CLAIMS

1. A cleaning device to wipe a surface to be cleaned with a cleaning sheet which is attached as covering a cleaning surface being a lower face of a base body, comprising:

a cleaning device body which includes a cleaning head and a base body attached as covering a lower face of the cleaning head; and

a handle portion which is attached to a face at the opposite side to the lower face of the cleaning head, wherein

the lower face of the base body includes a wave-like corrugated surface portion of which cross-section in a direction perpendicular to a predetermined direction along which cleaning is performed with the cleaning device body in a planar view is wave-shaped as having a ridge portion and a valley portion arranged alternately and continuously;

the valley portion of the wave-like corrugated surface portion includes an oblique valley portion of which an end part is opened to a side portion of the base body facing to the predetermined direction as being extended obliquely against the predetermined direction;

the wave-like corrugated surface portion is arranged as a part of a corrugated surface extended in a watering manner over an entire surface of the base body; and

the corrugated surface extended in a watering manner is a corrugated surface extended over the entire surface of the base body as being circle-shaped or rhomboid-shaped.

2. The cleaning device according to claim 1, wherein the ridge portion of the wave-like corrugated surface portion includes a plurality of projection ribs projecting from a crest portion of the ridge portion at intervals in an extending direction of the crest portion at least at a section along the oblique valley portion of the valley portion.

3. The cleaning device according to claim 2, wherein the projection ribs are line-shaped rib pieces arranged in a width direction of the ridge portion.

4. The cleaning device according to claim 3, wherein the line-shaped rib pieces are arranged obliquely against the predetermined direction.

5. The cleaning device according to any one of claims 1 to 4, wherein the cleaning device body has a rectangular plane shape and the side portion of the base body facing to the predetermined direction is a long side portion of the rectangular plane shape.

6. The cleaning device according to claim 5, wherein

the lower face of the base body includes an auxiliary wave-like corrugated surface portion of which cross-section in the predetermined direction is wave-shaped as having a ridge portion and a valley portion arranged alternately and continuously; and

the valley portion of the auxiliary wave-like corrugated surface portion includes an auxiliary oblique valley portion of which an end part is opened to a short side portion of the rectangular plane shape of the base body as being extended obliquely against the short side portion.

7. The cleaning device according to claim 6, wherein the ridge portion of the auxiliary wave-like corrugated surface portion includes a plurality of projection ribs projecting from a crest portion of the ridge portion at intervals in an extending direction of the crest portion at least at a section along the auxiliary oblique valley portion of the valley portion.

8. The cleaning device according any one of claims 1 to 7, wherein

a cushion member is attached over approximately entire area of the lower face of the cleaning head as being interposed between the lower face of the cleaning head and the base body; and

the lower face of the base body covered with the cleaning sheet is to be a flat surface while the cushion member is crushed with pressing force to the cleaning device body due to the handle portion from a state that the lower face of the base body projects to be a curved shape as pushing out the base body with the cushion member.

9. The cleaning device according to claim 1, wherein

the handle portion is a handle;

the handle is formed by joining a plurality of cylindrical pipes with a pipe joint structure for integrally joining a pair of the cylindrical pipes in an axial direction;

the pipe joint structure is structured as a male-side end portion of one cylindrical

pipe is inserted to a female-side end portion of the other cylindrical pipe, an engaging projection is engaged from the outside after a male-side projection insertion hole and a female-side projection insertion hole are matched, and a sleeve-like member is attached as covering a joint line portion from the outside between the male-side end portion and the female-side end portion;

the female-side end portion includes a positioning guide rib which inwardly projects from an inner circumferential surface of the female-side end portion at a section being apart from the female-side projection insertion hole in a circumferential direction;

the male-side end portion includes a guide groove extended from a top edge part of the male-side end portion in an axial direction at a section being apart from the male-side projection insertion hole in the circumferential direction as corresponding to the positioning guide rib; and

the male-side end portion is inserted to the female-side end portion until the male-side projection insertion hole is matched to the female-side projection insertion hole while the positioning guide rib of the female-side end portion is guided as being engaged with the guide groove of the male-side end portion.

10. The cleaning device according to claim 1, wherein

the handle portion is a handle;

the handle is formed by joining a plurality of cylindrical pipes with a pipe joint structure for integrally joining a pair of the cylindrical pipes in an axial direction;

the pipe joint structure is structured as a male-side end portion of one cylindrical pipe is inserted to a female-side end portion of the other cylindrical pipe, an engaging projection is engaged from the outside after a male-side projection insertion hole and a female-side projection insertion hole are matched, and a sleeve-like member is attached as covering a joint line portion between the male-side end portion and the female-side end portion;

an abutment rib which abuts to an end surface of the female-side end portion from a back side is arranged at the sleeve-like member continuously or discontinuously in a circumferential direction as inwardly projecting from an inner circumferential surface of a section covering the joint line portion;

an insertion guide slope portion extended as being sloped outwardly in the circumferential direction toward a top end side of the sleeve-like member is arranged at the abutment rib continuously or discontinuously in the circumferential direction; and

the male-side end portion of the one cylindrical pipe is inserted to the female-side end portion as being guided by the insertion guide slope portion in a state that the sleeve-like member is attached to the female-side end portion of the other cylindrical pipe while the end surface is abutted to an abutment surface of the abutment rib.

11. The cleaning device according to claim 1, wherein

the handle portion is a handle;

an end cap is attached to an upper end part of the handle;

the end cap attached to the upper end part of the handle through an attachment hole is made of elastic material and a cover end surface of the end cap arranged to cover an end surface portion of the handle is formed as an oblique surface against a perpendicular surface to a center axis direction of the handle, so that a taper-shaped top edge section of the end cap forms a cushion portion capable of being elastically deformed inwardly and outwardly in a radial direction as having the center axis direction of the handle as the center.

12. The cleaning device according to claim 1, wherein

the handle portion is a handle;

a joint structure of a cleaning head is provided to enable the handle to perform a 360-degree rotation in a circumferential direction about a joint portion in a state that the handle is arranged approximately in parallel to the cleaning head;

the joint structure of the cleaning head forms the joint portion capable of being rotated in an up-down direction and the circumferential direction by joining a bifurcated head-side yoke portion arranged as projecting from an upper face of the cleaning head and a bifurcated handle-side yoke portion arranged at a lower end part of the handle via a joint member which includes a first rotational axial center portion and a second rotational axial center portion of which center axes are orthogonal;

mutually-distant opposed surfaces of a pair of yoke projection portions structuring the head-side yoke portion respectively have a symmetrically mountain-shaped outer circumferential portion which includes slope portions at both sides of a crest portion;

a pair of yoke pieces structuring the handle-side yoke portion has lateral width being approximately the same as space width between the opposed surfaces of the pair of yoke projection portions;

an edge portion of either yoke piece is capable of being abutted to an outer circumferential portion of the opposed surface of either yoke projection portion in a state that the handle is arranged approximately in parallel to the cleaning head; and

the edge portion of either yoke piece is arranged to be movable as running over or sliding down along the outer circumferential portion of the opposed surface of either yoke projection portion in accordance with rotation of the handle in the circumferential direction in a state of being arranged approximately in parallel to the cleaning head.

13. The cleaning device according to claim 1, wherein

a cleaning sheet attachment which attaches a cleaning sheet to be replaceable in a detachably attachable manner is arranged at an upper face portion of the cleaning head and edge parts of the cleaning sheet which is wound as covering a bottom surface portion of the cleaning head are attached to the cleaning sheet attachment so as to maintain a state that the cleaning sheet is attached to the cleaning head;

the cleaning sheet attachment is structured by forming a holding slit and an opening slit at an attaching member;

the holding slit is formed into a saw-tooth shape or a waveform shape as being extended in a direction at a right angle or approximately at a right angle against a direction of tension force acting on the cleaning sheet;

the opening slit includes a two-line slit having two lines extended at one side as being continued to the holding slit at a center section of the holding slit and an oblique slit extended at the other side obliquely against an extending direction of the holding slit as sandwiching the holding slit; and

the oblique slit includes a base end portion being adjacent to the holding slit and a widening portion at a top end side from the base end portion having slit width which is wider than that of the base end portion.

CLAIMS

1. A cleaning device to wipe a surface to be cleaned with a cleaning sheet which is attached as covering a cleaning surface being a lower face of a base body, comprising:

a cleaning device body which includes a cleaning head and a base body attached as covering a lower face of the cleaning head; and

a handle portion which is attached to a face at the opposite side to the lower face of the cleaning head, wherein

the lower face of the base body includes a wave-like corrugated surface portion of which cross-section in a direction perpendicular to a predetermined direction along which cleaning is performed with the cleaning device body in a planar view is wave-shaped as having a ridge portion and a valley portion arranged alternately and continuously;

the valley portion of the wave-like corrugated surface portion includes an oblique valley portion of which an end part is opened to a side portion of the base body facing to the predetermined direction as being extended obliquely against the predetermined direction;

the wave-like corrugated surface portion being part of a corrugated surface extending in a ripple-like manner over the base body; and wherein

the corrugated surface has corrugations which are circle-shaped or rhomboid-shaped in appearance.

2. The cleaning device according to claim 1, wherein the ridge portion of the wave-like corrugated surface portion includes a plurality of projection ribs projecting from a crest portion of the ridge portion at intervals in an extending direction of the crest portion at least at a section along the oblique valley portion of the valley portion.

3. The cleaning device according to claim 2, wherein the projection ribs are line-shaped rib pieces arranged in a width direction of the ridge portion.

4. The cleaning device according to claim 3, wherein the line-shaped rib pieces are arranged obliquely against the predetermined direction.

5. The cleaning device according to anyone of claims 1 to 4, wherein the cleaning device body has a rectangular plane shape and the side portion of the base body facing to the predetermined direction is a long side portion of the rectangular plane shape.

6. The cleaning device according to claim 5, wherein

the lower face of the base body includes an auxiliary wave-like corrugated surface portion of which cross-section in the predetermined direction is wave-shaped as having a ridge portion and a valley portion arranged alternately and continuously; and

the valley portion of the auxiliary wave-like corrugated surface portion includes an auxiliary oblique valley portion of which an end part is opened to a short side position of the rectangular plane shape of the base body as being extended obliquely against the short side portion.

7. The cleaning device according to claim 6, wherein the ridge portion of the auxiliary wave-like corrugated surface portion includes a plurality of projection ribs projecting from a crest portion of the ridge portion at intervals in an extending direction of the crest portion at least at a section along the auxiliary oblique valley portion of the valley portion.

8. The cleaning device according anyone of claims 1 to 7, wherein

a cushion member is attached over approximately entire area of the lower face of the cleaning head as being interposed between the lower face of the cleaning head and the base body; and

the lower face of the base body covered with the cleaning sheet is to be a flat surface while the cushion member is crushed with pressing force to the cleaning device body due to the handle portion from a state that the lower face of the base body projects to be a curved shape as pushing out the base body with the cushion member.

9. The cleaning device according to claim 1, wherein

the handle portion is a handle;

the handle is formed by joining a plurality of cylindrical pipes with a pipe joint structure for integrally joining a pair of the cylindrical pipes in an axial direction;

the pipe joint structure is structured as a male-side end portion of one cylindrical pipe is inserted to a female-side end portion of the other cylindrical pipe, an engaging projection is engaged from the outside after a male-side projection insertion hole and a female-side projection insertion hole are matched, and a sleeve-like member is attached as covering a joint line portion from the outside between the male-side end portion and the female-side end portion;

the female-side end portion includes a positioning guide rib which inwardly projects from an innr circumferential surface of the female-side end portion at a

section being apart from the female-side projection insertion hole in a circumferential direction;

the male-side end portion includes a guide groove extended from a top edge part of the male-side end portion in an axial direction at a section being apart from the male-side projection insertion hole in the circumferential direction as corresponding to the positioning guide rib; and

the male-side end portion is inserted to the female-side end portion until the male-side projection insertion hole is matched to the female-side projection insertion hole while the positioning guide rib of the female-side end portion is guided as being engaged with the guide groove of the male-side end portion.

10. The cleaning device according to claim 1, wherein

the handle portion is a handle;

the handle is formed by joining a plurality of cylindrical pipes with a pipe joint structure for integrally joining a pair of the cylindrical pipes in an axial direction;

the pipe joint structure is structured as a male-side end portion of one cylindrical pipe is inserted to a female-side end portion of the other cylindrical pipe, an engaging projection is engaged from the outside after a male-side projection insertion hole and a female-side projection insertion hole are matched, and a sleeve-like member is attached as covering a joint line portion between the male-side end portion and the female-side end position;

an abutment rib which abuts to an end surface of the female-side end portion from a back side is arranged at the sleeve-like member continuously or discontinuously in a circumferential direction as inwardly projecting from an inner circumferential surface of a section covering the joint line portion;

an insertion guide slope portion extended as being sloped outwardly in the circumferential direction toward a top end side of the sleeve-like member is arranged at the abutment rib continuously or discontinuously in tile circumferential direction; and

the male-side end portion of the one cylindrical pipe is inserted to the female-side end portion as being guided by the insertion guide slope portion in a state that the sleeve-like member is attached to the female-side end portion of the other cylindrical pipe while the end surface is abutted to an abutment surface of the abutment rib.

11. The cleaning device according to claim 1, wherein

the handle portion is a handle;

an end cap is attached to an upper end part of the handle;

the end cap attached to the upper end part of the handle through an attachment hole is made of elastic material and a cover end surface of the end cap arranged to cover an end surface portion of the handle is formed as an oblique surface against a perpendicular surface to a center axis direction of the handle, so that a taper-shaped top edge section of the end cap forms a cushion portion capable of being elastically deformed inwardly and outwardly in a radial direction as having the center axis direction of the handle as the center.

12. The cleaning device according to claim 1, wherein

the handle portion is a handle;

a joint structure of a cleaning head is provided to enable the handle to perform a 360-degree rotation in a circumferential direction about a joint portion in a state that the handle is arranged approximately in parallel to the cleaning head;

the joint structure of the cleaning head forms the joint portion capable of being rotated in an up-down direction and the circumferential direction by joining a bifurcated head-side yoke portion arranged as projecting from an upper face of the cleaning head and a bifurcated handle-side yoke portion arranged at a lower end part of the handle via a joint member which includes a first rotational axial center portion and a second rotational axial center portion of which center axes are orthogonal;

mutually-distant opposed surfaces of a pair of yoke projection portions structuring the head-side yoke portion respectively have a symmetrically mountain-shaped outer circumferential portion which includes slope portions at both sides of a crest portion;

a pair of yoke pieces structuring the handle-side yoke portion has lateral width being approximately the same as space width between the opposed surfaces of the pair of yoke projection portions;

an edge portion of either yoke piece is capable of being abutted to an outer circumferential portion of the opposed surface of either yoke projection portion in a stale that the handle is arranged approximately in parallel to the cleaning head; and

the edge portion of either yoke piece is arranged to be movable as running over or sliding down along the outer circumferential portion of the opposed surface of either yoke projection portion in accordance with rotation of the handle in the circumferential direction in a state of being arranged approximately in parallel to the cleaning head.

13. The cleaning device according to claim 1, wherein

a cleaning sheet attachment which attaches a cleaning sheet to be replaceable

in a detachably attachable manner is arranged at an upper face portion of the cleaning head and edge parts of the cleaning sheet which is wound as covering a bottom surface portion of the cleaning head are attached to the cleaning sheet attachment so as to maintain a state that the cleaning sheet is attached to the cleaning head;

the cleaning sheet attachment is structured by forming a holding slit and an opening slit at an attaching member;

the holding slit is formed into a saw-tooth shape or a waveform shape as being extended in a direction at a right angle or approximately at a right angle against a direction of tension force acting on the cleaning sheet;

the opening slit includes a two-line slit having two lines extended at one side as being continued to the holding slit at a center section of the holding slit and an oblique slit extended at the other side obliquely against an extending direction of the holding slit as sandwiching the holding slit; and

the oblique slit includes a base end portion being adjacent to the holding slit and a widening portion at a top end side from the base end portion having slit width which is wider than that of the base end portion.