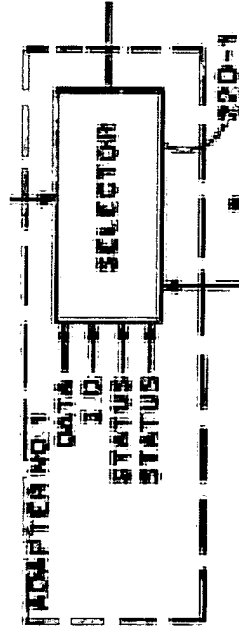


Fig. 20

Argument #4

Regardless of whether Riikonen is read as sending a device I.D. from the device or from the adapter, Riikonen does not teach sending the device I.D. over a serial cable.

Claim 1 Requires That the Beacon Signal Be Sent Over the Serial Cable

- The broadest reasonable interpretation of claim 1 in light of the Specification is that the beacon signal is sent over the serial cable connecting the I/O device to the computer.

In a system comprising a computer and an I/O device connected to the computer through a serial interface by a serial cable no more than a few feet in length, a method of identifying the I/O device, comprising the steps of:

- in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device;
- and
- in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device.

Riikonen – Device ID Provided Over Separate Input

- In Riikonen, the device I.D. code is provided over a separate input from the data.
- Data and device I.D. are both input to a selector, which indicates that one of the four inputs into the selector is being selected from.
- Thus, this indicates that the device I.D. is provided from some source other than “DATA” in Fig. 20 of Riikonen – requiring something other than the serial cable as claimed.

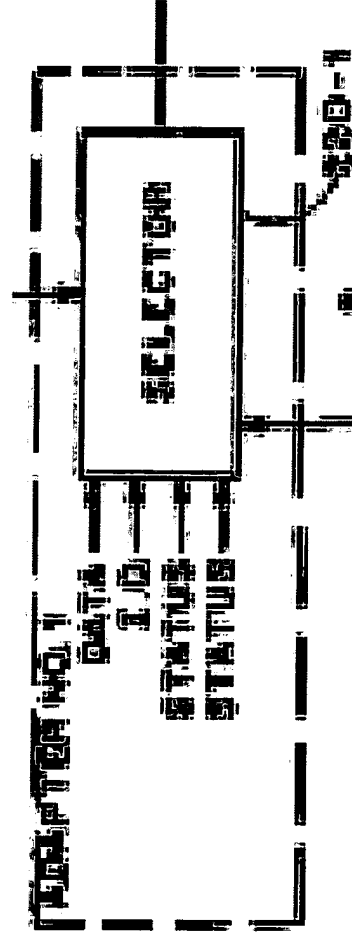
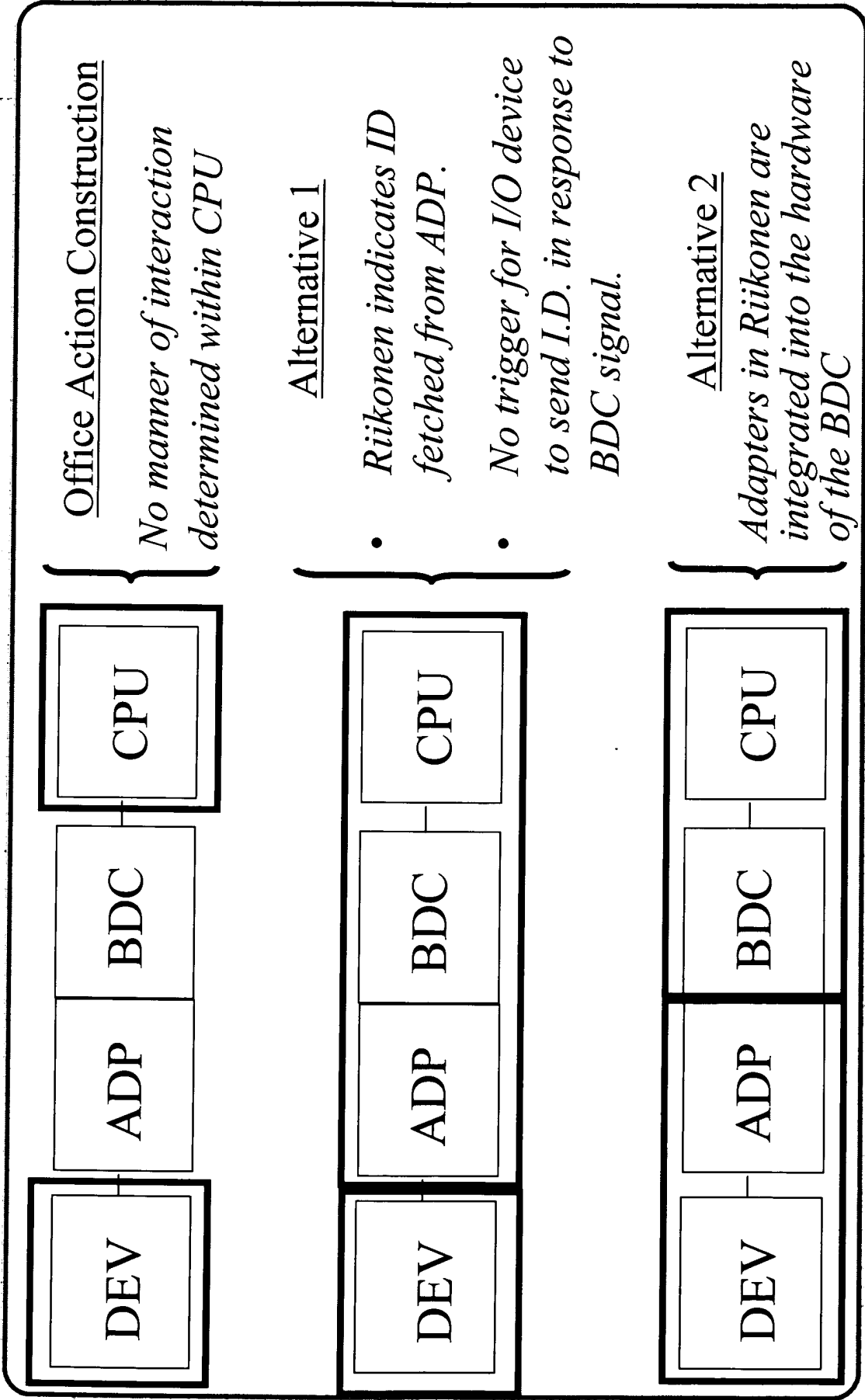


Fig. 20

Arguments Rebutting Potential Alternative Rejections Over Riikonen

- The Office Action states that CPU 14 is the claimed computer and that the claimed I/O device is the device in Riikonen.
- For purposes of analysis only, assume that the claimed computer and/or I/O device can encompass additional elements in Riikonen.
- However, under any potential alternative, Riikonen fails to teach all the elements of claim 1.

No Possible Reading of Riikonen Teaches All the Elements of Claim 1



Argument #5 (Alternative 1)

If the computer is interpreted as encompassing the controller, Riikonen does not teach “in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal,” as recited by claim 1.

Computer Cannot be Read to Encompass the Controller

- Claim 1 requires "in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal."
- If the computer is interpreted to encompass the controller and the adapters directly coupled to the controller, then the device ID would have to come from the device to teach all the elements of claim 1.
 - Riikonen indicates that the device I.D. is fetched from the adapter and not from the device.
 - Further, there is no trigger discussed in Riikonen to instruct the devices in Riikonen to send an I.D. code because, in Riikonen, the BDC enables the adapter in response to the control signals discussed in Riikonen and does not instruct the device to send a device I.D. code.
 - Thus, Riikonen does not teach a way for the device to send a device I.D. code in response to a control signal from the computer as claimed.

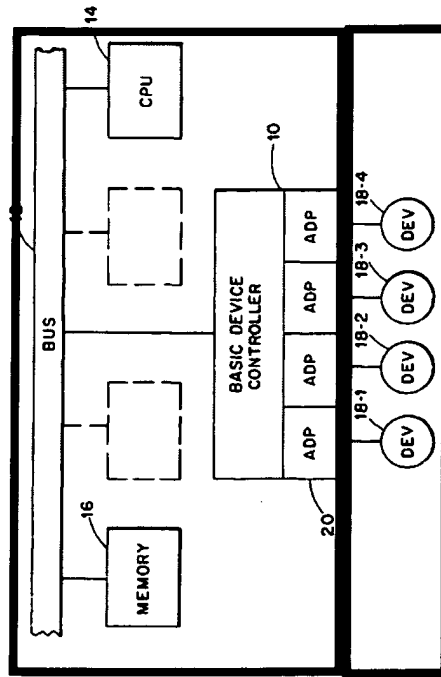


Fig. 1.

SOURCE: Riikonen, Fig. 1.

Argument #6 (Alternative 2)

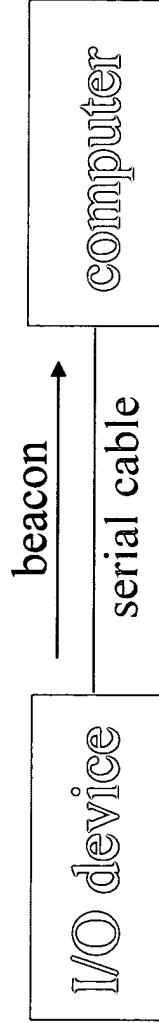
If the adapter of Riikonen were to be interpreted as the claimed I/O device, Riikonen does not teach “an I/O device connected to the computer through a serial interface by a serial cable,” as recited by claim 1.

Claim 1 of the '074 Patent

- 1. In a system comprising a computer and an I/O device connected to the computer through a serial interface by a serial cable no more than a few feet in length, a method of identifying the I/O device, comprising the steps of:
 - in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device; and
 - in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device.

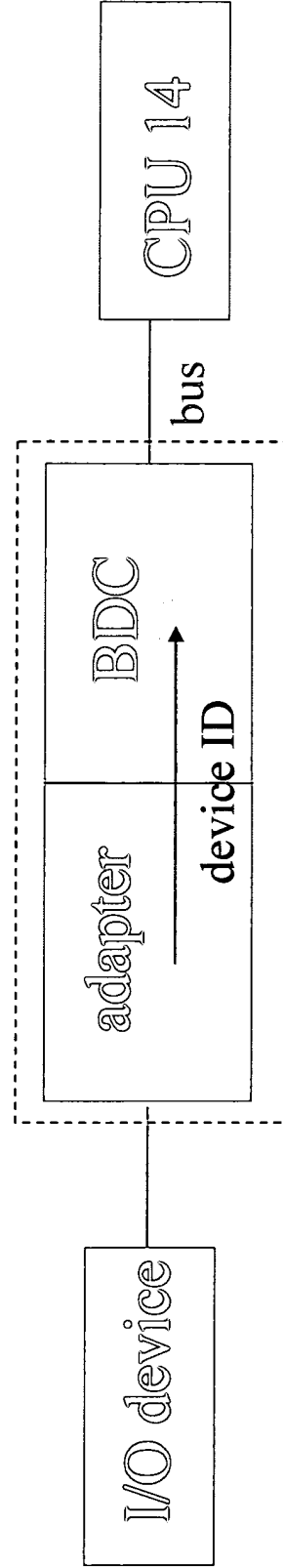
Riikonen – Adapter Cannot be Read as Claimed I/O Device

Claim 1 – Serial Cable Connects I/O Device with Computer



Riikonen – Serial Cable Does NOT Connect Adapter with CPU

special purpose hardware “controller”



* no serial cable connecting adapter to BDC and/or CPU 14

Riikonen – Adapter Connected to BDC

- Claim 1 requires “a computer and an I/O device connected to the computer through a serial interface by a serial cable.”
- An adapter as discussed in Riikonen cannot be read as an “I/O device” as claimed because the adapters in Riikonen are integrated into the hardware of the BDC.

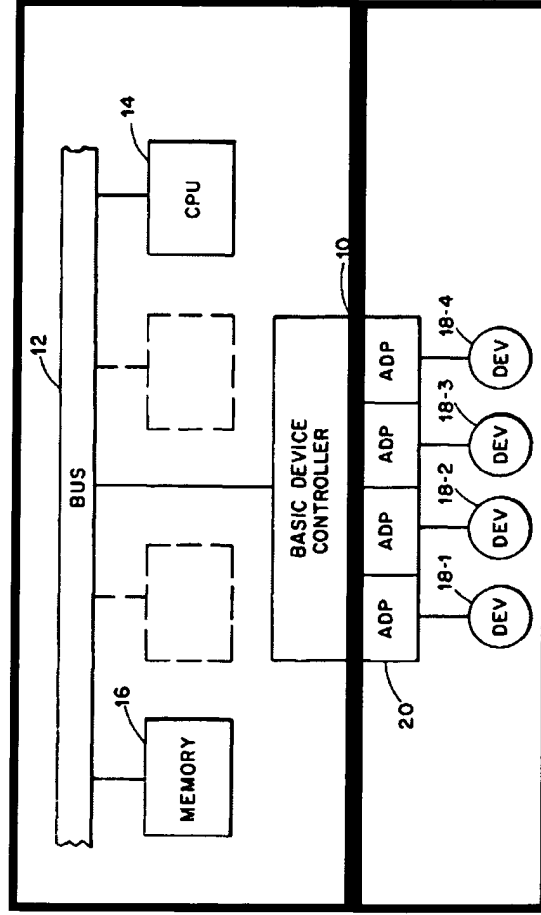


Fig. 1.

SOURCE: Riikonen, Fig. 1.

Riikonen -- Adapters Integrated Into the BDC device

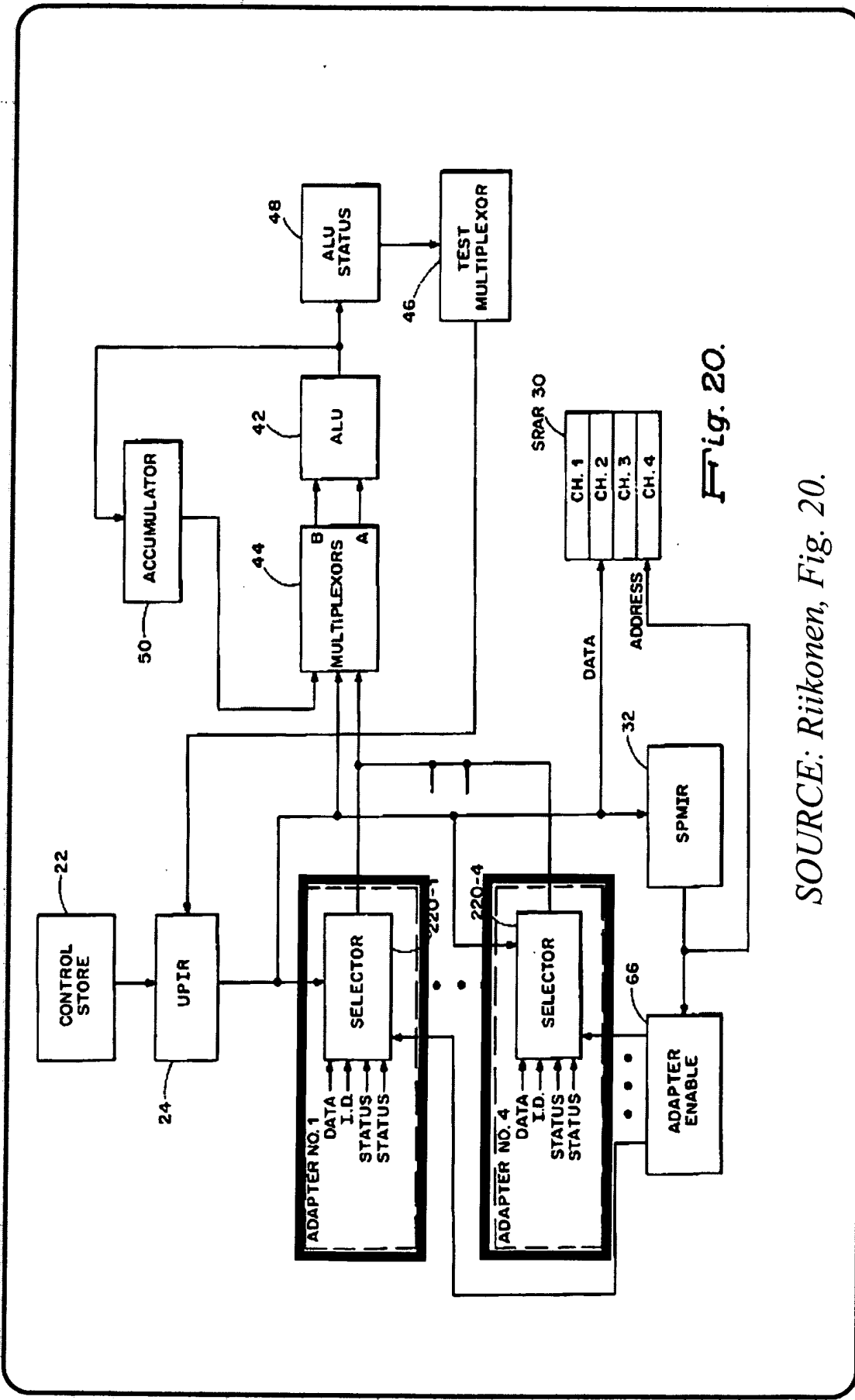


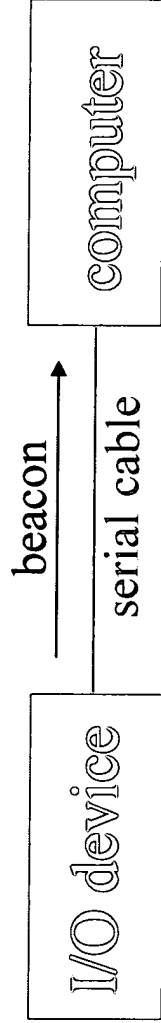
Fig. 20.

SOURCE: Riikonen, Fig. 20.

Conclusion and Summary of Arguments

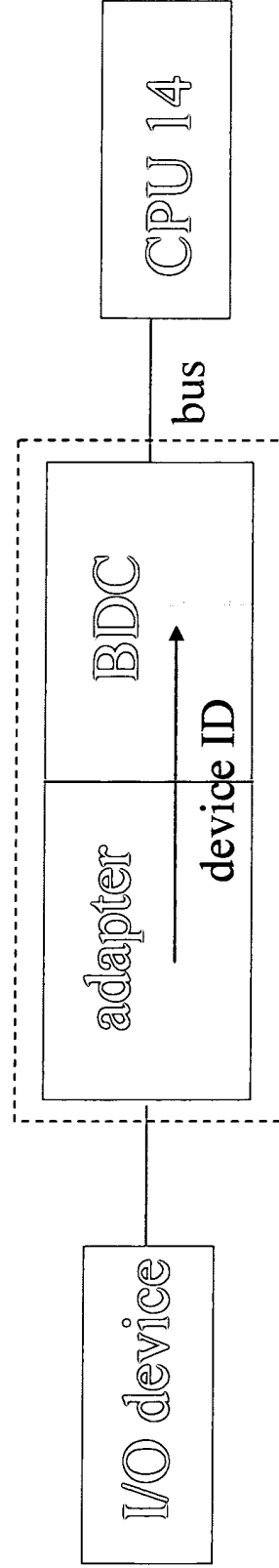
Conclusion

The '074 Patent – True “Plug-and-Play”



Riikonen – NOT “Plug-and-Play”

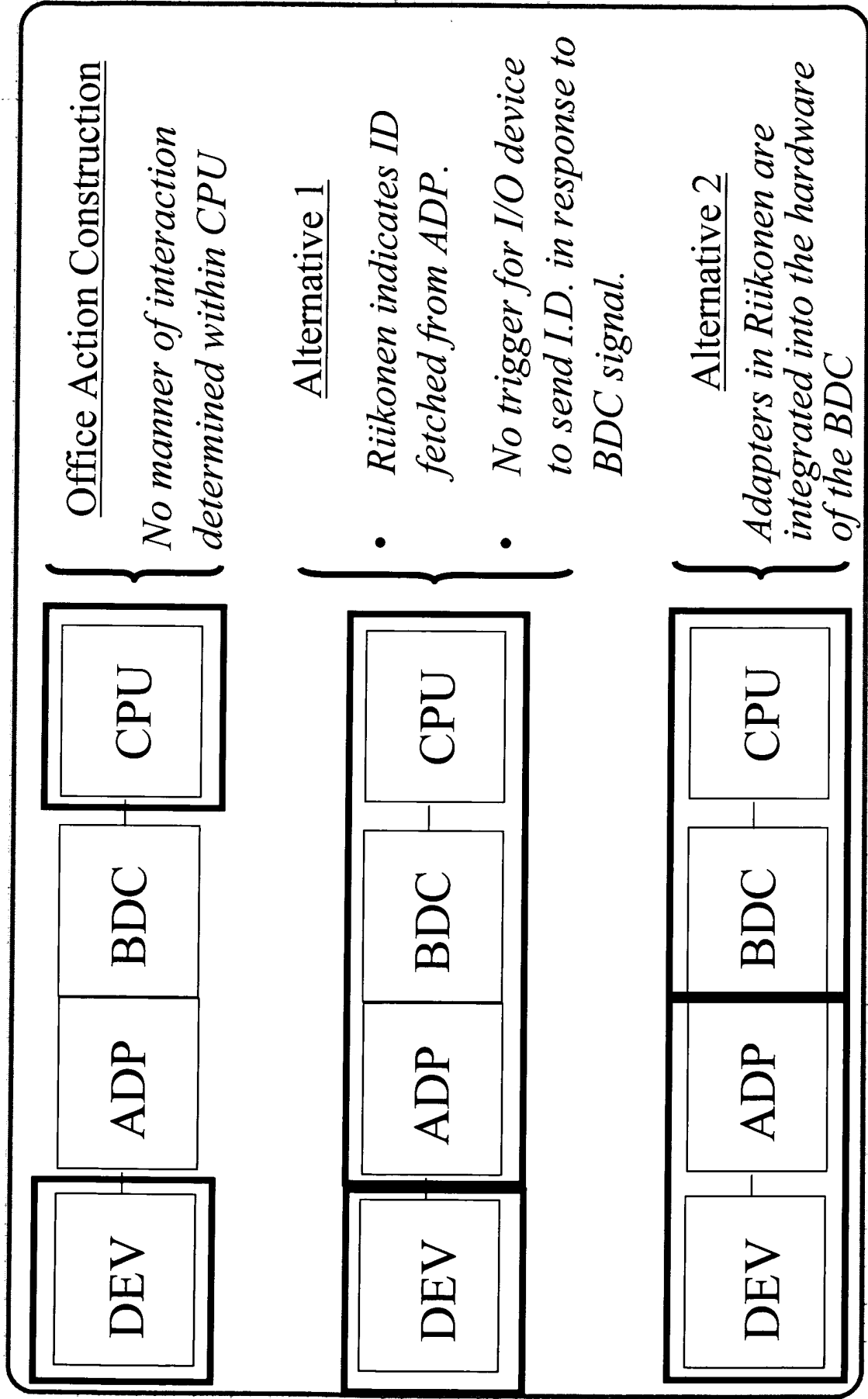
special purpose hardware “controller”



Summary of Arguments

- Riikonen fails to teach each of the features of claim 1 of the '704 Patent for at least the following reasons:
 - 1. Given that Riikonen's CPU 14 is interpreted by the Office Action to be the "computer" of claim 1, at least the following element of claim 1 is not taught: "in response to the beacon signal, determining within the computer a manner of interaction of the computer with the I/O device."
 - 2. Riikonen indicates that the device I.D. is fetched from the adapter in contrast to "sending from the I/O device to the computer a beacon signal comprising a sequence of bytes identifying the I/O device," as recited by claim 1 of the '074 Patent.
 - 3. Riikonen does not teach a serial cable as claimed.
 - 4. Regardless of whether Riikonen is read as sending a device I.D. from the device or from the adapter, Riikonen does not teach sending the device I.D. over a serial cable.
 - 5. If the computer is interpreted as encompassing the controller, Riikonen does not teach "in response to at least one of a power-up reset signal and a control signal from the computer, sending from the I/O device to the computer a beacon signal," as recited by claim 1.
 - 6. If the adapter of Riikonen were to be interpreted as the claimed I/O device, Riikonen does not teach "an I/O device connected to the computer through a serial interface by a serial cable," as recited by claim 1.

No Possible Reading of Riikonen Teaches All the Elements of Claim 1



Questions and Comments