

Cabinet Body and Manufacturing Method Thereof, Cabinet and Electronic Equipment

Technical Field

The present invention relates to the field of cabinet machining technology, and in particular, to a cabinet body and a manufacturing method thereof, a cabinet and an electronic equipment.

Background of the Related Art

The cabinets are widely used in installing and placing various electronic components, which is the form widely used by the electronic communication equipment. For high protection ability to the equipment, a cabinet body generally adopts an integrated machine design with a fully enclosed structure.

In the related art, the cabinet frame body adopts the structure style of frame wrapping door and there must be a water chute designed in the housing, in order to ensure the waterproof stability of the equipment. A case frame adopts a single sheet metal bending process of a single chamber, which is formed by welding after bending a single board, to reduce splicing as much as possible to ensure the optimal appearance and the protective properties. The structure in the related art adopts completing the frame blanking in one board, with the four corners being fully welded, and the specific processing procedures are blanking, bending, welding and polishing.

The defect of the related art is that the corner cannot be polished after welding, and the welding beading and the melted bead splashed by welding cannot be cleared; to weld internally is a blind welding, the welding quality problems, such as, empty solder, missing solder, welding stick adhesion, etc., are easy to appear. After the dusting is completed, although the appearance is somewhat obscured, these risks will not be eliminated.

The related art for forming the cabinet body is specifically as shown in FIG. 1. The cabinet body is integrally formed, that is, the integral blanking of the cabinet body is completed in one board, then it is correspondingly bent from outside to inside according to the lines as shown in FIG. 1, all the interfaces are welded and polished after bending into the required shape of the

cabinet body, so as to form the final cabinet body.

These interfaces are distributed in the four corners of the cabinet body. It is illustrated by taking any corner of the cabinet body as an example, specifically as shown in FIG. 2 and FIG. 3. The bold black line in the figure are marked as the interfaces, that is, the welding joints. As shown in the figure, due to the size of the water chute, that is, the space in the chute is too small and the head of welding gun is unable to put therein, the interface in the water chute can only be welded from the inside of the cabinet. In this way, there will be a joint area of the external welding and the internal welding, and it is easy to form a gap at the junction of the external welding and the internal welding, and it is easy to cause the problems, such as, leakage, etc. And when it is welded from the inside, the visual observation cannot be applied to the welding, and only blind welding can be performed; the welding scar is not easy to be controlled, and it is easy to cause the leakage hole formed by missing welding between the welding joints. While, the welding beading is easy to be remained at the interface near the water chute due to inconvenient polishing, which will affect the appearance.

The welding and the polishing are the most critical procedures of the cabinet, which will affect the waterproof and anti-corrosion performance of the product in the future. Therefore, those above-mentioned problems need to be solved.

Summary of the Invention

The technical problem required to be solved by the embodiment of the present invention is to provide a cabinet body and a method of manufacturing thereof, a cabinet and an electronic equipment, to ensure that all the welding is executed in the visual state, which solves the problem that it is difficult to polish the welding dead area.

In order to solve the above technical problem, the following technical scheme is adopted:

a method for manufacturing a cabinet body comprises:

blanking for a whole body to form an expansion board of the body;

bending the expansion board of the body to form a cabinet body with four gaps on a water chute inner wall, welding and polishing all interfaces of the body formed after bending, wherein

the four gaps are located at interfaces of the body, and each gap is convenient for welding a corresponding interface in a visual state;

respectively blanking for four water chute inner wall members, to form expansion boards of the water chute inner wall members;

5 respectively bending the expansion boards of the four water chute inner wall members, enabling the four water chute inner wall members formed after bending to coincide with four gaps of the water chute inner wall, to form a complete water chute inner wall; and

10 respectively welding the four water chute inner wall members formed after bending onto the four gaps of the water chute inner wall, to form the complete water chute inner wall, and polishing welding seams.

Alternatively, the four water chute inner wall members formed after bending are all L shaped.

15 Alternatively, the four gaps are located at interfaces at four corners of the water chute inner wall, correspondingly, the four water chute inner wall members are also located at the four corners of the water chute inner wall, and the four gaps are completely consistent with four inner wall members.

Alternatively, the four water chute inner wall members are totally same.

20 A cabinet body comprises: four water chute inner wall members and a body, wherein a water chute inner wall of the body has four gaps, the four gaps are located at interfaces of the body, and each gap is convenient for welding the corresponding interface in a visual state; and the four water chute inner wall members just coincide with the four gaps, to form a complete water chute inner wall.

Alternatively, the four water chute inner wall members are all L shaped.

25 Alternatively, the body is formed by totally blanking, bending, welding and polishing on a board;

each of the four water chute inner wall members is formed by totally blanking, bending, welding and polishing on a board;

the four water chute inner wall members are completely consistent with and welded on the four gaps of the body, to form a complete cabinet body.

Alternatively, the four water chute inner wall members are totally same.

Alternatively, the four gaps are located at interfaces at four corners of the water chute inner wall, correspondingly, the four water chute inner wall members are also located at the four corners of the water chute inner wall, and the four gaps are completely consistent with four inner wall members.

A cabinet comprises a cabinet body described in any one of above claims and a cabinet door.

An electronic equipment comprises: an above-mentioned cabinet, wherein the cabinet is provided with an electronic device.

In sum, the present embodiment provides a cabinet body and a manufacturing method of the cabinet body, a cabinet and an electronic equipment. Through improving the machining processing route of the cabinet body, the steel plate is blanked in accordance with the designed shape, initially bent, welded and polished, and then finally bent, welded and polished. In this way, it can guarantee that the welding is performed in the visual state, and it is completely polished, and then the split small components are welded on the body, to complete manufacturing the cabinet body, which provides a new part splitting method and machining processing route, solves the problems of water leaking and corrosion existing in such frame body in the industry due to the structure, and makes a more perfect appearance.

To manufacture the cabinet body by adopting the method described in the embodiment of the present invention, compared with the related art, it can ensure that all the welding is executed in the visual state, solve the problem that it is difficult to polish the welding dead area and eliminate the hidden danger of water leakage and corrosion of cabinet body.

Brief Description of Drawings

FIG. 1 is a schematic diagram of an expansion structure of a cabinet body in the related art;

FIG. 2 and FIG. 3 are schematic diagrams of an interface of any corner of a cabinet body
5 in the related art;

FIG. 4 is a schematic diagram of a cabinet body of an embodiment of the present invention;

FIG. 5 is an exploded drawing of parts of a cabinet body of an embodiment of the present invention;

FIG. 6 is a flow chart of a manufacturing method of a cabinet of an embodiment of the
10 present invention;

FIG. 7 is an expansion drawing of a body and small components of an embodiment of the present invention;

FIG. 8 is a schematic diagram of initially bending, welding and polishing a body of an
15 embodiment of the present invention;

FIG. 9 is a schematic diagram of last bending of the body of an embodiment of the present invention;

FIG. 10 is a schematic diagram of bending, welding and polishing a corner of four corners of a frame of an embodiment of the present invention;

FIG. 11 is a schematic diagram of welding and polishing split small components of an
20 embodiment of the present invention;

FIG. 12 is a completed schematic diagram of finally welding and polishing a cabinet body of an embodiment of the present invention;

FIG. 13 is a schematic diagram of a welding sequence of a cabinet body of an embodiment
25 of the present invention.

Preferred Embodiments of the Present Invention

The embodiment of the present invention provides a manufacturing method of the cabinet body. Through improving the machining processing route of the cabinet body, the steel plate is blanked in accordance with the designed shape, initially bent, welded and polished, and then finally bent, welded and polished. In this way, it can guarantee that the welding is performed in the visual state, and it is completely polished, and then the split small components are welded on the body, to complete manufacturing the cabinet body, which provides a new part splitting method and machining processing route, solves the problems of water leaking and corrosion existing in such frame body in the industry and makes a more perfect appearance.

The embodiments of the present invention are described in detail with reference to the accompanying drawings hereinafter. It should be illustrated that, in the case of not conflicting, the embodiments in the present application and features in these embodiments can be combined with each other.

The embodiment of the present invention provides a method for manufacturing the cabinet body, including:

- blanking to form a specified board and specified component of the body;
- welding a seam of a specified corner after initially bending the specified board;
- after bending again to form a box-shaped body with single-sided opening, welding a seam of an opening surface;
- welding the specified component at a specified position of the opening surface;
- welding seams of every two adjacent surfaces of the body to form the cabinet body with specified structure.

Alternatively, the above method further has the following characteristics: welding the specified component at a specified position of the opening surface includes:

- respectively welding a specified component on a specified position at four corners of the opening surface.

In order to solve the above problems, the embodiment of the present invention further provides a cabinet body. The cabinet body includes a body and specified components,

the body is a box-shaped member with a single-sided opening, formed by bending a

specified board formed through blanking;

the specified component is welded to the specified position of the opening surface of the body.

Alternatively, the above cabinet body further has the following characteristics:

- 5 the body is a box-shaped member with a single-sided opening, formed by bending a specified board formed through blanking, which is formed in the following ways: welding a seam of a specified corner after initially bending the specified board; after bending again to form a box-shaped body with a single-sided opening, welding a seam of an opening surface.

10 In order to solve the above problems, the embodiment of the present invention further provides a cabinet. The cabinet includes the above-mentioned cabinet body and a cabinet door.

In order to solve the above problems, the embodiment of the present invention further provides an electronic equipment. The electronic equipment includes the above-mentioned cabinet, and an electronic device is set in the cabinet.

15 FIG. 4 and FIG. 5 are schematic diagrams of a cabinet of the embodiment of the present invention. The cabinet of the present embodiment contains four same water chute inner wall members 102 and a body 101. For the body 101, compared to the full cabinet body of the related art, there are the gaps at the interfaces (that is, the welding beam in the future) on the water chute inner wall, and four water chute inner wall members 102 are just consistent with the four
20 gaps, to form the complete water chute inner wall. The four gaps are convenient for welding the interfaces, which will be shielded by the inner wall, in the visual state.

Alternatively, the four same water chute inner wall members 102 are all L shaped.

The body 101 is in a box shape with a single-sided opening; the body 101 is formed by totally blanking, bending, welding and polishing on a board; each of the four same water chute
25 inner wall members 102 is formed by totally blanking, bending, welding and polishing on a board; the four same water chute inner wall members 102 are completely and consistently welded in the four gaps of the body 101, to form a complete cabinet body 10.

In the related art, the water chute inner wall is in integrity; in the embodiment of the

present invention, the four water chute inner wall members 102 are split from the cabinet body 10, then all welding beams of the cabinet body 10 can be with spaces which allows to put welding and polishing tools from outside; all the weldings are completed in the visual state and they are completely polished.

5 Alternatively, the four gaps are located at interfaces at four corners of the water chute inner wall, and correspondingly, the four water chute inner wall members 102 are also located at the four corners of the water chute inner wall, and the four gaps are completely consistent with four inner wall members 102, as shown in FIG. 5.

10 Of course, the four gaps can also be in other places, and the positions of gaps depend on the interface positions of the body. As long as the position is not easy for welding in the visual state, it can be equipped with a gap. After the interfaces are welded in the visual state, then the corresponding gaps are filled with the consistent water chute inner wall members to form the complete cabinet.

15 In the case of not splitting the small components in the related art, multiple welding seams are shielded by the surrounding walls, and the welding and polishing tools cannot be placed. It is caused that part of the welding beams cannot be welded from outside and need to be welded from inside of the cabinet. While welding from the inside, the welder cannot stick his/her head inside, on one hand, it causes the phenomena, such as blind welding, bad welding joint quality, discontinuous missing welding, etc.; and on the other hand, it causes that the seam of the
20 external welding and the internal welding exists, which is easy to cause the gap of the connecting parts. In the process of cabinet in the present embodiment, all welding beams can be welded from outside after splitting the small components, and also the welding and polishing tools can be put outside, and the welder can weld and polish under the condition of seeing all welding beams.

25 FIG. 6 is a flow chart of a manufacturing method of a cabinet of an embodiment of the present invention; as shown in FIG. 6, the method of the present embodiment includes the following steps:

in S11, it is to blank for a whole body to form an expansion board of the body;

in S12, the expansion board of the body is bent to form the cabinet body with four gaps on

the water chute inner wall, and all interfaces of the body formed after bending are welded and polished;

for the body formed after bending, compared to the full cabinet body of the related art, there are four gaps on the water chute inner wall, and the gaps are located at the interfaces (also called the welding beams) of the body, and the gaps are convenient for welding the interfaces in the visual state.

Alternatively, the four gaps are located at interfaces in four corners of the water chute inner wall, and correspondingly, the four water chute inner wall members 102 are also located in the four corners of the water chute inner wall, and the four gaps are completely consistent with four inner wall members, as shown in FIG. 5.

Of course, the four gaps can also be in other places, and the positions of gaps depend on the interface positions of the body. As long as the position is not easy for welding in the visual state, it can be equipped with a gap. After the interfaces are welded in the visual state, then the corresponding gaps are filled with the consistent water chute inner wall members to form the complete cabinet.

In S13, it is respectively to blank for four water chute inner wall members, to form expansion boards of the water chute inner wall members;

in S14, the expansion boards of the four water chute inner wall members are respectively bent, to enable the four water chute inner wall members formed after bending to just coincide with the four gaps of the water chute inner wall, to form a complete water chute inner wall;

alternatively, the water chute inner wall members formed after bending are L shaped;

in S15, the four water chute inner wall members formed after bending are respectively welded onto the four gaps of the water chute inner wall, to form the complete water chute inner wall, polishing welding seams.

The execution sequence of the above steps S11-12 and S13-S14 can be first to execute S11-12 and then execute S13-S14, and it can also be first to execute S13-S14 and then execute S11-12, and they also can be executed at the same time.

The method of manufacturing the cabinet body in the embodiment is introduced in detail hereinafter. When manufacturing, it is included to consider the machining processing route when designing the cabinet body, and the cabinet body is split into body and four small components, as shown in FIG. 5.

5 According to the exploded drawing, the body and the small components are blanked and punched when manufacturing, as shown in FIG. 7. The small components can be directly bent to complete the forming process.

The surfaces, forming the four peripheral faces, of the body are initially bent, as shown in FIG. 8, and the four corners formed after bending are welded, and polished after the welding.
10 The welding beams are exposed, which is easy to achieve the polishing operations; if the location is welded and polished after all the bending is completed, the space is small, which is difficult to achieve the full operation.

Then the body is completely bent, and FIG. 9 is the schematic diagram of a final bending of the body. Next, the welding and polishing of the body are executed, and the welding forms of
15 the four corners are same, and one of the corners is explained, as shown in FIG. 10. It can be seen from the figure that all the welding lines are outside the body, the welding seams can be visually welded item by item, and the polishing operation is performed after the welding is completed.

And then the split four small components are welded onto the body, as shown in FIG. 11.
20 The cabinet body is welded and polished finally, shown in FIG. 12, to complete manufacturing the whole cabinet body.

The entire welding sequence is as shown in FIG. 13, the position marked with a is first welded, then the position marked with b is welded, and then the welding seam with the letter c is welded, and finally the vertical welding seam with d is welded.

25 The embodiment of the present invention further provides an electronic equipment. The electronic equipment includes the above-mentioned cabinet, and an electronic device is set in the cabinet.

The above description is only the preferred embodiments of the present invention. Certainly, the present invention can have a variety of other embodiments. Those skilled in the art can make the corresponding modifications and variations according to the present invention without departing from the spirit and essence of the present invention. And all of these
5 modifications or the variations should be embodied in the protection scope of the appended claims of the present invention.

Industrial Applicability

The above technical scheme can ensure that all the welding is executed in the visual state,
10 which solves the problem that it is difficult to polish the welding dead area, and eliminates the hidden danger of water leakage and corrosion of cabinet body. Therefore, the present invention has very strong industrial practicability.

What we claim is:

1. A method for manufacturing a cabinet body, comprising:

blanking for a whole body to form an expansion board of the body;

bending the expansion board of the body to form a cabinet body with four gaps on a water chute inner wall, welding and polishing all interfaces of the body formed after bending, wherein the four gaps are located at interfaces of the body, and each gap is convenient for welding a corresponding interface in a visual state;

respectively blanking for four water chute inner wall members, to form expansion boards of the water chute inner wall members;

respectively bending the expansion boards of the four water chute inner wall members, enabling the four water chute inner wall members formed after bending to just coincide with four gaps of the water chute inner wall, to form a complete water chute inner wall; and

respectively welding the four water chute inner wall members formed after bending onto four gaps of the water chute inner wall, to form the complete water chute inner wall, and polishing welding seams.

2. The method according to claim 1, wherein the four water chute inner wall members obtained after bending are all L shaped.

3. The method according to claim 1, wherein the four gaps are located at interfaces at four corners of the water chute inner wall, and correspondingly, the four water chute inner wall members are also located in positions of the four corners of the water chute inner wall, and the four gaps completely coincide with four inner wall members.

4. The method according to any one of claims 1 to 3, wherein the four water chute inner wall members are totally same.

5. A cabinet body, comprising: four water chute inner wall members and a body, wherein a water chute inner wall of the body has four gaps, and the four gaps are located at interfaces of the body, and each gap is convenient for welding a corresponding interface in a visual state; the four water chute inner wall members just coincide with the four gaps, to form a complete water chute inner wall.

6. The cabinet body according to claim 5, wherein the four water chute inner wall members are all L shaped.

7. The cabinet body according to claim 5 or 6, wherein,

the body is formed by totally blanking, bending, welding and polishing on a board;

5 each of the four water chute inner wall members is formed by totally blanking, bending, welding and polishing on a board;

the four water chute inner wall members are completely and consistently welded on four gaps of the body, to form a complete cabinet body.

8. The cabinet body according to claim 5 or 6, wherein the four water chute inner wall
10 members are totally same.

9. The cabinet body according to claim 8, wherein the four gaps are located at interfaces at four corners of the water chute inner wall, and correspondingly, the four water chute inner wall members are also located in positions of the four corners of the water chute inner wall, and the four gaps completely coincide with four inner wall members.

15 10. A cabinet, comprising a cabinet body described in any one of claims 5 to 9 and a cabinet door.

11. An electronic equipment, comprising: a cabinet according to claim 10, wherein an electronic device is set in the cabinet.