Each Z-shaped steel sheet pile 1 includes a web portion 16 that extends obliquely, the first flange portion 3 provided at one end of the web portion 16, the first joint portion 5 formed at the end of the first flange portion 3, the second flange portion 7 provided at the other end of the web portion 16, and the second joint portion 9 formed at the end of the second flange portion 7, and is approximately Z-shaped.

[0020]

<Joint Portions>

The first joint portion 5 and the second joint portion 9 have the same basic shape, which will now be described with reference to Figs. 2 and 3.

Each of the first joint portion 5 and the second joint portion 9 includes a joint main portion 17 that is formed continuously from the end of the corresponding flange portion, the main claw 13, and the sub-claw 15. The main claw 13 and the sub-claw 15 are formed so as to extend separately from each other from the joint main portion 17 and oppose each other.

The main claw 13 is thin at the proximal end thereof and includes the protruding portion 11 at the distal end thereof. In the present embodiment, the protruding portion 11 of the main claw 13 has an approximately rectangular shape, and the main claw 13 is T-shaped. ~~The shape of the~~

~~protruding portion 11 is not limited to a rectangular shape, and may instead be a circular shape or an elliptical shape.~~

[0021]

A bending angle of a connecting portion 19 between the horizontal and vertical portions of the T-shaped main claw 13 at the outer side is more acute than that at the inner side. Since the bending angle at the inner side is obtuse, a joint inner region 21 surrounded by the main claw 13 and the sub-claw 15 of each joint portion has a smooth arc shape. Since the joint inner region 21 has a smooth arc shape, when the joint portions are connected together, the degree of freedom of rotation of the entire body of each Z-shaped steel sheet pile 1 is increased.

[0022]

The sub-claw 15 is thick at the proximal end thereof, and the thickness decreases toward the distal end thereof. The sub-claw 15 has a smooth curved shape.

The joint inner region 21 surrounded by the main claw 13 and the sub-claw 15 receives the main claw 13 of the joint portion to be connected thereto. Since each main claw 13 has the protruding portion 11, the inserted main claw 13 is prevented from being pulled out through the gap between the other main claw 13 and the sub-claw 15.

[0023]

The first joint portion 5 and the second joint portion

CLAIMS

[Claim 1]

A Z-shaped steel sheet pile comprising a first joint portion formed at an end of one flange portion included in the Z-shaped steel sheet pile and a second joint portion formed at an end of the other flange portion included in the Z-shaped steel sheet pile, a steel sheet pile wall being formed by arranging a plurality of the Z-shaped steel sheet piles next to each other and connecting the Z-shaped steel sheet piles together by engaging the first and second joint portions of the Z-shaped steel sheet piles with each other,

wherein the first joint portion is a double-claw-type joint portion including a main claw and a sub-claw, the main claw including a protruding portion at an end thereof and being arranged on an inner side of the steel sheet pile, the sub-claw being formed so as to oppose the main claw and being arranged on an outer side of the steel sheet pile, and

wherein the second joint portion is a double-claw-type joint portion including a main claw and a sub-claw, the main claw including a protruding portion at an end thereof and being arranged on the outer side of the steel sheet pile, the sub-claw being formed so as to oppose the main claw and being arranged on the inner side of the steel sheet pile,

wherein the main claw is thin at the proximal end thereof and includes the protruding portion at the distal end thereof and the protruding portion of the main claw has an approximately rectangular shape and the main claw is T-shaped, and

wherein a bending angle of a connecting portion between the horizontal and vertical portions of the T-shaped

main claw at the outer side is more acute than that at the inner side, and the bending angle at the inner side is obtuse and a joint inner region surrounded by the main claw and the sub-claw of each joint portion has a smooth arc shape.

[Claim 2]

The Z-shaped steel sheet pile according to Claim 1,

wherein the first joint portion is provided at the end of the corresponding flange portion with a first curved portion interposed therebetween, the first curved portion being bent toward the inner side of the steel sheet pile and being provided so that an outer surface of the sub-claw does not project toward the outer side of the steel sheet pile from the outer surface of the flange portion, and

wherein the second joint portion is provided at the end of the corresponding flange portion with a second curved portion interposed therebetween, the second curved portion being bent toward the inner side of the steel sheet pile and being provided so that an outer surface of the main claw is shifted toward the inner side of the steel sheet pile by a distance greater than or equal to a thickness of the sub-claw.

[Claim 3]

A steel sheet pile wall formed by connecting a plurality of the Z-shaped steel sheet piles according to Claim 1 or 2.