snap fit connection (note FIG. **5**). Plate **92** includes apertures that are sized to accommodate the upper extent **86** of pins **66** but that are smaller than collars **88**. Thus, plates **92** function in limiting the upward travel of pins **66**. Plate **92** is particularly useful during the assembly process. Namely, after installing blocks **74** into channel **82** of upper cover **54**, pins **66** may be inverted as cover **54** is mated with lower tray **56**.

Braille Cell Assemblies

The Braille cell assemblies **64** are described next. Each cell assembly **64** includes a PCB that is removeably and electronically coupled to backplane board **62**. When secured, PCB's **68** are perpendicular to backplane board **62**. The total number of cell assemblies **64** involved will correspond to the number of Braille cells **26** contained within display **20**. Each PCB includes a female electrical connector **94** at its proximal end. This female electrical connector **94** is adapted to be coupled to a corresponding male connector **98** on the backplane board **62**. PCBs **68** can be removed and replaced as needed. Each PCB **68** also includes a series of stops **104** along the intermediate extent (note FIG. **7**). The function of stops **104** is described in greater detail hereinafter.

A series of bimorph reeds **72** are interconnected to either side of the PCB **68** by way of electrical contacts **106**. More specifically, four reeds **72** are connected to each side of PCB **68**. The distal end of each reed **72** is positioned beneath a corresponding tactile pin **66** (note FIG. **1**A). Upon the application of a voltage, an individual reed **72** applies the upward force necessary to expose a corresponding pin **66** through upper housing **54**. Each PCB **68** controls the operation of an individual Braille cell **26**. Each of the contacts **106** includes a base portion **108**, a support arm **112**, and a biasing arm **114**. Base portion **108** can include a series of apertures to decrease the weight of the contact. Each base **108** is adapted to be soldered to a PCB **68** using any of a variety of well known soldering techniques. When installed, support arm **112** of contact **106** is perpendicular to the face of PCB **68** and parallel to the backplane board **62**. Additionally, biasing arm **114** is angled at approximately a 45° angle relative to support arm **112**. Contacts **106** are preferably mounted in a staggered or stairstep arrangement. Namely, the uppermost contact **106** is closest to the proximal end of PCB **68** and the lowermost contact **106** is closest to the distal end of PCB **68**. When installed, reeds **72** have a similar staggered configuration. The staggered arrangement of reeds **72** allows the pins **66** to be aligned in rows. Each row of the Braille cell **26** corresponds to one side of the PCB **68**.

When soldered in place, contacts **106** are separated from one another and are electrically insulated. Adjacent contacts **106** form a fulcrum point **116** for an associated bimorph reed **72**. Each of these fulcrum points **116** is created between the biasing arm **114** of an upper contact **106** and the support arm **112** of a lower and adjacent contact **106**. When so arranged, biasing arm **114** forms an electrical contact with an electrode on the upper surface of reed **72** and support arm **112** of the immediately adjacent contact **106** forms an electrical contact with an electrode on the lower surface of reed **72**. Reed **72** is configured to bend about this fulcrum point **116** upon application of a voltage to upper and lower contacts **106**. Each of the bimorph reeds **72** is adapted to be inserted into one of these fulcrum points **116**. The intermediate extent of the bimorph **72** is then placed adjacent to a corresponding stop **104**. Stop **104** functions in limiting the downward bending moment of reed **72** and otherwise prevents interference between adjacent reeds **72**. Stops **104** thereby permit reeds **72** to be more closely positioned and allows for much tighter tolerances.

Once installed, the electrical connectors (**94** and **98**) provide voltage to the corresponding PCB **68** and allow voltage of opposite polarity to be delivered to the contacts **106** on PCB **68**. Namely, a negative voltage is applied to a first series of contacts **106** and a positive voltage is applied to a second series of contacts **106**. Thus, for example, a positive voltage may be applied to the upper most contact **106** while a negative voltage is applied to the adjacent and lower contact **106**. Adjacent contacts **106** are exposed to voltages of opposite polarity. This, in turn, allows opposite polarity voltage to be applied to the upper and lower surfaces of an individual reed **72**. Namely, biasing arm **114** can apply a positive voltage to the upper surface of reed **72** while the lower support arm **112** of an adjacent contact **106** applies a negative voltage to the lower surface of the same reed **72**. By applying the voltage in this manner, each bimorph reed **72** can be bent upon application of opposite polarity voltage. As a result, a corresponding tactile pin **66** is lifted. The pin **66** is lowered when the voltage is removed.

Method of Installing Contacts

The present disclosure also relates to an improved method for installing the electrical contacts **106** upon a PCB **68**. The method utilizes an alignment guide **118** for orienting a series of contacts **106** upon PCB **68**. Alignment guide **118** includes first and second surfaces (**122** and **124**) that are angled with respect to each other. In the depicted embodiment, the first and second surfaces (**122** and **124**) are at a right angle to each other. Alignment tabs **126** are formed at either end of second surface **124**. Alignment tabs **126** are dimensioned to fit into corresponding apertures **128** present on PCB **68**. The series of contacts **106** are releasably secured to a peripheral edge **132** of the second surface **124** of guide **118**. Contacts **106** are preferably connected to the second surface **124** via a score line. The score line is frangible and allows the contacts **106** to be separated by bending alignment guide **118** after contacts **106** have been soldered to PCB **68**. In the depicted and preferred embodiment, a series of five contacts **106** are secured to the second surface **124** of alignment guide **118**.

The installation method involves positioning the alignment guide **118** with the attached contacts **106** upon the PCB **68**. As best illustrated in FIG. **9**A, this is accomplished by inserting the tabs **126** on guide **118** into the alignment apertures **128** of PCB **68**. With the alignment guide **118** so positioned, the series of contacts **106** are properly aligned and spaced upon PCB **68** and are ready to receive reeds **72** between adjacent contacts **106**. Base portion **108** of each contact **106** is adapted to rest against the surface of PCB **68**. This also places each of the contacts **106** in a staggered relationship to each other. Namely, the uppermost contact **106** is closest to the rearward edge of PCB **68** and the lowermost contact **106** is closest to the forward edge of PCB **68**. This arrangement allows the bimorph reeds **72** to be similarly arranged in a staggered—or stairstep—fashion.

Once the contacts **106** have been properly positioned via the alignment guide **118** (and tabs **126** and apertures **128**), they are ready to be affixed to PCB **68**. In the preferred embodiment, the base **108** of each contact **106** is soldered into place. This can be done via a conventional soldering iron. Other known soldering techniques can be employed, such as wave soldering or reflow soldering. In the preferred embodiment, an infrared ("IR") reflow solder process is employed. Regardless of the technique employed, an electrical contact is formed between the base **108** of each contact **106** and an underlying circuit upon PCB **68**.

When properly oriented, the support and biasing arms (**112** and **114**) of each contact **106** are perpendicular to the face of PCB **68**. Additionally, the biasing arm **114** is oriented at