a different sensation at the touch points, and use the exists to locate the touch buttons. The selection task may be simplified due to such an arrangement.

[0033] Several aspects of the invention are described below with reference to examples for illustration. It should be understood that numerous specific details, relationships, and methods are set forth to provide a full understanding of the invention. One skilled in the relevant arts, however, will readily recognize that the invention can be practiced without one or more of the specific details, or with other methods, etc. In other instances, well-known structures or operations are not shown in detail to avoid obscuring the invention.

[0034] 2. User Interface

[0035] **FIG. 1** depicts portion **100** of a selection apparatus illustrating the manner in which a person may conveniently select a choice in a menu. Portion **100** is shown containing touch screen **110** surrounded by border **120**. Touch screen **110** is shown divided into two portions, i.e., touch area **130** and menu display area **140**. Border **120** is shown containing guide structure **150** and exits **180**-A through **180**-D. The sub-portions (areas) as relevant to various aspects of the present invention are described below in detail.

[0036] Menu display area **140** is generally used to display the menu choices (and other messages). For illustration, the selection apparatus is assumed to be contained in an ATM machine, and menu display area **140** is shown displaying four choices in the vertical direction of the left hand side: (1) Checking account (2) Savings account (3) Loan Account, and (4) Foreign account. In the top horizontal direction, four options are displayed: (1) Help; (2) Read; (3) Call Attendant; and (4) End Session. A user generally selects among the menu choices by touching on touch area **130** as described below.

[0037] Touch area **130** is shown containing touch buttons spread across four regions (i.e., upper, bottom, left and right region). For conciseness, the description is provided substantially with reference to only the left and top regions The left region (vertical direction) is shown containing four touch buttons **190**-A through **190**-D associated with the corresponding four choices displayed in menu display area **140**. Similarly, four touch buttons **190**-W through **190**-Z are respectively associated with the four choices in the top (horizontal direction).

[0038] In general, touching (including, but not limited to, pressing, tapping, etc.) a touch button causes the specific touched button (or corresponding area) to be indicated, for example, to a processing unit (described in sections below). Accordingly, each touch button needs to be typically implemented with the associated electronics (hardware, firmware and/or software) to cause an indication to be provided. The touch buttons can span entire touch area **130**. Touch buttons may be implemented in one of several known ways. While menu display area **140** and touch area **130** are shown as non-overlapping areas, it should be understood that the two areas can overlap substantially or entirely.

[0039] Users select one of the displayed choices by touching a corresponding select button. For example, touch button **190**-A may be touched to select Checking account option. However, visually impaired people may not be able to see and thus unable to locate the touch buttons. The manner in which such people may conveniently perform a selection task is described below.

[0040] Guide structure **150** needs to be generally of a shape to guide a user finger (possibly more fingers or any object in general) along multiple points ("touch points"). The touch points are designed to provide a different sensation (compared to other points in the guide structure) when a user slides a finger on the touch points. In an embodiment, guide structure **150** is implemented as a semi-circular groove and each touch point is implemented as a small bump contained within the groove.

[0041] The implementation of alternative embodiments with other shaped guide structures and touch points will be apparent to one skilled in the relevant arts based on the disclosure provided herein. In one alternative embodiment, guide structure **150** is implemented using a projected structure and the touch points as further projections or depression points. Such alternative embodiments are contemplated to be within the scope and spirit of various aspects of the present invention.

[0042] Guide structure **150** is also shown containing reference point **160**. Reference point **160** may provide a convenient point from which to count the relative positions of the menu choices in each direction (as described in further detail in sections below). Guide structure **150** is shown contained within border **120**, which may be constructed using durable material such as metal.

[0043] Exits **180**-A through **180**-D are respectively associated with touch points **170**-A through **170**-D. Each exit leads to a corresponding touch button. Thus, exits **180**-A through **180**-D respectively lead to touch buttons **190**-A through **190**-D. In an embodiment, each exit opens guide structure **150** towards the corresponding touch button on touch screen **110**. Assuming that touch points are close-by to touch buttons and persons can be trained to easily locate a touch button of interest (located at a fixed distance from corresponding touch point) from a corresponding touch point, embodiments can be implemented without including exists. Such embodiments are contemplated to be within the scope and spirit of various aspects of the present invention.

[0044] The description is continued with reference to an example in which a visually impaired person selects one of the menu options in portion **100** of **FIG. 1**.

[0045] 3. Example Selection

[0046] In an embodiment, portion **100** is augmented by an audio unit to enable a visually impaired person ("person") to select a menu option. Selecting the 'Help' option (by touching on touch button **190**-W) may cause the general instructions on selection (i.e., use of guide apparatus and touch points) to be read out. A general overview of the selection apparatus may also be provided. Selection of 'Call Attendant' option may cause any attendants to be notified that their assistance is being requested. Selection of 'End Session' option may end the session for the present user.

[0047] Selecting the 'Read' option (touch button **190**-X) causes the menu options in the vertical direction to be read. The menu options may be read with the associated count number (1-4). A person may then start from reference point **160**, slide the finger down counting the number of touch points traversed, and use the exit at the count associated with the menu choice of interest to select the corresponding touch button.