cell **36** having eight (8) bimorph reeds mounted thereto associated with each set **64** of eight (8) pin holes or bores **66** as aforesaid. The tactile pins **80** are provided in four differing lengths, **84***a*, **84***b*, **84***c* and **84***d* as indicated in FIG. **3**. The pins may be manufactured individually, or they may be manufactured in connected-together groups of eight (8) that are separated from one another after assembly into the Braille cell, thereby improving manufacturability. As shown in this embodiment, the pins **80** are not contained in an individual cell cap for each individual Braille cell as is known in the prior art.

The novel monolithic cell cap of the present invention is depicted in FIGS. **4**A and **4**B and is denoted as a whole by the reference numeral **90**. Twenty (20) sets **92** of tactile pin holes **94** are depicted, each tactile pin hole being adapted to slidingly receive the tip of tactile pin **80**. This configuration is referred to as a "double decade." Unlike the aforementioned prior art Braille cells that require one individual cap per set of pinholes, cell cap **90** is a monolithic cap for all sets of tactile pin holes, i.e., cell cap **90** enables one cap to cap a plurality of Braille cells. With the present invention the tactile pin **80** is captive in the mechanical design, being secured between the top frame **60** and the monolithic cell cap **90** using a negative stop and a positive stop on the tactile pin. As such, there is no dependency on the bimorph actuators to hold the tactile pins in place. This low cost portion of the display, including the top frame, cell cap and pins, eliminates the requirement to clean bio-contaminants on a regular basis. This portion may be considered disposable. Additionally, an individual Braille cell can be repaired or replace as needed, without disrupting the tactile pins. Cell cap **90** significantly reduces the tolerance issues associated with individual caps without compromising access to the individual Braille cells if repair or replacement is required.

Additionally the novel monolithic cell cap includes openings for the cursor and navigation buttons. The buttons are shown in greater detail with reference to FIG. **6**. FIG. **6** illustrates a set of buttons and a frame **110** for holding the buttons. The buttons exist over a tact switch as shown. Each button has a head **112** that is enlarged with respect to its stem **114**. Frame **110** has a comb-like construction where the contiguous teeth of the comb are spaced apart from one another by a space that slideably receives a stem **114**. The teeth of the comb thus support heads **112**. Buttons **110** perform functions relating to cursor location and panning features. The design and functionality of the buttons are known in the art where the button is positioned within the individual cell cap of the Braille cell assembly. However, utilizing the novel cell cap in accordance with the present invention, the set of buttons are secured to the underside of the cap further enhancing the manufacturability and maintenance of the assembly. Additionally, the design of the present invention allows for as plurality of buttons to be manufactured as a single piece having interconnects between the buttons. Manufacturing efficiencies are realized with this design, allowing for a row of buttons to be inserted concurrently and then individually separated.

In an additional embodiment, the monolithic cell cap may be constructed with anti-bacterial plastics or a variety of other materials designed to prevent the spread and growth of germs.

Frame bottom wall **46** is more fully depicted in FIG. **5**. Six (6) machine threaded inserts collectively denoted **100**, are employed to attach the double decade assembly to the final OEM product. Other means of attaching the frame are within the scope of the invention. Frame bottom wall **46** is preferably constructed of a material that does not require additional isolation from the metal chassis to which it is mounted. Slots **102** cooperate with slots **72** formed in backplane, or top wall, **44** to hold the Braille cells **36**.

FIG. **7** depicts the novel double decade Braille cell assembly without the novel cell cap. Note that there are two (2) button and frame assemblies **110** of the type depicted in FIG. **11** and that said assemblies **110** are disposed in confronting relation to one another. FIG. **8** depicts the double decade Braille cell assembly with the novel cell cap **92** in its functional position. All pins are in their retracted position in this figure.

It will be seen that the advantages set forth above, and those made apparent from the foregoing description, are efficiently attained and since certain changes may be made in the above construction without departing from the scope of the invention, it is intended that all matters contained in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween. Now that the invention has been described,

What is claimed is:

1. A Braille display assembly, comprising:

a frame including a top wall, a bottom wall, and an angle wall, wherein the angle wall includes a plurality of sets of tactile pinholes;

a plurality of individual Braille cells supported by the frame, and

a cell cap including a plurality of sets of tactile pinholes, the cell cap being secured to the frame, whereby the pinholes of the frame and the pinholes of the cell cap are in alignment and are adapted to receive a plurality of tactile pins;

whereby the cell cap encases the plurality of individual Braille cells providing a common tactile surface for the plurality of Braille cells.

2. The Braille display of claim **1** wherein the cell cap is adapted to provide a positive stop for the tactile pins.

3. The Braille display assembly of claim **1**, wherein the cell cap further comprises a plurality of button access holes, each button access hole being adapted to receive one of a plurality of control buttons.

4. A Braille display, comprising:

a cell cap providing a common tactile surface for a plurality of Braille cells;

the cell cap being releasably engaged to the Braille display such that the cell cap encases the plurality of Braille cells;

a plurality of sets of tactile pinholes formed in the cell cap, each tactile pinhole being adapted to slideably receive a tactile pin;

a frame comprising a top wall, a bottom wall, and an angle wall wherein the angle wall has a first part disposed in abutting relation to a leading edge of the top wall, the angle wall further comprising a plurality of sets of tactile pinholes formed in the first part of the angle wall; and

wherein each of the plurality of tactile pinholes formed in the cell cap are positioned to be aligned with each of the plurality of tactile pinholes formed in the first part of the angle wall;

a plurality of individual tactile pins being slideably received within the pinholes of the angled wall and the cell cap.

5. The Braille display of claim **4**, wherein a plurality of control buttons are releasably engaged to the underside of the cell cap.

6. The Braille display of claim **5**, wherein the bottom wall of the frame is fabricated of an insulative material.

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