Abstract Title: **Watch with surface input means**

A personal time device 1 (for example wristwatch) comprising a display, the display comprising a planar surface 3 wherein the surface is adapted to act as an input device for controlling the device. This may be done with a cover or with the display face itself. Preferably, the device is waterproof and may have further input devices, such as buttons 6 to control the apparatus.

**FIG. 5**
Stopwatch

The present invention relates to a personal time measurement apparatus in the form of a wristwatch. It is often useful, during training for sport and other pursuits, to be able to measure time, for example the total elapsed time and split or lap times during a race. It may also be desirable to measure other parameters such as the number of laps. During individual or solo sporting pursuits, or during training, the sportsperson may however not have the benefit of another party such as a coach to measure their lap times and other parameters used to assess their performance. In this instance where no other party is available, it is useful for the sportsperson to carry a timing, measurement apparatus or device on their person. Often this timing apparatus is in the form of a wristwatch or stopwatch.

A conventional wristwatch or stopwatch comprises a body and a display face, which display face may have analogue dials or may comprise a digital liquid crystal display. In order to control the functions of the stopwatch, the stopwatch is often provided with protruding buttons, knobs or the like, located around the outer circumference of the body of the watch. However, operating the stopwatch with such buttons requires a certain level of manual dexterity as the buttons are often small and may also be located in close proximity to one another. This means that the user experiences problems when measuring for example lap times leading to a loss of rhythm or accuracy.

Further difficulties in controlling a conventional stopwatch may arise when the user, such as a sportsperson, is wearing equipment such as protective gloves or when the user is exposed to environmental conditions which reduce the sensitivity and dexterity of their hand. Such environmental conditions may include low temperature, low light or wet environments such as swimming. Old age, disablement and certain medical conditions may also reduce the level of manual dexterity of the user.

The present invention therefore seeks to provide a stopwatch with improved ease of operation.
According to the present invention, there is provided a personal time measurement apparatus comprising a display, the display comprising a substantially planar surface, wherein the surface is adapted to act as an input device for controlling said apparatus.

Preferably, the planar surface is formed as a display face and acts as a switch, by which the functions of the stopwatch may be controlled. Preferably, the display face is substantially flat and therefore does not protrude substantially over the upper most plane of the body of the apparatus. If the display face and hence control button were to protrude, the control button may be inadvertently activated or caught on clothing. Furthermore, a substantially flat display face has the advantage that when the apparatus is formed as a wristwatch, it has the appearance of a conventional wristwatch.

Preferably, the planar surface is a cover plate and acts as a switch, by which functions of the stopwatch may be controlled. The cover plate may be a transparent cover glass which protects the entire face of the watch. The cover plate may also be formed to partially cover the face of the watch such as a ring located around the circumference of the watch face.

Preferably, the apparatus is adapted to be used underwater and is provided with sealing means to prevent the ingress of water.

Preferably, the apparatus is provided with means to locate the apparatus on the user’s body or clothing. Such means may include a band or strap for locating the apparatus on the user’s wrist or a loop for locating the apparatus around the user’s neck.

Preferably, the apparatus may also be provided with further input devices such as buttons for controlling other secondary functions.
Preferably, the apparatus may be adapted to project the display or read out the readings with a synthesized voice or transmit the data via invisible means to a base station.

An embodiment of the invention will now be described by way of example with reference to the accompanying drawings, where:

Figure 1 shows a plan view of a time measurement apparatus in the form of a wristwatch;
Figure 2 shows a view though section A-A of Figure 3;
Figure 3 shows a view of the underside of the watch;
Figure 4 shows a 3-dimensional view of the watch;
Figure 5 shows an enlarged view through section B-B of Figure 2.

Figure 1 shows a plan view of a preferred embodiment of the present invention. The embodiment is in the form of a wristwatch 1 and comprises a body 2 and a substantially circular display face 3. In the preferred embodiment, the device has strap parts 4, 5 for locating the device on the wrist of the user. The fastening means for connecting the straps 3,7 are not shown but may include a buckle, or hoop and loop means such as Velcro®.

In the exemplary embodiment, the upper most plane of the display face 3 lies in a plane which is substantially level with the upper surface of the body 2 of the wristwatch 1. The display face 3 of the device is formed as a substantially circular and substantially planar button 3 and is adapted to sense pressure applied to said face 3, for example as the result of touch. When pressure is sensed on said button 3, the functions of the apparatus may be controlled. Because the face 3 is large compared with conventional control buttons, and the face 3 is located uppermost on the device, the apparatus may be controlled more readily when compared with conventional time measurement apparatus, especially when the user has reduced manual dexterity or sensitivity. Because of the ease of operation, the apparatus may be operated more quickly and efficiently and time is not
lost by the user operating small and fiddly control buttons; this may be especially important in competitive sporting environments, particularly when measuring lap times when swimming. There are further control buttons 6 located around the circumference of the body 2 which may be used to operate secondary functions.

Figure 2 shows a side view of the watch. It can be seen that the display face 3 lies in a plane which is substantially parallel to the upper most plane of the watch body 2.

In the embodiment, the wristwatch is adapted for operation underwater. Figure 3 shows a view from the underside of the watch showing the base plate 7 which may provide access to the battery compartment. In order to prevent the ingress of water or moisture, the apparatus may be provided with a seal made of rubber or silicon, which is located between the base plate 7 and the body 2 of the wristwatch. The base plate 7 is attached to the body 2 with fixing screws 9. This embodiment would be suitable for swimming, sailing, diving or other pursuits where the electronic components within the apparatus must be protected from the ingress of water. With the non-protruding form of the button, any resistance to the user’s movement through the water would be reduced.

Figure 4 shows a 3-dimensional view of the watch 1 showing the substantially circular display face 3. The watch of the present embodiment is formed as a conventional watch.

A section through the body 3 of the watch 1 may be seen in Figure 5. The display face 3 is formed as a switch. When the user exerts pressure on the display face, the display face is depressed and displaced into the cavity 10. This displacement activates a switch mechanism 11, which switch controls the functions of the watch.
Claims

1. A personal time measurement apparatus comprising a display, the display comprising a substantially planar surface, wherein the surface is adapted to act as an input device for controlling said apparatus.

2. An apparatus according to Claim 1, wherein the planar surface is formed as a display face and said display face is adapted to act as a switch to control said apparatus.

3. An apparatus according to Claim 1, wherein the planar surface is formed as a cover plate and said cover plate is adapted to act as a switch to control said apparatus.

4. An apparatus according to any one of the preceding claims, wherein the apparatus is adapted to be used underwater and is provided with sealing means to prevent the ingress of water.

5. An apparatus according to any one of the preceding claims, wherein the apparatus is provided with further input devices such as buttons to control the apparatus.

6. A personal time measurement apparatus substantially as described herein with reference to and as illustrated in the accompanying drawings.
Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

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<td>US6813223 B1 (BORN et al.), see Abstract, col 2 lines 14-44 and Figures.</td>
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<td>US4228534 A (FELLRATH et al.), see esp. Abstract and Figures.</td>
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<td>EP1383015 A (FARINE), 21.01.04 (see Figures and WPI Accession Abstract No. 2004-111523 [12]).</td>
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<td>JP53013466 A (ICHIKAWA) 02.07.78 (see Figures and EPO English Language Abstract).</td>
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