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(71) Applicant(s):
Katie Louise Teichman
Flat 10 Barrydene, Oakleigh Road North,
Whetstone, LONDON, N20 9HG,
United Kingdom

(72) Inventor(s):
Katie Louise Teichman

(74) Agent and/or Address for Service:
Urquhart-Dykes & Lord LLP
30 Welbeck Street, LONDON, W1G 8ER,
United Kingdom

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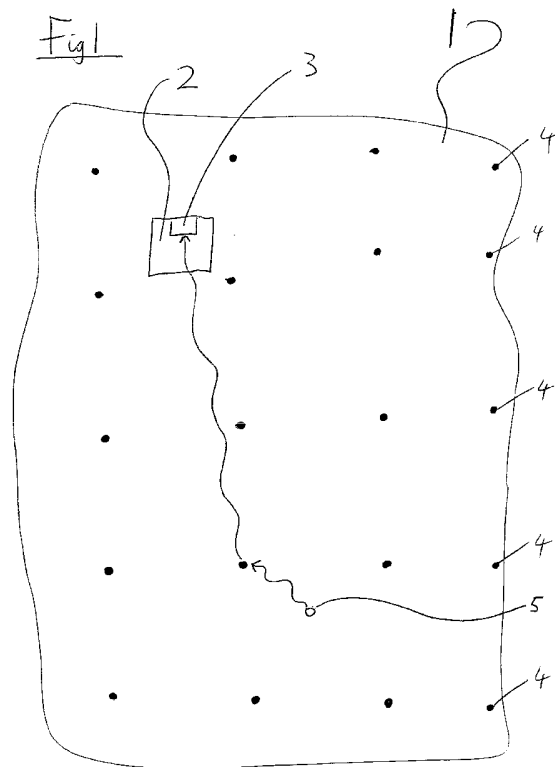
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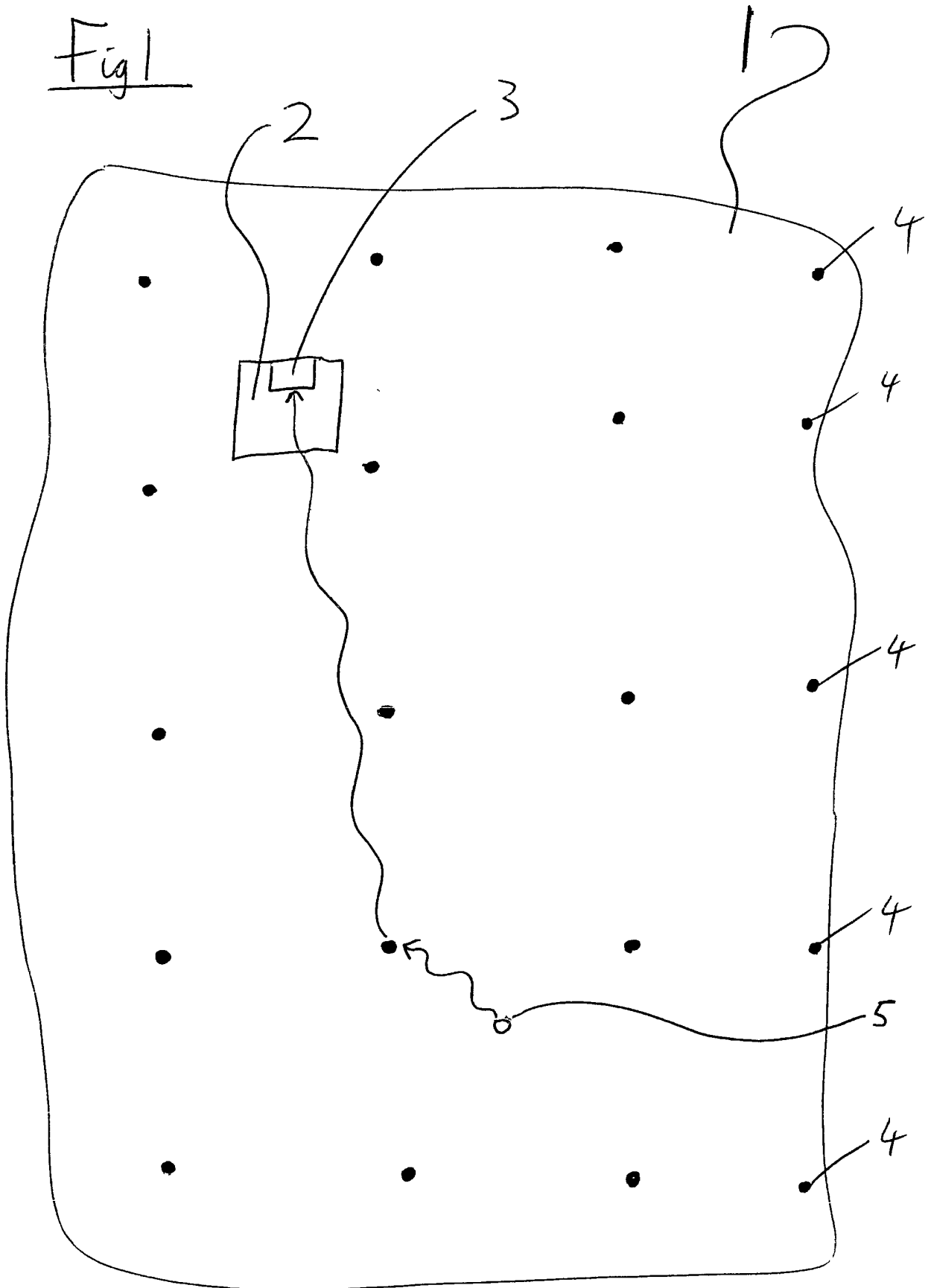
(54) Abstract Title: **Service request system**

(57) A service request system comprises a number of request units 5 located within a service area, a number of receivers 4, a location unit 3 and a display. Each request unit 5 has a manual control and wireless radio transmitter and sends a radio request for service in response to operation of the manual control. Each receiver 4 which receives a request for service reports reception of the request for service to the location unit 3. The location unit derives the location of the sending request unit within the service area and shows this location on the display.



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Fig 1



Service Request System

This invention relates to a service request system and in particular to a service request system for use in bars and hotels.

It is usual for hotels having bars and lounge areas to allow guests to order refreshments from wherever they are seated in the bar or lounge area. However, it may be a problem to provide an expected or acceptable level of service in hotel or resort complexes having large external lounge and bar areas such as pool side areas, sun terraces and the like because of the physical size of the guest areas where service may be desired.

This is a particular problem for resort or hotel complexes using walls, foliage and landscaping to cut down noise and to allow guests some privacy, because the more complex layout of the service area makes it impossible for a member of staff to see more than a small part of the service area at any time.

In general it is desired and expected by guests, that it should be possible to obtain services such as the ordering and provision of food and drinks wherever a guest is located in the service area without undue delays.

There is a problem in providing this desired level of service, particularly in large service areas, that guests may have to wait for an unacceptably long time for a staff member to pass close enough to attract their attention and request service, or a guest may have to move to a bar or similar ordering point themselves to request service. These problems are more likely to be encountered where service is provided across physically

large areas and where the layout of the serviced area is more complex.

It is of course possible to raise the service to a desired level by increasing the number of waiters or other service staff, but this can increase costs to unacceptable levels.

The present invention has been made in order to solve these problems.

In a first aspect, this invention provides a service request system comprising at least one request unit located within a service area, at least one receiver, a location unit and a display, the request unit comprising a manual control and wireless radio transmitter adapted to send a radio request for service signal in response to operation of the manual control, the receiver being adapted to receive the request for service signal and report reception of the request for service signal to the location unit, and the location unit being adapted to derive the location of the request unit within the service area from the report and to show this location on the display.

Embodiments of the invention will now be described with referenced to the accompanying diagrammatic figure 1.

Figure 1 shows a plan view of a system according to the invention when in use.

A first embodiment of the invention will now be described with reference to figure 1. Figure 1 shows a pool side seating and sun terrace area 1 associated with a hotel and served by a bar 2.

A large number of items of guest furniture, typically chairs, recliners, loungers, beds and the like, are located within the area 1. For brevity this guest furniture will be referred to as chairs below, but other types of furniture may be used. The chairs can be freely moved around within the service area 1 by guests so that the guests can sit or rest wherever they wish within the area 1.

The service request system according to the invention comprises a central terminal or console 3 located in the bar 2 and a plurality of wireless radio receiver units 4 located about the area 1. In figure 1 the receivers 4 are shown arranged across the area 1 approximately in a grid array. The receivers 4 may in principle be arranged across or around the area 1 in any convenient configuration which provides adequate reception coverage for service request units throughout the area 1.

Each of the chairs provided for use by the guests incorporates a service request unit 5. As explained above, the chairs are intended to be moved around freely by the guests. In order not to interfere with such movement the service request units 5 are battery powered so that no power cables are required

The use of battery power is not essential, but will usually be preferred to allow free movement. However, a cable power supply could be used if desired.

Each service request unit 5 comprises a request for service button, a wireless radio transmitter and a visual service request indicator.

When a guest requires service, they can request service by pressing the request for service button on their chair. The

service request unit 5 will respond by providing a positive visual indication to the guest that the request for service button has been pressed and the service request has been sent by activating an LED which illuminates the request for service button. The service request unit 5 further transmits a radio signal indicating that a request for service has been made.

If the guest wishes to cancel the request for service they can simply press the request for service button again. The service request unit 5 responds by ending the visual indication by stopping illumination of the LED, this provide a positive visual indication to the guest that the request for service has been cancelled. The service request unit further stops transmission of the request for service radio signal.

The illumination of the request for service button by an LED is a preferred way of providing a visual indication of the making of a request for service. Other types of illumination could be used instead of an LED. Further, alternative means of providing a visual indication of the making of a request for service could be provided instead of or in addition to illumination of the button. One alternative means of providing a visual indication would be for the request for service button to remain depressed after it is pressed for the first time and to return to its normal position only when it is pressed for a second time.

The radio signal emitted by the service request unit 5 making a request for service is received by one or more of the wireless radio receivers 4. Each of the receivers 4 receiving the request for service signal analyses the received signal and sends a report signal to the central console 3 identifying itself and the location of the service request unit 5 from

which the request for service signal has been received. The report signal may be sent from a receiver 4 directly to the central console 3 or may be sent through one or more other receivers 4 acting as repeaters, as appropriate under the communication method used.

The receivers 4 can use any known technique for communication with the central console 3, such as a standard wireless networking arrangement.

The central console 3 contains stored information regarding the location of all of the receivers 4. The central console 3 uses the known stored position of the or each receiver 4 reporting receipt of a request for service signal and the report signal to calculate the location of the service requesting unit 5 issuing the request for service and generates a notification that a request for service has been received together with the physical location within the service area 1 of the requesting service request unit 5 so that staff can move to the location of the guest requesting service and provide them with the desired service.

Conveniently, the central console 3 can be provided by a suitably programmed personal computer (PC).

The process of calculating the location of the service request unit 5 may be carried out in any known manner. Each receiver 4 may be capable of calculating the position relative to itself of a service request unit 5, and in this case the report signal sent to the central console 3 would provide this relative location information. However, in practice, it is expected that the position calculation will be carried out by the central console 3 based upon comparison of report signals from multiple

receivers 4. Examples of known techniques which could be used are time difference of arrival, time of flight, triangulation and received signal strength. It is stated above that radio request for service signal is received by at least one receiver 4. It will be understood that different location calculation methods may require different minimum numbers of receivers 4 to receive the request for service signal, and may require different types and amounts of information about the request for service signal to be included in the report signal.

Preferably, the central console 3 provides both notification that a request for service has been received and indicates the location of the service request unit 5 and thus the location of the guest requesting service by displaying the calculated location of the service request unit 5 from which the request signal has been received as a cursor on a map of the area 1.

In order to ensure that the request for service cannot easily be overlooked it is preferable for the central console to also emit an audible signal that a request for service has been received. Further, it is preferred that the cursor indicating the location of the service request unit 5 should be highlighted by blinking or use of a colour contrasting to the rest of the map display.

When a member of staff arrives at the location of the guest requesting service they can approach the guest, take their order and press the request for service button again, that is a second time. The request unit 5 then stops sending the request for service and returns to a passive non transmitting state and the request for service button stops giving a visual indication that service has been requested. The staff can then provide the requested service to the guest as appropriate. Alternatively,

the staff could press the request for service button for the second time only when the requested services have actually been provided.

It should be understood that use of either of these two procedural options is dependent on the operators and both are entirely supported by the system.

In practise it will often be the case that a number of guests and their chairs, loungers or other furniture will be located close together. In this case, in order to avoid any confusion the staff will be able to identify which guest has requested service because the request for service button on the request unit 5 visually identifies the sending of a request for service.

Preferably, the central console 3 can be advised when a member of staff has been assigned responsibility to deal with a request for service and to indicate this on the display so that multiple members of staff are not mistakenly sent to deal with the same request for service. This process of indicating to the central console 3 that a member of staff has been assigned to deal with a request for service and changing the indication on the display shows this change of status can be carried out using any convenient procedure.

One preferred arrangement is for the visual display provided by the central console 3 to be a touch screen display so that the central console 3 can be informed that a member of staff has been assigned to deal with a request for service by simply touching the screen over the service request cursor.

It is preferred to keep displaying the location of a request for service, until the sending of the request for service is stopped by the service request button of the service request unit 5 being pressed for the second time to cancel the sending of the request for service signal, in order to avoid a request for service being forgotten. In this case, the status of a request for service as to whether a member of staff has been sent to attend to the request for service can be indicated by changing the visual appearance of the request for service cursor. This can be done by changing the colour by changing from a blinking cursor to a continuously light cursor or any other convenient indication.

It would of course be possible to stop displaying the location of a request for service on the visual display immediately a member of staff is assigned to deal with the request for service. However, it this is generally not preferred because this could lead to confusion between requests for service which have been allocated to staff to be dealt with and requests for service which are cancelled by guests.

The receivers 4 are fixed when the system is operating and communicate by wireless radio links with the central console 3. Alternatively, physical connections such cable or fibre optic links could be used between the receivers 4 and the central console 3. However, the use of wireless links is preferred so that the system can be quickly and easily set up or reconfigured without requiring the installation or rerouting of physical connections.

The use of a cable or mains power supply for the receivers 4 is preferred because the power required by a receiver 4 is expected to be much greater than a service request unit 5.

However, a battery power supply could also be used. If a battery power supply is used, solar cells or photo-voltaic elements can advantageously be provided to extend battery life.

The use of fixed receivers 4 which remain at fixed locations relative to one another when the service request system is in use is preferred in order to simplify operation of the system.

Advantageously, in addition to the mode of use described above to provide service requests, the receivers 4 and the central console 3 can also be operated in a calibration mode in which radio signals are sent between the different receivers 4 in order to allow the locations of the receivers 4 within the area 1 to be calculated. This location information is then stored in the memory of the central console 3. In practice, this calibration function should be carried out when the system is first installed, after any of the receivers 4 have been moved and periodically as necessary to keep the system operating accurately.

In a second embodiment of the invention, in addition to the visual display at the central console 3 in the bar area 2 the staff are provided with individual portable wireless display units linked to the central console 3. When a request for service is received members of staff can be assigned or take responsibility for dealing with the request for service and indicate this to the central console 3 without having to physically move back to the bar area, so improving efficiency. Further, the use of portable display units by members of staff allows them to confirm the location of the service request unit 5 making a request for service after leaving the bar area where the central console is located so that they cannot forget or become confused about the location.

In a third embodiment of the invention, in addition to the features explained above of the first and second embodiments, each service requesting unit 5 is assigned a unique identity code and includes this identity number in the request for service radio signal. This incorporation of a unique identity code into each request for service signal ensures that where the request for service signal is received by multiple receivers 4 it is correctly identified as a single request for service and not as multiple different requests for service.

Further, in the third embodiment it is preferred that the unique identity code of each service requesting unit 5 is also clearly indicated on the chair or lounge to which the service request unit 5 is attached and that this code is indicated together with the request for service location cursor on the or each display. This allows a member of staff to clearly identify which guest has made the request for service. The codes will advantageously be numbers or alphanumeric sequences mainly comprising numbers so that the codes can be easily memorised and identified by members of staff.

This arrangement of uniquely coding the service request unit 5 and indicating this code on the display, or otherwise providing the code to the responsible member of staff, can be used as an alternative to the request for service button on the service request unit 5 indicating visually that a request for service has been made.

However, it is preferred to use the unique identification code in addition to the request for service button indicating that a request for service has been made. This provides greater certainty that the member of staff will identify the correct guest who has made the request for service. Further, the button

visually indicating that a request for service has been made provides reassurance to the guest that their request for service has been properly made and will be responded to.

The invention is not limited to the use of a single system in isolation. A large area, such as a resort complex for example, could be covered by multiple systems having contiguous service areas.

Further, multiple central consoles could be connected to an array of receivers in an area and different receivers being assignable to form a service request system together with different ones of the central consoles as required. This can be used to form a reconfigurable system able to deal with changing guest numbers. For example, an area could be served by different numbers of bars at different times with receivers being assigned to form service request systems together with central consoles in the open bars only.

In the embodiments described above the location of the service request unit is calculated by the receivers or central console. As an alternative each service request unit could calculate it's own position and include this in the request for service signal.

The different radio signals can be at any convenient frequency and modulation type. For example, Ultra-Wide band, 2.4 Ghz, 443 MHz, 433 MHz, 303 MHz and 900 MHz radio can all be used, among others.

In the embodiments described above a service request unit 5 sends a service request signal continually from the first time the request for service button is pressed until the second time

it is pressed. This continuously sent signal may instead be sent periodically during this period. As a further alternative the service request unit may only send a signal to start and end the request for service, the central console responding to these signals by toggling a request for service status record for the service request unit between a requesting state and a not requesting state. In this case the two toggling signals may be the same or different.

In the above the description the sending and processing of a single request for service is often referred to for clarity. It should be understood that in operation a number of requests for service may be being sent by different service request units at the same time.

In the above description the request for service function is controlled by buttons being pressed. It would of course be possible to substitute other forms of activation device with different activation functions, for example switches or pull cords.

In order to prevent accidental or inadvertent sending of requests it is preferred to include confirmation means in the button or other request for service mechanism. Suitable confirmation means include a time delay requiring a sustained pull or push for a set period of time or a mechanical interlock requiring two or more linked actions to activate a request for service, for example twisting and then pressing a button. Many suitable confirmation means are well known.

Preferably the confirmation means is used only to confirm the sending of a request for service and not the cancellation of a request for service.

In order to prevent abuse of the system, for example by children, the service requesting unit preferably includes an activation device which requires the presence of a token to activate the service requesting unit and allow a request for service to be sent. In one preferred arrangement the token is a non-contact smart card or tag and the activation device includes a reader able to detect the presence of the smart card or tag. Conveniently the service requesting unit has a slot or recess located adjacent the reader and the user places their smart card or tag in the slot or recess to activate the service requesting unit.

CLAIMS

1. A service request system comprising at least one request unit located within a service area, at least one receiver, a location unit and a display, the request unit comprising a manual control and wireless radio transmitter adapted to send a radio request for service signal in response to operation of the manual control, the receiver being adapted to receive the request for service signal and report reception of the request for service signal to the location unit, and the location unit being adapted to derive the location of the request unit within the service area from the report and to show this location on the display.

2. A service request system as claimed in claim 1, and comprising a plurality of spaced apart receivers each adapted to receive the request for service signal and report reception to the location unit.

3. A service request system as claimed in claim 2 in which the location unit comprises a memory device in which the location of each receiver is stored and the location unit is adapted to derive the location of the request unit from the stored location of the or each receiver which reports reception of the request for service signal.

4. A service request system as claimed in any preceding claim in which the request unit is adapted to provide a visual indication of operation of the manual control.

5. A service request system as claimed in claim 4 in which the manual control is a press button which remains depressed to provide said visual indication.

6. A service request system as claimed in claim 4 or claim 5, in which the request unit comprises a light which is illuminated to provide said visual indication.

7. A service request system as claimed in any preceding claim, in which the or each request unit is attached to an item of furniture.

8. A service request system as claimed in claim 7, in which the or each item of furniture is a chair, bed, recliner or lounger.

9. A service request system as claimed in any preceding claim, comprising a plurality of request units, in which each request unit has a unique identity code which is included in the request for service signal.

10. A service request system as claimed in claim 9, in which the identity codes of request units making a request for service and shown on the display.

11. A service request system as claimed in claim 9 or claim 10, when dependent from claim 7 or 8, in which the identity code is displayed on the item of furniture to which each request unit is attached.

12. A service request unit as claimed in claim 11, in which the identity code is an alphanumeric sequence.

13. A service request unit as claimed in claim 12, in which the identity code is number.



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Application No: GB0507714.4

Examiner: John Donaldson

Claims searched: 1 to 13

Date of search: 7 June 2005

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1 to 13	US 2003/0088469 A1 (LEIFER), see abstract, paragraphs 0034, 0035, 0043 to 0046
X	1 to 13	US 6681109 B1 (LEIFER), see abstract, column 3, line 59 to column 4, line 15, column 5, line 38 to column 6, line 11
X	1, 4 to 7, 9 to 13	US 2003/0182209 A1 (GE), see abstract, paragraph 0039
X	1, 2, 4 to 6, 9, 10	GB 1424379 A (CHRISTIAN ROVSING), see page 1, line 41 to page 2, line 11
X	1, 4 to 6, 9, 10	WO 83/04327 A1 (PITRODA), see abstract, page 12, line 34 to page 13, line 16
X	1, 4 to 7, 9 to 13	DE 4425289 A1 (GRÜTERICH), see WPI Abstract Accession No 1996-069668 [10]
X	1, 4 to 6, 9, 10	JP 2003141637 A (SEIKO), see WPI Abstract Accession No 2003-463034 [44]
X	1, 4 to 6, 9, 10	JP 03192386 A (NITSUKO), see EPODOC Abstract

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category	P	Document published on or after the declared priority date but before the filing date of this invention
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X:

G4H

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Worldwide search of patent documents classified in the following areas of the IPC⁰⁷

G08C

The following online and other databases have been used in the preparation of this search report

WPI, EPODOC