WHAT IS CLAIMED IS:

1. An ultrasonic cleaning apparatus, comprising:

a casing having an inner bottom surface to which ultrasonic transducer is located on and a bottom surface to which the ultrasonic vibration is applied by an ultrasonic transducer;

a liquid film forming means configured to form a liquid film on the casing bottom surface through flowing a cleaning liquid along the casing bottom surface by ejecting the cleaning liquid toward the bottom surface from one end side of the casing bottom surface through the flow-speed acceleration part accelerating the cleaning liquid from the cleaning liquid supply part attached to one lateral face of the casing; and

a cleaning liquid discharge part that is provided at another end side of the casing bottom surface and configured to discharge the cleaning liquid flowing on the casing bottom surface toward an object to be cleaned located underneath of the casing bottom surface.

2. The ultrasonic cleaning apparatus according to claim 1, wherein the bottom surface is tilted by a prescribed angle with respect to a horizontal plane so that the one end side is positioned at an upper side than the other end side.

3. The ultrasonic cleaning apparatus according to claim 2, wherein the bottom surface is tilted within a range of 1° to 45° with respect to the horizontal plane.

4. The ultrasonic cleaning apparatus according to claim 1, wherein:

the liquid film forming means comprises a cleaning liquid supply part configured to supply the cleaning liquid, and a cleaning liquid storage tank configured to store the cleaning liquid inside thereof; and

the cleaning liquid storage tank comprises an overflow rectifier configured to rectify the cleaning liquid by overflowing the cleaning liquid.

5. The ultrasonic cleaning apparatus according to claim 4, wherein notches are provided at a prescribed interval in an upper end of the overflow rectifier in a longitudinal direction.

6. The ultrasonic cleaning apparatus according to claim 1, wherein:

the liquid film forming means includes a flow-speed acceleration part configured to accelerate flow speed of the cleaning liquid; and

the flow-speed acceleration part comprises a supply flow path formed with a overflow rectifier and an outer lateral

face of the casing and comprises a cleaning liquid introduction path formed with the bottom surface of the casing and a cleaning liquid introduction member, the flow-speed acceleration part forming a liquid film on the casing bottom surface by flowing the cleaning liquid along the casing bottom surface from the cleaning liquid introduction path.

7. The ultrasonic cleaning apparatus according to claim 6, wherein:

an ejection port is provided between the casing bottom surface and the cleaning liquid introduction member; and

the flow-speed acceleration part is configured to accelerate the flow speed of the cleaning liquid ejected from the ejection port.

8. The ultrasonic cleaning apparatus according to claim 1, wherein:

the cleaning liquid supply part is provided on one lateral face of the casing; and

the cleaning liquid discharge part is provided in a line form along an end part where another lateral face of the casing opposing to the one lateral face of the casing intersects with

the other end side of the casing bottom surface.

9. The ultrasonic cleaning apparatus according to claim 1, comprising a conveyor device configured to convey the object to be cleaned, wherein

the cleaning liquid discharge part is disposed on a conveying path of the conveyor device.

10. The ultrasonic cleaning apparatus according to claim 1, comprising a vibration cut-off body provided to a lateral face of the casing to cut off ultrasonic vibration.

11. The ultrasonic cleaning apparatus according to claim 1, comprising a cleaning liquid adjustment plate that is provided between the casing bottom surface and the object to be cleaned to adjust a discharge amount of the cleaning liquid for the object to be cleaned.

12. An ultrasonic cleaning system, comprising an ultrasonic cleaning apparatus and a control device configured to control the ultrasonic cleaning apparatus, wherein:

the ultrasonic cleaning apparatus comprises

a casing having an inner bottom surface to which ultrasonic transducer is located on and a bottom surface to which the ultrasonic vibration is applied by an ultrasonic generation device via an ultrasonic transducer, a liquid film forming means comprising a cleaning liquid supply part configured to supply a cleaning liquid, the liquid film forming means forming a liquid film on the casing bottom surface through flowing the cleaning liquid along the casing bottom surface by ejecting the cleaning liquid toward the bottom surface from one end side of the casing bottom surface through the flow-speed acceleration part accelerating the cleaning liquid from the cleaning liquid supply part attached to one lateral face of the casing, and a cleaning liquid discharge part that is provided at another end side of the casing bottom surface and discharges the cleaning liquid flowing on the casing bottom surface toward an object to be cleaned located underneath of the casing bottom surface; and

the control device outputs a cleaning liquid supply signal to a cleaning liquid supply open/close means configured to supply the cleaning liquid to the cleaning liquid supply part when starting cleaning to supply the cleaning liquid to the cleaning liquid supply part, outputs a generation start signal to the ultrasonic generation device after a prescribed time has passed to drive the ultrasonic generation device,

outputs a generation stop signal to the ultrasonic generation device when ending the cleaning to stop drive of the ultrasonic generation device, and outputs a cleaning liquid

supply stop signal to the cleaning liquid supply open/close means after a prescribed time has passed to stop supply of the cleaning liquid to the cleaning liquid supply part for controlling supply of the cleaning liquid for the casing bottom surface while driving the ultrasonic generation device.

13. The ultrasonic cleaning system according to claim 12, comprising a conveyor means configured to convey the object to be cleaned, and a detection sensor configured to detect existence of the object to be cleaned on the conveyor means, wherein

the control device

checks existence of the object to be cleaned on the conveyor means by the detection sensor, outputs the cleaning liquid supply signal to the cleaning liquid supply open/close means configured to supply the cleaning liquid to the cleaning liquid supply part when starting cleaning to supply the cleaning liquid to the cleaning liquid supply part, outputs a generation start signal to the ultrasonic generation device after a prescribed time has passed to drive the ultrasonic generation device,

checks by the detection sensor when ending the cleaning

that the object to be cleaned that has undergone cleaning treatment on the conveyor means has passed through, outputs a generation stop signal to the ultrasonic generation device to stop drive of the ultrasonic generation device, and outputs a cleaning liquid supply stop signal to the cleaning liquid supply open/close means after a prescribed time has passed to stop supply of the cleaning liquid to the cleaning liquid supply part.