CLAIMS

1. A pile-driving method that utilizes resonant vibrations depended on a length of a pile to drive the pile into the ground, the method comprising:

applying a load to a pile-head of the pile, the load being equivalent to 0.26 times or more and 3 times or less the mass of the pile; and

vibrating the pile by using resonant vibrations corresponding to a resonance mode in which the pile-head is an antinode, wherein:

the pile-head of the pile is gripped by a pile clamp;

the load is applied to the pile-head gripped by the pile clamp;

the pile clamp includes a main unit, and gripping parts that are provided to the main unit and arranged so as to surround the pile-head of the pile;

a weight is provided inside the main unit; and

the sum of the masses of the weight and the pile clamp is 0.26 times or more and 3 times or less the mass of the pile.

2. The pile-driving method according to claim 1, wherein:

the resonance mode is a one-half wavelength resonance mode and a one-wavelength resonance mode;

the one-half wavelength resonance mode or the one-wavelength resonance mode is selected based on the length of the pile; and

the pile is vibrated by using resonant vibrations corresponding to the resonance mode that was selected.

3. A vibration control method that controls vibrations of a pile when the pile is driven into the ground using resonant vibrations, comprising:

adjusting a load applied to a pile-head of the pile within a range of 0.26 times or more and 3 times or less the mass of the pile, based on a driving depth of the pile or a hardness of the ground; and

vibrating the pile by using resonant vibrations corresponding to a resonance mode in which the pile-head is an antinode, wherein:

the pile-head of the pile is gripped by a pile clamp;

the load is applied to the pile-head gripped by the pile clamp;

the pile clamp includes a main unit, and gripping parts that are provided to the main unit and arranged so as to surround the pile-head of the pile;

a weight is provided inside the main unit; and

the sum of the masses of the weight and the pile clamp is 0.26 times or more and 3 times or less the mass of the pile.

4. The vibration control method according to claim 3, wherein

the resonance mode is a one-half wavelength resonance mode and a one-wavelength resonance mode;

the one-half wavelength resonance mode or the one-wavelength resonance mode is selected based on the length of the pile; and

the pile is vibrated by using resonant vibrations corresponding to the resonance mode that was selected.