What is claimed is:

1. A steel sheet pile wall comprising:

a steel sheet pile comprising claw-like Larssen-type joints formed on both ends thereof, wherein

a recessed groove in which a water cut-off material is filled is formed on an inner side of a claw bottom portion out of the joints connected to each other, a water cut-off material is charged into a recessed groove of one of the joints and a water-swellable rubber material is attached to inside of the recessed groove of the other joint.

2. The steel sheet pile wall according to claim 1, wherein

the steel sheet pile is a U-shaped steel sheet pile that is formed of a web and flanges, formed in a U shape as viewed in a cross sectional view, and formed with the Larssen-type joints on distal ends of the flanges,

an inclination angle (θ) of the flanges with respect to a normal line of a web surface ranges from 4° to 10°, and

an orthogonal-direction joint space allowance (dy) formed on the inner side of the claw bottom portion in connecting the joints with each other is 7.0 mm or less and

a claw rotation angle (α) defined by engaging surfaces of the claws adjacent to each other is 30° or more.

3. The steel sheet pile wall according to claim 2, wherein an opening width formed as a space between the distal end of the claw and the corresponding flange in connecting the joints with each other is 14.4 mm or less.

4. The steel sheet pile wall according to claim 2, wherein

an upper limit value (Wmax) of the opening width formed as a space between the distal end of the claw and the corresponding flange in connecting the joints with each other is determined by calculating the following expression (1) based on a relationship with the inclination angle (θ):

$$Wmax\ (mm) = -\theta/12 + 15.2 \quad (1).$$

5. A method for manufacturing a steel sheet pile wall, the method comprising:

forming the recessed groove in the steel sheet pile according to any one of claims 1 to 4 with a rolling mill.

6. A steel sheet pile wall ~~comprising~~:

~~the steel sheet pile~~ according to any one of claim~~s~~ 1

to 4, wherein

a water cut-off material is charged into the recessed grooves after the steel sheet pile is driven into ground.

7. ~~A~~ The steel sheet pile wall ~~comprising~~:

~~the steel sheet pile~~ according to any one of claim~~s~~ 1 to 4, wherein

a water-swellable rubber material is attached to inside of the recessed grooves before the steel sheet pile is driven into ground.

~~8. A steel sheet pile wall comprising:~~

~~the steel sheet pile according to any one of claims 1 to 4, wherein~~

~~out of the joints connected to each other, a water cut-off material is charged into a recessed groove of one of the joints and a water-swellable rubber material is attached to inside of a recessed groove of the other joint.~~