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(54) **WAFER STORAGE BOX**

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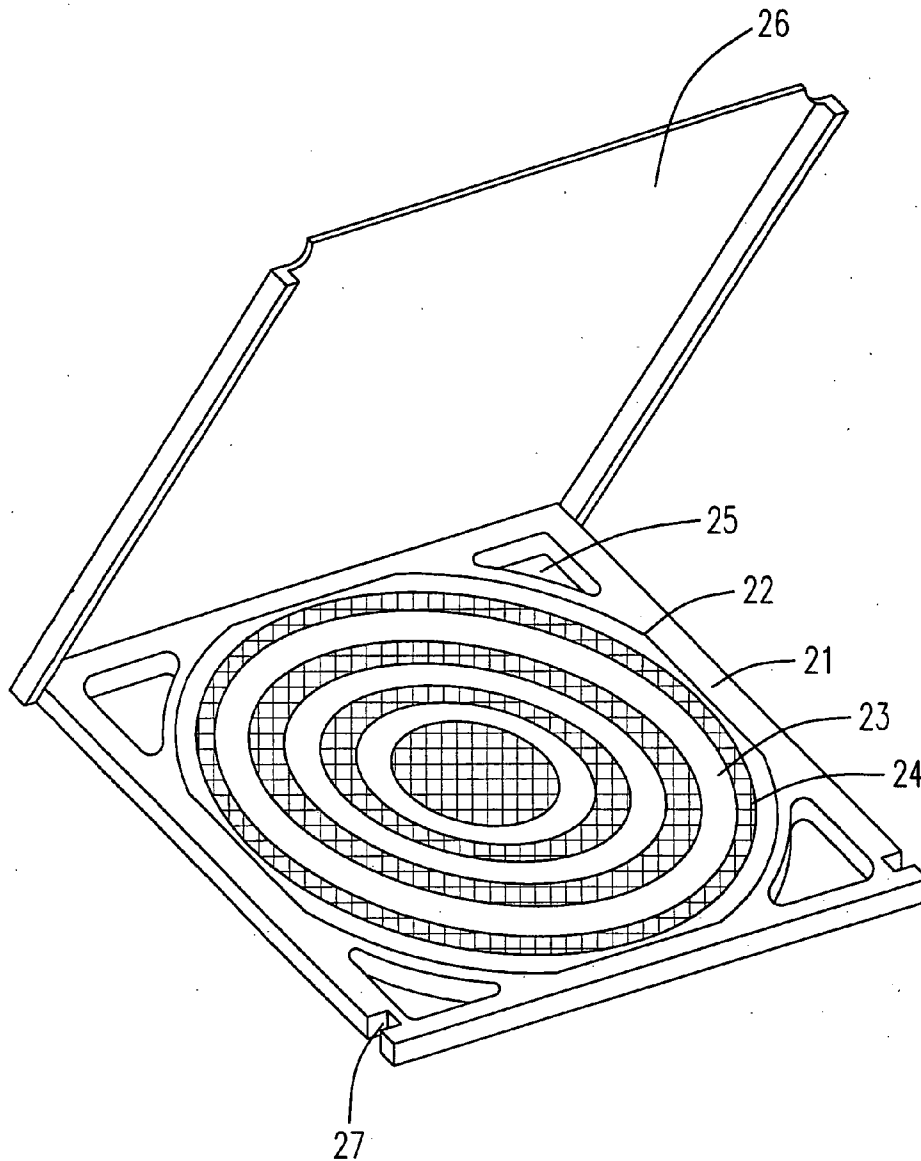
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(57) **ABSTRACT**

A storage box for storing a wafer is provided. The wafer storage box includes a main body having a receiving portion having a bottom surface, a plurality of protruding portions formed on the bottom surface for strengthening the main body, a plurality of anti-shock members disposed on the bottom surface, and a cover connected to the main body.

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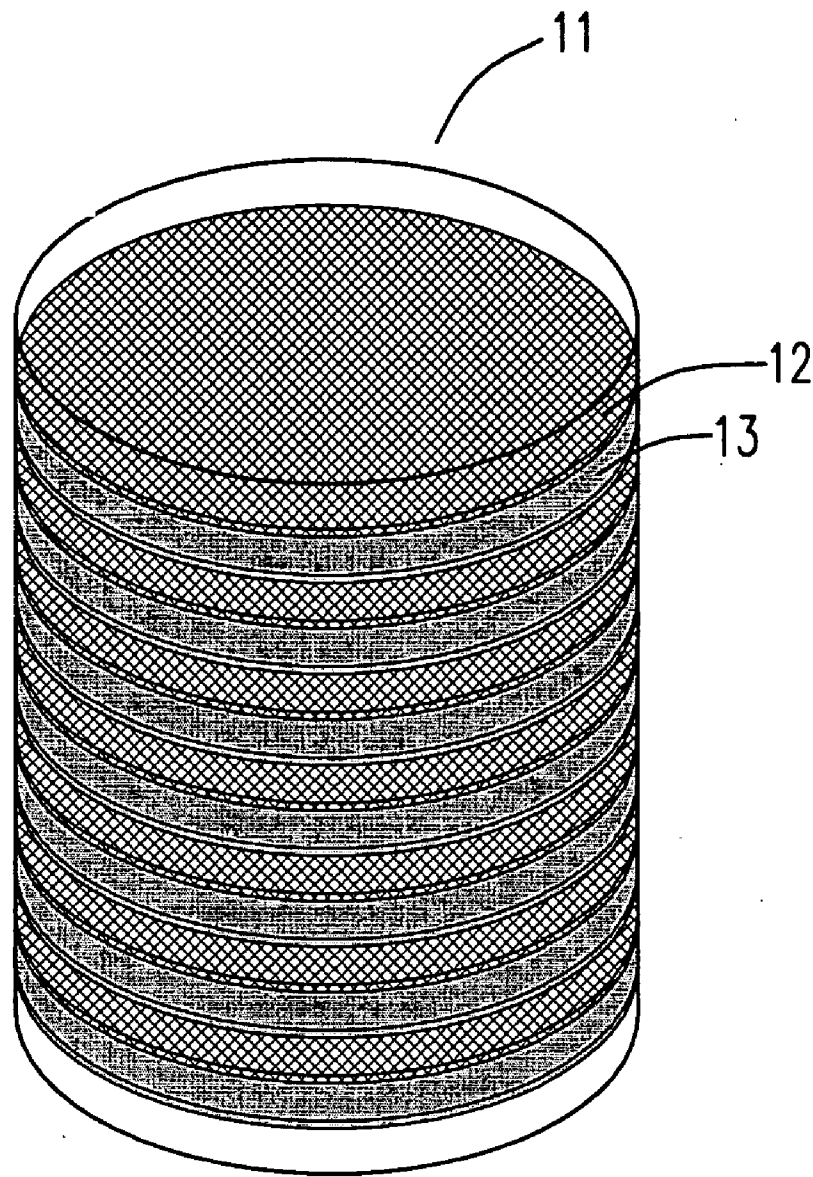


Fig. 1 (PRIOR ART)

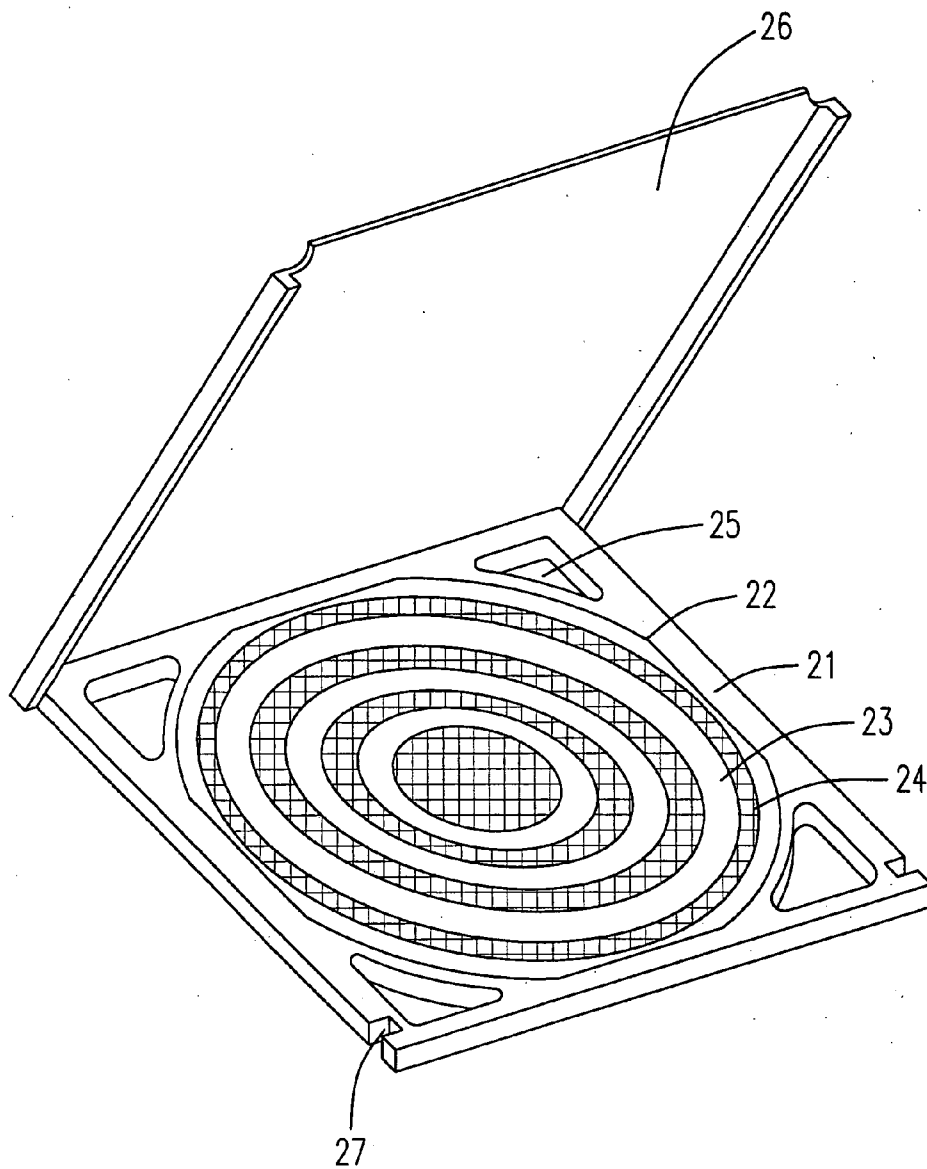


Fig. 2(a)

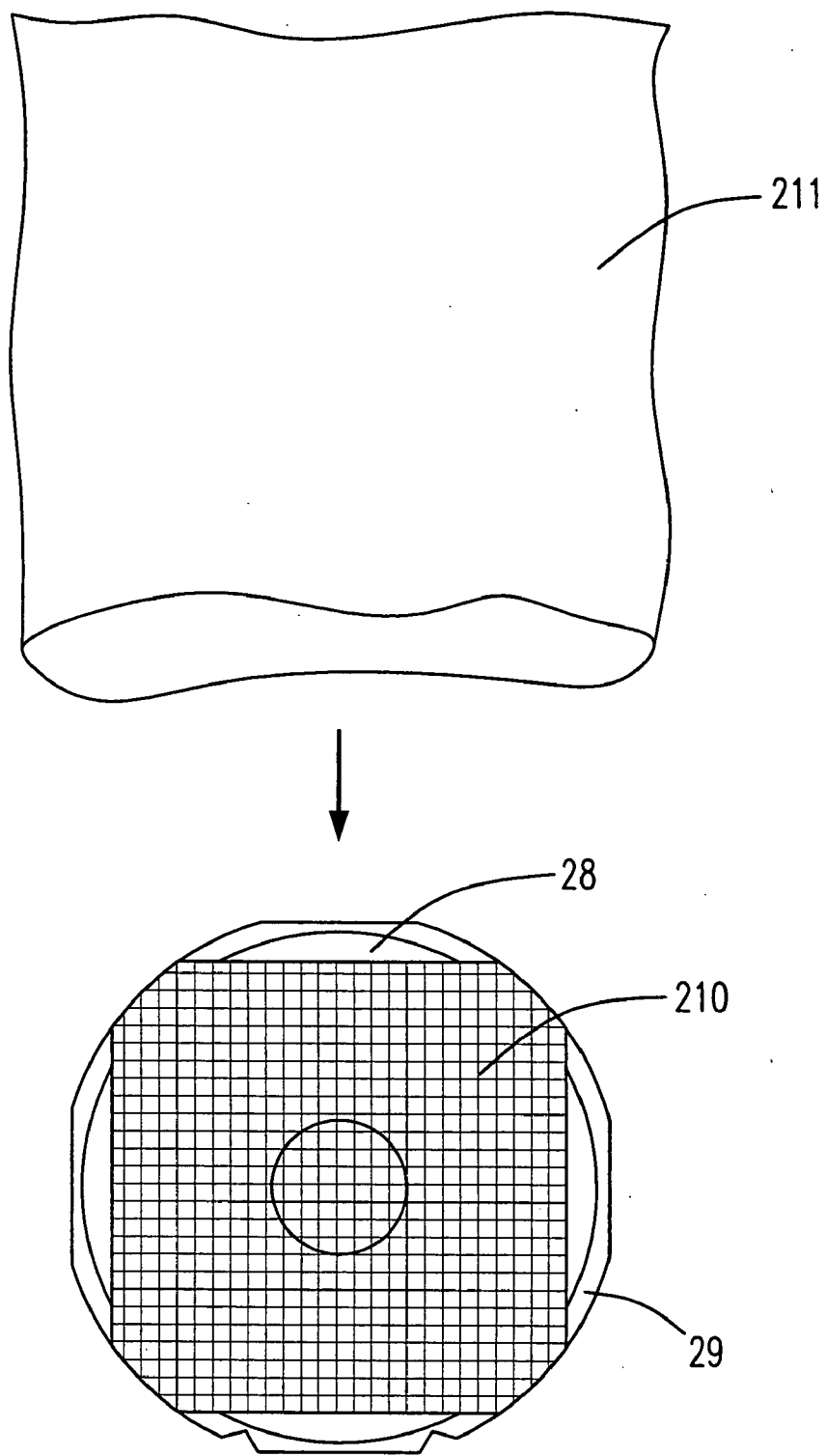


Fig. 2(b)

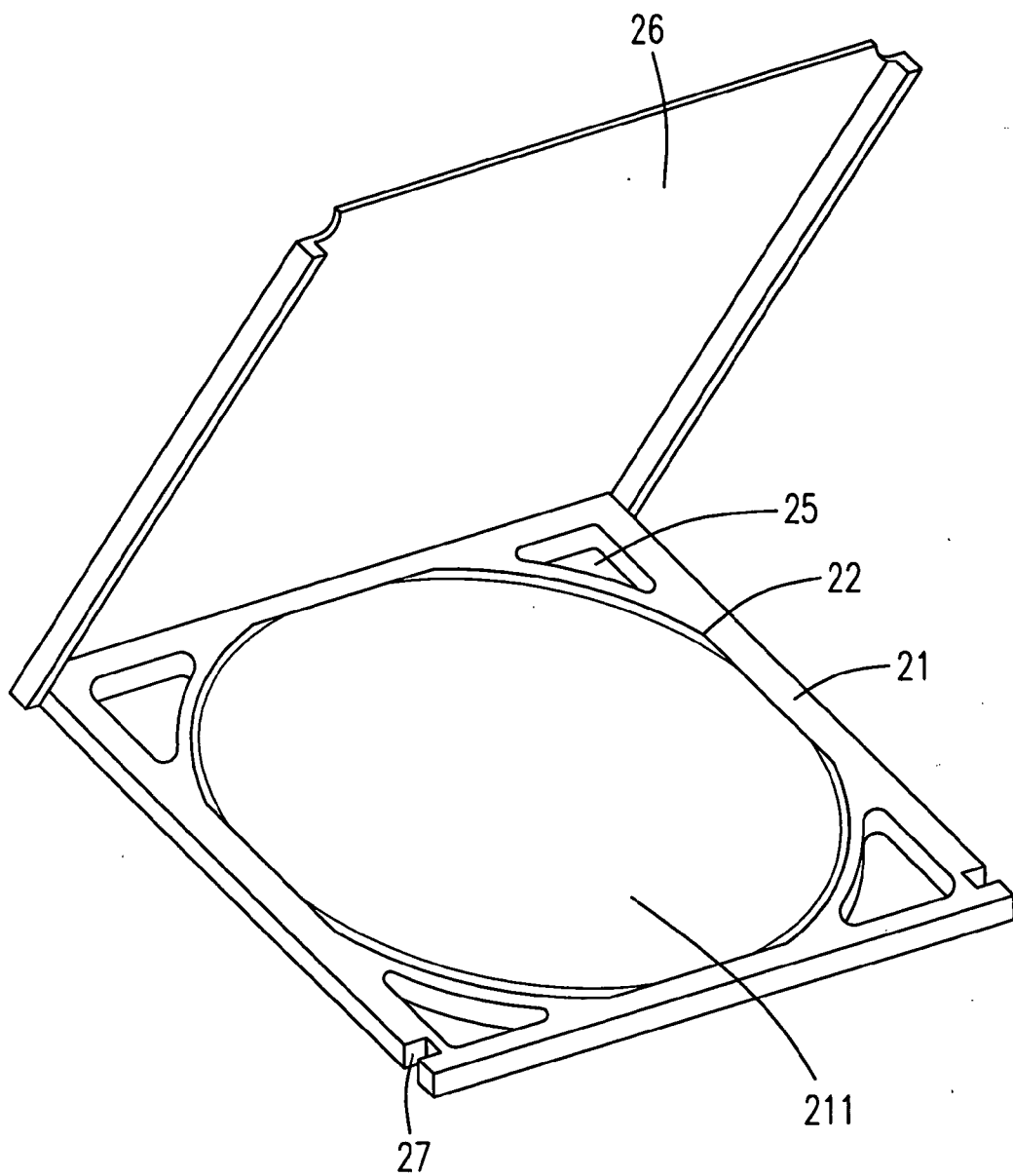


Fig. 2(c)

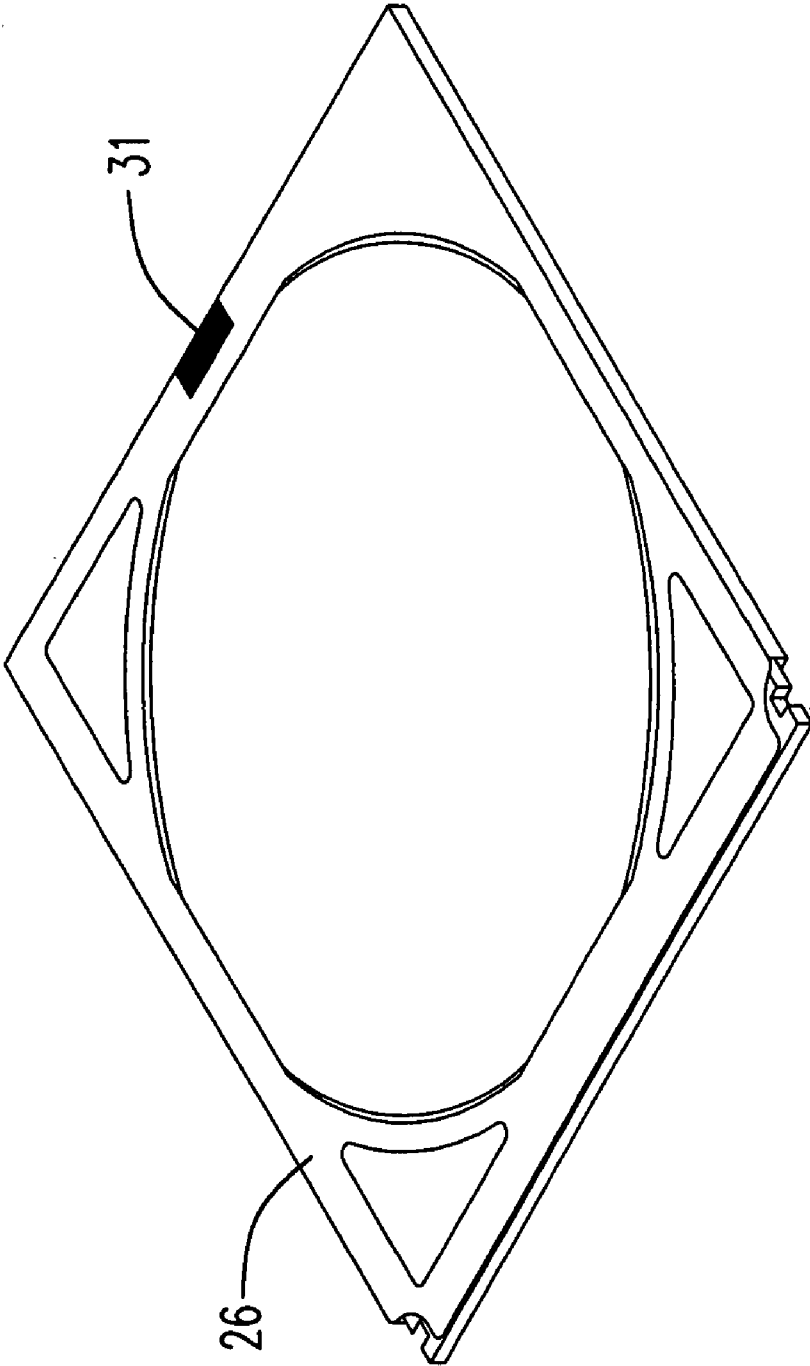


Fig. 3(a)

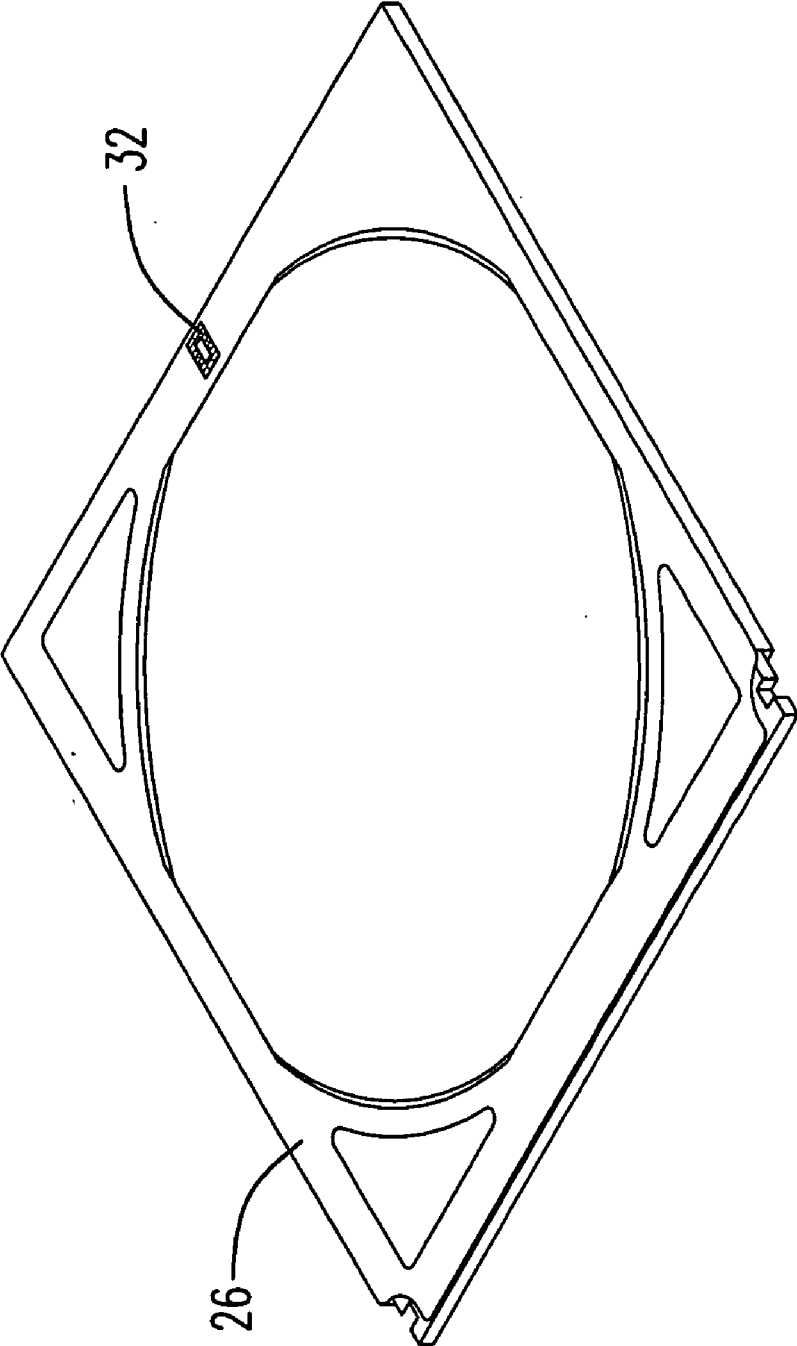


Fig. 3(b)

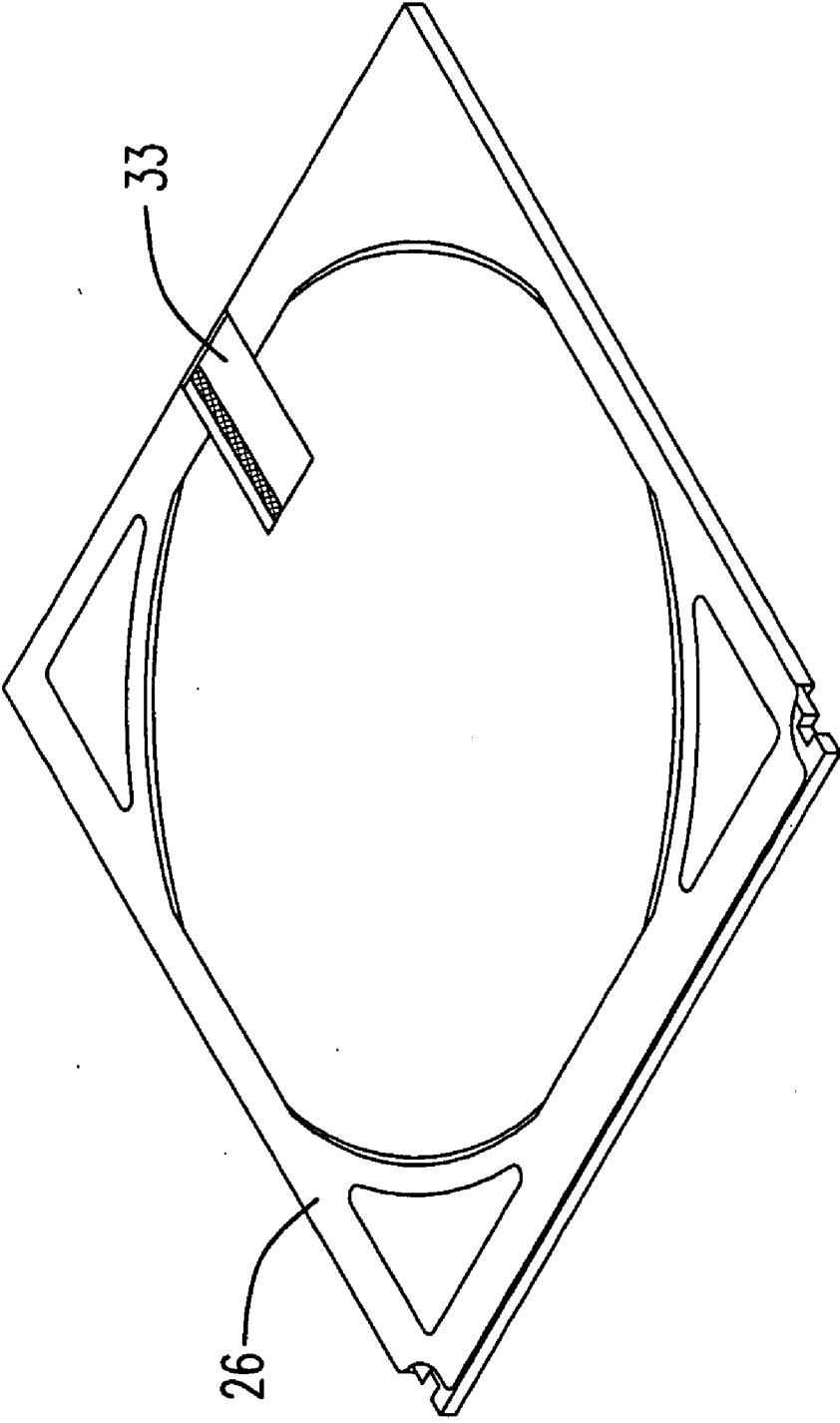


Fig. 3(c)

WAFER STORAGE BOX

FIELD OF THE INVENTION

[0001] The present invention relates to a wafer storage box, and more particularly to a wafer storage box for preventing the wafer from being damaged.

BACKGROUND OF THE INVENTION

[0002] There are many different processes involved in the fabrication for semiconductors. In the transformation between processes, it is inevitable to store and carry the wafers. At this time, the wafer storage box is used for storing the wafers.

[0003] Please refer to **FIG. 1**, which is a schematic diagram of the wafer storage box according to the prior art. The wafer storage box **11** is a plastic box and used for storing a plurality of wafers **12**. The amount of wafers **12** stored is dependent on the capacity of the wafer storage box **11**. In the wafer storage box **11**, the wafers **12** are spaced out from each other merely with a cotton pad **13**. In this way, the quality of the wafers **12** will be affected due to the electrostatic force induced from the friction between the wafer surface and the cotton pad **13**. Moreover, the wafers **12** will be easily damaged because of incautious collision in conveying. Insidiously, many wafers **12** are wasted, and thus the fabrication cost is enhanced.

[0004] From the above description, it is known that how to develop a wafer storage box for reducing the wafer damage so as to save the fabrication cost has become a major problem waited to be solved. In order to overcome the drawbacks in the prior art, an improved wafer storage box is provided. The particular design in the present invention not only solves the problems described above, but also is easy to be implemented. Thus, the invention has the utility for the industry.

SUMMARY OF THE INVENTION

[0005] In accordance with one aspect of the present invention, a wafer storage box is provided. The wafer storage box can prevent the wafer from being damaged by the external collision force during the conveying process. Therefore, the wafer damage can be efficiently reduced and the fabrication cost can be saved.

[0006] In accordance with another aspect of the present invention, a wafer storage box is provided. The wafer storage box can be applied to all of the semiconductor fabrication processes. That is, both the half-finished wafer and the finished one can be stored in the wafer storage box of the present invention.

[0007] In accordance with a further aspect of the present invention, a storage box for storing a wafer is provided. The storage box includes a main body having a receiving portion having a bottom surface, a plurality of protruding portions formed on the bottom surface for strengthening the main body, a plurality of anti-shock members disposed on the bottom surface, and a cover connected to the main body.

[0008] Preferably, the wafer has a frame disposed at a periphery thereof for fixing the wafer.

[0009] Preferably, the wafer has a protective membrane adhered to an upper surface thereof.

[0010] Preferably, the protective membrane is an adhesive membrane.

[0011] Preferably, the wafer is wrapped in an anti-electrostatic bag, and then placed on the protruding portions and the anti-shock members.

[0012] Preferably, the main body has a plurality of openings for passing therethrough a user's fingers and for reducing the weight of the storage box.

[0013] Preferably, each opening is disposed at a corner of the main body.

[0014] Preferably, the main body further has at least one recess.

[0015] Preferably, the main body is made of the transparent material.

[0016] Preferably, the protruding portions are ribs.

[0017] Preferably, the anti-shock members are shock-absorbing pads.

[0018] Preferably, the cover is made of the transparent material.

[0019] Preferably, the storage box further includes a bar code disposed on the cover for identifying the wafer.

[0020] Preferably, the storage box further includes a chip disposed on the cover for identifying the wafer.

[0021] Preferably, the storage box further includes a magnetic card disposed on the cover for identifying the wafer.

[0022] The above objects and advantages of the present invention will become more readily apparent to those ordinarily skilled in the art after reviewing the following detailed descriptions and accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] **FIG. 1** is a schematic diagram showing the wafer storage box according to the prior art;

[0024] **FIG. 2(a)** is a schematic diagram showing the wafer storage box according to a preferred embodiment of the present invention;

[0025] **FIGS. 2(b)** and **2(c)** are diagrams showing different processes for storing the wafer via the wafer storage box shown in **FIG. 2(a)**; and

[0026] **FIGS. 3(a)** to **3(c)** are diagrams illustrating various ways of identifying the wafer storage box according to a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0027] The present invention will now be described more specifically with reference to the following embodiments. It is to be noted that the following descriptions of preferred embodiments of this invention are presented herein for the purposes of illustration and description only; it is not intended to be exhaustive or to be limited to the precise form disclosed.

[0028] Please refer to **FIG. 2(a)**, which shows a schematic diagram of the wafer storage box according to a preferred embodiment of the present invention. The wafer storage box

includes a main body 21 and a cover 26, wherein the cover 26 is connected to the main body 21. The main body 21 includes a receiving portion 22 having a bottom surface. A plurality of circular ribs 23 are formed on the bottom surface of the receiving portion 22 for strengthening the main body 21. Moreover, a plurality of shock-absorbing pads 24 are disposed on the bottom surface of the receiving portion 22 for preventing the wafer from being damaged by the external collision force during the conveying process. Therefore, the wafer damage can be efficiently reduced and the fabrication cost can be saved.

[0029] Four openings 25 are disposed at four corners of the main body 21 for passing therethrough the user's fingers and for reducing the weight of the wafer storage box. In addition, the main body 21 further includes two recesses 27 for the user to easily take out the wafer storage box from a storage cabinet for storing wafer storage boxes (not shown).

[0030] Please refer to FIGS. 2(b) and 2(c), which show different processes for storing the wafer via the wafer storage box shown in FIG. 2(a). Before the wafer 28 being placed into the wafer storage box, a frame 29 has to be disposed at the periphery of the wafer 28 for fixing it. Next, an adhesive membrane 210 is adhered to the upper surface of the wafer 28. After that, the wafer 28 is wrapped in an anti-electrostatic bag 211 and then placed on the circular ribs 23 and the shock-absorbing pads 24, as shown in FIG. 2(c). Finally, the cover 26 is covered on the main body 21, and then the wafer 28 can be conveyed.

[0031] The main body 21 and the cover 26 of the present invention are both made of the transparent material. Hence, the user knows whether the wafer 28 is stored inside the wafer storage box without the need to open the cover 26. Furthermore, different sizes of wafers (such as 12 or 8 inches) can be stored in the wafer storage box of the present invention, merely by modifying the size of the wafer storage box. Additionally, the wafer storage box of the present invention further includes a bar code 31 disposed on the cover 26. A scanner (not shown) is used for scanning the bar code 31 so as to identify the wafer 28, as shown in FIG. 3(a). Certainly, the way of employing the scanner to scan the bar code 31 can be altered. For one example, a chip reading device (not shown) can be used for reading the chip 32 disposed on the cover 26 so as to identify the wafer 28, as shown in FIG. 3(b). For another example, a magnetic card reading device (not shown) can be used for reading the magnetic card 33 disposed on the cover 26 so as to identify the wafer 28, as shown in FIG. 3(c).

[0032] In conclusion, the wafer storage box of the present invention can prevent the wafer from being damaged by the external collision force during the transportation process. Therefore, the wafer damage can be efficiently reduced and the fabrication cost can be saved. Moreover, the wafer storage box of the present invention can be applied to all of the semiconductor fabrication processes. That is, both the half-finished wafer and the finished one can be stored in the wafer storage box of the present invention. Accordingly, the present invention can effectively solve the problems and drawbacks in the prior art, and thus it fits the demand of the industry and is industrially valuable.

[0033] While the invention has been described in terms of what is presently considered to be the most practical and preferred embodiments, it is to be understood that the invention needs not be limited to the disclosed embodiments. On the contrary, it is intended to cover various modifications and similar arrangements included within the spirit and scope of the appended claims which are to be accorded with the broadest interpretation so as to encompass all such modifications and similar structures.

What is claimed is:

1. A storage box for storing a wafer, comprising:
 - a main body having a receiving portion having a bottom surface;
 - a plurality of protruding portions formed on said bottom surface for strengthening said main body;
 - a plurality of anti-shock members disposed on said bottom surface; and
 - a cover connected to said main body.
2. The storage box as claimed in claim 1, wherein said wafer has a frame disposed at a periphery thereof for fixing said wafer.
3. The storage box as claimed in claim 2, wherein said wafer has a protective membrane adhered to an upper surface thereof.
4. The storage box as claimed in claim 3, wherein said protective membrane is an adhesive membrane.
5. The storage box as claimed in claim 4, wherein said wafer is wrapped in an anti-electrostatic bag, and then placed on said protruding portions and said anti-shock members.
6. The storage box as claimed in claim 1, wherein said main body comprises a plurality of openings for passing therethrough a user's fingers and for reducing a weight of said storage box.
7. The storage box as claimed in claim 1, wherein each said opening is disposed at a corner of said main body.
8. The storage box as claimed in claim 1, wherein said main body further comprises at least one recess.
9. The storage box as claimed in claim 1, wherein said main body is made of a transparent material.
10. The storage box as claimed in claim 1, wherein said protruding portions are ribs.
11. The storage box as claimed in claim 1, wherein said anti-shock members are shock-absorbing pads.
12. The storage box as claimed in claim 1, wherein said cover is made of a transparent material.
13. The storage box as claimed in claim 1, further comprising a bar code disposed on said cover for identifying said wafer.
14. The storage box as claimed in claim 1, further comprising a chip disposed on said cover for identifying said wafer.
15. The storage box as claimed in claim 1, further comprising a magnetic card disposed on said cover for identifying said wafer.

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