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(54) **BRAILLE READING-WRITING DEVICE**

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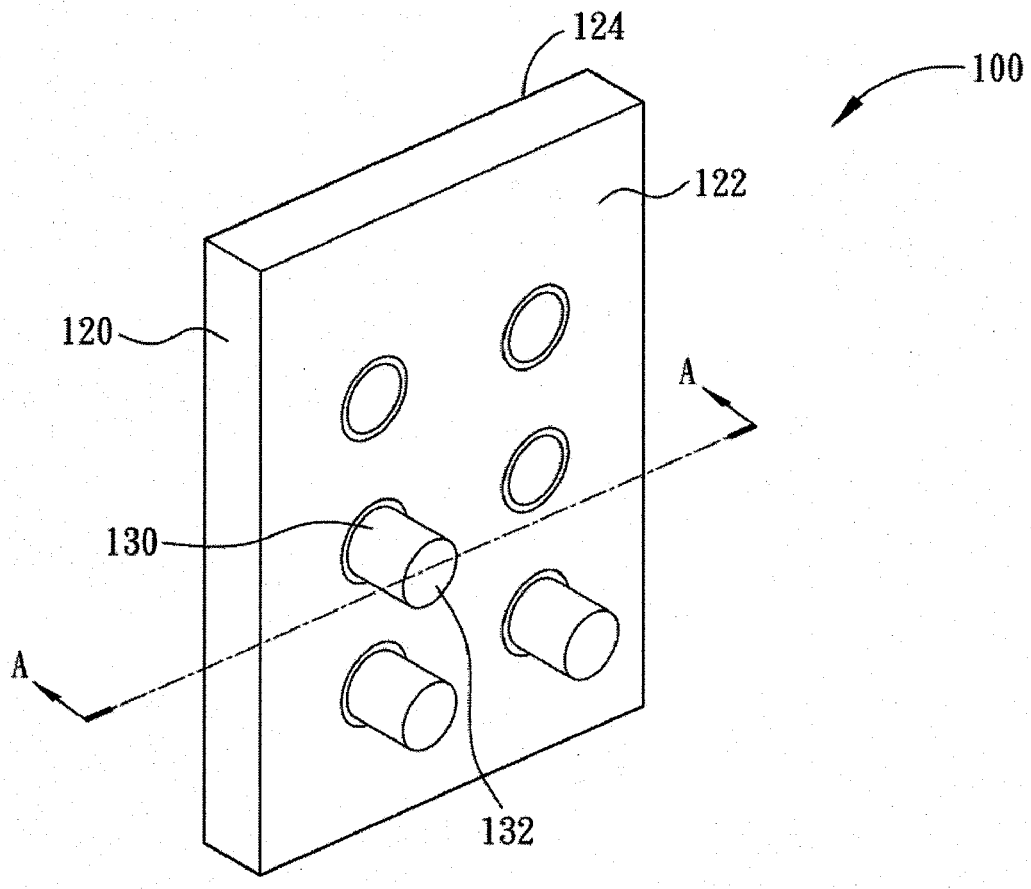
(57) **ABSTRACT**

A braille reading-writing device includes a body and a plurality of braille buttons. The body has a first surface and a second surface. The braille buttons are disposed through the body. Each of the braille buttons includes a pressing portion located at the same side with the first surface and a touching portion located at the same side with the second surface. The touching portion protrudes from the second surface when the pressing portion is pressed. The braille reading-writing device allows the blind people to write braille on the first surface and to touch to read the written braille on the second surface, thereby integrating the functions of writing and reading braille.



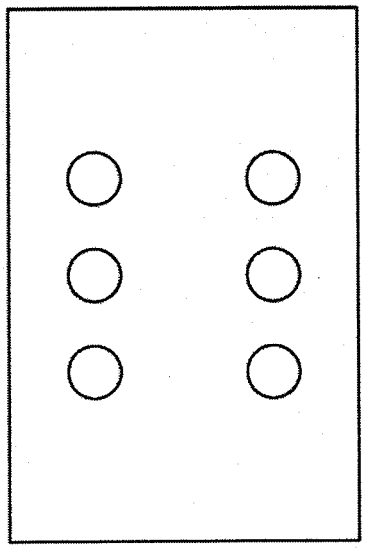


FIG. 1 (Prior Art)

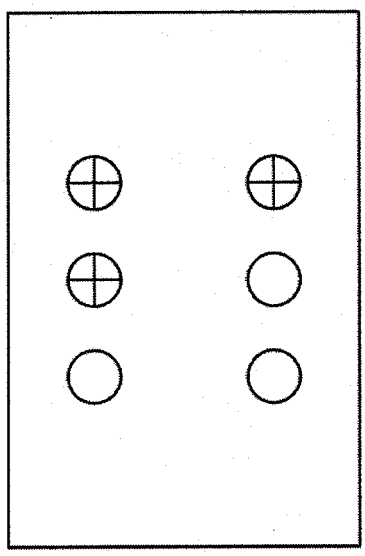


FIG. 2 (Prior Art)

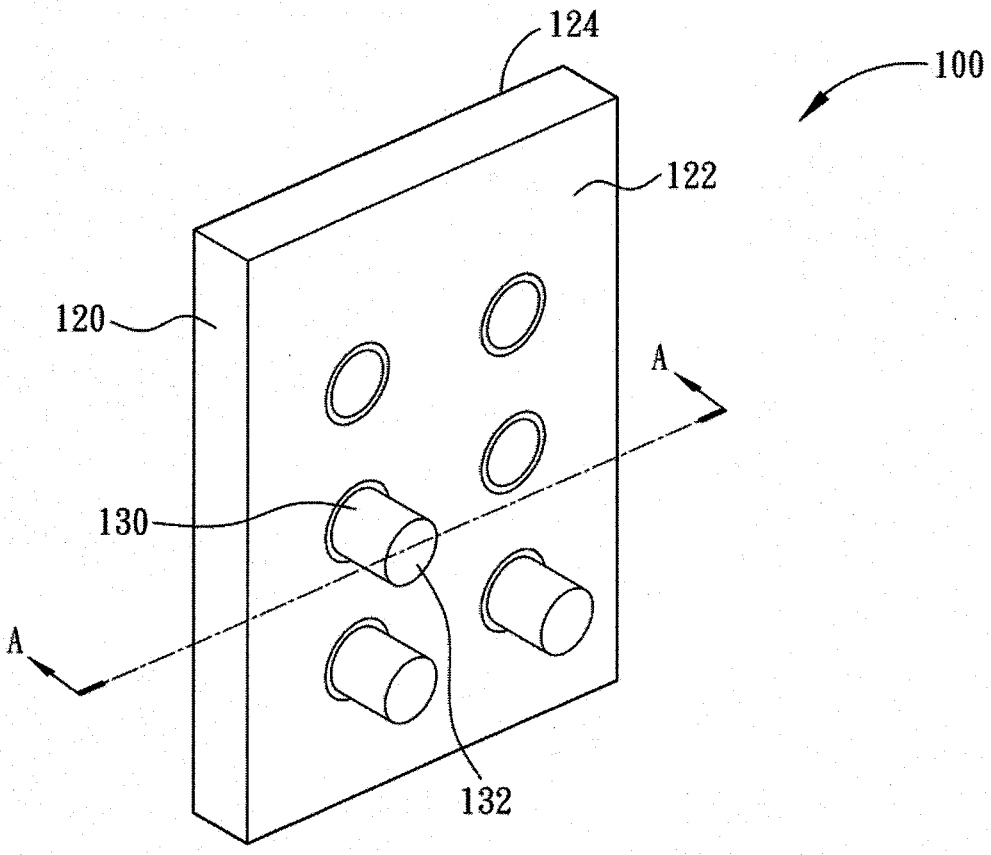


FIG. 3

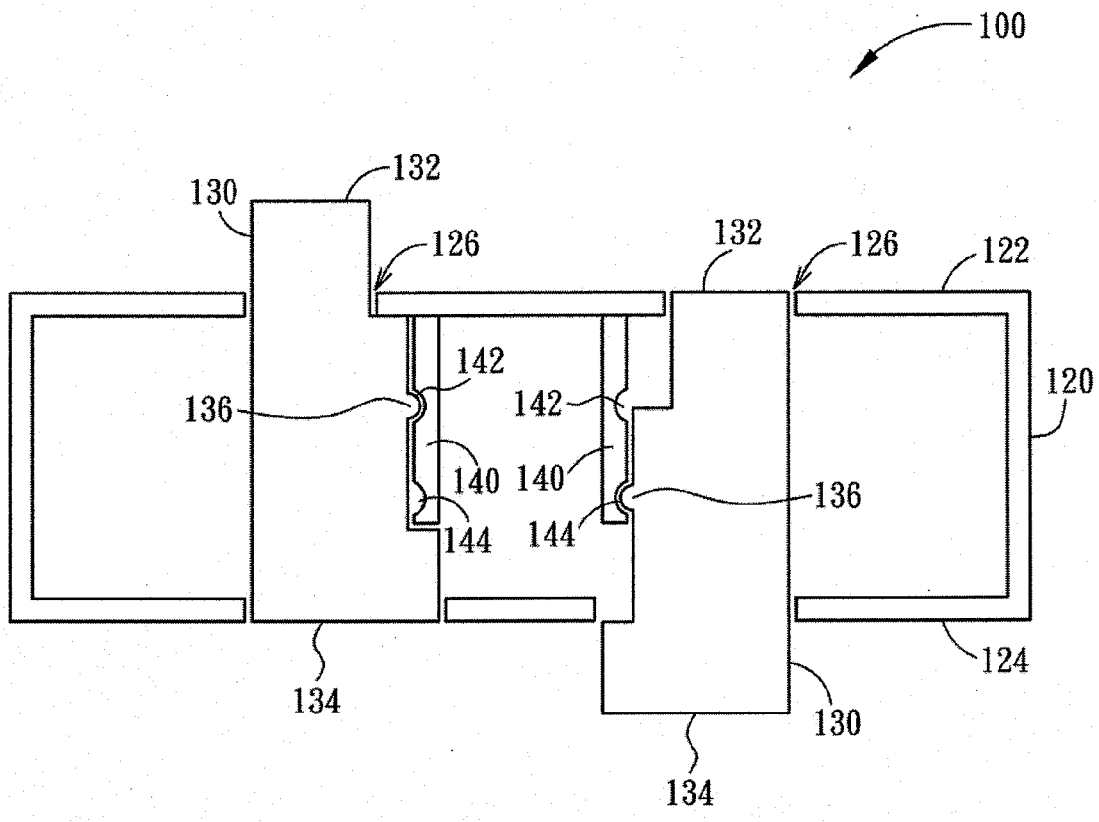

100
130
132
126
132
126
122
142
136
142
120
140
140
136
144
144
134
124
130
134

FIG. 4

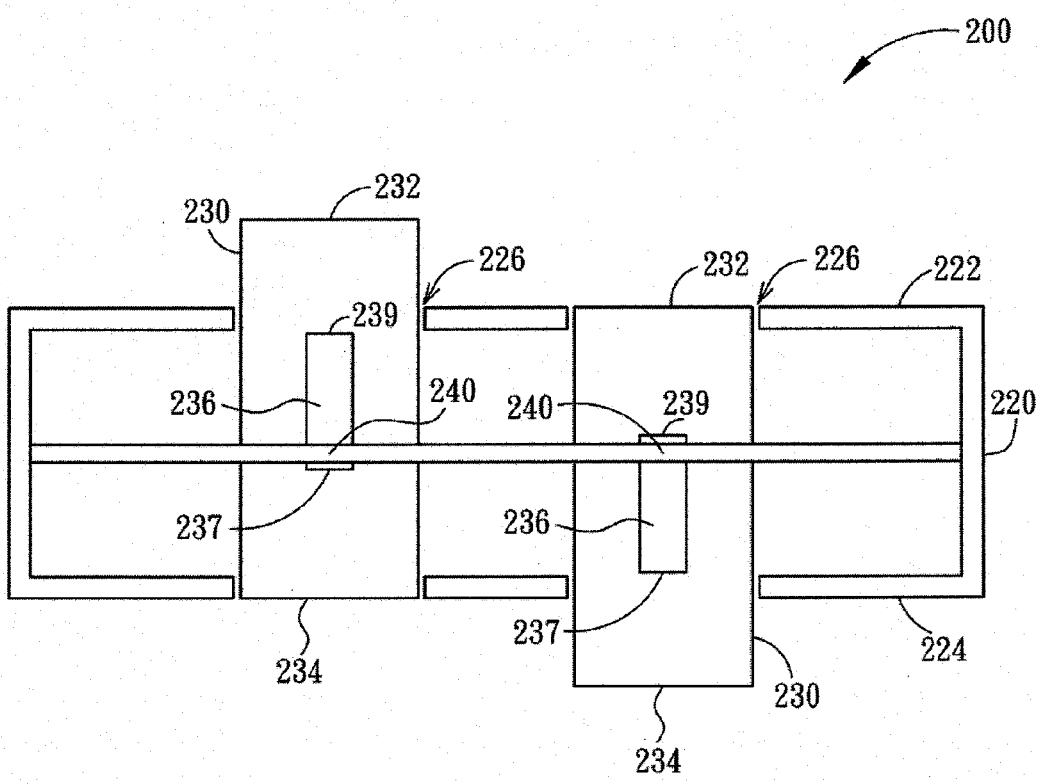

200
232
230
226
232
226
222
239
236
240
240
239
220
237
236
237
234
230
224
234

FIG. 5

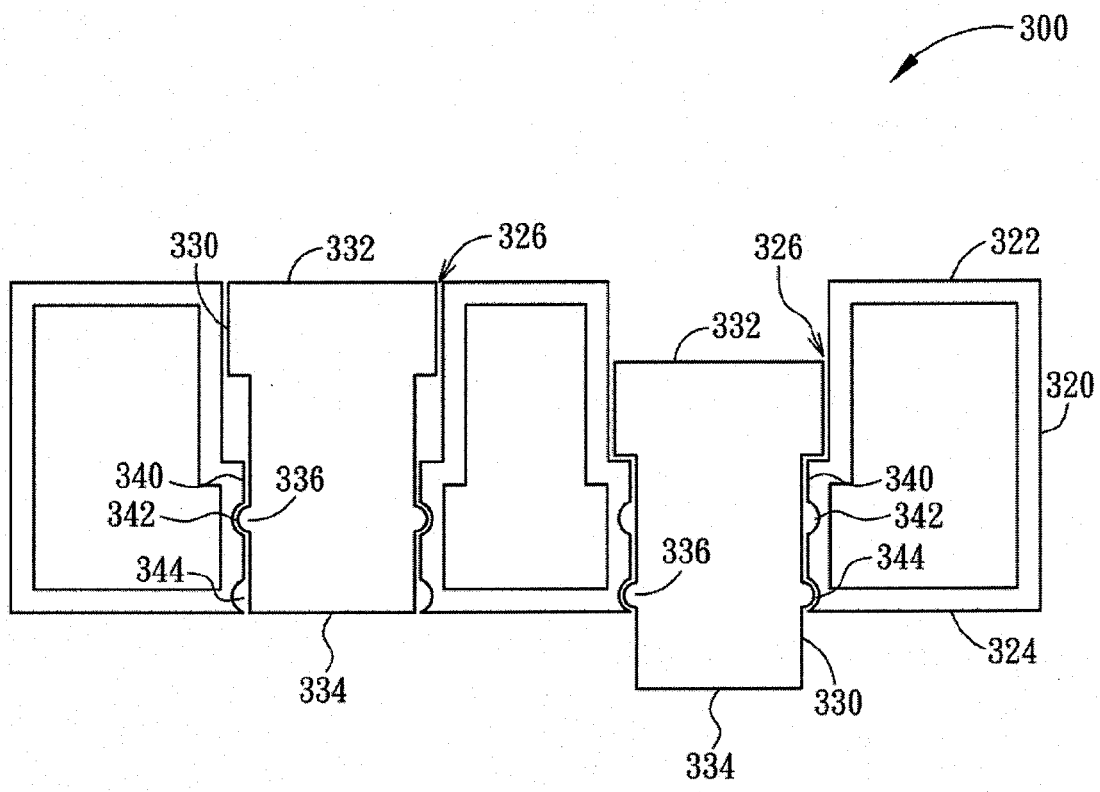

300
330
332
326
326
322
332
320
340
336
342
344
340
342
336
344
324
334
330
334

FIG. 6

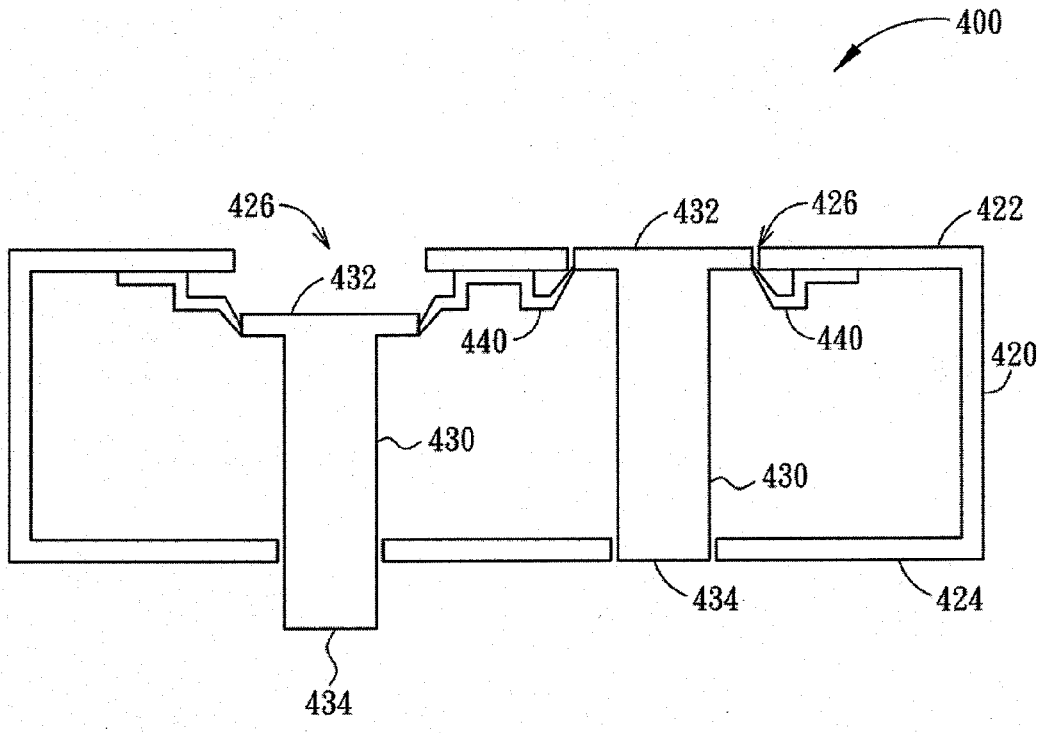


FIG. 7

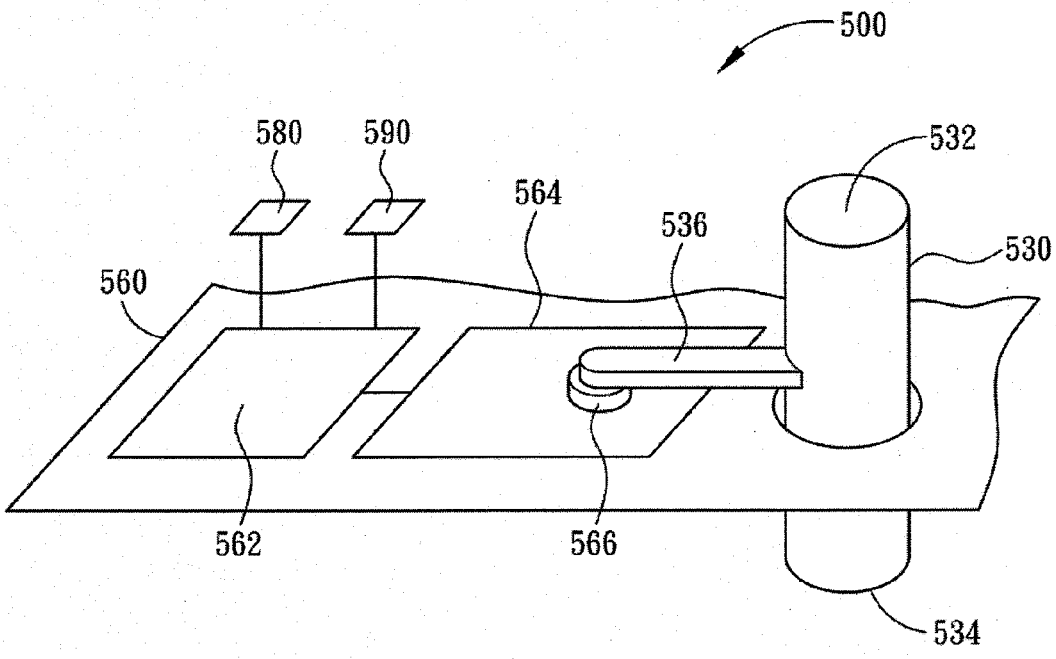


FIG. 8

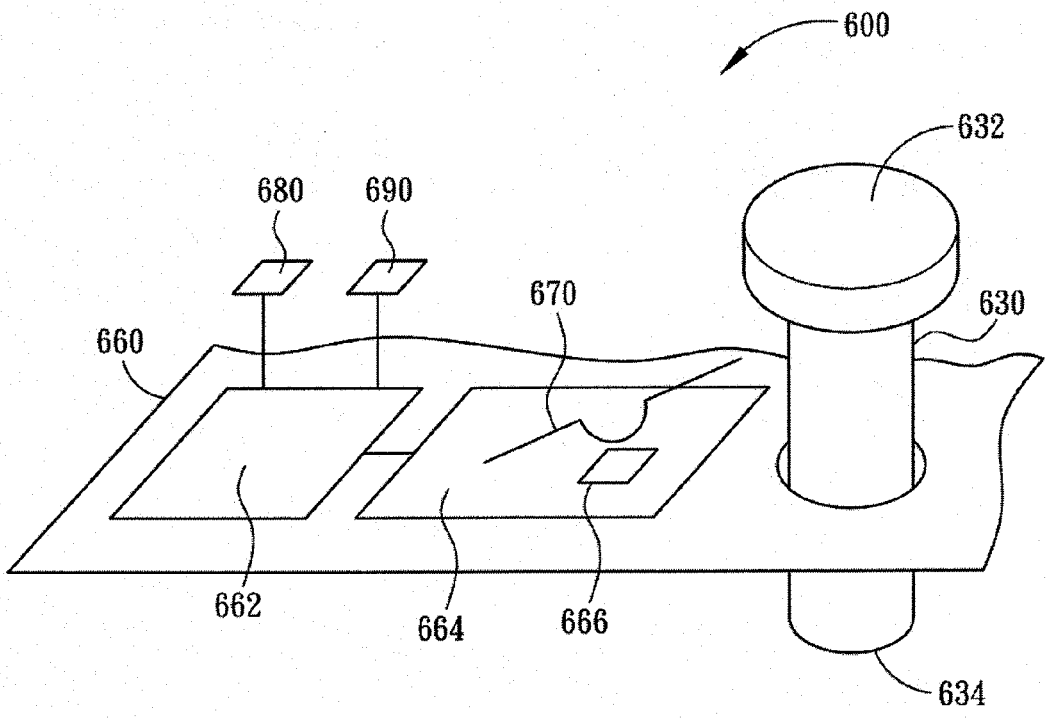


FIG. 9

BRAILLE READING-WRITING DEVICE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This Non-provisional application claims priority under 35 U.S.C. §119(a) on Patent Application No(s). 201210010996.5 filed in People's Republic of China on Jan. 13, 2012, the entire contents of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of Invention

[0003] The invention relates to a learning device and, in particular, to a braille reading-writing device.

[0004] 2. Related Art

[0005] The braille is a system provided to the blind people for recognizing the letters, and a basic unit of the braille is a 6-dot cell in a rectangular form. As shown in FIG. **1**, these six dots are arranged into an array of two columns and three rows where the dots of the left column are called the dot **1**, dot **2**, and dot **3**, respectively, from top to bottom and the dots of the right column are called the dot **4**, dot **5**, and dot **6**, respectively, from top to bottom.

[0006] Each dot has two states such as a protruding state and an un-protruding state. Therefore, six dots can collectively provide 64 combinations. Many kinds of devices, such as the braille board, the braille machine, and the braille printer, can provide the dots of different combinations on the back of the paper so that the front of the paper can show different letters, numbers, initial consonants, compound vowels, etc. As shown in FIG. **2**, when the dots **1**, **2**, **4** of the front protrude, it represents the English letter "f" (the mark "+" in the figure indicates the protruding dot)

[0007] However, the blind people can only do the touch practice by the above method, and cannot do the reading-writing practice at the same time.

SUMMARY OF THE INVENTION

[0008] The invention is to provide a braille reading-writing device to solve the aforementioned problem.

[0009] A braille reading-writing device according to the invention includes a body and a plurality of braille buttons. The body has a first surface and a second surface which are tactilely distinguishable. The braille buttons are disposed through the body. Each of the braille buttons has a pressing portion and a touching portion. The pressing portion and the first surface are located at the same side, and the touching portion and the second surface are located at the same side. When the pressing portion is pressed, the touching portion protrudes from the second surface.

[0010] As mentioned above, the blind people can write braille on the first surface of the braille reading-writing device according to the invention, and then they can touch to read the written braille on the second surface thereof. Therefore, in the invention, the functions of writing and reading braille are integrated into the same device, and operation habits of the blind people are greatly conformed to.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The invention will become more fully understood from the detailed description and accompanying drawings, which are given for illustration only, and thus are not limitative of the present invention, and wherein:

[0012] FIG. **1** is a schematic diagram of a basic unit of the braille;

[0013] FIG. **2** is a schematic diagram of the braille letter representing the English letter "f";

[0014] FIG. **3** is a schematic diagram of a braille reading-writing device according to the first embodiment of the invention;

[0015] FIG. **4** is a sectional diagram of the braille reading-writing device taken along the line A-A in FIG. **3**;

[0016] FIG. **5** is a sectional diagram schematically showing a braille reading-writing device according to the second embodiment of the invention;

[0017] FIG. **6** is a sectional diagram schematically showing a braille reading-writing device according to the third embodiment of the invention;

[0018] FIG. **7** is a sectional diagram schematically showing a braille reading-writing device according to the fourth embodiment of the invention;

[0019] FIG. **8** is a schematic diagram of a voice control unit of the braille reading-writing device according to the fifth embodiment of the invention; and

[0020] FIG. **9** is a schematic diagram of a voice control unit of a braille reading-writing device according to the sixth embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0021] The present invention will be apparent from the following detailed description, which proceeds with reference to the accompanying drawings, wherein the same references relate to the same elements.

[0022] FIG. **3** is a schematic diagram of a braille reading-writing device **100** according to the first embodiment of the invention. The braille reading-writing device **100** includes a body **120** and a plurality of braille buttons **130**. The body **120** includes a first surface **122** and a second surface **124**. Herein, the first and the second surfaces **122** and **124** can be tactilely distinguishable. In this embodiment, the first and the second surfaces **122** and **124** can be the opposite surfaces of the body **120**.

[0023] FIG. **4** is a sectional diagram of the braille reading-writing device **100** taken along the line A-A in FIG. **3**. In FIG. **4**, the braille buttons **130** are disposed through the body **120**, and each includes a pressing portion **132** and a touching portion **134**. The pressing portion **132** and the first surface **122** are located at the same side, and the touching portion **134** and the second surface **124** are located at the same side. In this embodiment, the pressing portion **132** of the braille button **130** can move between a first position and a second position relative to the body **120** thus to allow the touching portion **134** to move together.

[0024] Specifically, in an initial state, the pressing portion **132** is located at the first position shown by the left braille button **130** in FIG. **4** when it has not been pressed. In this embodiment, when the pressing portion **132** is located at the first position, the braille button **130** protrudes from the first surface **122** of the body **120** for facilitating the operation of the user. However, the invention is not limited thereto. For example, in other embodiments, the pressing portion **132** in the initial state also can be slightly concaved towards the body **120**. In the embodiment, as shown by the right braille button **130** in FIG. **4**, when the pressing portion **132** is pressed to the second position from the first position, it drives the touching portion **134** to protrude from the second surface **124** of the body **120**. When the pressing portion **132** reaches the second

position, the pressing portion **132** of the braille button **130** can be leveled with the first surface **122** of the body **120**. However, the invention is not limited thereto. In other embodiments, when the pressing portion. **132** reaches the second position, it can be slightly lower or higher than the first surface **122** of the body **120**.

[0025] In FIG. **3**, when the pressing portions **132** of the braille buttons **130** respectively representing the dots **3**, **5**, **6** (observed facing the second surface **124**, the dots of the left column are respectively called the dots **1**, **2**, **3** from top to bottom and the dots of the right column are respectively called the dots **4**, **5**, **6** from top to bottom) are not pressed (i.e. at the initial state), they are all at the first position. When the pressing portions **132** of the braille buttons **130** respectively representing the dots **1**, **2**, **4** are pressed, they are at the second position, i.e. the pressed state. The pressing operation simulates making braille symbols on the braille paper via a braille pen, i.e. the writing action. The state of the braille buttons **130** in FIG. **3** represents that a letter "f" is written. As the pressing portion **132** of a certain braille button **130** is pressed from the first surface **122**, the touching portion **134** of the corresponding braille button **130** protrudes from the second surface **124**. After the pressing operation is completed, the braille reading-writing device **100** can be turned over and thus the touching portions of the braille buttons **130** on the second surface **124** can be touched. The blind people can recognize the corresponding letter and know its meaning via the touch. For example, in this embodiment, the pressing portions **132** of the braille buttons **130** respectively representing the dots **1**, **2**, **4** are pressed from the first surface **122** to allow the touching portions **134** of the braille buttons **130** respectively representing the dots **1**, **2**, **4** to protrude from the second surface. After turning over the braille reading-writing device **100**, the blind people can recognize the letter "f" via the touch.

[0026] As mentioned above, the first and the second surfaces **122** and **124** can be tactilely distinguishable, thereby making the blind people know from which surface they should press the braille buttons **130**. There are many ways to make the first and the second surfaces **122** and **124** easily tactilely distinguishable. For example, they can be made of different materials so as to have two kinds of touch feelings. For example, the first surface **122** can be made of plastics while the second surface **124** is made of rubber, and vice versa. Otherwise, the first and the second surfaces **122** and **124** can have different hardness or roughness. Even a protrusion can be disposed on one of the first surface **122** and the second surface **124** for the distinguishability. However, the invention is not limited thereto, and any means that can help to tactilely distinguish the first surface **122** from the second surface **124** can be used.

[0027] In addition, in this embodiment, for improving the touch feeling of the touching portion **134**, its hardness can be larger than that of the pressing portion **132**. For example, the touching portion **134** can be made of plastics while the pressing portion **132** can be made of rubber. However, in other embodiments, the touching portion **134** and the pressing portion **132** can be made of the same material, such as rubber.

[0028] In FIG. **4**, in this embodiment, the body **120** includes a plurality of through holes **126** passing through the first and the second surfaces **122** and **124**, and the braille buttons **130** are disposed through the through holes **126**, respectively. However, in other embodiments, the body **120** and the braille buttons **130** can be integrally formed.

[0029] In FIG. **4**, in this embodiment, the braille reading-writing device **100** further includes a plurality of elastic positioning boards **140** disposed at an inner wall of the body **120**. Each of the elastic positioning boards **140** has a first positioning hole **142** and a second positioning hole **144** both of which face the corresponding braille button **130**. An outer surface of each of the braille buttons **130** has a positioning protrusion **136** corresponding to the first and the second positioning holes **142** and **144**. When the pressing portion **132** is at the first position, the positioning protrusion **136** is disposed in the first positioning hole **142**. When the pressing portion **132** is pressed to leave the first position, the elastic positioning board **140** is tilted away from the braille button **130** thus to allow the positioning protrusion **136** to leave the first positioning hole **142**. Accordingly, the pressing portion **132** moves towards the second position. When the pressing portion **132** moves to the second position, the positioning protrusion **136** moves into the second positioning hole **144**, thus positioning the pressing portion **132** at the second position. By the aforementioned structure, the braille button **130** can be positioned at the first and the second positions, respectively.

[0030] In this embodiment, the blind people can write braille on the first surface **122** of the braille reading-writing device **100**, and touch to read the written braille on the second surface **124** thereof. Thereby, the functions of writing braille and reading braille are integrated into the same device.

[0031] FIG. **5** is a sectional diagram schematically showing a braille reading-writing device **200** according to the second embodiment of the invention. In this embodiment, the braille reading-writing device **200** includes a body **220** and a plurality of braille buttons **230**. The body **220** includes a first surface **222** and a second surface **224**. Herein, the first and the second surfaces **222** and **224** can be tactilely distinguishable. In this embodiment, the first and the second surfaces **222** and **224** can be the opposite surfaces of the body **220**. The braille buttons **230** are disposed through the body **220**, and each includes a pressing portion **232** and a touching portion **234**. The pressing portion **232** and the first surface **222** are located at the same side, and the touching portion **234** and the second surface **224** are located at the same side. In this embodiment, the body **220** includes a plurality of through holes **226** passing through the first and the second surfaces **222** and **224**, and the braille buttons **230** are disposed through the through holes **226**, respectively. In other embodiments, the body **220** and the braille buttons **230** can be integrally formed.

[0032] Like the pressing portion **132** in the first embodiment, the pressing portion **232** also moves between the first and the second positions. However, in this embodiment, the braille buttons **230** and the positioning method thereof are different from the braille buttons **130** in FIG. **4**. In this embodiment, the braille reading-writing device **200** includes a limiting board **240** disposed in the body **220**. The limiting board **240** can be fixed to an inner wall of the body **220** such as by screwing or locking. Each of the braille buttons **230** has a limiting through hole **236** having a first inner wall **237** and a second inner wall **239** opposite to each other. The limiting board **240** is disposed through the limiting through hole **236**. When the pressing portion **232** is at the first position, the first inner wall **237** is disposed against the limiting board **240**, as shown by the left braille button **230** in FIG. **5**. When the pressing portion **232** is pressed to the second position, the second inner wall **239** is disposed against the limiting board **240** and the touching portion **234** protrudes from the second surface **224**, as shown by the right braille button **230** in FIG.

5. By the aforementioned structure, the braille button **230** can be positioned at the first and the second positions, respectively.

[0033] In FIG. **5**, in this embodiment, when the pressing portion **232** is at the first position, the braille button **230** protrudes from the first surface **222** of the body **220**. When the pressing portion **232** reaches the second position, the pressing portion **232** of the braille button **230** is leveled with the first surface **222**. However, the invention is not limited thereto.

[0034] In other aspects, the braille reading-writing device **200** is the same as or similar to the braille reading-writing device **100** in the first embodiment, and therefore it is not described for concise purpose.

[0035] FIG. **6** is a sectional diagram schematically showing a braille reading-writing device **300** according to the third embodiment of the invention. In this embodiment, the braille reading-writing device **300** includes a body **320** and a plurality of braille buttons **330**. The body **320** includes a first surface **322** and a second surface **324**. Herein, the first and the second surfaces **322** and **324** can be tactilely distinguishable. In this embodiment, the first and second surfaces **322** and **324** can be the opposite surfaces of the body **320**. The braille buttons **330** are disposed through the body **320**, and each includes a pressing portion **332** and a touching portion **334**. The pressing portion **332** and the first surface **322** are located at the same side, and the touching portion **334** and the second surface **324** are located at the same side. In this embodiment, the body **320** includes a plurality of through holes **326** passing through the first and the second surfaces **322** and **324**, and the braille buttons **330** are disposed through the through holes **326**, respectively. However, in other embodiments, the body **320** and the braille buttons **330** can be integrally formed.

[0036] Like the pressing portions **132** and **232** in the first and the second embodiments, the pressing portion **332** also moves between the first and second positions. However, in this embodiment, the braille buttons **330** and the positioning method thereof are different from the braille buttons **130** and **230** in FIGS. **4** and **5**. In this embodiment, an outer surface of the braille button **330** has an annular elastic protrusion **336**, and an inner wall of the body **320** has an extending portion **340** including a first annular positioning recess **342** and a second annular positioning recess **344** both corresponding to the annular elastic protrusion **336**. When the pressing portion **332** is at the first position, the annular elastic protrusion **336** is located in the first annular positioning recess **342**. When the pressing portion **332** is pressed to leave the first position, the annular elastic protrusion **336** deforms elastically and then leaves the first annular positioning recess **342**. When the pressing portion **332** reaches the second position, the annular elastic protrusion **336** is located in the second annular positioning recess **344** and the touching portion **334** protrudes from the second surface **324**. By the aforementioned structure, the braille button **330** can be positioned at the first and the second positions, respectively.

[0037] In FIG. **6**, in this embodiment, when the pressing portion **332** is at the first position, the pressing portion **332** of the braille button **330** is leveled with the first surface **322** of the body **320**. In addition, when the pressing portion **332** is pressed to the second position, the pressing portion **332** is concaved inward from the first surface **322**. However, the invention is not limited thereto.

[0038] In other aspects, the braille reading-writing device **300** is the same as or similar to the braille reading-writing devices **100** or **200** in the first or the second embodiments, and therefore it is not described for concise purpose.

[0039] FIG. **7** is a sectional diagram schematically showing a braille reading-writing device **400** according to the fourth embodiment of the invention. In this embodiment, the braille reading-writing device **400** includes a body **420** and a plurality of braille buttons **430**. The body **420** includes a first surface **422** and a second surface **424**. Herein, the first and the second surfaces **422** and **424** can be tactilely distinguishable. In this embodiment, the first and the second surfaces **422** and **424** can be the opposite surfaces of the body **420**. The braille buttons **430** are disposed through the body **420**, and each includes a pressing portion **432** and a touching portion **434**. The pressing portion **432** and the first surface **422** are located at the same side, and the touching portion **434** and the second surface **424** are located at the same side. In this embodiment, the body **420** includes a plurality of through holes **426** passing through the first and the second surfaces **422** and **424**, and the braille buttons **430** are disposed through the through holes **426**, respectively. In other embodiments, the body **420** and the braille buttons **430** can be integrally formed.

[0040] Like the pressing portions **132**, **232** and **332** in the first, the second and the third embodiments, the pressing portion **432** also moves between the first and the second positions. However, in this embodiment, the braille buttons **430** and the positioning method thereof are different from the braille buttons **130**, **230** and **330** in FIGS. **4** to **6**. In this embodiment, the braille reading-writing device **400** includes a plurality of silica elastic arms **440** disposed at an inner wall of the body **420** and connected with the braille buttons **430**, respectively. Each of the silica elastic arms **440** has two positioning points, i.e. an upper positioning point and a lower positioning point. In FIG. **7**, the silica elastic arm **440** connected with the right braille button **430** in FIG. **7** is at the upper positioning point to allow the pressing portion **432** to be at the first position. When the braille button **430** is pressed, the elastic force of the silica elastic arm **440** needs to be overcome. When the silica elastic arm **440** is lowered down to the lower positioning point by the driving of the braille button **430**, the pressing portion **432** is positioned at the second position to allow the touching portion **434** to protrude from the second surface **424** as shown by the left braille button **430** in FIG. **7**. By the aforementioned structure, the braille button **430** can be positioned at the first and the second positions, respectively.

[0041] In FIG. **7**, in this embodiment, when the pressing portion **332** is at the first position, the pressing portion **332** of the braille button **430** is leveled with the first surface **422** of the body **420**. In addition, when the pressing portion **432** is pressed to the second position, the pressing portion **332** is concaved inward from the first surface **422**. However, the invention is not limited thereto.

[0042] In other aspects, the braille reading-writing device **400** is the same as or similar to the braille reading-writing devices **100**, **200** or **300** in the first, the second or the third embodiments, and therefore it is not described for concise purpose.

[0043] In the fifth embodiment of the invention, for helping the blind people determine whether the braille they write or read is correct or not, the braille reading-writing device can be configured with a voice control unit. FIG. **8** is a schematic diagram of a voice control unit **560** of the braille reading-writing device **500** according to the fifth embodiment of the invention. Except adding the voice control unit **560**, the

mechanism of the braille reading-writing device **500** can be designed as the braille reading-writing device **100**, **200**, **300**, or **400**. Accordingly, the mechanism of the braille reading-writing device **500** is mostly omitted in FIG. **8**, and only a braille button and part of the voice control unit **560** are illustrated.

[0044] In FIG. **8**, the braille reading-writing device **500** includes the voice control unit **560**. The voice control unit **560** includes a voice element **562** and a control circuit board **564** which is disposed in the body (not shown) and electrically connected with the voice element **562**. The control circuit board **564** includes a plurality of signal contacts **566** corresponding to the braille buttons **530**. The braille button **530** includes a pressing portion **532** and a touching portion **534**, and when the pressing portion **532** is pressed, the corresponding signal contact **566** is electrically connected with the corresponding braille button **530** and thus the voice element **562** voices the corresponding content.

[0045] In FIG. **8**, in this embodiment, the braille button **530** includes a conductive portion **536** disposed between the pressing portion **532** and the touching portion **534**. When the pressing portion **532** is pressed, the conductive portion **536** moves towards the corresponding signal contact **566** and is electrically connected with the signal contact **566**. The conductive portion **536** is preferably a flexible conductive element, such as conductive cloth, conductive foam plastics, or a metal elastic sheet, for enhancing the touch feeling of pressing the braille button **530**.

[0046] In this embodiment, the braille reading-writing device **500** can further include a voice enabling button **580** electrically connected with the voice element **562**. When the voice enabling button **580** is pressed, the voice element **562** voices the corresponding content according to the conducting states of the signal contacts **566** and the corresponding braille buttons **530**. Thereby, after writing or reading braille, the blind people can hear the sound corresponding to the braille letters to determine whether the writing or reading is correct or not.

[0047] In other embodiments, the braille reading-writing device **500** may detect conducting states of the signal contacts **566** and the corresponding braille buttons **530** to automatically voice the corresponding content after each of the pressing operations. Accordingly, when a braille letter needs to be made by pressing a plurality of braille buttons **530**, the sound of an interim braille letter, instead of the expected braille letter, may be heard after a certain pressing operation.

[0048] In fact, the meaning of a specific braille letter depends on the man-made mapping relationship between the braille letter and its meaning. For example, English alphabet, Mainland China alphabet, and Chinaese phonetic alphabet have their respective mapping relationships between the braille letter and the meaning. Accordingly, for supporting multiple languages, the braille reading-writing device **500** can include a language selecting button **590** electrically connected with the voice element **562** in FIG. **8**. The voice element **562** voices the content in the corresponding language according to the input of the language selecting button **590**. For example, when the input of the language selecting button **590** is corresponding to English, the voice element **562** voices the content corresponding to the written braille letter in English. In addition, when Mainland China alphabet or Chinaese phonetic alphabet is selected, the voice element **562** voices the content corresponding to the written braille letter in Mainland China alphabet or Chinaese phonetic alphabet. Accordingly, the voice element **562** may include a multi-speech database or be electrically connected with a multi-speech database.

[0049] The form of the braille button **530** in FIG. **8** is just for example, and it can use the structure of the braille button **130**, **230**, **330**, or **430** in the first, the second, the third, or the fourth embodiments. However, the invention is not limited thereto; in other embodiments, the braille button **530** can have any proper form.

[0050] In other aspects, the braille reading-writing device **500** is the same as or similar to the braille reading-writing devices **100**, **200**, **300** or **400** in the first, the second, the third or the fourth embodiments, and therefore it is not described for concise purpose.

[0051] FIG. **9** is a schematic diagram of a voice control unit **660** of a braille reading-writing device **600** according to the sixth embodiment of the invention. Like FIG. **8**, the mechanism of the braille reading-writing device **600** is mostly omitted in FIG. **9**, and only a braille button and part of the voice control unit **660** are illustrated.

[0052] In FIG. **9**, the braille reading-writing device **600** includes the voice control unit **660**. The voice control unit **660** includes a voice element **662** and a control circuit board **664** which is disposed in the body (not shown) and electrically connected with the voice element **662**. The control circuit board **664** includes a plurality of signal contacts **666** corresponding to the braille buttons **630**. The braille button **630** includes a pressing portion **632** and a touching portion **634**, and when the pressing portion **632** is pressed, the corresponding signal contact **666** is electrically connected with the corresponding braille button **630** and the voice element **562** thus voices the corresponding content.

[0053] In FIG. **9**, in this embodiment, the braille reading-writing device **600** further includes a conductive elastic sheet **670**. One end of the conductive elastic sheet **670** is fixed to the control circuit board **664** while the other end is suspended above the control circuit board **664**. When the pressing portion **632** is pressed, the braille button **630** presses the other end of the conductive elastic sheet **670** to allow the other end of the conductive elastic sheet **670** to move towards the signal contact **666** thus to be electrically connected with the signal contact **666**.

[0054] Like the fifth embodiment, the braille reading-writing device **600** in this embodiment can further include a voice enabling button **680** and a language selecting button **690** both of which are electrically connected with the voice element **662**. The functions and operations of the voice enabling button **680** and language selecting button **690** are similar to those of the voice enabling button **580** and the language selecting button **590** of the braille reading-writing device **500**, and therefore they are not described for concise purpose.

[0055] The form of the braille button **630** in FIG. **9** is just for example, and it can use the structure of the braille button **130**, **230**, **330**, or **430** in the first, the second, the third, or the fourth embodiments. However, the invention is not limited thereto, and in other embodiments, the braille button **630** can have any proper form.

[0056] In other aspects, the braille reading-writing device **600** is the same as or similar to the braille reading-writing devices **100**, **200**, **300**, **400** or **500** in the first, the second, the third, the fourth or the fifth embodiments, and therefore it is not described for concise purpose.

[0057] In summary, the blind people can write braille on the first surface of the braille reading-writing device according to

the embodiments of the invention, and they can touch to read the written braille on the second surface thereof Therefore, in the embodiments of the invention, the functions of writing and reading the braille are integrated into the same device, and operation habits of the blind people are greatly conformed to.

[0058] Although the invention has been described with reference to specific embodiments, this description is not meant to be construed in a limiting sense. Various modifications of the disclosed embodiments, as well as alternative embodiments, will be apparent to persons skilled in the art. It is, therefore, contemplated that the appended claims will cover all modifications that fall within the true scope of the invention.

What is claimed is:

1. A braille reading-writing device, comprising:

a body having a first surface and a second surface which are tactilely distinguishable; and

a plurality of braille buttons disposed through the body, wherein each of the braille buttons has a pressing portion and a touching portion, the pressing portion and the first surface are located at the same side, the touching portion and the second surface are located at the same side, and when the pressing portion is pressed, the touching portion protrudes from the second surface.

2. The braille reading-writing device according to claim **1**, wherein the first surface and the second surface are made of different materials.

3. The braille reading-writing device according to claim **1**, wherein one of the first and second surfaces has a protrusion.

4. The braille reading-writing device according to claim **1**, wherein the hardness of the pressing portion is less than that of the touching portion.

5. The braille reading-writing device according to claim **1**, wherein the body and the braille buttons are integrally formed.

6. The braille reading-writing device according to claim **1**, wherein the body has a plurality of through holes passing through the first surface and the second surface, and the braille buttons are disposed through the through holes, respectively.

7. The braille reading-writing device according to claim **1**, further comprising a plurality of elastic positioning boards disposed at the inner wall of the body, wherein each of the elastic positioning boards has a first positioning hole and a second positioning hole both facing the corresponding braille button, an outer surface of each of the braille buttons has a positioning protrusion corresponding to the first positioning hole and the second positioning hole, when the pressing portion is at a first position, the positioning protrusion is disposed in the corresponding first positioning hole, and when the pressing portion is pressed to a second position from the first position, the positioning protrusion is disposed in the corresponding second positioning hole.

8. The braille reading-writing device according to claim **1**, further comprising a limiting board disposed in the body, wherein each of the braille buttons has a limiting through hole having a first inner wall and a second inner wall opposite to each other, the limiting board is disposed through the limiting through hole, when the pressing portion is at a first position, the first inner wall is disposed against the limiting board, and when the pressing portion is pressed to a second position from the first position, the second inner wall is disposed against the limiting board.

9. The braille reading-writing device according to claim **1**, wherein an outer surface of each of the braille buttons has an annular elastic protrusion, an inner wall of the body has an extending portion including a first annular positioning recess and a second annular positioning recess both corresponding to the annular elastic protrusion, when the pressing portion is at a first position, the annular elastic protrusion is located in the first annular positioning recess, and when the pressing portion is pressed to a second position from the first position, the annular elastic protrusion is located in the second annular positioning recess.

10. The braille reading-writing device according to claim **1**, further comprising a silica elastic arm disposed at an inner wall of the body and connected with the braille buttons, respectively.

11. The braille reading-writing device according to claim **1**, further comprising a voice control unit including a voice element and a control circuit board disposed in the body and electrically connected with the voice element, wherein the control circuit board includes a plurality of signal contacts corresponding to the braille buttons, and when the pressing portion is pressed, the corresponding signal contact is electrically connected with the corresponding braille button and thus the voice element voices the corresponding content.

12. The braille reading-writing device according to claim **11**, wherein each of the braille buttons comprises a conductive portion disposed between the pressing portion and the touching portion, and when the pressing portion is pressed, the conductive portion moves towards the corresponding signal contact and is electrically connected with the signal contact.

13. The braille reading-writing device according to claim **12**, wherein the conductive portion is made of conductive cloth, conductive foam plastics, or a metal elastic sheet.

14. The braille reading-writing device according to claim **11**, further comprising a conductive elastic sheet with one end fixed to the control circuit board and the other end suspended above the control circuit board, wherein when the pressing portion is pressed, the braille button presses the other end of the conductive elastic sheet to allow the other end of the conductive elastic sheet to move towards the signal contact thus to be electrically connected with the signal contact.

15. The braille reading-writing device according to claim **11**, further comprising a voice enabling button electrically connected with the voice element, wherein when the voice enabling button is pressed, the voice element voices the corresponding content according to the conducting states of the signal contacts and the corresponding braille buttons.

16. The braille reading-writing device according to claim **11**, further comprising a language selecting button electrically connected with the voice element, wherein the voice element voices the content in the corresponding language according to the input of the language selecting button.

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