PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5 :
G08B 5/22, G04B 19/00, 25/00
G04B 37/00

A1

(11) International Publication Number: **WO 93/16448**

(43) International Publication Date: 19 August 1993 (19.08.93)

(21) International Application Number: PCT/US92/11125

(22) International Filing Date: 14 December 1992 (14.12.92)

(30) Priority data:
833,187 10 February 1992 (10.02.92) US

(71) Applicant: MOTOROLA, INC. [US/US]; 1303 East Algonquin Road, Schaumburg, IL 60196 (US).

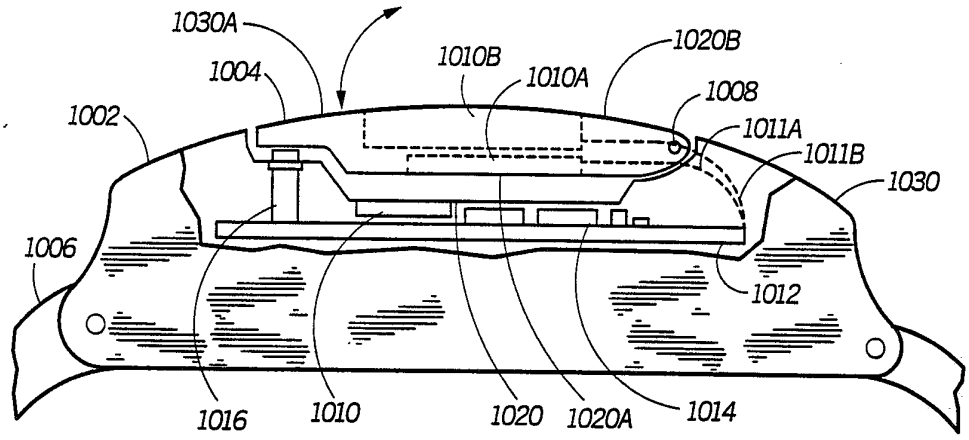
(72) Inventors: SCHEID, William, Joseph ; 12128 NW 27th Drive, Coral Springs, FL 33065 (US). KURCBART, Robert ; 21311 Escondido Way, Boca Raton, FL 33433 (US). TOTH, Richard, John ; 799 SW 17th Street, Boca Raton FL 33432 (US).

(74) Agents: KOCH, William, E. et al.; Motorola, Inc., Intellectual Property Dept./JG, 1500 N.W. 22nd Avenue, Boynton Beach, FL 33426-8292 (US).

(81) Designated States: BR, CA, JP, KR, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.

(54) Title: SELECTIVE CALL RECEIVER HAVING AN ARTICULATED USER INTERFACE



(57) Abstract

A selective call receiver (100) includes a base (1002) having a coverable base surface area (1020). A cover (1004) can cover the base (1002) at the coverable base surface area (1020), the cover having a cover surface area comprising at least an outer cover surface area (1020B). A user interface (1010, 1010A, 1010B, 1016) articulated between the cover (1004) and the base (1002) communicates with a user. Paging information can be pesented to a user via the user interface (1010, 1010A, 1010B). The user interface (1010, 1010A, 1010B, 1016) has a user interface surface area including at least a portion of the cover surface area (1010A, 1010B). Coupling means (1008) moveably couples the cover (1004) to the base (1002) to define the user interface surface area greater than the outer cover surface area (1020B).

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	**FR**	France	**MR**	Mauritania
AU	Australia	**GA**	Gabon	**MW**	Malawi
BB	Barbados	**GB**	United Kingdom	**NL**	Netherlands
BE	Belgium	**GN**	Guinea	**NO**	Norway
BF	Burkina Faso	**GR**	Greece	**NZ**	New Zealand
BG	Bulgaria	**HU**	Hungary	**PL**	Poland
BJ	Benin	**IE**	Ireland	**PT**	Portugal
BR	Brazil	**IT**	Italy	**RO**	Romania
CA	Canada	**JP**	Japan	**RU**	Russian Federation
CF	Central African Republic	**KP**	Democratic People's Republic of Korea	**SD**	Sudan
CG	Congo			**SE**	Sweden
CH	Switzerland	**KR**	Republic of Korea	**SK**	Slovak Republic
CI	Côte d'Ivoire	**KZ**	Kazakhstan	**SN**	Senegal
CM	Cameroon	**LI**	Liechtenstein	**SU**	Soviet Union
CS	Czechoslovakia	**LK**	Sri Lanka	**TD**	Chad
CZ	Czech Republic	**LU**	Luxembourg	**TG**	Togo
DE	Germany	**MC**	Monaco	**UA**	Ukraine
DK	Denmark	**MG**	Madagascar	**US**	United States of America
ES	Spain	**ML**	Mali	**VN**	Viet Nam
FI	Finland	**MN**	Mongolia		

SELECTIVE CALL RECEIVER HAVING AN ARTICULATED USER INTERFACE

Field of the Invention

This invention relates in general to the field of selective call receivers, and more specifically to a selective call display receiver having an articulated user interface.

Background of the Invention

With the advent of miniaturization in the field of selective call receivers, it is currently feasible to incorporate a selective call receiver into a reduced volume such as a watch pager or a credit card pager. Although the smaller size has significant advantages with respect to convenience and portability for the user, the smaller user interface presents a real problem. For example, in a watch pager configuration, the display size may be limited to the dimensions of the outer watch surface area. The surface area that previously presented time information to a user now, additionally, must present paging information. Moreover, the number of user controls, such as buttons and switches, increases with the paging function. Hence, a conflict exists between the requirement for smaller, lighter, and more portable selective call receivers, and the equally important requirement to provide a friendly user interface. The latter requirement tends to limit how small the surface area can be that is allotted for the display and the user controls.

Thus, with the ever-increasing demand for smaller form factors, what is necessary is a selective call receiver having an articulated user interface. The articulation of the user interface permits a flexible configuration for space conservation, while allowing adequate surface area for the user interface during use.

Summary of the Invention

In carrying out one form of this invention, there is provided a selective call receiver for presenting paging information received thereby. The selective call receiver comprises a base having a coverable base surface area, a cover for covering the base at the coverable base surface area, the cover having a cover surface area comprising at least an outer cover surface area, and a user interface means articulated between the cover and the base for communicating with a user, including presenting the paging information to a user. Further, the user interface means has a user interface surface area comprising at least a portion of the cover surface area. The selective call receiver also comprises a coupling means for moveably coupling the cover to the base to define the user interface surface area greater than the outer cover surface area.

Brief Description of the Drawings

FIG. 1 is a block diagram of a watch pager in accordance with the present invention.

FIG. 2 is a perspective view of a watch pager with wristband on a user's wrist according to a first embodiment of the present invention.

FIGs. 3A and 3B illustrate perspective views of a watch pager according to a second embodiment of the present invention.

FIGs. 4A and 4B are perspective views of a watch pager according to a third embodiment of the present invention.

FIGs. 5A and 5B show perspective views of a watch pager according to a fourth embodiment of the present invention.

FIG. 6 illustrates a perspective view of a watch pager according to a fifth embodiment of the present invention.

FIGs. 7A and 7B show two side cut-away views of a watch pager according to a sixth embodiment of the present invention.

FIG. 8A shows a side cut-away view of a watch pager according to a seventh embodiment of the present invention.

FIGs. 8B thru 8E illustrate four orthographic views of the watch pager of FIG. 8A.

FIG. 9A is a side x-ray view of a watch pager according to an eighth embodiment of the present invention.

FIG. 9B is a top view of the watch pager of FIG. 9A.

FIG. 10 is a side cut-away view of a watch pager, showing a display activation means according to the present invention.

FIG. 11A is a side x-ray view of the watch pager of FIG. 6, showing a display activation means in accordance with the present invention.

FIG. 11B is a top view of the watch pager of FIG. 11A.

FIG. 11C is an enlargement of the side x-ray view of FIG. 11A, focusing on the display activation switch and mechanism.

Description of a Preferred Embodiment

FIG. 1 is a block diagram of a selective call receiver, e.g. a watch pager 100. It includes radio receiver circuitry 110 which receives signals via an antenna 112. The received signals include paging information. The output of the radio receiver circuitry 110 is applied to a microcomputer decoder 114 which processes the information contained in the received signals. As can be seen, the microcomputer decoder 114 communicates with an output annunciator 116, a display 118, such as a liquid crystal display (LCD), and a code plug address and option memory 120. The user can activate user controls 122, such as buttons or switches, to invoke functions in the watch pager 100. The operation of a paging receiver of the general type shown in FIG. 1 is well known and is more fully described in U. S. Patent No. 4,518,961, issued May 21, 1985, entitled "Universal Paging Device with Power Conservation."

Additionally, an optional clock/timer module 124 provides time and preferably date information to the microcomputer decoder 114. The watch pager 100 can then present time and date information to a user via the display 118, e.g. a liquid crystal display, using known methods and techniques. Alternatively, an optional watch module 126 presents time information to the user, such as

via an analog watch mechanism. The analog watch mechanism preferably comprises quartz analog movement using timekeeping technology that is well known in the art. Users prefer the quartz analog movement with the familiar moving hands on the face of a watch.

FIG. 2 is a perspective view of a watch pager 200 with wristband 202 on a user's wrist according to a first embodiment of the present invention. The watch pager 200 comprises a cover 203 pivotably coupled to a base 205. In a first ("closed") position, the cover 203 covers a coverable surface area of the base 205. In a second position, when open, a first portion 206 and a second portion 208 of an articulated display are viewable by a user. Optionally, a third portion of the articulated display can be disposed on the outer cover surface area 204. In this way, the user can view at least a portion of the articulated display with the cover 203 in the closed position. Each of the different portions of the articulated display can display different information to a user, preferably including time information and paging information provided by the watch pager 200. Further, at least one of the portions of the articulated display may comprise liquid crystal display (LCD) technology, which is well known in the art. An LCD display with sufficient lighting, including ambient lighting, front lighting, back lighting, or a combination thereof, can clearly and effectively display information to a user, while requiring reduced power consumption.

Additionally, user controls 209, such as buttons and switches, are located on the base 205 for convenient access by the user. The articulated display 206, 208, and user controls 209 constitute an articulated user interface for the watch pager 200. By articulating the user interface, an effective user interface surface area that is greater than the outer cover surface area can be gained

for communicating with a user. This greater user interface surface area provides a significant advantage over known selective call receivers, e.g., watch pagers, in that more user interface surface area is available for communicating with a user during operation, while allowing a smaller form factor for the selective call receiver to enhance portability by the user.

FIGs. 3A and 3B illustrate perspective views of a watch pager according to a second embodiment of the present invention. An analog watch 300, preferably with quartz analog movement mechanism, is located in a cover 308 and facing the outer cover surface area. The cover 308 is coupled to a base 306 via a pivoting pin arrangement (not shown). Preferably, the watch pager is also coupled to a wristband 301 for ease of portability.

The cover 308 and base 306 can open and close like a book. In the open position, a display 302 and user controls 304 are accessible by the user. In the closed position, the cover 308 covers the display 302 and user controls 304, and visually resembles a conventional analog wristwatch. Further, the closed position of the cover 308 efficiently utilizes the available volume of the watch pager to provide a smaller form factor. Furthermore, the cover 308 also protects the display 302 and user controls 304 from external hazards and contaminants.

Notice the movement of the cover 308 relative to the base 306 and wristband 301 differs from the previous embodiment of FIG. 2. When worn on the wrist, in the open position, the cover 308 conveniently pins back a user's shirt sleeve to prevent the shirt sleeve from accidentally covering the display 302 and user controls 304 during use.

The watch 300, facing the outer cover surface area, and the display 302 disposed on a coverable surface area of the base 306 constitute an articulated display. Further, in combination with the user controls 304, this

arrangement provides an articulated user interface in accordance with the present invention.

FIGs. 4A and 4B are perspective views of a watch pager according to a third embodiment of the present invention. An analog watch 402 is located in a cover 410 and faces an outer cover surface area. The cover 402 is moveably coupled to a base 408, preferably via a pivoting mechanism (not shown). Further, the base 408 is preferably coupled to a wristband 403, which enhances portability. User controls 406 are located on the base 408 for easy access by the user. The user controls 406 are accessible regardless of the position of the cover 402 relative to the base 408. Here, the cover 410 moves to cover a display 404 disposed on a coverable surface area of the base 408, while allowing continued access to the user controls 406. The watch 402 facing the outer cover surface area and the display 404 disposed on the coverable surface area of the base 408 constitute an articulated display. Further, in combination with user controls 406, the articulated display and user controls constitute an articulated user interface.

FIGs. 5A and 5B show perspective views of a watch pager according to a fourth embodiment of the present invention. An analog watch module 502 is located in a cover 512 and faces an outer cover surface area. The cover 512 also includes an inner cover surface area, a display 508 being disposed thereon. The cover 512 is coupled to a base 510 and pivots thereabout. Further, the watch pager is coupled to a wristband 503 for ease of portability by the user.

In one ("closed") position, the cover 512 covers a coverable surface area of the base 510. User controls 506 are disposed on the coverable surface area of the base 510. The display 508 and the user controls 506 are protected from external hazards and contaminants when the

cover is "closed". Additional user controls 504 are located on the base 510 outside of the coverable surface area of the base 510. These additional user controls 504 are accessible by a user regardless of the position of the cover 512 relative to the base 510. In this way, the cover 512 and the base 510, in one position, can open like a book to expose the display 508 and the user controls 506 for user access. And in a second position, the cover 512 and base 510 can close to make the watch module 502 easily viewable by a user, while protecting a portion of the user interface (e.g., the display 508 and the user controls 506).

FIG. 6 illustrates a perspective view of a watch pager according to a fifth embodiment of the present invention. A cover 603 is coupled to a base 604 via pivoting means 610, such as a pivot pin structure. An analog watch module 602 is located in the cover 603, and faces an outer cover surface area. Additionally, the base 604 is coupled to a wristband 605 for ease in portability by a user. In a closed position of the cover 603 over the base 604, the watch module 602 is normally viewable by a user and visually resembles a conventional wrist watch.

In a second ("open") position, with the cover 603 pivoted away from the base 604, a display 606 and user controls 608, 608A, 609, are accessible by the user. At least one user control 608 additionally operates to sense the presence of the cover 603 over the base 604. When the cover 603 is positioned over a coverable surface area 607 of the base 604, the at least one user control 608 contacts the cover 603, preferably acting as a momentary switch sensor to detect the presence of the cover 603 over the base 604. This sensing mechanism allows the watch pager to enable and disable the display 606 when viewable and not viewable by a user, respectively. By not energizing the display 606 until viewable by a user, the

watch pager can conserve power from its power source, such as a battery.

Optionally, user control 608 may operate in combination with additional user controls, such as user control 608A, to sense the presence of the cover 603. When the sensing user controls 608, 608A, are collectively activated by the presence of the cover 603 over the base 604, the watch pager can deactivate the display 606. On the other hand, when the sensing user controls 608, 608A are not collectively activated, they may operate as user controls for accepting user input. The function and structure of the display activation switch and mechanism, such as the user control 608, will be more fully discussed below.

FIGs. 7A and 7B show two side cut away views of a watch pager according to a sixth embodiment of the present invention. FIG. 7B focuses particularly on a movable cover 702 and base 708 arrangement. As can be seen, the cover 702 is moveably coupled to the base 708 via a pivot pin 706, or similar structure. Within the cover 702 resides a quartz analog movement mechanism 704 for a watch module that faces the outer cover surface area. The base 708 is coupled to a flexible wristband 710. Further, the wristband 710 comprises an antenna structure 722 that is electrically coupled to paging receiver circuitry 720 on a circuit supporting substrate 716.

The circuit supporting substrate 716 is electrically coupled to a second circuit supporting substrate 714 via electrical coupling means (not shown). The second circuit supporting substrate 714 includes electrical circuits 712 disposed thereon. The electrical circuits 712, preferably, comprise a microcomputer decoder and associated circuitry.

Additionally, the electrical circuits 712 include display driving circuitry, which are electrically coupled

to a display 724 located on the cover 702. Specifically, the display 724 is electrically coupled to a third circuit supporting substrate 717 in the cover 702. A flex circuit 726, coupled to the circuit supporting substrate 717, thereby electrically couples the display driving circuitry in the base 708 with the display 724 in the cover 702. Hence, the display 724 can be disposed on an inner surface area 725 of the moveable cover 702 while the driving circuitry can be located in the base 708. In this way, the display 724 may be electrically driven and viewable by a user when the cover 702 moves to an "open" position.

User controls 718 are located on the circuit supporting substrate 716, which is coupled to the base 708. In this arrangement, the user controls 718 are continuously accessible by the user notwithstanding the movement of the cover 702 relative to the base 708.

With this arrangement, the cover 702 can pivot away from the base 708 to expose the display 724 on the inner surface area 725 of the cover 702. When the cover 702 is closed toward the base 708, in a second position, the analog watch 704 is easily viewable by the user.

A gasket 707 helps seal the translucent lens 703 to the cover 702. The face 705 of the analog watch 704 is viewable through the lens 703.

FIGs. 8A thru 8E illustrate different views of a watch pager according to a seventh embodiment of the present invention. FIG. 8A shows a side cut away view of the watch pager, and FIGs. 8B thru 8E illustrate four orthographic views thereof.

A cover 802 is moveably coupled to a base 808, such as via a pivot pin 806. An analog watch module 804 is contained in the cover 802. The face of the watch module 804 is viewable by a user from the outer cover surface area. A display 812 is located on the base 808 and disposed on a surface area that is coverable by the cover

802. The watch mechanism 804 and a portion of an inner cover surface area fit into a recess area of the base 808 that is adjacent to the display 812. In this way, the height of the analog watch module 804 is not added to the height of the display 812, thereby providing a slimmer form factor for the watch pager. The display 812 is electrically coupled to a circuit supporting substrate 810. Electrical circuits (not shown) may be disposed on the circuit supporting substrate 810, including display driving circuitry.

User controls 814 are located on the base 808, and are accessible by the user regardless of the position of the cover 802. FIG. 8B illustrates a top view of the watch pager with the cover 802 in an open position. The display 812 is viewable by the user with the cover in such a position. With the cover 802 in the closed position, the analog watch module 804 is then normally viewable by the user (see FIG. 8D). Additionally, a battery compartment 816 is provided and accessible via the rear surface area of the base 808.

FIGS. 9A and 9B illustrate two views of a watch pager according to an eighth embodiment of the present invention. An analog watch module 902 is located on a base 904. The analog watch module 902 may include user controls such as a crown 903. The base 904 is part of a rigid wristband having a joint 906 and a latch mechanism 908. This arrangement emulates a bangle.

A cover 910 pivots about a pivot pin 912 and is coupled to the base 904. The cover's pivotal movement is constrained by tracks on the cover and stops on the base (not shown). This guiding mechanism allows the cover 910 to pivot in an open position that is substantially limited. A spring mechanism 916 provides spring force for moving the cover 910 into the open position. A latch 914 engages with the cover 910 in the closed position. A user

can release the latch 914 to cause the cover 910 to open via the spring mechanism 916.

Once the cover 910 is in an open position, the display 918, which is located on the cover 910, is viewable by a user. A storage area 911 in the base 904 receives and secures the display 918 with the cover 910 in a closed position. Therefore, the cover 910 and display 918 constitute a pop-up display which is viewable in a first position of the cover 910 and storable within the base storage area 911 in a second position of the cover 910. A user can close the cover 910 and store the display 918 in the storage area 911 by applying a slight and continuous pressure to an outer cover surface area.

FIG. 10 is a side cut away view of a watch pager, showing a display activation means 1016 according to the present invention. The display activation means 1016 preferably comprises a momentary switch mechanism that is electrically coupled to a circuit supporting substrate 1012 and electronic circuits 1014 thereon. The electronic circuits 1014 also include display driver circuitry that are electrically coupled to a display 1010. The display activation means 1016, the electrical circuits 1014, and the display 1010 are located in a base 1002. The display 1010 is disposed on a coverable surface area 1020 of the base 1002. A cover 1004 is coupled to the base 1002 via pivot pin 1008. Additionally, the base 1002 is coupled to a wristband 1006 for ease of portability by a user.

In a first position, the cover 1004 makes contact with the display activation means 1016. The display activation means 1016, e.g. a momentary switch, can sense the presence of the cover 1004 by contact with the cover 1004. Upon sensing the presence of the cover 1004 over the coverable surface area 1020 of the base 1002, and over the display 1010, the display activation means 1016 and electrical circuits 1014 can de-energize the display 1010.

Hence, when the display 1010 is covered by the cover 1004, the presence of the cover 1004 over the display 1010 signals to the display activation means 1016 via the momentary switch mechanism to turn off the display 1010. This helps conserve power from a power source of the watch pager. In a second position, with the cover 1004 pivoted away from the base 1002, the display 1010 is viewable by a user. The display activation means 1016 can sense the absence of the cover 1004 by the lack of contact therewith at the momentary switch mechanism. When the cover 1004 does not make contact with the momentary switch mechanism and display activation means 1016, a signal to the electronic circuits 1014 indicates that the display 1010 can be energized. In this way, the movement of the cover 1004 in a first position can de-energize the display 1010, and in a second position can energize the display 1010 for viewing by a user. Consequently, the display 1010 and the display driver circuitry included in the electronic circuits 1014 may not consume power when not in use. This then helps to conserve power of a power source for the watch pager.

Optionally, an articulated display may comprise any combination of the display portions 1010, 1010A and 1010B. Display 1010A is located in the cover 1004 and disposed on an inner cover surface area 1020A. Display 1010B is also located in the cover 1004 and is disposed on an outer cover surface area 1020B. Moreover, an articulated user interface may comprise display portions and user controls located on any combination of the inner cover surface area 1020A, the outer cover surface area 1020B, and the coverable surface area 1020 of the base 1002. An articulated user interface provides a flexible configuration of the available surface area that conserves space and at the same time allows adequate surface area for the user interface during use. Consequently, this

flexible user interface arrangement presents an optimum solution to the conflicting requirements of smaller product size versus large enough user interface dimensions for human operation.

The display portions 1010A and 1010B that are located in the covered 1004 may be electrically coupled to the electrical circuits 1014 on the circuit supporting substrate 1012 in the base 1002, including display driver circuitry, via respective flex circuits 1011A and 1011B. Hence, a watch pager including all three displayed portions 1010, 1010A, and 1010B can energize the display portion 1010B on the outer cover surface area when the cover 1004 is in a closed position, and can energize the display portions 1010 and 1010A when the cover is in an open position. In this fashion, the respective display portion of the articulated display is energized, and consumes power, when normally viewable by a user. Otherwise, by de-energizing the respective display portion when not in use, the watch pager can conserve power.

FIGs. 11A thru 11C illustrate the watch pager of FIG. 6, and a display activation means 608 in accordance with the present invention. FIG. 11A shows a side x-ray view of the cover 603 being coupled to the base 604 via the pivot pin 610, with the display activation means 608 sensing the presence of the cover 603. The watch pager is mounted on wrist straps 605 for the user's convenience. FIG. 11B shows a top view of the watch pager of FIG. 11A, illustrating how the cover 603 can pivot from side to side 1101 about pivoting pin 610 coupled to the base 604. In a first position of the cover 603, the display 606 is viewable by a user. In a second position of the cover 603B, the display 606 is covered and stored away. Consequently, in this position, the watch module 602, cover 603B, base 604, and wristband 605 arrangement visually resembles a conventional wristwatch.

FIG. 11C is an enlargement of the side x-ray view of FIG. 11A, highlighting the display activation switch and mechanism as part of the display activation means 608. The display 606 can be energized/de-energized in response to a signal from the display activation means 608. The cover 603 has a lead-in ramp or cam feature 1103 arranged to engage the display activation switch mechanism 608 when the cover 603 pivots over the display activation switch mechanism 608. Further, the display activation means 608 is coupled to a circuit supporting substrate 1102, and the display activation switch and mechanism 608 is also partly disposed on a coverable surface area of the base 604.

Operationally, as the cover 603 pivots over the base 604, the lead-in ramp structure 1103 guides over the display activation switch and mechanism 608. An affirmative contact of the cover 603 to the switch and mechanism 608 signals the presence of the cover 603 over the base 604. This event indicates that the display 606 is not viewable by the user, and can therefore be de-energized. A reverse pivoting motion by the cover 603 separates the cover 603 from the display activation switch and mechanism 608. The display activation means 608 then signals to the watch pager that the display 606 can be energized for viewing by the user. In this way, the watch pager can conserve power of a power source, e.g. a battery, when the display 606 is not in use.

As shown by the exemplary embodiments discussed above, a selective call receiver having an articulated user interface provides an optimum solution to the conflicting requirements of smaller and more portable form factors versus having sufficient user interface for effective operation by a user. The articulation of the user interface can comprise a plurality of displays, user controls, or a combination thereof, disposed on one or more surface areas of the selective call receiver. This

flexible arrangement of a user interface utilizes the very limited space available in modern selective call receivers, while providing sufficient surface area for effective user interface operation.

What is claimed is:

CLAIMS

1. A selective call receiver for presenting paging information received thereby, comprising:

a base having a base surface area including a coverable base surface area;

a cover for covering the base at the coverable base surface area, the cover having a cover surface area comprising at least an outer cover surface area;

user interface means articulated upon the cover surface area and the base surface area for communicating with a user, including presenting the paging information to a user, the user interface means having a user interface surface area comprising at least a portion of the cover surface area; and

coupling means for moveably coupling the cover to the base to define the user interface surface area greater than the outer cover surface area.

2. The selective call receiver of claim 1, wherein the coupling means comprises a pivoting means for pivotally coupling the cover to the base.

3. The selective call receiver of claim 1, wherein the user interface means comprises articulated display means having at least first and second portions thereof for displaying paging information via at least one of the at least first and second portions of the articulated display means.

4. The selective call receiver of claim 3, wherein the cover surface area comprises the outer cover surface area and an inner cover surface area, and wherein the first portion of the articulated display means is disposed on the outer cover surface area and the second portion of the articulated display means is disposed on one of the inner cover surface area and the coverable base surface area.

5. The selective call receiver of claim 4, further comprising display activation means electrically coupled to the first and second portions of the articulated display means for selectively energizing one of the first and second portions of the articulated display means and de-energizing the other one of the first and second portions of the articulated display means by sensing when the cover is in a first position relative to the base.

6. The selective call receiver of claim 3, wherein the articulated display means includes a third portion thereof for displaying information, and wherein the cover comprises the outer cover surface area and an inner cover surface area, and wherein the third portion of the articulated display means is disposed on the outer cover surface area, and the first and second portions of the articulated display means are disposed on the inner cover surface area and the coverable base surface area, respectively.

7. The selective call receiver of claim 6, wherein the third portion of the articulated display means comprises an analog watch module for providing time information to a user on the outer cover surface area.

8. The selective call receiver of claim 6, further comprising display activation means electrically coupled to the first, second, and third portions of the articulated display means for selectively energizing the first and second portions of the articulated display means and de-energizing the third portion of the articulated display means when the display activation means senses the cover is in a first position relative to the base, and for selectively energizing the third portion of the articulated display means and de-energizing the first and second portions of the articulated display means when the display activation means senses the cover is in a second position relative to the base.

9. The selective call receiver of claim 1, wherein the user interface means comprises:

articulated display means at least partially disposed on the cover surface area for displaying the paging information to a user; and

user control means at least partially disposed on the coverable base surface area for receiving user input.

10. The selective call receiver of claim 9, wherein the user control means comprises display activation means electrically coupled to at least a portion of the articulated display means for selectively energizing the at least a portion of the articulated display means when the display activation means senses the cover is in a first position relative to the base, and for selectively de-energizing the at least a portion of the articulated display means when the display activation means senses the cover is in a second position relative to the base.

11. A watch pager comprising:

an articulated display including at least a first portion and a second portion, each portion capable of displaying information to a user;

a receiver for receiving signals including paging information;

a controller coupled to the output of the receiver for decoding the received paging information, and further coupled to the first portion of the articulated display for providing thereto information including the paging information for displaying to a user;

a base having a coverable base surface area;

a cover for covering the base at the coverable base surface area, the cover having a cover surface area, where one of the first and second portions of the articulated display is located on the cover surface area and the other one of the first and second portions of the articulated display is located on the coverable base surface area; and

coupling means for moveably coupling the cover to the base.

12. The watch pager of claim 11, further comprising a clock/timer module electrically coupled to the controller for providing time information thereto, and wherein the controller decoder is coupled to the second portion of the articulated display for providing time information thereto for presenting the time information to a user.

13. The watch pager of claim 11, wherein the cover comprises at least an outer cover surface area, and the watch pager further comprising a watch module mechanically coupled to the cover and with information being presented on the outer cover surface area for providing time information to a user.

14. The watch pager of claim 11, further comprising:

user control means electrically coupled to the controller for receiving user input, the user control means being at least partially located on the coverable base surface area of the base.

15. The watch pager of claim 11, wherein the first and second portions of the articulated display are located on the cover surface area and on the coverable surface area of the base to define a display area that is greater than the outer cover surface area.

16. A wristworn selective call receiver, comprising:

a watch for providing time information to a user;

a display for displaying paging information to a user; and

coupling means for moveably coupling the watch and the display.

17. The wristworn selective call receiver of claim 16, wherein the coupling means comprises pivoting means for pivotally coupling the watch and the display.

18. The wristworn selective call receiver of claim 16, further comprising user control means for receiving user input, the user control means being mechanically coupled to the display and the coupling means moveably coupling the watch and the user control means.

19. The wristworn selective call receiver of claim 16, further comprising display energizing means for sensing the relative position of the watch to the display and energizing the display when in a first position relative to the watch and de-energizing the display when in a second position relative to the watch.

20. An improved wrist-worn selective call receiver of the type which receives messages, alerts a user that a message has been received, and displays at least a portion of the message on a display, the improvement comprising:

a display which is moveable from a first position to a second position.

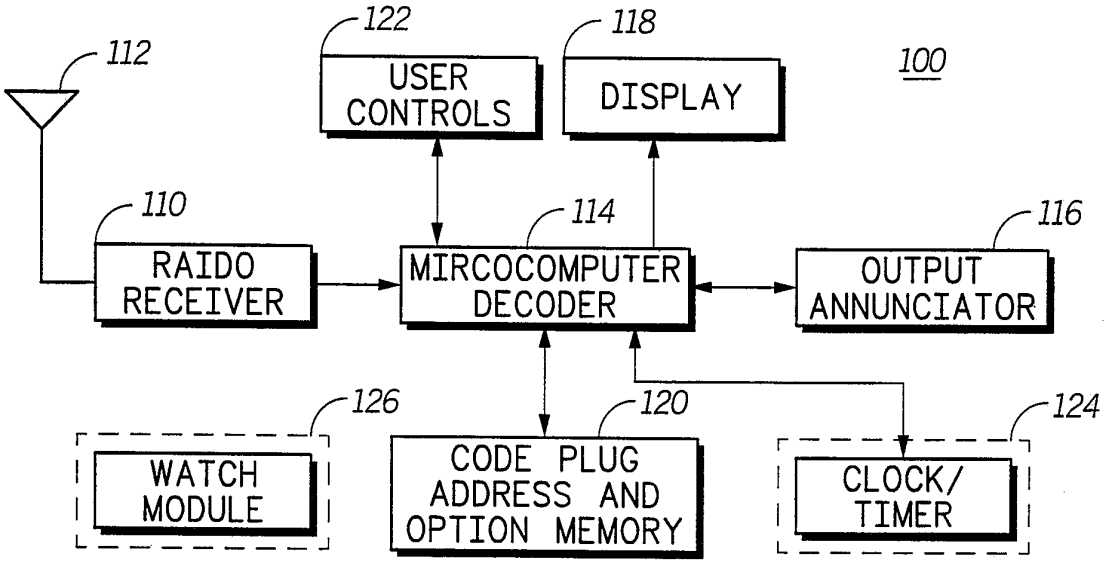


FIG.1

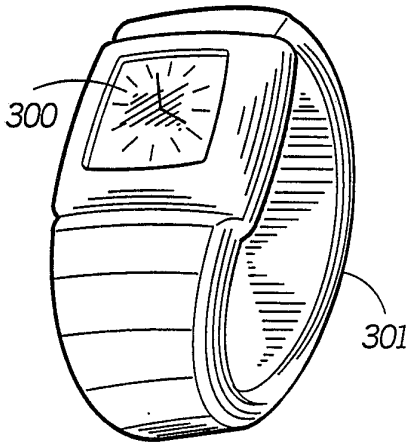


FIG.3A

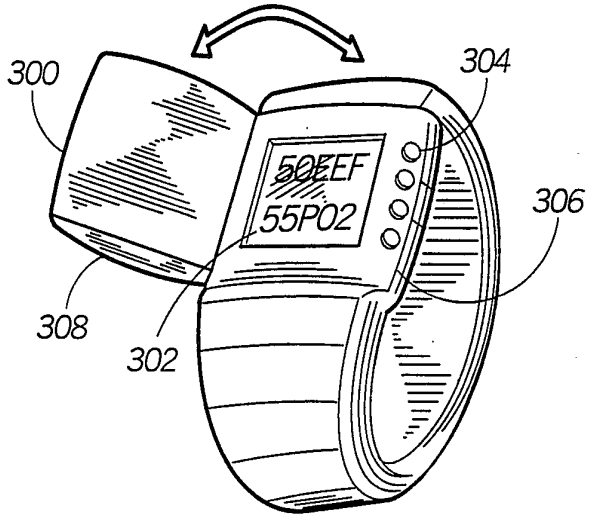


FIG.3B

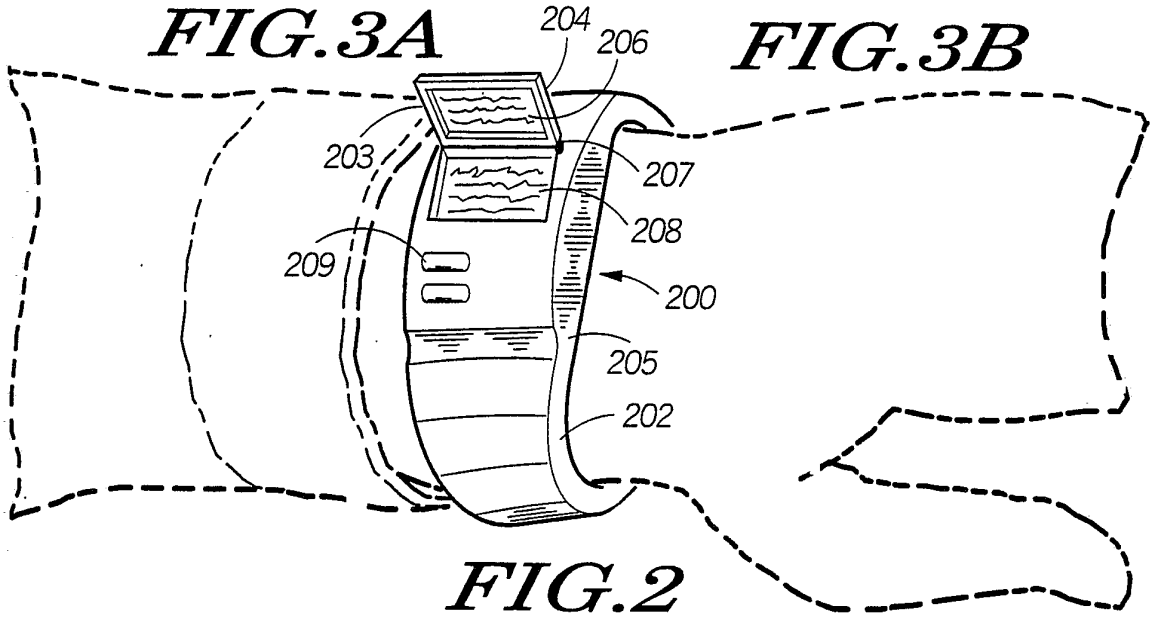


FIG.2

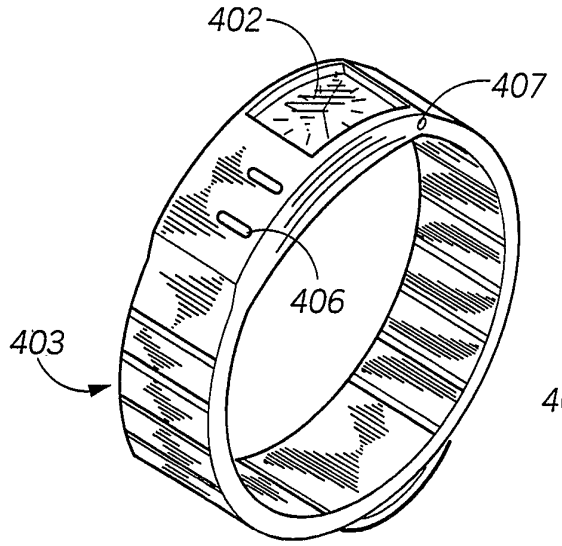


FIG.4A

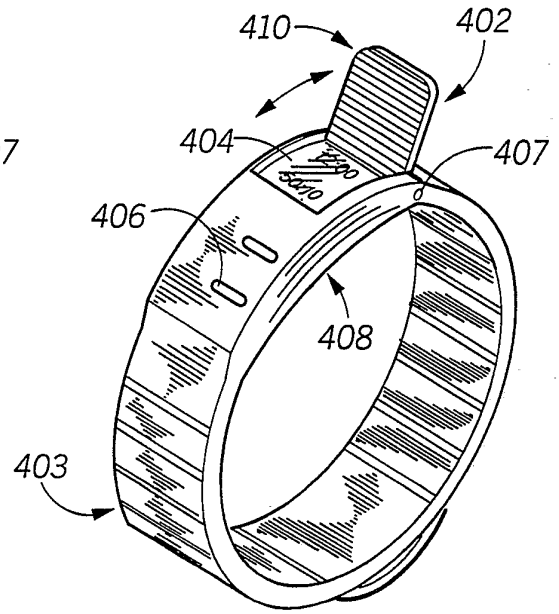


FIG.4B

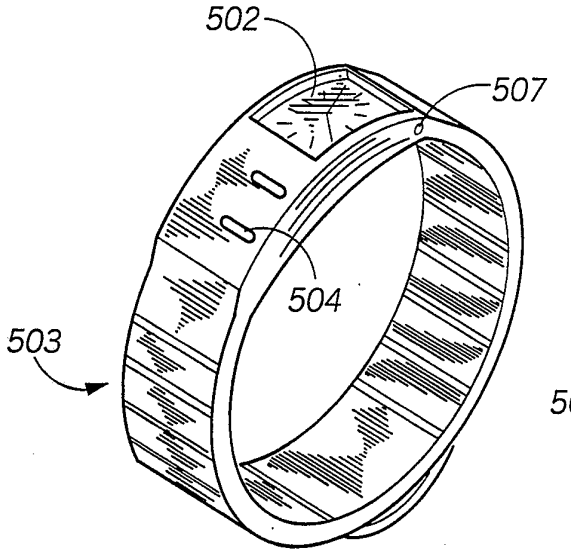


FIG.5A

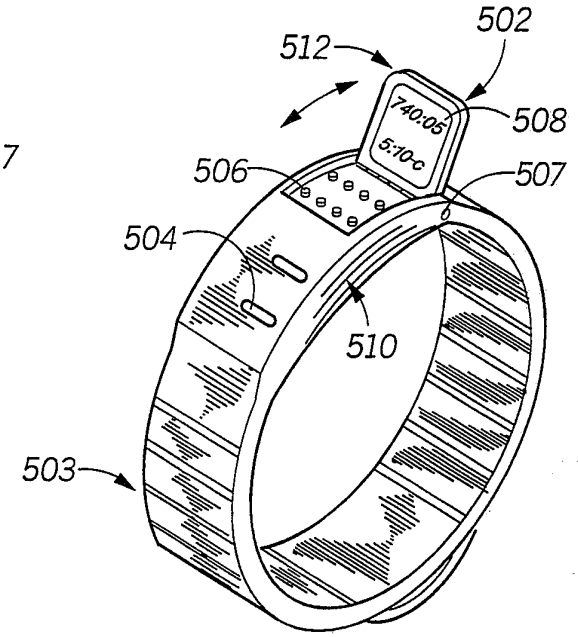


FIG.5B

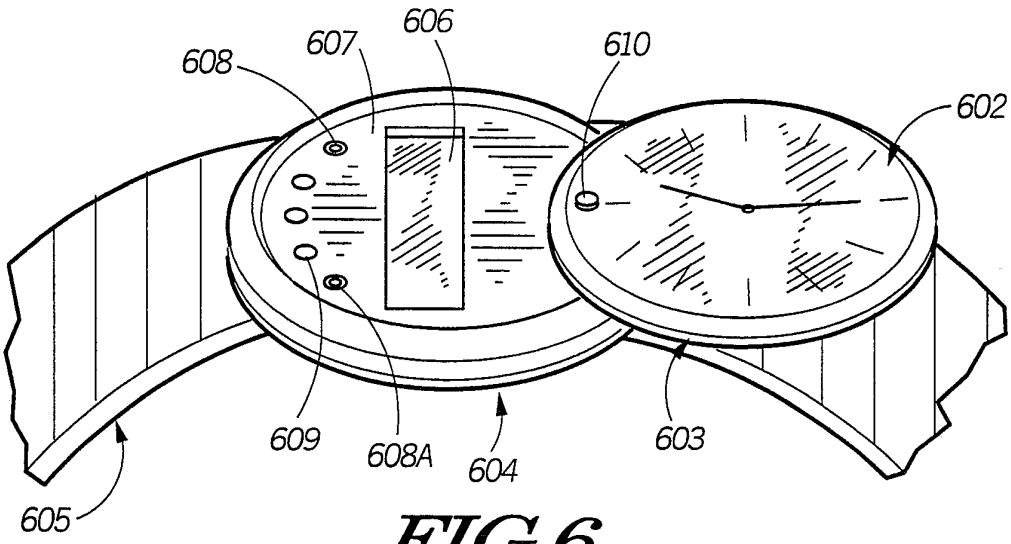


FIG.6

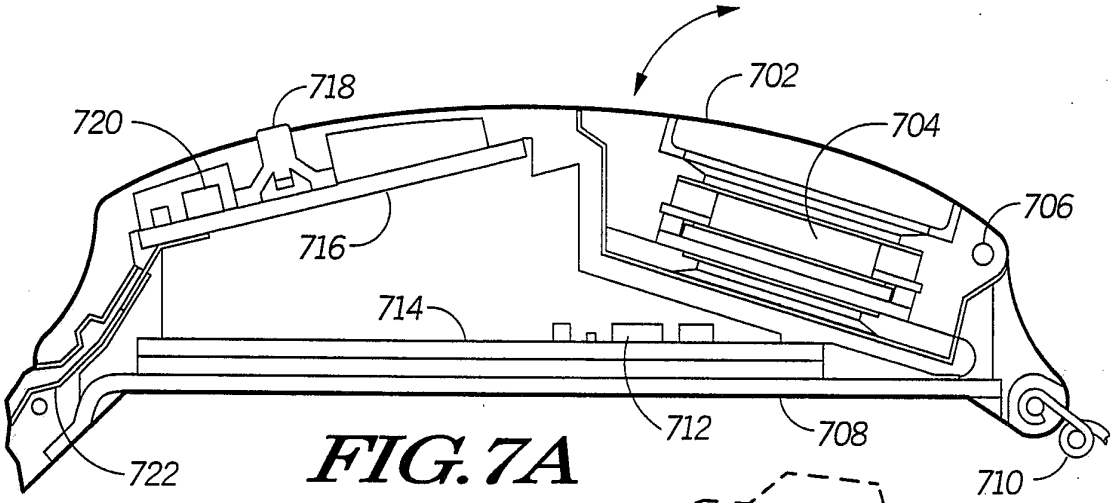


FIG.7A

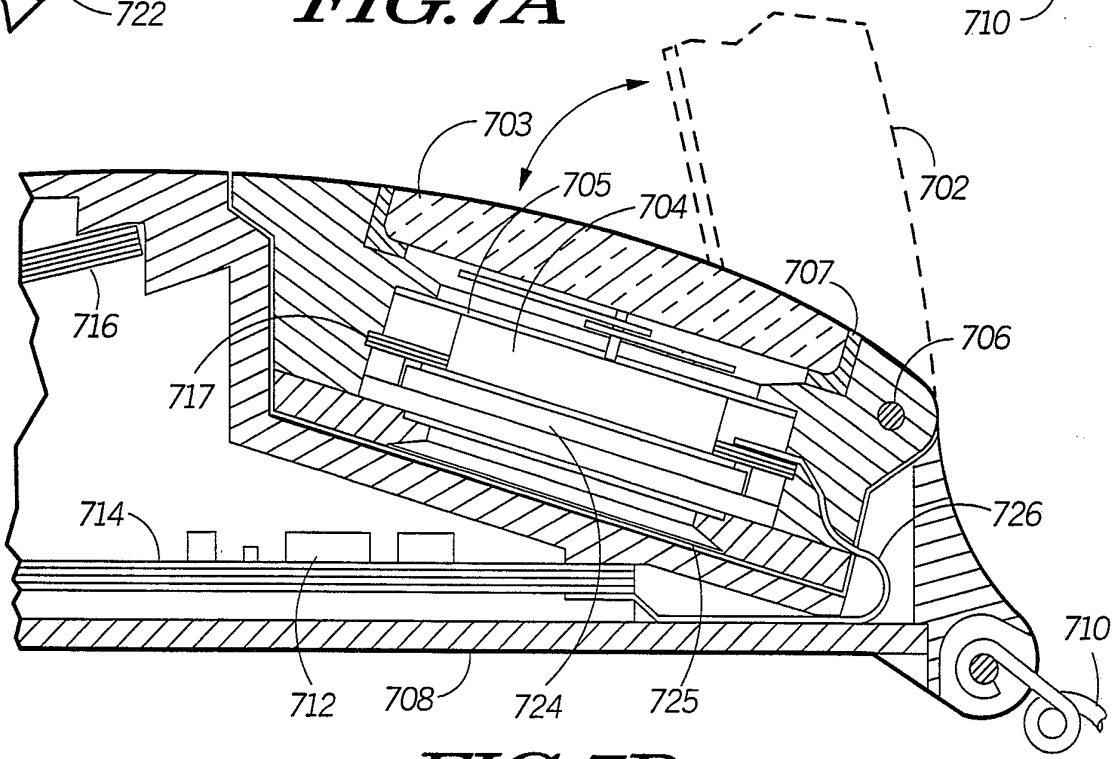


FIG.7B

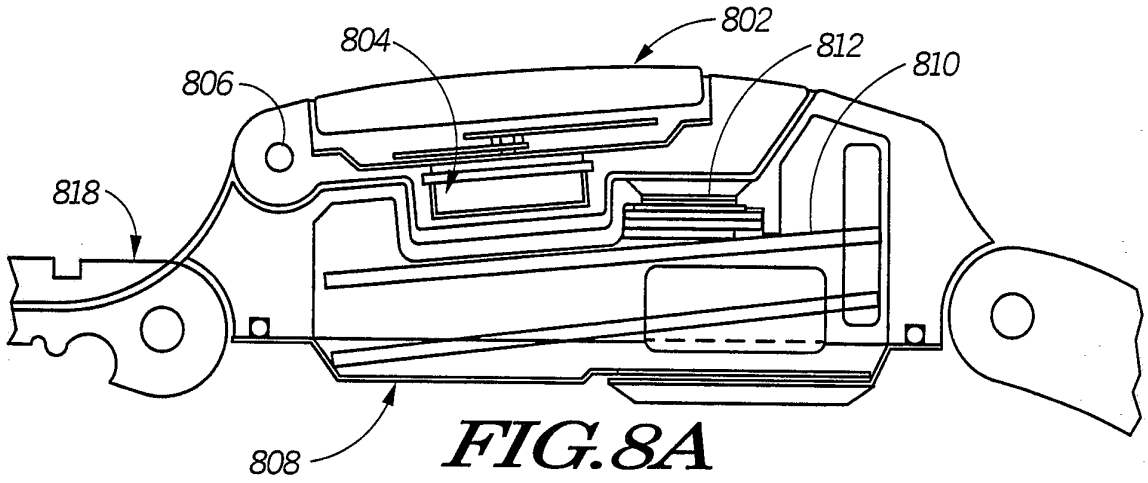


FIG.8A

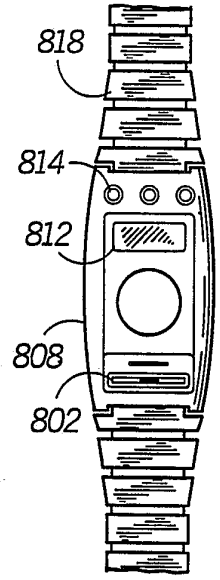


FIG.8B

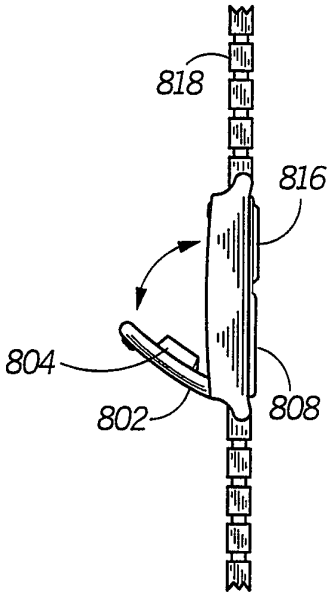


FIG.8C

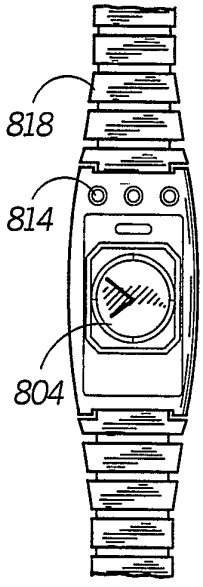


FIG.8D

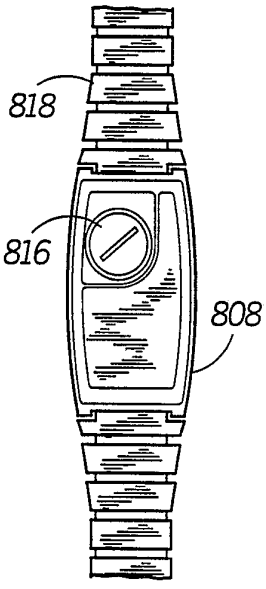


FIG.8E

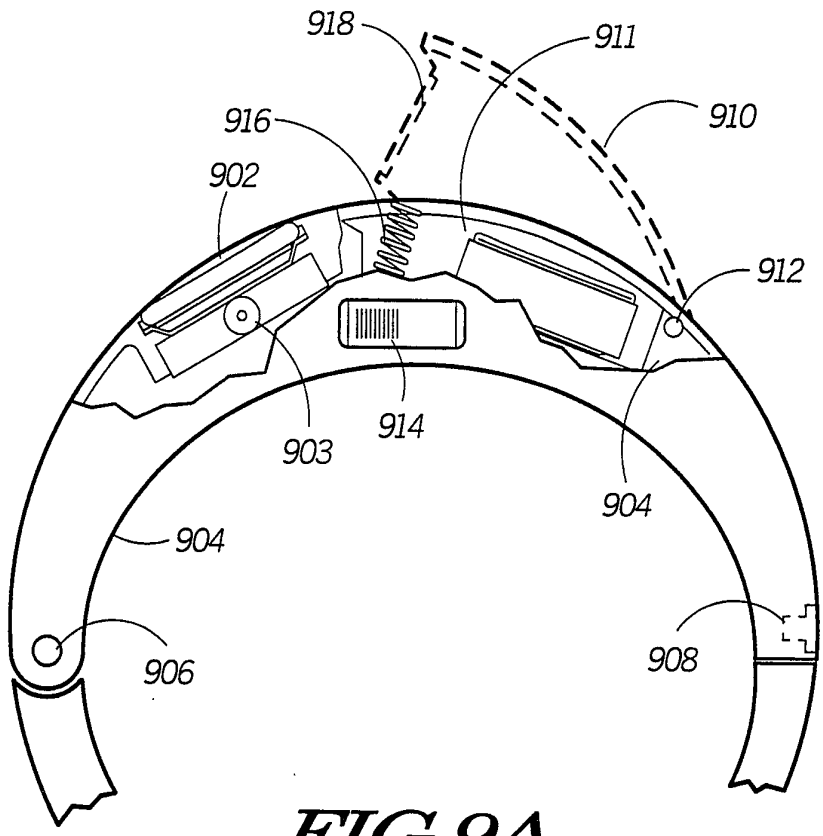


FIG.9A

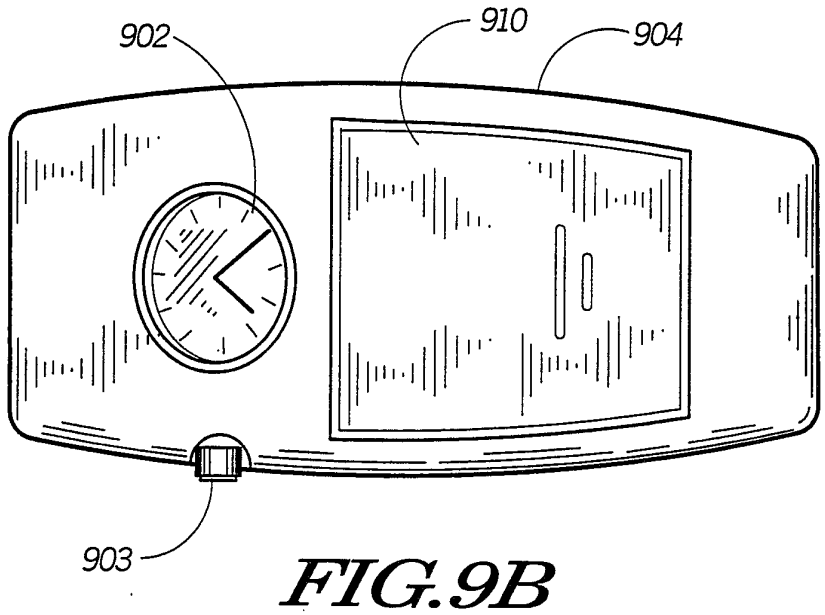


FIG.9B

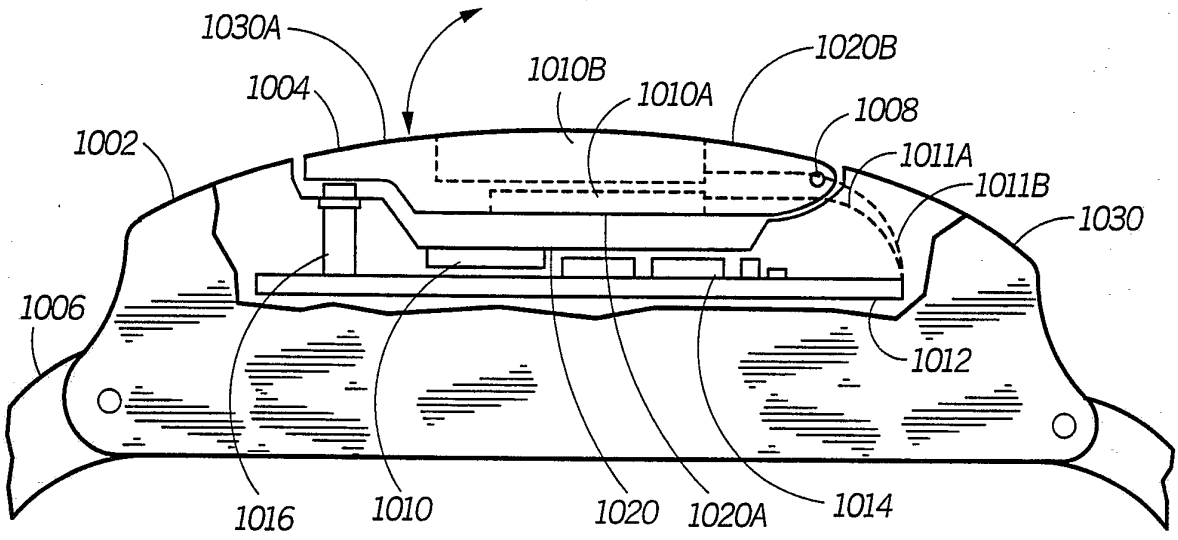


FIG.10

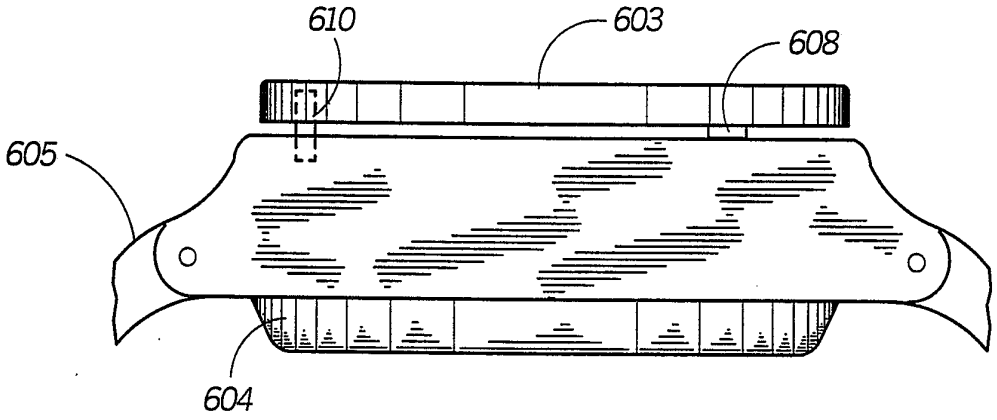


FIG.11A

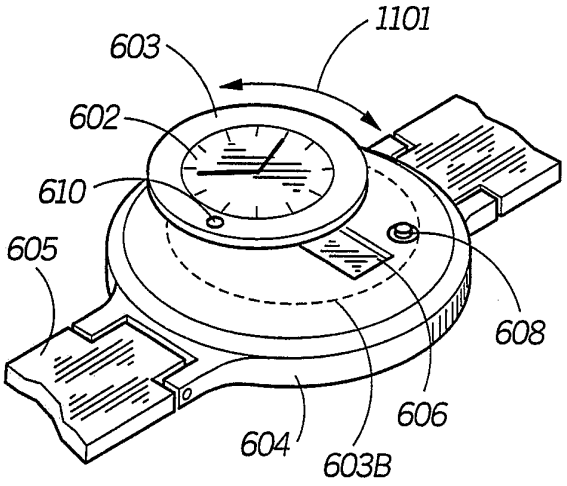


FIG.11B

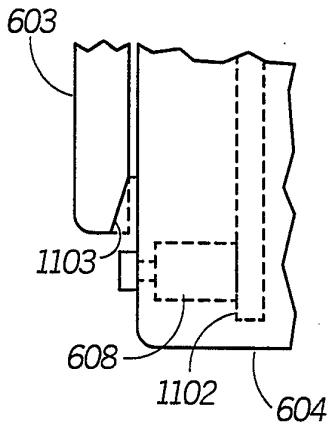


FIG.11C

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US92/11125

A. CLASSIFICATION OF SUBJECT MATTER
IPC(5) :G06F 5/22; G04B 19/00, 25/00, 37/00.
US CL :340/715.44, 311.1;368/223,281,283.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 368/282.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

none

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US,A, 4,985,878 (Yamada et al.) 15 January 1991. See Fig. 2A,2B, 4,6,7,8,10,27,28; col. 14; lines 8-15; and abstract.	1-20
Y	US,A, 4,786,902 (Davis et al.) 22 November 1988. See col. 1, line 47 to col. 3, line 15; Fig. 1,2 and 3A-3H; and abstract.	1-20
A	US,A, 4,697,931 (Okuyama et al.) 06 October 1987. See abstract; Figs. 2A, 2B, 2C, 21A, 21B and 21C.	1-20
A	US,A, 4,644,352 (Fujii) 17 February 1987 See Figs. 17 and 20; abstract.	1-20

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be part of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 26 FEBRUARY 1993	Date of mailing of the international search report
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. NOT APPLICABLE	Authorized officer for ANDREW M. HILL NGUYEN NGOC-BO INTERNATIONAL DIVISION Telephone No. (703) 305-4822

Form PCT/ISA/210 (second sheet)(July 1992)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US92/11125

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US,A, 4,470,708 (Nee) 11 September 1984 See figs. 4 and 6.	1-20
Y	US,A, 4,444,513 (Proellochs et al.) 24 April 1984. See Fig. 1a, 1b, 2a, 2b, 3b; abstract.	4-8,11-15
A	US,A, 4,168,607 (Friedman) 25 September 1979. See abstract; Figs. 6,7,10, and 11.	1-20