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(11) **EP 1 575 007 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
14.09.2005 Bulletin 2005/37

(51) Int Cl.7: **G07F 17/26**

(21) Application number: **05100998.3**

(22) Date of filing: **11.02.2005**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
 HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR**
 Designated Extension States:
AL BA HR LV MK YU

(72) Inventor: **IANCU, Theodor**
34355, Haifa (IL)

(74) Representative: **Leone, Mario et al**
Società Italiana Brevetti S.p.A.
Piazza di Pietra 39
00186 Roma (IT)

(30) Priority: **11.03.2004 IT RM20040128**

(71) Applicant: **Lorane Technical Equipment B.V.**
1083 HJ Amsterdam (NL)

(54) **A multifunctional apparatus for issuing products and/or services**

(57) An automatic multifunctional booth for issuing products and/or services, in particular for printing photographic products, comprises a central control unit, in-

terface devices, acquisition means, a printing unit and means for connection to a telecommunications network for transferring data from/to users and/or a management centre.

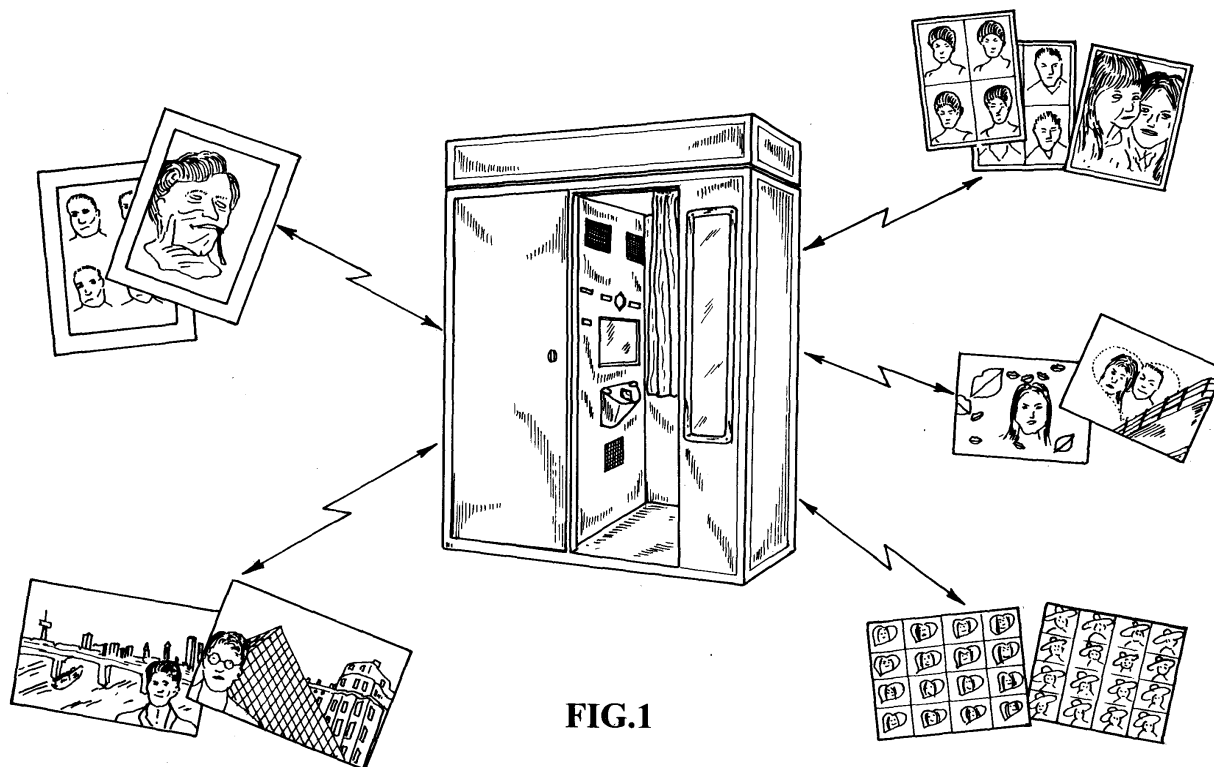


FIG.1

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Description

[0001] The present invention relates to a multifunctional apparatus for issuing products and/or services.

[0002] Systems for distributing instruments to make use of certain services are already known. Examples of this kind can be the devices for the production of travel instruments such as tickets for public transportation means or also railway tickets.

[0003] However, these systems have the limit that each is manufactured specifically for the production of a predetermined type of instrument, e.g. a ticket for public transportation service.

[0004] Therefore, to obtain instruments for access to different services, it is necessary to provide as many specific devices, each with specific characteristics.

[0005] Moreover, none of these systems provides the possibility of a personalisation of the required instrument, so the range of possible types of instruments is also limited, because for example it is not possible to issue those instruments which provide for the identification of the user, e.g. by means of a photograph or by means of his/her identifying data.

[0006] There are also booths which allow to purchase products, such as food products or photographs, in particular booths for the production of ID photographs or cards of other kinds.

[0007] However, these apparatuses also have the limitation that each is dedicated to a particular service or product and none of them is multifunctional.

[0008] Additionally, none of the prior art apparatuses allows to be used as a point for the withdrawal of a predetermined product purchased elsewhere, e.g. through the Internet or with other remote purchasing means.

[0009] The object of the present invention, therefore, is to solve the aforesaid problems, providing a multifunctional apparatus as defined in claim 1.

[0010] In particular, the apparatus according to the present invention may be constructed both in the form of stand-alone "totem pole" and in the form of a multifunctional automatic booth able to provide various kinds of services.

[0011] The advantages, as well as the characteristics and operating modes of the present invention shall become readily apparent in the detailed description that follows of a preferred embodiment, provided purely by way of non limiting example, with reference to the accompanying drawings, in which:

- Figure 1 is a view of an apparatus according to the present invention;
- Figure 2 is a view of some internal parts of an apparatus according to the present invention;
- Figure 3 is an exemplifying diagram of a possible application of the present invention; and
- Figure 4 is a block diagram of an apparatus according to the invention.

[0012] To describe the present invention, reference shall hereafter be made to the aforesaid figures.

[0013] In particular, the apparatus according to the present invention is designed to provide users with a service for printing photographic products and/or the like.

[0014] However, the same booth may also provide other types of services, as shall become readily apparent from the remainder of the description.

[0015] Hereafter, reference shall be made, for the sake of descriptive simplicity, to the case in which the apparatus is constructed in the form of a multifunctional booth, it being understood however that different embodiments may be provided, for example multifunctional totem poles or, in particular, for printing illustrated post cards.

[0016] The apparatus according to the present invention is of the self-service type, to be installed in more or less capillary fashion on the urban territory.

[0017] From a technical viewpoint, the booth comprises a central control unit, interface devices, acquisition means for taking pictures and a printing unit.

[0018] The user who wants locally to make use of the services offered, shall go to the booth and, after paying a cash consideration, shall request and obtain the service.

[0019] In particular, the following services are provided:

- taking and printing photos (ID card format, photographic portrait, photo amusement, etc.);
- preparing and printing cards of various kinds (calling cards, greeting cards, etc.);
- printing post cards;
- production of caricatures;
- printing badges (with and without photo).

[0020] Post cards are printed at the request of the user who may choose the one or ones (s)he likes best amongst those stored in a local or also a remote database by means of a connection to the Internet or to a local network.

[0021] The choice may advantageously be made through means for selecting images, comprising a simple and effective user interface, described in greater detail below. Through said interface, the user may also personalise the selected card with the addition of inscriptions, backgrounds or with the addition of his/her own digitised images, taken directly in the booth or inserted by means of external storage supports.

[0022] The cards thereby obtained may advantageously have their rear pre-printed like common post cards and they may also be pre-stamped.

[0023] For this purpose, the apparatus may be provided with means for issuing postal values, e.g. stamps, based on current postal fees (stored in a database able to be updated) necessary to post the card to the location indicated by the user.

[0024] The stamps may either be printed directly on the card or may be issued and provided to the user in the form of stickers of corresponding value to be subsequently affixed onto the card.

[0025] To take images, the acquisition means advantageously comprise devices such as photo cameras or video cameras, preferably of the digital type.

[0026] The printing unit may comprise different printing devices, each able to print on a specific support (photographic paper, simple paper, die-cut, adhesive or other types).

[0027] Especially in the case in which the apparatus according to the present invention is constructed both in the form of a booth, of particular interest is the possibility to obtain caricatures starting from a digital image of the user's face.

[0028] By way of example, a short description of said procedure shall be provided.

[0029] With a digital image taking device (photo camera or television camera), an image of the user's face is captured which is then acquired and stored on a fixed storage device (hard disk).

[0030] The image thus stored is then processed by a specific software which subdivided into a grid of fixed dimensions (19x25 points), in order to generate a set of quadrilateral polygons (squares).

[0031] At this point, the user shall have the possibility of choosing among other options, each whereof corresponds to a different deformation of the grid. The vertices of the squares are correspondingly "shifted" according to predefined rules, thus deforming the squares into irregular quadrilateral polygons.

[0032] The set of said irregular polygons is then subjected to graphic processing operations (rendering), e.g. by means of a "texture mapping" algorithm, using the set of textures obtained, thereby generating a new deformed image corresponding to the caricature of the first acquired image.

[0033] To this new image are then applied filters of various kinds (convolution matrices or other algorithms) to obtain particular pictorial effects selected by the user such as black/white, the pastel painting effect or the oil painting effect.

[0034] The final image is then stored on hard disk and displayed on a monitor, e.g. by lighting the individual pixels according to a random sequence.

[0035] Lastly, the image thus obtained is printed in the format required by the user (as a single photo, within a post card or in yet other manners).

[0036] Although the delivery of a printing service is one of the preferred applications of the present invention, it should nonetheless be understood that according to the same inventive concept, the apparatus can be designed in such a way as to provide other types of services as well.

[0037] Purely by way of example, an apparatus according to the present invention may advantageously be used for the delivery of credit instruments, e.g. prepaid

telephone cards. A user may select his/her telephone operator and the cutting of the desired card, to be obtained after paying the cash consideration.

[0038] According to the present invention, the apparatus further comprises means for connecting to a telecommunications network. In particular, devices for connecting to the Internet are advantageously provided.

[0039] Said connecting ability allows to implement additional functionalities.

[0040] For example, in the booth form, the apparatus may be connected to a desk/operator of an office, e.g. of a Governmental Agency, and used as a point for preparing identity documents. The user may go to one of the booths installed over the territory and request to obtain an identity card complete with photograph. The photograph thus executed is sent in real time to the corresponding office of the Governmental Agency. The user shall be provided with an identifying code, e.g. a bar code, with which, going to the operator of the office, (s) he may withdraw his/her identity card.

[0041] The apparatus according to the present invention, also in a "totem pole" version, can also be exploited as a point for the delivery of information (tourist or otherwise) or as a point for sending/receiving and printing electronic mail messages and faxes.

[0042] A user who wishes to make use of the services provided by means of the present invention shall naturally access said services through the provided interface devices (e.g. a dedicated alphanumeric keyboard).

[0043] Advantageously, the booth according to the present invention comprises additional input devices, able to receive commands for the delivery of services.

[0044] In particular, direct connection modules and wireless connection modules (infrared, Bluetooth, wi-fi or others) for various kinds of electronic apparatuses, e.g. cell phones, are provided.

[0045] In this way, through the connected apparatuses, the user may request and/or pay for the selected service.

[0046] An additional possibility offered by the present invention is given by the fact that the acquisition means comprise dedicated modules to receive data from various kinds of external storage supports. In particular, data may be transferred from and to: digital photo cameras, portable PCs, palmtops, memory cards, floppy disks, CD-ROM, DVDs or other devices.

[0047] The data thus transferred, e.g. images in digital format, may then be printed directly on paper support, or for example be sent via e-mail to an electronic mail address or otherwise be recorded on magnetic or optical supports.

[0048] An additional service which may be provided by means of apparatus according to the present invention is in fact linked to the printing of digital photographs.

[0049] The user who desires to print his/her own photos could in this case send them through his/her personal PC to an appropriately provided server.

[0050] Indicating his/her geographic position in the

city to the system, (s) he would in exchange receive the indication of the apparatus that is closest to him/her where the printed photographs could be withdrawn.

[0051] A functionality similar to the one described above may be advantageously be provided also for multimedia contents such as videos, music or others. Said multimedia contents may also be downloaded from the Internet. In this case, the product to be withdrawn would be a computer product, or rather data stored in files, which may advantageously be recorded on different supports such as floppy disks or CD-ROMs, with appropriate recording means provided for this purposes, e.g. a CD-ROM recorder.

[0052] The customer may also record his/her voice on the indicated supports, using musical bases that are prerecorded or downloaded from the Internet (such as karaoke).

[0053] The user then, going to the indicated apparatus may, following an identification and payment procedure, obtain the desired product.

[0054] The apparatus according to the present invention comprises a payment acceptance unit, able to accept payments made in different forms: cash, credit card, ATM, cell phone, bank transfer, prepaid cards.

[0055] Solely for the purpose of further clarifying the possible usefulness of an apparatus according to the present invention, an additional example of utilisation is also provided.

[0056] In particular, one or more apparatuses according to the present invention could advantageously be installed in locations where typically prints of "snapshot" photographs are requested, e.g. tourist attractions or also sites where wedding ceremonies of parties, or conferences or similar events, take place. In this case, the "official" photographer of the event could use the apparatus according to the present invention as an archive to "upload" the photographs taken during the ceremony or the event and the customers could then use the apparatus itself to display their photos, select which ones to print and then decide whether to print them right away or to order multiple copies or versions, e.g. through an on-line service.

[0057] The present invention has hitherto been described according to a preferred embodiment thereof, provided purely by way of non limiting example.

[0058] Other forms may be provided, without departing from the scope of protection of the invention, as defined by the appended claims.

Claims

1. A multifunctional apparatus for issuing products and/or services, in particular for printing photographic products and/or illustrated post cards, comprising a central control unit, interface devices, acquisition means, a printing unit and means for connection to a telecommunications network for trans-

ferring data from/to users and/or a management centre.

2. An apparatus as claimed in claim 1, wherein said acquisition means comprise a device for taking images.
3. An apparatus as claimed in claim 2, wherein said device for taking images is a photo camera.
4. An apparatus as claimed in claim 3, wherein said photo camera is digital.
5. An apparatus as claimed in any of the previous claims, wherein said printing unit comprises one or more printing device, each able to print images on a different support.
6. An apparatus as claimed in any of the previous claims, further comprising means for processing the acquired images.
7. An apparatus as claimed in claim 6, wherein said acquisition means comprise a software procedure for changing the appearance of the acquired image.
8. An apparatus as claimed in claim 7, wherein said procedure is able to perform an operation of subdividing the acquired image into a set of regular polygons.
9. An apparatus as claimed in claim 8, wherein said photo regular polygons are deformed according to predefined rules.
10. An apparatus as claimed in claim 9, wherein the set of said deformed polygons is subjected to "rendering" operations by means of "texture mapping" algorithms, obtaining a deformed image of the acquired image.
11. An apparatus as claimed in claim 10, wherein to said deformed image are applied one or more filters, to obtain specific pictorial effects.
12. An apparatus as claimed in any of the previous claims, wherein said connecting means are able to connect to the Internet.
13. An apparatus as claimed in any of the previous claims, further comprising input devices able to receive commands for the delivery of the services.
14. An apparatus as claimed in claim 13, wherein said input devices comprise direct connection modules for connecting electronic apparatuses.
15. An apparatus as claimed in claim 13 or 14, wherein

said input devices comprise wireless connection modules for connecting electronic apparatuses.

- 16.** An apparatus as claimed in claim 15, wherein said wireless connection modules support standards such as: infrared, Bluetooth, wi-fi. 5
- 17.** An apparatus as claimed in any of the previous claims, wherein said acquisition means comprise dedicated modules for the reception of data from external storage supports. 10
- 18.** An apparatus as claimed in claim 17, wherein said modules for receiving data are able to receive data from: digital photo cameras, PCs, palmtops, memory cards, floppy disks, CD-ROM, DVDs. 15
- 19.** An apparatus as claimed in any of the previous claims, further comprising means for recording data on magnetic and/or optical supports. 20
- 20.** An apparatus as claimed in claim 19, wherein said recording means comprise a CD-ROM recorder.
- 21.** An apparatus as claimed in any of the previous claims, wherein said services comprise the issue of prepaid telephone cards. 25
- 22.** An apparatus as claimed in any of the previous claims, further comprising means for selecting one or more images to print, among a multiplicity of images stored in an image database. 30
- 23.** An apparatus as claimed in claim 22, wherein said database is local. 35
- 24.** An apparatus as claimed in claim 22, wherein said database is remote, accessible through a telecommunications network. 40

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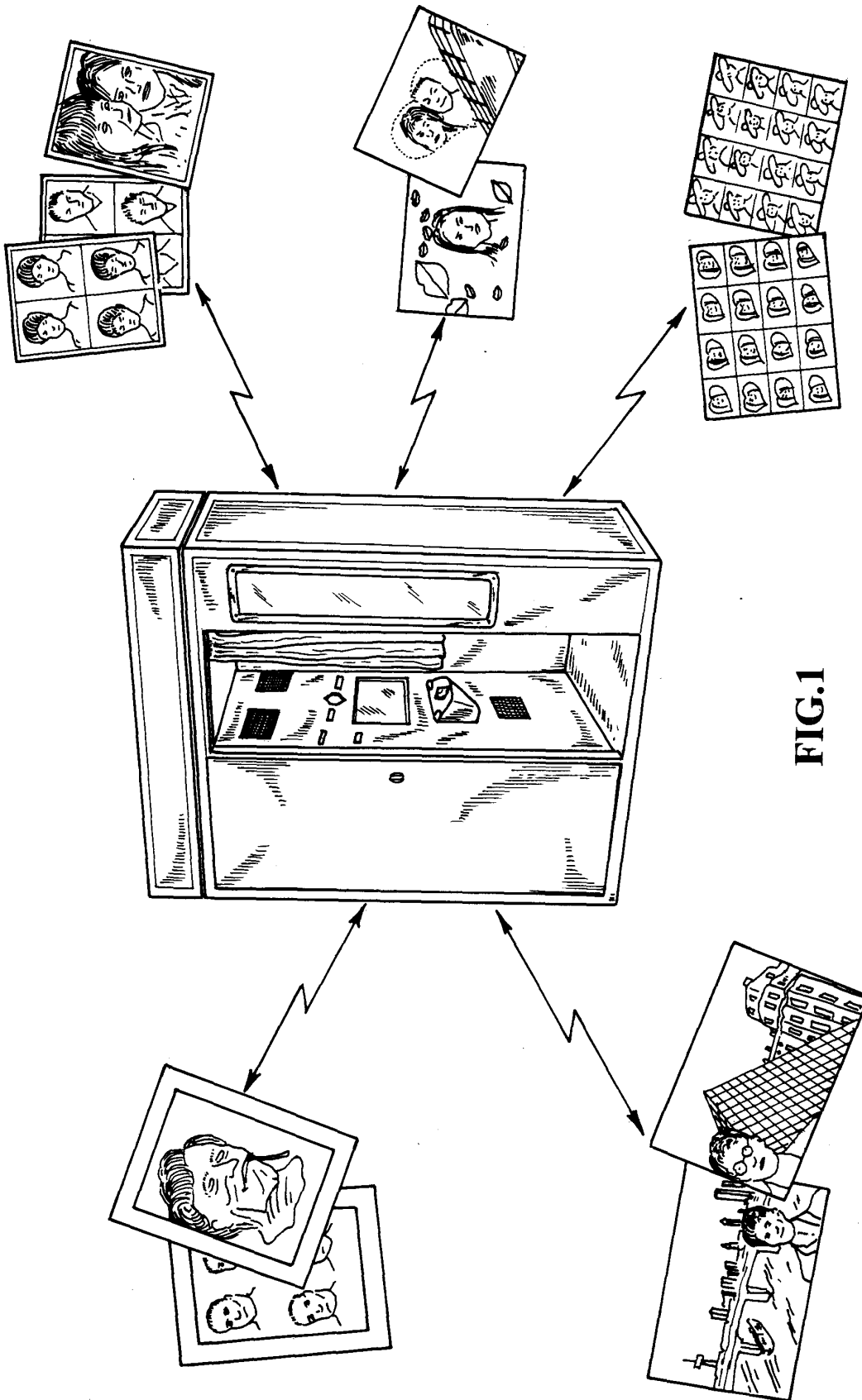


FIG.1

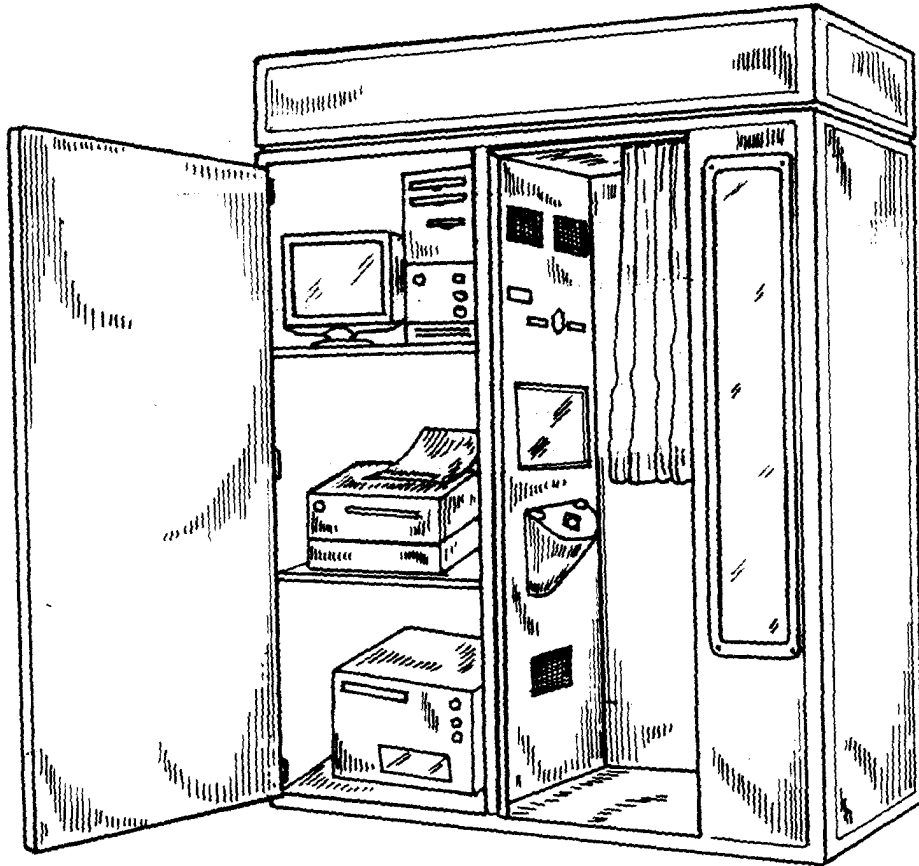


FIG.2

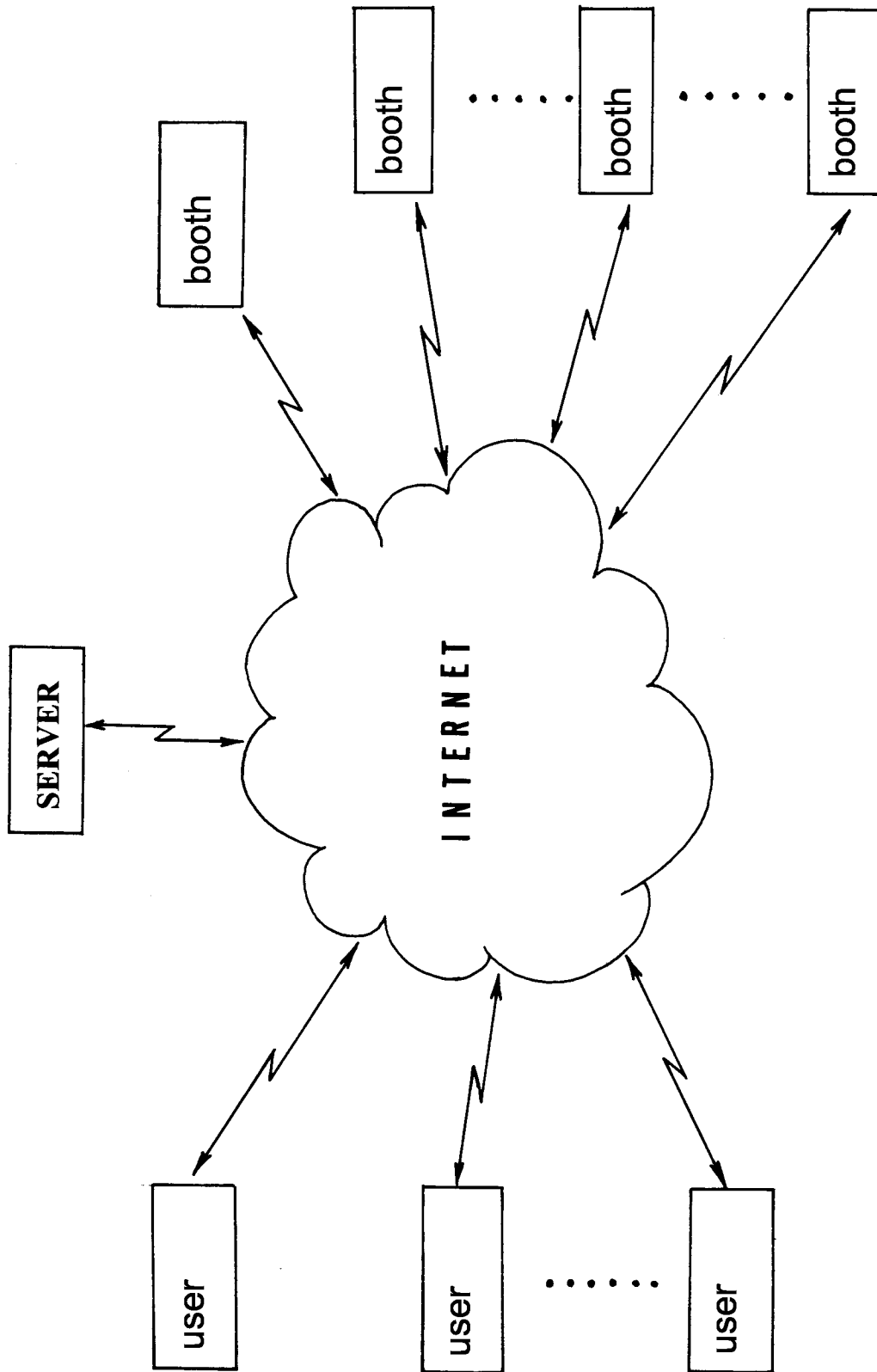


FIG.3

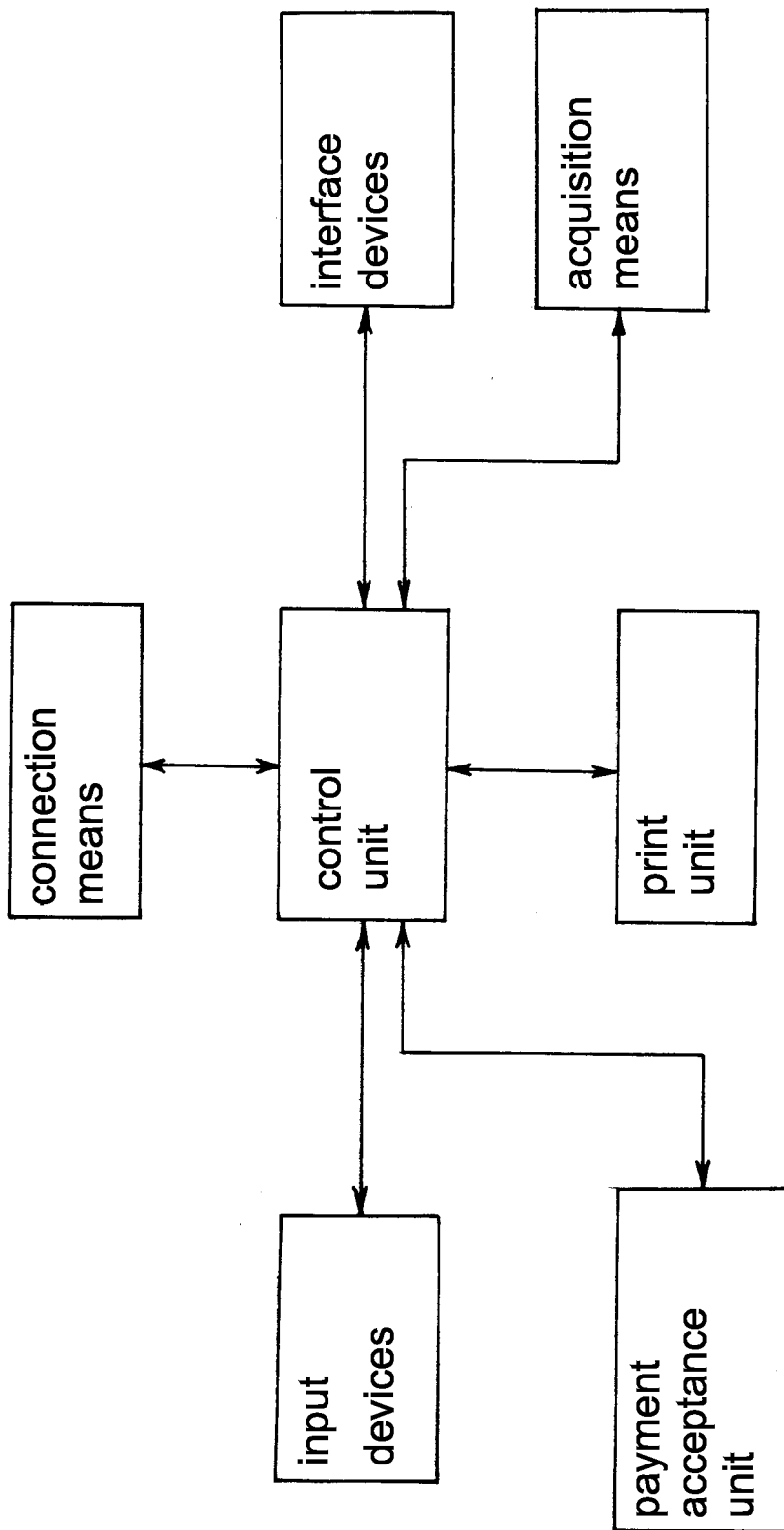


FIG.4