



PCT/GB 00 / 041 141



INVESTOR IN PEOPLE

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

REC'D 28 NOV 2000

WIPO PCT

GB 00/4110
4

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

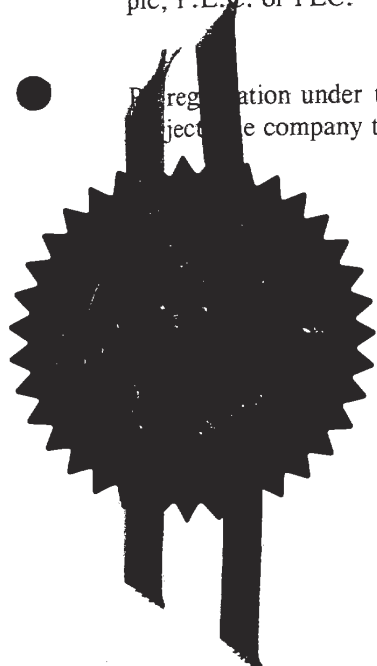
Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

PRIORITY DOCUMENT

SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH RULE 17.1(a) OR (b)

Signed

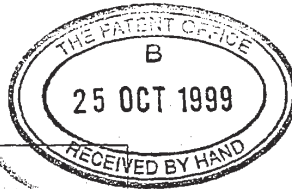
Dated 13th November, 2000.



An Executive Agency of the Department of Trade and Industry



For official use

26OCT99 E486875-5 003312
P01/7700 0.00 - 9925227.2

Your reference 230P81421

25 OCT 1999 9925227.2

Notes

Please type, or write in dark ink using CAPITAL letters. A prescribed fee is payable for a request for grant of a patent. For details, please contact the Patent Office (telephone 071-438 4700).

Rule 16 of the Patents Rules 1990
The main rule governing the completion and filing of this form.

Do not give trading styles, for example, 'Trading as XYZ company', nationality or former names, for example, 'formerly (known as) ABC Ltd' as these are not required.

Warning

After an application for a Patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977 and will inform the applicant if such prohibition or restriction is necessary. Applicants resident in the United Kingdom are also reminded that under Section 23, applications may not be filed abroad without written permission unless an application has been filed not less than 6 weeks previously in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction revoked.

The
Patent
Office

Request for grant of a Patent

Form 1/77

Patents Act 1977

1 Title of invention

- 1 Please give the title of the invention Data Storage, Retrieval and Access Systems.

2 Applicant's details☐ **First or only applicant**

- 2a If you are applying as a corporate body please give:

Corporate name Internet Limited

Country (and State of incorporation, if appropriate) United Kingdom

- 2b If you are applying as an individual or one of a partnership please give in full:

Surname

Forenames

- 2c In all cases, please give the following details:

Address Upper Nordens, High Hurst Wood,
Uckfield, East Sussex, TN22 4AN
United Kingdom

UK postcode (if applicable)

Country
ADP number (if known)

7767106001 IS

2d, 2e and 2f: If there are further applicants use provide details on a separate sheet of paper.

☐ **Second applicant (if any)**

2d If you are applying as a corporate body please give:

Corporate name

Country (and State
of incorporation, if
appropriate)

2e If you are applying as an individual or one of a partnership please give in full:

Surname

Forenames

2f In all cases, please give the following details:

Address

UK postcode
(if applicable)

Country

ADP number
(if known)

③ An address for service in the
United Kingdom must be supplied

Please mark correct box

③ **Address for service details**

3a Have you appointed an agent to deal with your application?

Yes ☒ No ☐ → go to 3b

↓
please give details below

Agent's name

Marks & Clerk

Agent's address

57-60 Lincoln's Inn Fields
LONDON
WC2A 3LS.

Postcode

Agent's ADP
number

18001

3b: If you have appointed an agent, all
correspondence concerning your
application will be sent to the agent's
United Kingdom address.

3b If you have not appointed an agent please give a name and address in the
United Kingdom to which all correspondence will be sent:

Name

Address

Postcode

ADP number
(if known)

Daytime telephone
number (if available)

4 Agent's or
applicant's reference
number (if applicable) 230P81421

⑤ Claiming an earlier application date

5 Are you claiming that this application be treated as having been filed on the date of filing of an earlier application?

Yes ☐ No ☒ **→ go to 6**

please give details below

☐ number of earlier application or patent number

filing date

(day month year)

Please mark correct box

☐ and the Section of the Patents Act 1977 under which you are claiming:

15(4) (Divisional) ☐ 8(3) ☐ 12(6) ☐ 37(4) ☐

⑥ Declaration of priority

6 If you are declaring priority from previous application(s), please give:

6 If you are declaring priority from a PCT Application please enter 'PCT' as the country and enter the country code (for example, GB) as part of the application number.

Please give the date in all number format, for example, 31/05/90 for 31 May 1990.

Country of filing	Priority application number (if known)	Filing date (day, month, year)

- 7 The answer must be 'No' if:
- any applicant is not an inventor
 - there is a joint inventor who is not an applicant, or
 - any applicant is a corporate body.

8 Please supply duplicates of claim(s), abstract, description and drawing(s).

Please mark correct box(es)

- 9 You or your appointed agent (see Rule 90 of the Patents Rules 1990) must sign this request.

Please sign here →

A completed fee sheet should preferably accompany the fee.

7 Inventorship

7 Are you (the applicant or applicants) the sole inventor or the joint inventors?

Please mark correct box

Yes ☐

No ☒

A Statement of Inventorship on Patents Form 7/77 will need to be filed (see Rule 15).

8 Checklist

8a Please fill in the number of sheets for each of the following types of document contained in this application.

Continuation sheets for this Patents Form 1/77

Claim(s)

6

Description

8

Abstract

1

Drawing(s)

3

(Informal) 3

8b Which of the following documents also accompanies the application?

Priority documents (please state how many)

Translation(s) of Priority documents (please state how many)

Patents Form 7/77 – Statement of Inventorship and Right to Grant (please state how many)

Patents Form 9/77 – Preliminary Examination/Search

Patents Form 10/77 – Request for Substantive Examination

9 Request

I/We request the grant of a patent on the basis of this application.

Signed

Marks & Clerk

Date

25-10-99

(day month year)

Please return the completed form, attachments and duplicates where requested, together with the prescribed fee to:

☐ The Comptroller
The Patent Office
Cardiff Road
Newport
Gwent
NP9 1RH

or

☐ The Comptroller
The Patent Office
25 Southampton Buildings
London
WC2A 1AY

DATA STORAGE, RETRIEVAL AND ACCESS SYSTEMS

This invention is generally concerned with data storage, retrieval and access systems. More particularly it relates to apparatus and methods for mobile and/or portable data retrieval and use and to data storage means and to means for controlling access to, and paying for, data and to apparatus, methods and systems therefor. The invention may be used, for example, for providing and controlling access to MP3 audio and compressed video data sources.

One problem associated with the increasingly wide use of the internet is the growing prevalence of so-called data pirates. Such pirates obtain data either by unauthorised or legitimate means and then make this data available essentially world-wide over the internet without authorisation. Data can be a very valuable commodity, but once it has been published on the Internet it is difficult to police access to and use of it by Internet users who may not even realise that it is pirated. This is a particular problem with audio recordings, and, once the bandwidth becomes available, is also likely to be evident with video.

Over the past three or four years MP3 (MPEG3 format encoded) audio sources have become increasingly widely available on web pages. MP3 or MPEG3 is an internationally defined standard for compressing audio information such as speech or music. It relies on psycho-acoustic properties of human hearing to achieve very large factors of data compression. It is thus feasible to download usefully long passages of music in a practically convenient short time. Pirate data suppliers have not been slow to realise the potential of this and many unauthorised website have sprung up offering popular music including recent releases by world famous bands. This has caused the recording industry considerable concern and there is an urgent need to find a way to address the problem of data piracy.

The invention described below addresses this problem and may be able to convert this threat into a potential opportunity.

According to the present invention there is therefore provided a mobile data retrieval device [as claim 1].

According to a second aspect of the invention there is provided a data processing system [as claim 18].

According to a third aspect of the invention there is provided a data storage means [as claim 22].

According to a yet further aspect of the invention there is provided a method [as claim 28].

The payment validation means is, for example, means to validate payment with an external authority such as a bank or building society. The combination of the payment validation means with the data storage means allows the access to the downloaded data which is to be stored by the data storage means, to be made conditional upon checked and validated payment being made for the data. Binding the data access and payment together allows the legitimate owners of the data to make the data available themselves over the internet without fear of loss of revenue. This has the potential to undermine the position of the data pirates.

A further advantage of the system is that it allows users under the age of 18 to make internet purchases. Currently internet users pay for goods and/or services by credit card. Since credit cards cannot be legitimately be used by persons under the age of 18 (at least in the UK), a significant fraction of adventurous internet users are excluded from e-commerce, one of the most significant predicted uses of the internet. In one embodiment of the invention however, the payment validation means comprises e-cash - that is the payment validation means stores transaction value information on a cash value of transactions validatable by the data storage means. In simple terms, the data storage means can be a card which is charged up to a desired cash value (if necessary limited to a maximum value) at a suitable terminal. This might be an internet access terminal but could, more simply, be a device to accept the data storage card and to receive and count money deposited by the user to charge the card, writing update cash value information onto the card. More sophisticated ways of updating the cash value on the card are also possible, such as direct bank transfer. Since, with this type of embodiment, the

storage means is, essentially, precharged with cash rather than acting as a credit card it can be used by young people without the risk of their incurring large debts.

In one embodiment the data storage means is powered by the retrieval device when it is connected to the device and retains a memory of the downloaded data when it is unpowered. This can be achieved by the use of Flash RAM or, more generally, any form of programmable read-only memory. Alternatively the data storage means may incorporate a rechargeable cell of capacitor and store information in battery backed-up static RAM.

The downloaded data maybe entered into the data storage device by means of an interface such as a magnetically or capacitatively coupled connection or an optical connection, but preferably the interface comprises contacts for direct electrical connection to the storage means. The payment validation means may likewise have one of a variety of interfaces but again preferably comprises a set of electrical contacts. The payment validation means could, however comprise a magnetic or holographic data-strip such as is known for use with credit cards and phone cards. Preferably, the interface to receive the downloaded data, is separate from the interface to the payment validation means, to allow separate and simultaneous access to both these systems. Advantageously the payment validation means includes a memory storing information to identify the person who is paying for the downloaded data.

For additional security the downloaded data may be encrypted. In this case data decryption may be necessary at some stage, either in the data storage means or in the retrieval device or in an information delivering apparatus such as the data access terminal. Alternatively the data decryption function can be shared amongst one or more of these devices. The skilled person will be aware of a range of suitable encryption/decryption techniques including Pretty Good Privacy (Registered Trade Mark) and PKI. Normally when the downloaded data is encrypted a decryption key must be supplied. This can be generated automatically by the data access terminal or data access service provider or it can be entered by the user into the data access terminal or into the mobile data retrieval device.

The data storage means and/or the retrieval device can be provided with access control means to prevent unauthorised access to the downloaded data. Alternatively, this access control

means can be used to stop or provide only limited access of the user to the downloaded data in accordance with the amount paid. Thus, for example, a complete set of data information relating to a particular topic, a particular music track, or a particular software package might be downloaded, although access to part of the data set might thereafter be controlled by payments made by a user at a later stage. Thus, a user could pay to enable an extra level on a game or to enable further tracks of an album.

In embodiments where the access control means is responsive to the payment validation means access control information may be stored with the downloaded data or in a separate storage area, for example in the payment validation means. The user's access to the downloaded data could advantageously be responsive to the payment validation means, for example, by means of a control line coupling the payment validation means with a memory access or decryption control element.

In a preferred embodiment the data storage means comprises an electronic memory card or smart card and the mobile data retrieval device is provided with a slot to receive the card. Preferably the card is a push-fit within the retrieval device, and retention of the card may be effected by pressure from electrical interface connections and/or resilience of the housing, or by using a resilient retaining means. In a preferred embodiment the retrieval device includes an audio output and a display, to play a downloaded track and to show information about the track and/or an accompanying video.

To download data onto the data storage means the user can employ a data access terminal coupled to the internet. The terminal can directly validate payment - for example in the case of a smart card charged with electronic cash it can deduct a cash value from the card. Alternatively it can communicate with a bank or other financial services provider to control payment. In a preferred embodiment, however, the terminal connects to a data access service provider which provides a portal to other sites and which validates payment and then forwards data from a data supplier to the user's local access terminal. The data access service provider may alternatively forward payment validation information and/or information from the payment validation authority to the data supplier for control by the supplier of the data

plied. Thus, access to the payment validation system and/or data for downloading may be entirely controlled by the data supplier.

Data held on the data storage means may advantageously include data relating to the user's or payer's usage of the system. This information may include, for example, information on a user's spending pattern, information on data supplies used and information on the downloaded data. This information may be accessed by the data supplier and/or data access service provider and can be used for targeted marketing or loyalty-based incentive schemes such as air miles or the like.

The data access terminal may be a conventional computer or, alternatively, it may be a mobile phone. The Wireless Application Protocol (WAP) allows mobile phones to efficiently access the internet and this allows a mobile phone to be used to download data to the data storage means, advantageously, directly. The data storage means can, if desired, incorporate the functionality of a mobile phone SIM card, which cards already include a user identification means allowing through the phone network operator, user billing.

In preferred embodiment the downloaded data is MP3 encoded audio data, but the system finds more general application for other data types. For example, download data can include software, share price information, current news information, transport timetable information, weather information and catalogue shopping information. The downloaded information may also include compressed video data. The storage capacity of the data storage means is adaptable to suit the type of data intended to be downloaded - for example, 32 megabytes is sufficient for CD quality music, but for video it is preferable that the data storage means has a capacity of 128 megabytes or greater.

These and other aspects of the invention will now be further described, by way of example only, with reference to the accompanying figures in which:-

Figure 1 shows an embodiment of a mobile data retrieval device according to the present invention, a) from the top; b) from the front; and c) from the side;

Figure 2 shows an embodiment of a data storage means according to the present invention.

Figures 3a and b show data access terminals;

Figure 4a shows a logical signal path between elements of a data providing system; and

Figure 4b shows a physical representation of a data providing system.

Referring to Figure 1, this shows a mobile data retrieval device for playing MP3 audio (10) with operator controls (12) and LCD display (14). The outline of a smart card data storage device is shown at (16). The operator controls allow a user to select and play tracks, whilst track information and still or video images are provided on display (14). A slot (18) is provided in the front of the device to receive a smart card-type data storage means. This smart card occupies space (20) and interfaces with resilient contacts (24); it is held in the data retrieval device against the contacts, by resilient housing element (22).

Referring now to Figure 2, this shows a data storage means (30) suitable for use with the retrieval device of Figure 1. The data storage means is based on a standard smart card; it is plastic, about the size of a standard credit card, and has some flexibility. On the card (30) are two sets of contacts, contacts (32) for interfacing with the payment validation means and contacts (34) for interfacing with the memory for storing downloaded data. The surface of the card can be embellished with suitable graphics.

Preferably the smart card retains all its useable functionality as specified for standard Electronics Point of Sale Systems (EPOSS) and, if desired, the memory for storing the downloaded data can be electrically separate from this. However, it may be preferable to provide interaction between the standard smart card device and the data memory in order to accomplish the access control/decryption functions described above.

Referring now to Figure 3, one embodiment of a data access terminal is shown at (40). This has a screen (42) and a slot (44) to receive the data storage means (30). Alternatively the data storage means may interface to the terminal via the data retrieval device (10) and an interface (46) to the terminal (40). In Figure 3b a dedicated terminal (50) has a slot (52) to receive the

storage means, a display (54) and controls (56). Coins can be inserted into the terminal at (58) and notes at (60) to charge the data storage means with cash.

Referring now to Figure 4a, this illustrates the logical connections and data flow between data processing systems involved in payment validation, and data download to storage means (30). A user connects the data storage means (30) to terminal (40) and logs on to a data web page of data access service provider (60). Either terminal (40) or service provider (60) then communicates via data paths (62) with payment validation authority (70) to check and authorise the user's or payer's payment. In the case of electronic cash the terminal (40) may immediately validate the payment information, updating the service provider and/or payment validation authority (70) at a later stage. The logical connection (64) between the terminal and the service provider is preferably made over the internet.

The service provider may provide a direct portal to data suppliers (80) or may collect information from data suppliers (80) and provide a "front end" to present data from the suppliers to the terminal user. Alternatively service provider (60) may regulate direct access between terminal (40) and data suppliers (80), as shown by links (66), by communicating with the terminal and the data suppliers to provide communication regulation information to, for example, instruct data suppliers about what information the user of terminal (40) should have access to.

In a preferred embodiment service provider (60) pays royalties at an agreed rate - for example, 10 pence per track or 10 pence per minute - to an appropriate organ of the recording industry and the user of terminal (40) effectively pays the service provider. Billing can also be regulated by bandwidth and/or data download time.

Preferably the service provider (60) monitors the user's access to the system and either stores or forwards to data suppliers (80), or downloads to data storage means (30), usage information. In a preferred embodiment the service provider sends information via terminal (40) to data storage means (30) which can be used to determine incentives to be provided to users of the system.

Figure 4B shows a physical configuration of the system of Figure 4A in which a plurality of terminals (40), a plurality of service providers (60) and a plurality of data suppliers (80) all interact via the internet. The physical embodiment of the system is not critical and a skilled person will understand that the terminals, data processing systems and the like can all take a variety of forms.

The skilled person will understand that many variants to the system are possible and the invention is not limited to the described embodiments.

CLAIMS:

1. A mobile data retrieval device comprising:
a removable data storage means;
data access means, to access downloaded data on the data storage means;
storage interface means adapted to couple the data storage and data access means; and
data output means to provide the downloaded data, in a useful form, to a user of the device;
wherein the data storage means further comprises payment validation means to validate payment for the downloaded data.
2. A mobile data retrieval device as claimed in claim 1 wherein the data storage means receives power from the retrieval device when connected to the device and retains storage by the downloaded data when unpowered.
3. A mobile data retrieval device as claimed in claim 1 or 2 wherein the data storage means comprises external data interface means to receive data downloaded from an external source onto the card for storage and wherein the payment validation means comprises means to validate payment to the external source.
4. A mobile data retrieval device according to any preceding claim wherein the payment validation means comprises memory means to store transaction value information on a cash value of transactions validatable by the data storage means.
5. A mobile data retrieval device according to any preceding claim wherein the payment validation means comprises memory means to store information to identify a payer for the downloaded data.

6. A mobile data retrieval device according to any preceding claim wherein one of the data storage means and the retrieval device further comprises data description means to at least partially decrypt downloaded data.

7. A mobile data retrieval device according to any preceding claim wherein one of the data storage means and the retrieval device comprises access control means to prevent unauthorised access to the downloaded data.

8. A mobile data retrieval device according to claim 7 wherein the access control means is responsive to the payment validation means.

9. A mobile data retrieval device according to any one of claims 3 to 8 wherein the payment validation means comprises a payment validation means interface operable simultaneously with the external data interface means.

10. A mobile data retrieval device according to any preceding claim wherein the data storage means comprises an electronic memory card or smart card.

11. A mobile data retrieval device according to claim 10 having a housing with a slot therein to receive the data storage means.

12. A mobile data retrieval device according to claim 11 further comprising local storage means and means to copy data from the data storage means into the local storage means.

13. A mobile data retrieval device according to claim 11 or 12 wherein the retrieval device is portable and, in two directions, is not substantially larger than the data storage means.

14. A mobile data retrieval device according to any preceding claim wherein the storage interface means is adapted for repeated removal and reconnection of the data storage means to the retrieval device.

15. A mobile data retrieval device according to any preceding claim further comprising display means to display information derived from the downloaded data to the user.

16. A mobile data retrieval device according to any preceding claim further comprising audio output means to provide an audio output corresponding to the downloaded data to the user.

17. A mobile data retrieval device according to any preceding claim comprising a first set of contacts for the storage interface means and a second set of contacts for interfacing to the payment validation means.

18. A data providing system comprising a mobile data retrieval device as claimed in any preceding claim, and
a data access terminal to interface with the data storage means to download data and to co-operate with the payment validation means to validate payment for the downloaded data.

19. A data providing system as claimed in claim 18 wherein the data access terminal is couplable to the internet and co-operates with the payment validation means to validate payment with a payment validation authority and is operable to download data to the data storage means from a data supplier on the internet.

20. A data providing system as claimed in claim 19 wherein the data access terminal operates through a data access service provider, the data access service provider being configured to communicate with the payment validation authority and to control access of data access terminal to data from the data supplier.

21. A data storage means for use with the device or system of any preceding claim.
22. A data storage means comprising an external data interface means to receive data downloaded from an external source onto the card for storage; and payment validation means comprising means to validate payment to the external source, and/or to a payment validation authority.
23. A data storage means as claimed in claim 22 further comprising data decryption means to at least partially decrypt the downloaded data.
24. A data storage means as claimed in claim 22 or 23 further comprising access control means to prevent unauthorised access to the downloaded data.
25. A data storage means as claimed in claim 24 wherein the access control means is responsive to the payment validation means.
26. A data storage means according to any one of claims 22 to 25 wherein the payment validation means comprises a payment validation means interface operable simultaneously with the external data interface means.
27. A data storage means according to any one of claims 22 to 26 wherein the data storage means comprises an electronic memory card or smart card.
28. A method of providing portable data comprising the steps of:
- (i) providing a portable data storage device comprising downloaded data storage means and payment validation means;
 - (ii) providing a terminal for internet access;
 - (iii) coupling the portable data storage device to the terminal;

- (iv) reading payment information from the payment validation means using the terminal;
 - (v) validating the payment information; and
 - (vi) downloading data into the portable storage device from a data supplier.
29. A method as claimed in claim 28 further comprising writing updated payment information into the payment validation means.
30. A method as claimed in claim 28 or 29 further comprising communicating a result of the validating step to the data supplier.
31. A method as claimed in any one of claims 28 to 30 further comprising controlling access by the terminal to data from the data supplier using another data processing system on the internet.
32. A method as claimed in claim 31 wherein the another data processing system performs said step of validating.
33. A method as claimed according to any one of claims 28 to 32 wherein said step of coupling is performed by a mobile data retrieval device as claimed in any one of claims 1 to 17.
34. A method as claimed in claims 28 to 34 further comprising writing usage information into the data storage means, the usage information relating to use made of the data storage means, such as information relating to the downloaded data, to data supplier or suppliers used; and/or to a user's spending patterns.
35. A method as claimed in claims 28 to 33 wherein said portable data storage device comprises an electronic memory card or smart card.

36. A device, system, data storage means, or method as claimed in any preceding claim wherein the data is MP3 encoded audio data.

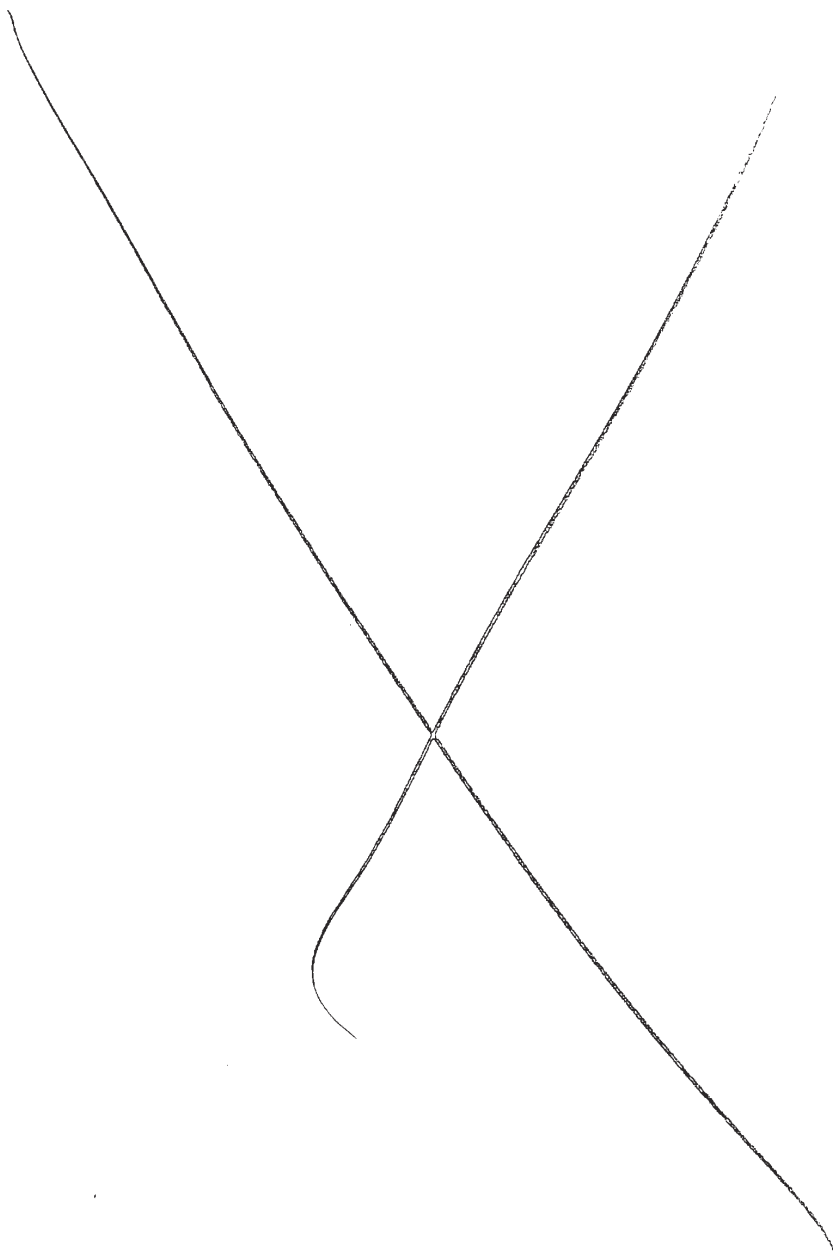
37. A data retrieval device, system, data storage means, or method substantially as hereinbefore described.

ABSTRACT:

A mobile data retrieval device comprising: a removable data storage means; data access means, to access downloaded data on the data storage means; storage interface means adapted to couple the data storage and data access means; and data output means to provide the downloaded data, in a useful form, to a user of the device; wherein the data storage means further comprises payment validation means to validate payment for the downloaded data.

A data storage means comprising an external data interface means to receive data downloaded from an external source onto the card for storage; and payment validation means comprising means to validate payment to the external source, and/or to a payment validation authority.

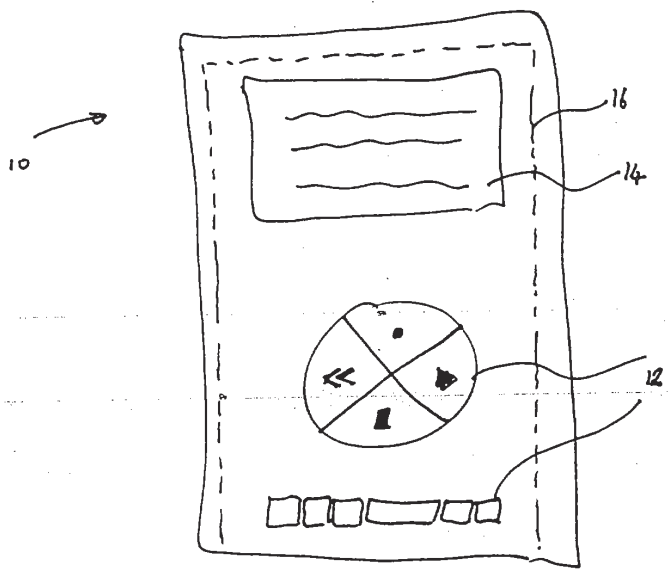
(Fig. 4A).



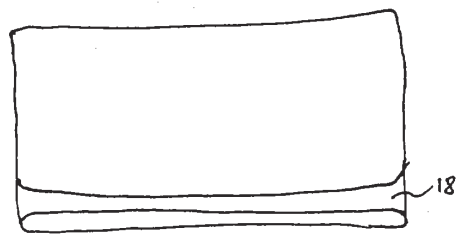
1/3

Figure 1

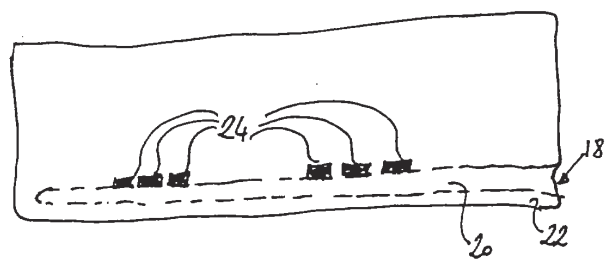
A



B



C



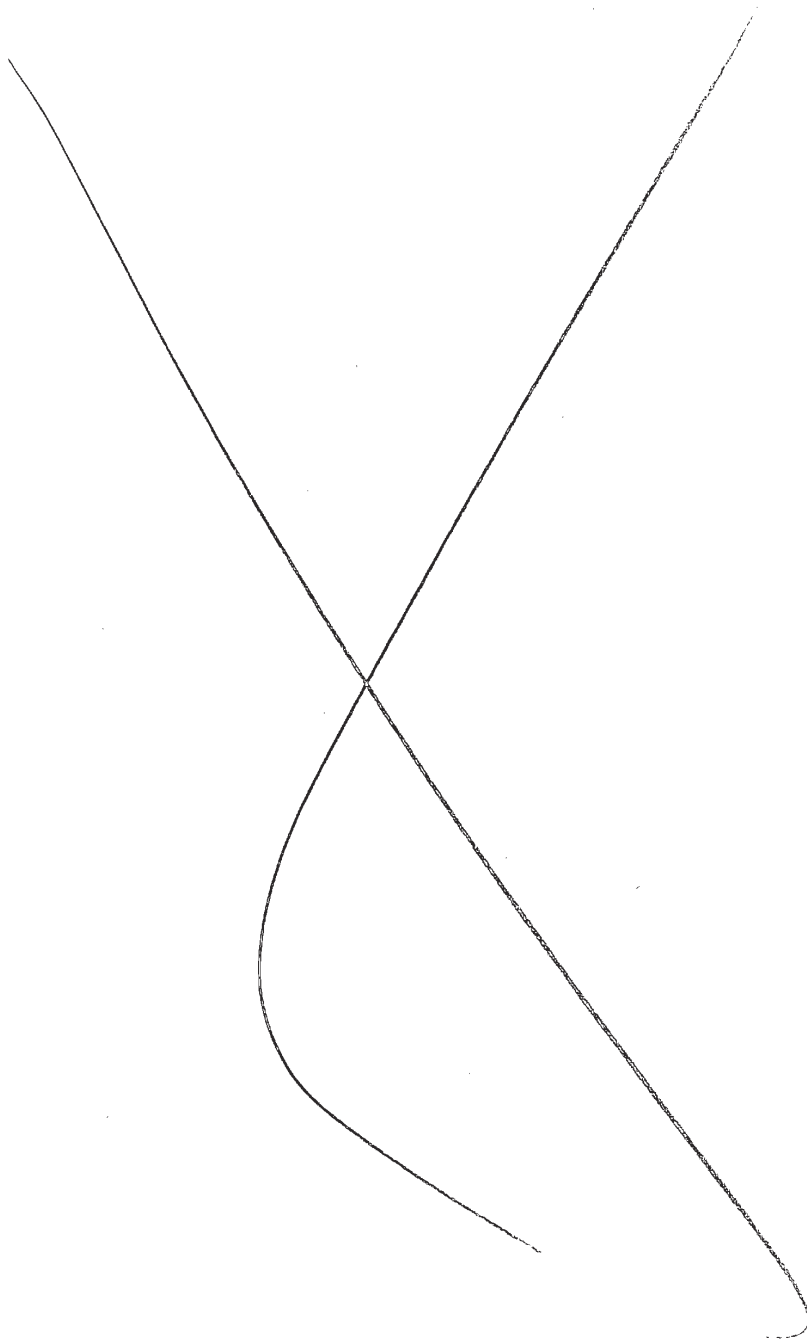


FIGURE 2

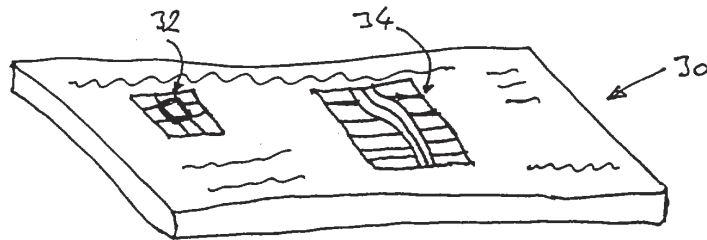
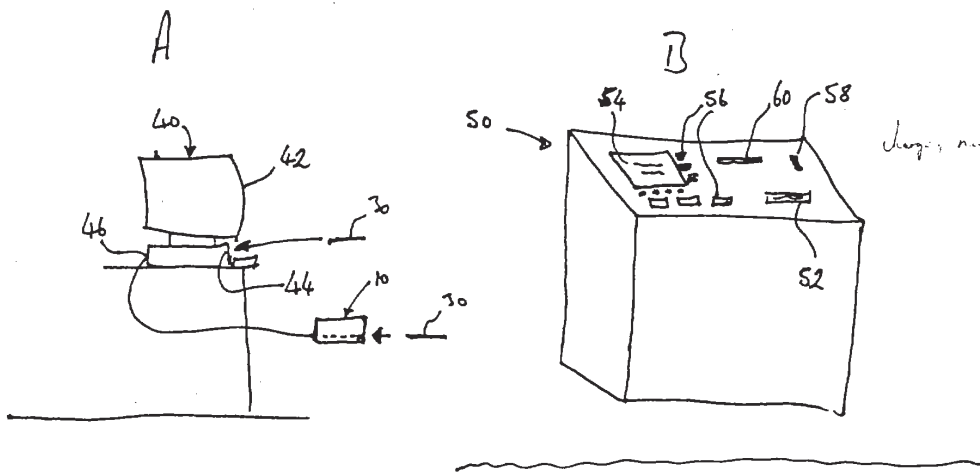
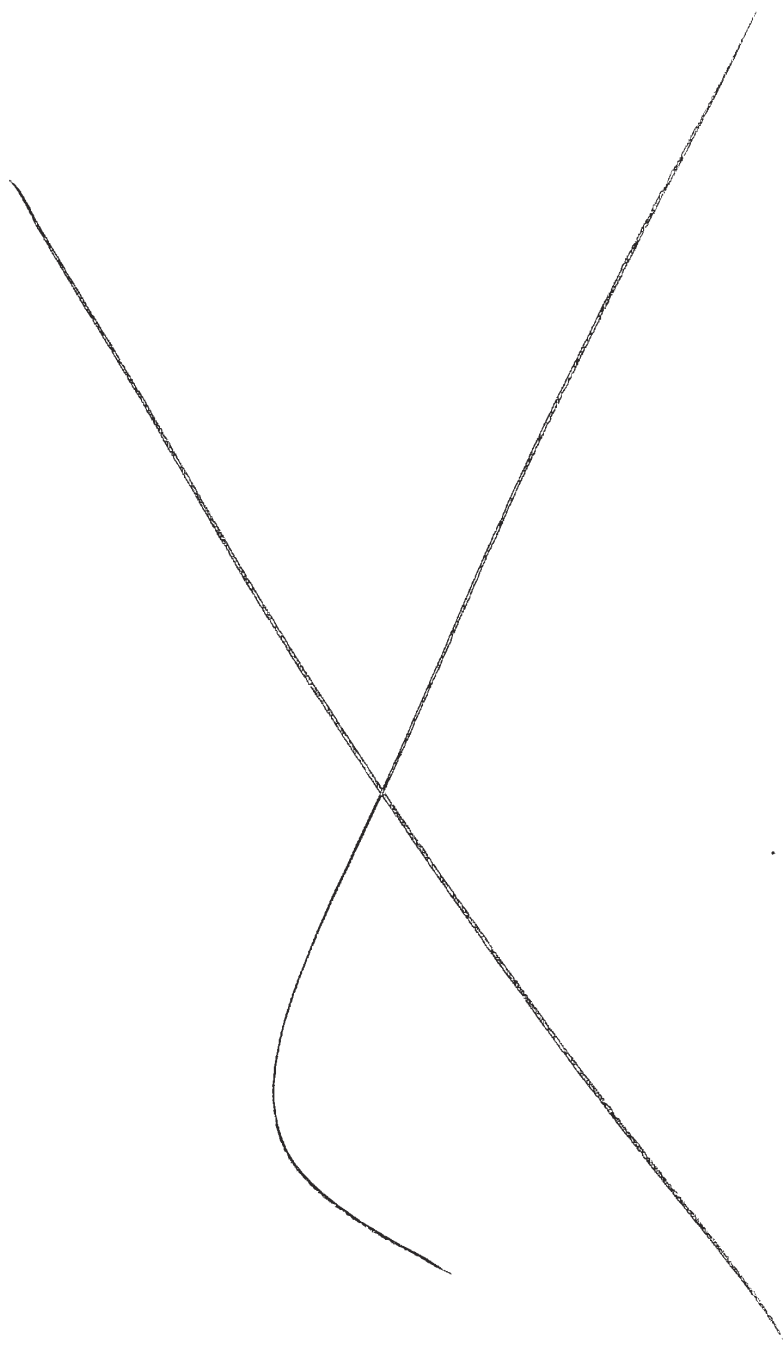
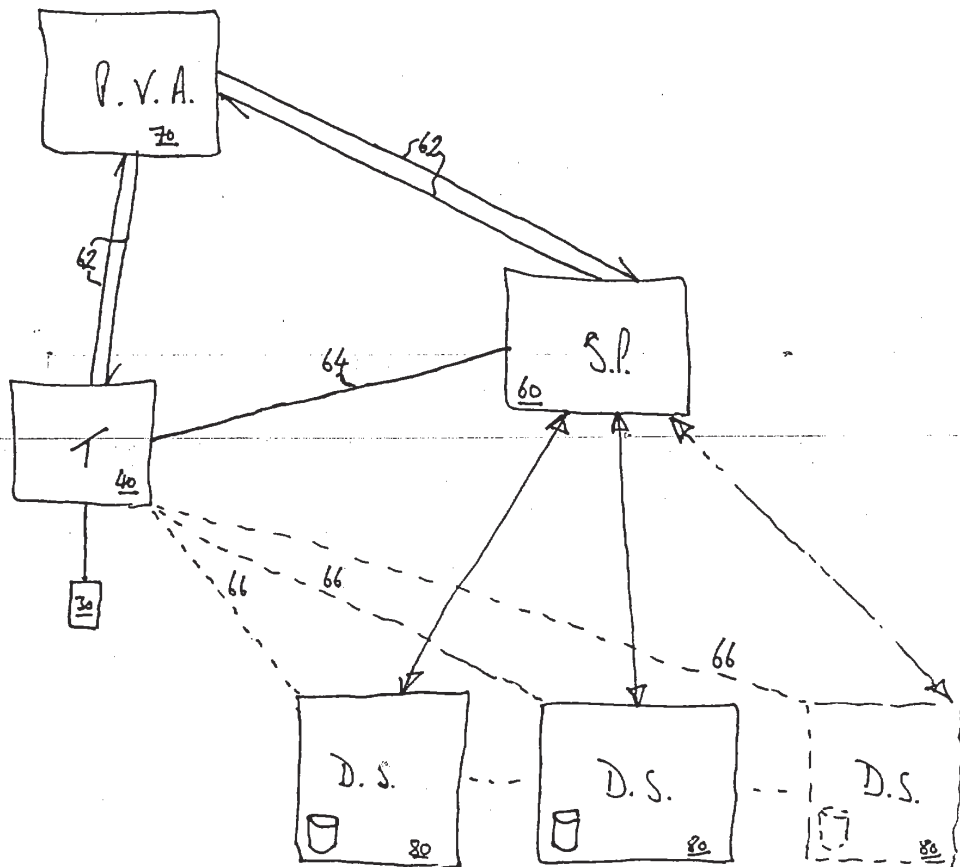


FIGURE 3

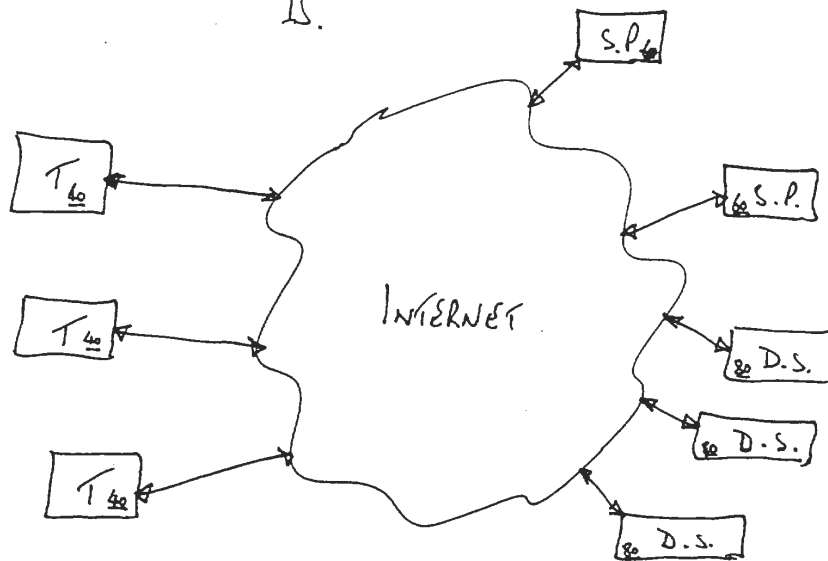




3/3
FIGURE 4
A.



B.



PCT/GB00/04110

PJT

