A sink drain hole structure, which can be more securely connected with a drain by a connector without loosening. The sink drain hole structure includes a sink main body formed of a rigid wall and a drain hole integrally formed with the sink main body. The drain hole is defined with a horizontal reference axis and a vertical reference axis. The drain hole has an edge section in the direction of the horizontal reference axis for supporting and connecting with a drain (or a drain pipe), a connection section extending from the edge section in the direction of the vertical reference axis and a terminal section (or folding edge) extending from the connection section in the direction of the horizontal reference axis. The terminal section overlaps at least a part of the edge section to form a double-layered structure defining an elastic space.
SINK DRAIN HOLE STRUCTURE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates generally to a sink drain hole structure, and more particularly to a sink drain hole structure having an edge section, a connection section vertically extending from the edge section and a terminal section horizontally extending from the connection section to together define an elastic space for enhancing the security of connection between the drain hole and the drain (or the drain pipe).

[0003] 2. Description of the Related Art

[0004] A conventional kitchen cabinet or the like platform is equipped with a sink structure for washing or containing water. For example, U.S. Pat. No. 4,333,188 discloses a convertible sink and U.S. Pat. No. D352771 discloses a sink. Basically, the sink has a drain hole and a drain pipe connected with the drain hole by means of a connector for draining the sink.

[0005] In consideration of manufacturing and processing cost, the sink and drain hole are made of metal thin sheet (such as stainless steel) by means of pressing. When the water is filled into the sink from a tap, the water beam will directly impact the bottom of the sink to vibrate the sink by a considerable amplitude. After a long period of use, the connector for connecting the drain (or the drain pipe) with the drain hole often loosens to cause leakage. In some special decoration designs, the sink is embedded in a concrete structure or implanted in a narrow space. Therefore, it is very hard for a worker to relock the loosened connector and drain (or the drain pipe).

[0006] As well known by those who are skilled in this field, the material of the drain pipe connector assembly structure is subject to aging. Also, the sink is long-term repeatedly used to contain hot water and cold water. Due to thermal expansion/contraction, the drain and the connector will also gradually loosen.

[0007] There is another problem of the conventional sink drain hole in structure and use. That is, the sink and drain hole are made of metal thin sheet by pressing so that the drain hole has a sharp edge. As a result, it often takes place that a user is cut by the sharp edge. This is not what we expect.

[0008] It is therefore tried by the applicant to provide a sink drain hole structure, which can overcome the problems existing in the conventional sink drain hole that the water beam will impact and vibrate the sink to cause loosening and leakage of the connector for connecting the drain (or the drain pipe) with the drain hole and the drain (or the drain pipe) and the connector will gradually loosen due to thermal expansion/contraction and the material of the drain pipe connector assembly structure is subject to aging. In this case, it is unnecessary for a worker to relock the loosened connector and drain pipe.

[0009] The drain hole and the drain pipe of the sink drain hole structure of the present invention can be more securely assembled without increasing the thickness of the sink and the drain hole. Also, the drain hole of the sink drain hole structure of the present invention has arched edge so that a user is protected from being cut.

SUMMARY OF THE INVENTION

[0010] It is therefore a primary object of the present invention to provide a sink drain hole structure, which can be more securely connected with a drain by a connector without loosening. The sink drain hole structure includes a sink main body formed of a rigid wall and a drain hole integrally formed with the sink main body. The drain hole is defined with a horizontal reference axis and a vertical reference axis. The drain hole has an edge section in the direction of the horizontal reference axis for supporting and connecting with a drain (or a drain pipe), a connection section extending from the edge section in the direction of the vertical reference axis and a terminal section (or folding edge) extending from the connection section in the direction of the horizontal reference axis. The terminal section overlaps at least a part of the edge section to form a substantially double-layered structure. The sink drain hole structure of the present invention overcomes the problems of the conventional sink drain hole that the structural strength is lower and the edge is likely to cut a user.

[0011] In the above sink drain hole structure, the connection section of the drain hole is an arched turning structure, whereby the edge section and the terminal section as well as the connection section together form a double-layered structure with a substantially U-shaped cross section. Accordingly, the edge section, the connection section and the terminal section together define an elastic space (in the double-layered structure). The elastic space provides an elastic tightening tolerance when the drain pipe (or the drain) is locked with the drain hole by means of a connector. In other words, the elastic space can provide a looseness-proof effect for the locking relationship between the connector and the drain pipe. Accordingly, the drainpipe can be more securely locked with the drain hole by means of the connector.

[0012] The present invention can be best understood through the following description and accompanying drawings, wherein:

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a perspective sectional view of the sink main body of the present invention, showing the drain hole of the sink main body;

[0014] FIG. 2 is a plane sectional view of the drain hole of the present invention, showing that the edge section, the connection section and the terminal section together define an elastic space and the tail end of the terminal section leans against the edge section;

[0015] FIG. 3 is a sectional view showing the assembly of the present invention, the drain pipe and the connector;

[0016] FIG. 4 is a plane sectional view of the drain hole of the present invention, showing that the terminal section is pressed against the edge section;

[0017] FIG. 5 is a plane sectional view of another embodiment of the drain hole of the present invention, showing that the edge section is fitted in an enclosure body; and

[0018] FIG. 6 is a plane sectional view of still another embodiment of the drain hole of the present invention, showing that the connection section is upward bent and the terminal section extends from the connection section in the direction of the horizontal reference axis to lean against an upper side of the edge section.
DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] Please refer to FIGS. 1 and 2. The sink drain hole structure of the present invention includes a sink main body 10 formed of a rigid wall 11 and a drain hole 20 integrally formed with the sink main body 10. The sink main body 10 has a basin 12 in communication with the drain hole 20 for containing water or other liquid. In this embodiment, the sink main body 10 (or the rigid wall 11) is made of a metal sheet (such as stainless steel) by means of pressing. The metal sheet is integrally drawn and pressed to form the drain hole 20.

[0020] Referring to FIG. 2, the sink main body 10 (or the drain hole 20) is defined with a horizontal reference axis x, a vertical reference axis y and a central area C. The drain hole 20 has an edge section 21 in the direction of the horizontal reference axis x for supporting and connecting with a drain (or a drain pipe). A connection section 22 extends from the edge section 21 toward the central area C in the direction of the vertical reference axis y. A terminal section 23 (or folding edge) extends from the connection section 22 in the direction of the horizontal reference axis x. The terminal section 23 overlaps at least a part of the edge section 21 to form a substantially double-layered structure.

[0021] As shown in the drawings, the terminal section 23 has a tail end 25 leaned against the edge section 21.

[0022] In this embodiment, the connection section 22 of the drain hole 20 is an arched turning structure, whereby the edge section 21 and the terminal section 23 as well as the connection section 22 together form a double-layered structure with a substantially U-shaped cross section. Accordingly, the edge section 21, the connection section 22 and the terminal section 23 together define an elastic space 24 (in the double-layered structure).

[0023] Please now refer to FIG. 3. The elastic space 24 provides an elastic tightening tolerance when the drain pipe 40 (or the drain) is locked with the drain hole 20 by means of a connector 45. In other words, the elastic space 24 can provide a looseness-proof effect for the locking relationship between the connector 45 and the drain pipe 40. Accordingly, the drain pipe 40 can be more securely locked with the drain hole 20 by means of the connector 45.

[0024] That is, when the drain pipe 40 (or the drain) is supported on the edge section 21 of the drain hole 20 and locked therewith by means of the connector 45, the elastic space 24 provides a move area or range for the terminal section 23 to lean against the edge section 21 under the locking/pressing force of the connector 45 so as to store energy.

[0025] Therefore, after the drain pipe 40 is locked with the drain hole 20 by means of the connector 45, the structure form of the edge section 21, the connection section 22 and the terminal section 23 makes the terminal section 23 (or the edge section 21) tend to bound downward (or upward) away in the direction of the vertical reference axis y to release the energy. Accordingly, the drain pipe 40 (or the drain) is constantly tightly locked with the drain hole 20 by means of the connector 45 with an elastic tolerance. Under such circumstance, the locking relationship can be ensured to elastically hold the drain hole 20.

[0026] Please now refer to FIG. 4. In a preferred embodiment, the terminal section 23 extends from the connection section 22 in the direction of the horizontal reference axis x to attach to a lower side of the edge section 21. That is, in this embodiment, the terminal section 23 and the edge section 21 are pressed together. In cooperation with the connection section 22, a double-layered structure is formed with the elastic space 24.

[0027] FIG. 5 shows a modified embodiment of the present invention. In this embodiment, the edge section 21 of the drain hole 20 is fitted in an enclosure body 30 with a U-shaped cross section for enclosing a part of the edge section 21 to form the elastic space 24. The enclosure body 30 is made of an elastic material, plastic material or the like.

[0028] FIG. 6 shows another modified embodiment of the present invention. In this embodiment, the connection section 22 is upward bent and the terminal section 23 extends from the connection section 22 in the direction of the horizontal reference axis x to lean against an upper side of the edge section 21. The terminal section 23 overlaps at least a part of the edge section 21 to form a substantially double-layered structure.

[0029] The tail end 25 of the terminal section 23 leans against the edge section 21, whereby the edge section 21, the connection section 22 and the terminal section 23 together form a double-layered structure defining the elastic space 24.

[0030] The sink drain hole structure of the present invention has the following advantages:

[0031] 1. The edge section 21, the arched connection section 22 and the terminal section 23 of the drain hole 20 are redesigned and different from the conventional sink drain hole in structure and use form. The conventional sink drain hole has some shortcomings that the water beam will impact and vibrate the sink to cause loosening and leakage of the connector for connecting the drain (or the drain pipe) with the drain hole and the drain (or the drain pipe) and the connector will gradually loosen due to thermal expansion/contraction and the material of the drain pipe connector assembly structure is subject to aging. The sink drain hole structure of the present invention overcomes the above problems. In this case, it is unnecessary for a worker to relock the loosened connector and drain pipe embedded in a concrete structure or implanted in a narrow space.

[0032] 2. The edge section 21, the arched connection section 22 and the terminal section 23 of the drain hole 20 together define the elastic space 24. Without increasing the thickness of the sink and the drain hole, the elastic space 24 provides an elastic tightening tolerance when the drain pipe 40 (or the drain) is locked with the drain hole 20 by means of the connector 45. This enhances the looseness-proof effect for the connector, whereby the drain pipe 40 can be more securely locked with the drain hole 20 by means of the connector 45. Also, the drain hole of the sink drain hole structure of the present invention has arched edge so that a user is protected from being cut.

[0033] The above embodiments are only used to illustrate the present invention, not intended to limit the scope thereof. Many modifications of the above embodiments can be made without departing from the spirit of the present invention.

What is claimed is:

1. A sink drain hole structure comprising a sink main body formed of a rigid wall and a drain hole integrally formed with the sink main body, the sink main body having a basin in communication with the drain hole, the drain hole being defined with a horizontal reference axis, a vertical reference axis and a central area, the drain hole having an edge section in the direction of the horizontal reference axis for supporting
and connecting with a drain, a connection section extending from the edge section in the direction of the vertical reference axis and a terminal section extending from the connection section in the direction of the horizontal reference axis, the terminal section having a tail end, the terminal section overlapping at least a part of the edge section to form a double-layered structure defining an elastic space.

2. The sink drain hole structure as claimed in claim 1, wherein the tail end leans against the edge section.

3. The sink drain hole structure as claimed in claim 1, wherein the connection section of the drain hole is an arched turning structure with a U-shaped cross section.

4. The sink drain hole structure as claimed in claim 1, wherein the connection section extends from the edge section toward the central area of the drain hole in the direction of the vertical reference axis.

5. The sink drain hole structure as claimed in claim 1, wherein the terminal section is normally forced to store energy and tends to release the energy in the direction of the vertical reference axis.

6. The sink drain hole structure as claimed in claim 4, wherein the edge section is normally forced to store energy and tends to release the energy in the direction of the vertical reference axis.

7. The sink drain hole structure as claimed in claim 1, wherein the terminal section partially attaches to a lower side of the edge section.

8. The sink drain hole structure as claimed in claim 1, wherein the terminal section partially leans against a lower side of the edge section.

9. The sink drain hole structure as claimed in claim 1, wherein the connection section is upward bent and the terminal section extends from the connection section in the direction of the horizontal reference axis to lean against the edge section, whereby the edge section, the connection section and the terminal section together define an elastic space.

10. The sink drain hole structure as claimed in claim 1, wherein a drain is locked with the drain hole by means of a connector, the edge section, the connection section and the terminal section together defining an elastic space, when the connector presses the terminal section against the edge section, the elastic space providing a move range to store energy, whereby the terminal section is normally forced to store energy and tends to release the energy.

11. The sink drain hole structure as claimed in claim 1, wherein the sink main body is made of a metal thin sheet by means of pressing and the metal sheet is integrally drawn and pressed to form the drain hole.

12. A sink drain hole structure comprising a sink main body formed of a rigid wall and a drain hole integrally formed with the sink main body, the sink main body having a basin in communication with the drain hole, the drain hole being defined with a horizontal reference axis and a vertical reference axis, the drain hole having an edge section in the direction of the horizontal reference axis for supporting and connecting with a drain (or a drain pipe), the edge section being fitted in an enclosure body with a U-shaped cross section.

13. The sink drain hole structure as claimed in claim 12, wherein the enclosure body encloses a part of the edge section.

14. The sink drain hole structure as claimed in claim 12, wherein the enclosure body is made of plastic material.

15. The sink drain hole structure as claimed in claim 12, wherein the enclosure body is made of elastic material.

16. The sink drain hole structure as claimed in claim 12, wherein the sink main body is made of a metal thin sheet by means of pressing and the metal sheet is integrally drawn and pressed to form the drain hole.

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