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(54) **POLISHING TOOL**

(57) A sanding tool includes a baseplate assembly, a housing assembly, a drive mechanism, and a fan assembly. The baseplate assembly includes a baseplate for mounting a sanding member. The housing assembly is disposed on the baseplate and includes a body housing. The drive mechanism is disposed in the body housing and drives the baseplate assembly to move. The housing assembly further includes a functional housing, where a hollow cavity is formed in the functional housing, the functional housing is provided with an inlet and an outlet that communicate with the cavity, the inlet communicates with a dust removal channel of the sanding tool, the outlet is configured to discharge gas in the cavity, and the fan assembly is used for forming a dust removal air path moving towards the inlet. The functional housing is disposed on a side of the body housing and a projection of the functional housing on a plane where the baseplate assembly is located is located within the baseplate; and a ratio of an area of a projection of the functional housing on the baseplate to an area of the baseplate is greater than or equal to 0.15 and less than or equal to 0.95.

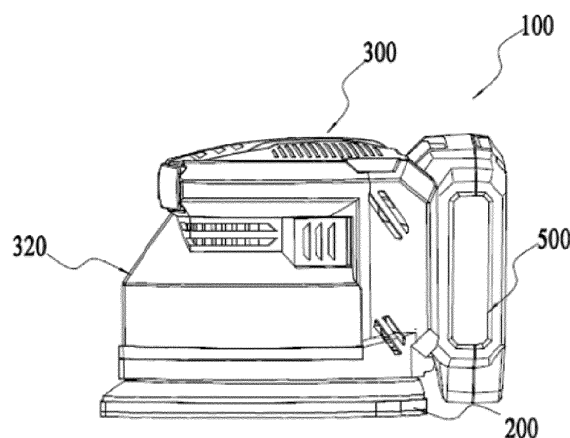


FIG. 1

Description

[0001] The present application claims priority to Chinese Patent Application No. 202010601000.2 filed Jun. 29, 2020 and Chinese Patent Application No. 202121256254.1 filed Jun. 4, 2021, the disclosures of which are incorporated herein by reference in their entireties.

TECHNICAL FIELD

[0002] The present application relates to the technical filed of power tools, for example, a sanding tool.

BACKGROUND

[0003] A sanding tool is a commonly used power tool for polishing and sanding surfaces of woods, plastics, stones, metals and other materials through the swing of a baseplate. While satisfying a sanding function, a hand-held sanding tool generally should also have a relatively small volume and weight to satisfy the expectation of a user for a convenient operation and improve user experience. However, the operation of the sanding tool is often accompanied by the generation of a relatively large amount of dust. To avoid environmental pollution caused by the dust and an effect of dust on the health of the user, existing sanding tools are mostly provided with dust collection devices for collecting the dust generated during sanding.

[0004] The dust collection devices in the related art are mostly external dust collection boxes or dust collection bags, each of which is connected to a dust outlet of a main machine through a pipeline or directly. A small number of dust collection boxes can be directly connected to the main machine. However, the existing dust collection devices are mostly additional components disposed on the main machine and mating with the main machine. Therefore, after the dust collection device is connected to the main machine, the main machine has a bulky structure and a relatively large volume, and the stability of the center of gravity of the main machine is even affected due to the weight of the dust collection device after dust collection, resulting in wiggles during operation and operation inconvenience of the user. Therefore, how to make the sanding tool satisfy the requirements for a compact structure, convenient dust collection and miniaturization of the whole machine with various functions taken into account becomes a technical problem to be solved urgently in the art.

SUMMARY

[0005] The present application provides a sanding tool, where the whole machine has a more compact structure and is convenient for a user to operate flexibly while satisfying a dust collection function.

[0006] An example provides a sanding tool. The sand-

ing tool includes a baseplate assembly, a housing assembly, a drive mechanism, a fan assembly and a support bracket. The baseplate assembly includes a baseplate for mounting a sanding member. The housing assembly is disposed on the baseplate and includes a body housing. The drive mechanism is disposed in the body housing, where the drive mechanism drives the baseplate assembly to move. The fan assembly is mounted to the drive mechanism. The support bracket is disposed between the body housing and the baseplate. The support bracket includes a support seat, a central release member and a floating connecting arm, where the support seat is disposed between the body housing and the baseplate, the central release member is fixedly connected to the baseplate directly or indirectly, the floating connecting arm is connected between the central release member and the support seat, and the floating connecting arm allows the support seat and the central release member to move relative to each other when the support bracket receives an axial and/or radial force. The housing assembly further includes a functional housing, where a hollow cavity is formed in the functional housing, the functional housing is provided with an inlet and an outlet that communicate with the cavity, the inlet communicates with a dust removal channel of the sanding tool, the outlet is configured to discharge gas in the cavity, and the fan assembly is used for forming a dust removal air path moving towards the inlet. The functional housing is disposed on a side of the body housing and a projection of the functional housing on a plane where the baseplate assembly is located is located within the baseplate; and a ratio of an area of a projection of the functional housing on the baseplate to an area of the baseplate is greater than or equal to 0.15 and less than or equal to 0.95.

[0007] In an example, the ratio of the area of the projection of the functional housing on the baseplate to the area of the baseplate is greater than or equal to 0.5 and less than or equal to 0.95.

[0008] In an example, an axial height of the functional housing is greater than or equal to 0.3 and less than or equal to 0.85.

[0009] In an example, the functional housing includes an auxiliary grip at a top end of the functional housing, where the auxiliary grip is an inwardly indented recess on the functional housing.

[0010] In an example, the functional housing is snap-fit with the body housing, and the functional housing is further provided with an auxiliary fastener that mates with the baseplate.

[0011] In an example, the functional housing includes an outer housing disposed on a periphery of the body housing and mating with the body housing to form the cavity.

[0012] In an example, the functional housing includes an outer housing and an inner housing, where the outer housing encloses the inner housing, the cavity is formed between the outer housing and the inner housing, and the inner housing is disposed outside the body housing.

[0013] In an example, an opening is formed between the outer housing and the inner housing, and the functional housing further includes a cover plate covering the opening.

[0014] In an example, a filter and a filter holder for mounting the filter are disposed in the functional housing, where the filter is disposed on a moving path of the dust removal air path.

[0015] In an example, a dust removal assembly disposed between the baseplate assembly and the functional housing is further included, where the dust removal channel is provided with the dust removal assembly.

[0016] In an example, the dust removal assembly includes a guide portion and a conveying support, where the guide portion is provided with a dust inlet, the guide portion is disposed on the baseplate assembly and communicates with a baseplate dust suction opening on the baseplate assembly, the conveying support communicates with the dust inlet of the guide portion, the conveying support is provided with a dust outlet, and the dust outlet interfaces with the inlet.

[0017] In an example, the conveying support is at least partially disposed in the body housing, the conveying support is detachably connected to the body housing, and the conveying support is detachable from the body housing.

[0018] In an example, a direct current power supply is further included, where the drive mechanism is disposed between the direct current power supply and the functional housing.

[0019] Another example provides a sanding tool. The sanding tool includes a baseplate assembly, a housing assembly, a drive mechanism and a support bracket. The baseplate assembly includes a baseplate for mounting a sanding member. The housing assembly is disposed on the baseplate and includes a body housing. The drive mechanism is configured to drive the baseplate assembly to move. The support bracket is disposed between the body housing and the baseplate. The support bracket includes a support seat, a central release member and a floating connecting arm. The support seat is disposed between the body housing and the baseplate. The central release member is fixedly connected to the baseplate directly or indirectly. The floating connecting arm is connected between the central release member and the support seat and allows the support seat and the central release member to move relative to each other when the support bracket receives an axial and/or radial force.

[0020] In an example, the central release member is a cylinder extending along a direction perpendicular or oblique to the support seat.

[0021] In an example, the central release member is provided with a screw hole and fixedly connected to the baseplate through a screw.

[0022] In an example, an arm length of the floating connecting arm is greater than an axial height of the support seat.

[0023] In an example, the support seat supports the

body housing, an end of the floating connecting arm is connected to an upper end of the central release member, and another end of the floating connecting arm is connected to the support seat.

5 **[0024]** In an example, the support seat supports the body housing, and the floating connecting arm is windingly connected to the support seat and an upper end of the central release member.

10 **[0025]** In an example, a mounting seat and a floating support arm are further included, where the mounting seat is axially spaced apart from the support seat, the mounting seat is fixedly connected to the baseplate, and the mounting seat is connected to the central release member through the floating support arm.

15 **[0026]** In an example, the floating connecting arm is connected to the support seat and a lower end of the central release member, and the floating support arm is connected to the mounting seat and an upper end of the central release member.

20 **[0027]** In an example, the floating connecting arm and the floating support arm are staggeredly spaced.

[0028] In an example, the support bracket further includes a relief portion that provides space for movement of the floating connecting arm, where the relief portion includes a first through hole disposed on the support seat and a second through hole disposed on the mounting seat, where an axis of the second through hole is parallel to an axis of the first through hole or the second through hole is disposed coaxially with the first through hole.

25 **[0029]** In an example, the floating connecting arm is connected to an inner edge of the first through hole and the floating support arm is connected to an inner edge of the second through hole.

30 **[0030]** In an example, the floating connecting arm includes a plurality of bent sections extending along a radial direction of the central release member and the floating support arm includes a plurality of bent sections extending along the radial direction of the central release member.

35 **[0031]** In an example, the support bracket is integrally formed.

[0032] In an example, an axial height of the support bracket is greater than or equal to 6 mm and less than or equal to 20 mm.

40 **[0033]** Another example provides a sanding tool. The sanding tool includes a baseplate assembly, a housing assembly, a drive mechanism and a support bracket. The baseplate assembly includes a baseplate for mounting a sanding member. The housing assembly is disposed on the baseplate and includes a body housing. The drive mechanism is configured to drive the baseplate assembly to move. The support bracket is disposed between the body housing and the baseplate. The support bracket includes a support seat, a central release member and a floating connecting arm. An upper end of the support seat abuts against the body housing. The central release member is fixedly connected to the baseplate directly or indirectly. The floating connecting arm is connected be-

tween the central release member and the support seat, where a ratio of an axial stiffness of the support bracket to a radial stiffness of the support bracket is greater than or equal to 0.67 and less than or equal to 100.

[0034] In an example, the central release member is provided with a screw hole and fixedly connected to the baseplate through a screw.

[0035] In an example, the floating connecting arm and the floating support arm are staggeredly spaced.

[0036] In an example, the floating connecting arm includes a plurality of bent sections extending along a radial direction of the central release member and the floating support arm includes a plurality of bent sections extending along the radial direction of the central release member.

[0037] In an example, the support bracket is integrally formed.

[0038] In an example, an axial height of the support bracket is greater than or equal to 6 mm and less than or equal to 20 mm.

[0039] Another example provides a sanding tool. The sanding tool includes a baseplate assembly, a housing assembly, a drive mechanism and a support bracket. The baseplate assembly includes a baseplate for mounting a sanding member. The housing assembly is disposed on the baseplate and includes a body housing. The drive mechanism is configured to drive the baseplate assembly to move. The support bracket is disposed between the body housing and the baseplate. The support bracket includes a support seat, a central release member and a floating connecting arm. An upper end of the support seat abuts against the body housing. The central release member is fixedly connected to the baseplate directly or indirectly. The floating connecting arm is connected between the central release member and the support seat, where a ratio of an axial stiffness of the support bracket to a height of the support bracket is greater than or equal to 1 N/mm² and less than or equal to 83.3 N/mm².

[0040] In an example, the central release member is provided with a screw hole and fixedly connected to the baseplate through a screw.

[0041] In an example, the support bracket further includes a mounting seat and a floating support arm, where the mounting seat is axially spaced apart from the support seat and connected to the baseplate, and the floating support arm is connected to the central release member and the mounting seat.

[0042] In an example, the floating connecting arm is connected to the support seat and a lower end of a cylinder, and the floating support arm is connected to the mounting seat and an upper end of the cylinder.

[0043] In an example, the floating connecting arm and the floating support arm are staggeredly spaced.

[0044] In an example, the floating connecting arm includes a plurality of bent sections extending along a radial direction of the central release member and the floating support arm includes a plurality of bent sections extending along the radial direction of the central release mem-

ber.

[0045] In an example, the support bracket is integrally formed.

[0046] In an example, an axial height of the support bracket is greater than or equal to 6 mm and less than or equal to 20 mm.

[0047] Another example provides a sanding tool. The sanding tool includes a baseplate assembly, a housing assembly, a drive mechanism, a fan assembly and a support bracket. The baseplate assembly includes a baseplate for mounting a sanding member. The housing assembly is disposed on the baseplate and includes a body housing. The drive mechanism is disposed in the body housing, configured to drive the baseplate assembly to move and includes an output shaft supported on the baseplate by a support that rotates about an axis of rotation. The fan assembly is connected to the drive mechanism. The support bracket is disposed between the body housing and the baseplate. The support bracket includes a support seat, a central release member and a floating connecting arm, where the support seat is disposed between the body housing and the baseplate, the central release member is fixedly connected to the baseplate directly or indirectly, and the floating connecting arm is connected between the central release member and the support seat and allows the support seat and the central release member to move relative to each other when the support bracket receives an axial and/or radial force. The housing assembly further includes a functional housing, where a hollow cavity is formed in the functional housing, the functional housing is provided with an inlet and an outlet that communicate with the cavity, the inlet communicates with a dust removal channel of the sanding tool, the outlet is configured to discharge gas in the cavity, and the fan assembly is used for forming a dust removal air path moving towards the inlet. The baseplate has an initial center of mass line passing through an initial center of mass of the baseplate, where the initial center of mass line is perpendicular to the baseplate, and the axis of rotation is farther away from the functional housing than the initial center of mass line. The sanding tool further includes a center of mass mover disposed on the baseplate to move the center of mass of the baseplate to a corrected center of mass line that coincides with the axis of rotation.

[0048] In an example, a distance between the corrected center of mass line and the initial center of mass line is greater than or equal to 5 mm and less than or equal to 35 mm.

[0049] In the sanding tool of the present application, part of a space in a main machine housing is reserved for receiving dust so that a dust suction assembly does not need to be provided. Part of the position in the main machine housing is reserved for receiving dust so that on the basis of satisfying the functions of dust suction and dust collection, the wiggles during operation due to too large a volume of a dust suction container are avoided, thereby improving operation flexibility and user ex-

perience.

BRIEF DESCRIPTION OF DRAWINGS

[0050]

FIG. 1 is a structural view of a sanding tool according to the present application;

FIG. 2 is a schematic view of the assembly of the sanding tool in FIG. 1;

FIG. 3 is a schematic view of the assembly of a functional housing in FIG. 1;

FIG. 4 is a structural view of the functional housing in FIG. 3;

FIG. 5 is a structural view of the functional housing in FIG. 3 from another angle;

FIG. 6 is a structural view of the sanding tool in FIG. 1 with a functional housing removed;

FIG. 7 is a structural view of the sanding tool in FIG. 6 with a body housing open;

FIG. 8 is a schematic view of the assembly of a dust removal assembly and a baseplate assembly according to the present application;

FIG. 9 is a view of the assembly of a baseplate assembly and an output shaft of an electric motor according to the present application;

FIG. 10 is a sectional view taken along A-A of FIG. 9;

FIG. 11 is a schematic view illustrating migration of a center of mass in FIG. 10;

FIG. 12 is a schematic view of the assembly of support brackets and a baseplate assembly according to the present application;

FIG. 13 is a structural view of a support bracket according to an example of the present application;

FIG. 14 is a top view of the support bracket in FIG. 13;

FIG. 15 is a sectional view taken along B-B of FIG. 14;

FIG. 16 is a structural view of a support bracket according to another example of the present application;

FIG. 17 is a front view of the support bracket in FIG. 16;

FIG. 18 is an exploded view of a sanding tool according to a second example of the present application;

FIG. 19 is an exploded view of the sanding tool in FIG. 18 from another perspective according to the present application;

FIG. 20 is a cross-sectional view of a sanding tool according to a second example of the present application; and

FIG. 21 is an exploded view of a dust removal assembly of the sanding tool in FIG. 18 according to the present application.

DETAILED DESCRIPTION

[0051] FIG. 1 shows a sanding tool 100 according to an example of the present application. The sanding tool 100 in the example of the present application is a sander, for example, a flat sander that can be held and operated by a user with one hand or two hands. Optionally, the sanding tool 100 may be a round sander, a triangular sander, a square sander, a special-shaped sander or the like, and any applicable sanding tool that can satisfy technical solutions of the present application is within the scope of the present application.

[0052] As shown in FIGS. 1 and 7, the sanding tool 100 in the example of the present application includes a baseplate assembly 200, a housing assembly 300, a drive mechanism 400, a fan assembly 800, and a power supply 500. As shown in FIG. 2, the housing assembly 300 includes a body housing 310 and a functional housing 320, and the drive mechanism 400 and the fan assembly are both disposed in the body housing 310. The power supply 500 may be a direct current (DC) power supply such as a battery pack or may be an alternating current (AC) power supply. The drive mechanism 400 is disposed between the DC power supply and the functional housing 320.

[0053] Referring to FIGS. 1 and 12, the baseplate assembly 200 includes a baseplate 210 and a sanding member (not shown in the figures) fixed on the baseplate 210. A plane surface is formed on the baseplate 210, and the sanding member is disposed on a side of the baseplate 210 facing away from the housing assembly 300. The sanding member may be sandpaper or other types of abrasive or polishing parts and may be removably attached to the baseplate in a conventional manner. The baseplate 210 is provided with a baseplate dust suction opening 210a for sucking dust generated during operation.

[0054] The drive mechanism 400 is configured to drive the baseplate assembly 200 to move. As shown in FIG. 7, the drive mechanism 400 includes an electric motor and an output shaft 410 connected to the electric motor, and the fan assembly 800 is mounted on the output shaft

410 and driven by the output shaft 410 to rotate, where an end of the output shaft 410 is connected to the electric motor, the other end of the output shaft 410 is connected to the baseplate assembly 200, and the drive mechanism 400 and the fan assembly 800 are both disposed in the body housing 310. The drive mechanism 400 may further include a transmission assembly disposed between an electric motor shaft and the output shaft 420, where the transmission assembly may be any suitable transmission mechanism such as gear transmission and belt transmission, which is not limited herein. As shown in FIG. 10, a support 420 is also connected to the end of the output shaft 410. The support 420 in the example of the present application is an eccentric bearing mounted in the baseplate assembly 200. The electric motor rotates about an electric motor axis 411 to drive the eccentric bearing to rotate and drive the baseplate 210 to perform an eccentric motion on a surface of a workpiece. At the same time, to balance the vibration during the eccentric motion, the sanding tool 100 in the example of the present application is further provided with a counterweight that may be disposed on the fan assembly 800 or the baseplate assembly 200.

[0055] As shown in FIG. 10, the support 420 in the example of the present application rotates about an axis of rotation 421 that is spaced apart from and parallel to the electric motor axis 411. As shown in FIG. 11, the baseplate 210 in the example of the present application has an initial center of mass line 211 perpendicular to the plane surface of the baseplate 210 and passing through an initial center of mass of the baseplate 210, where the initial center of mass line 211 refers to a center of mass line of the baseplate 210 when no center of mass mover 43 is disposed on the baseplate 210.

[0056] In the example of the present application, the support 420 is moved backwards (moved to a right side in FIGS. 10 and 11) on the baseplate 210 so that the drive mechanism 400 (including the electric motor, a fan, and the like) drivingly connected to the support 420 is integrally moved backwards. Therefore, the space of the baseplate 210 occupied by the body housing 310 is reduced, that is, more space is reserved on a left side of the baseplate 210 in FIG. 10. In other words, more space is reserved for the functional housing 320, thereby increasing the volume of the functional housing 320. In this manner, the axis of rotation 421 in the example of the present application deviates from the initial center of mass line 211, that is, the axis of rotation 421 does not pass through the initial center of mass of the baseplate 210.

[0057] Therefore, as shown in FIGS. 9 to 12, the sanding tool 100 in the example of the present application further includes a center of mass mover 430 disposed on a rear side of the baseplate 210 to move the center of mass of the baseplate 210 to a position of a corrected center of mass line 212 that coincides with the axis of rotation 421, and the corrected center of mass line 212 is farther away from the functional housing 320 than the

initial center of mass line 211. In other words, the center of mass mover 430 is configured to move the center of mass of the baseplate 210 to a side facing away from the functional housing 320 such that the center of mass of the baseplate 210 coincides with the axis of rotation 421. Therefore, the uneven movement, bouncing and vibration of the baseplate 210 during use of the sanding tool are avoided.

[0058] The axis of rotation 421 in the example of the present application is farther away from the functional housing 320 than the initial center of mass line 211, that is, the axis of rotation 421 in the present application is moved backwards relative to the initial center of mass line 211 (the right side in FIG. 11 shows the rear side). As shown in FIG. 11, a distance between the corrected center of mass line 212 and the initial center of mass line 211 is greater than or equal to 5 mm and less than or equal to 35 mm, that is, the axis of rotation 421 is moved backwards by 5 mm to 35 mm relative to the initial center of mass line 211. In the example of the present application, the center of mass mover 430 is provided to move the center of mass line of the baseplate 210 backwards by 7 mm, 10 mm, 15 mm, or 20 mm to the position of the corrected center of mass line 212. The corrected center of mass line 212 refers to a center of mass line of the baseplate 210 after the center of mass mover 430 is disposed on the baseplate 210.

[0059] As shown in FIG. 12, the center of mass mover 430 in the example of the present application is disposed in the baseplate 210, a mounting groove is provided on the baseplate 210, and the center of mass mover 430 is clamped in the mounting groove, thereby preventing the center of mass mover 430 from protruding out of the baseplate 210. The center of mass mover 430 may be a metal member or a non-metal member, which is not limited herein. The mounting groove for mounting the center of mass mover 430 may not be provided on the baseplate 210, but the center of mass mover 430 is directly bonded to the baseplate 210.

[0060] In the present application, the support 420 and the drive mechanism 400 are integrally moved backwards on the baseplate 210, thereby reserving more space for the functional housing 320 and increasing the volume of the functional housing 320. At the same time, the center of mass mover 430 is provided to compensate for a deviation between the axis of rotation 421 and the center of mass line of the baseplate 210 so that it is ensured that the corrected center of mass line 212 of the baseplate 210 coincides with the axis of rotation 421, and the baseplate 210 is supported to move on the center of mass of the baseplate 210, thereby ensuring the even movement of the baseplate 210 and avoiding the bouncing, vibration, and the like of the baseplate 210.

[0061] As shown in FIG. 2, the functional housing 320 is connected to the baseplate assembly 200 and/or the body housing 310. As shown in FIGS. 1 and 2, a projection of the functional housing 320 on a plane where the baseplate assembly 200 is located is basically located

within the baseplate 210.

[0062] The projection of the functional housing 320 on the baseplate assembly 200 is located within the baseplate 210 so that the disharmony of the overall shape due to too large a volume of the functional housing 320 is avoided, the operation inconvenience of the user caused by too large a volume is avoided, and the functional housing can be better integrated into the housing of the whole machine, thereby improving the operation experience of the user on the basis of ensuring the harmony of appearance.

[0063] As shown in FIGS. 2 and 6, the body housing 310 in the example of the present application includes a grip 311, a main barrel 312 and a base 313 that communicate with each other and are formed separately and assembled into the body housing 310.

[0064] As shown in FIG. 6, the grip 311 is disposed at the top of the body housing 310 and held by the user during operation. To facilitate the holding by the user, as shown in FIG. 4, the functional housing 320 in the example of the present application further includes an auxiliary grip 324, where the auxiliary grip 324 is an inwardly indented recess formed at a top end of the functional housing 320, and the auxiliary grip 311 is indented inwards relative to the grip, so as to provide space for the user to hold with fingers.

[0065] Referring to FIGS. 2 and 6, the base 313 is disposed at the bottom of the body housing 310 and covers the baseplate assembly 200. The main barrel 312 is disposed between the grip 311 and the base 313 and includes an electric motor chamber 3122 and an air channel chamber 3123, where the electric motor chamber 3122 communicates with the air channel chamber 3123, an outer periphery of the electric motor chamber 3122 is a cylindrical surface, and the electric motor chamber 3122 protrudes out of the air channel chamber 3123. The electric motor, the fan assembly 800, and the like are disposed in the electric motor chamber 3122. Air channel components are disposed in the air channel chamber 3123, and the air channel chamber 3123 is provided with an air channel chamber outlet 3124 interfacing with an inlet 322 of the functional housing 320.

[0066] As shown in FIG. 7, the sanding tool 100 in the example of the present application further includes a switch assembly 510 and a control mechanism 520. The control mechanism 520 is used for controlling the electric motor to rotate. The control mechanism 520 includes a printed circuit board assembly (PCBA) on which relevant elements such as a capacitor and an inductor are provided. The control mechanism 520 is connected to the switch assembly 510 and the power supply. The switch assembly 510 is operated so as to control the electric motor to be turned on and off. The switch assembly 510 is disposed at a front end of the grip 311 (that is, a left end in FIG. 7). The control mechanism 520 is disposed in the air channel chamber 3123 of the main barrel 312 or may be disposed in the grip 311. The control mechanism 520 is arranged vertically.

[0067] In this example, referring to FIGS. 3 to 5, the functional housing 320 is disposed on a side of the body housing 310. A hollow cavity 321 is formed in the functional housing 320, the functional housing 320 is provided with the inlet 322 and an outlet 323 that communicate with the cavity 321, the inlet 322 communicates with a dust removal channel 620a in the body housing 310, the outlet 323 is configured to discharge a dust removal air-flow in the cavity 321 out of the cavity, and the fan assembly 800 is used for forming an air path moving from the baseplate dust suction opening 210a to the inlet 322.

[0068] In this example, a ratio of an area of a projection of the functional housing 320 on the baseplate 210 to an area of the baseplate 210 is greater than or equal to 0.15 and less than or equal to 0.95. In this example, the ratio of the area of the projection of the functional housing 320 on the baseplate to the area of the baseplate 210 is about 0.7, or the ratio of the area of the projection of the functional housing 600 on the baseplate 210 to the area of the baseplate 210 may be set to 0.6, 0.5, or 0.4.

[0069] In the present application, an axial height of the functional housing 320 is greater than or equal to 15 mm and less than or equal to 125 mm, or the axial height of the functional housing 320 is greater than or equal to 25 mm and less than or equal to 70 mm. At the same time, a ratio of the axial height of the functional housing 320 to an axial height of the whole machine is greater than or equal to 0.3 and less than or equal to 0.85. In this example, the ratio of the axial height of the functional housing 320 to the axial height of the whole machine is about 0.5, or the ratio of the axial height of the functional housing 320 to the axial height of the whole machine may be set to 0.6 or 0.7, where the axial height refers to a height in a vertical direction perpendicular to the baseplate 210.

[0070] Through the preceding reasonable layout and design, the volume of the functional housing 320 can be increased, thereby ensuring the volume of the functional housing 320 on the basis of ensuring that the whole sanding tool 100 has a compact structure and relatively small dimensions, avoiding frequent dust dumping due to too small a volume, and improving the user experience.

[0071] As shown in FIG. 4, in the example of the present application, the functional housing 320 mates with the main barrel 312. Since the electric motor chamber 3121 of the main barrel 312 protrudes, a notch is correspondingly provided on the functional housing 320, that is, the functional housing 320 in the example of the present application is a type of U-shaped housing.

[0072] With reference to FIGS. 3 to 5, the functional housing 320 includes an opening 325 provided at the bottom of the functional housing 320 and an end cover 326 provided at the opening 325, where a groove is provided at a periphery of the end cover 326, and the housing at the opening of the functional housing 320 can be clamped into the groove to mate with and be fixed to the end cover 326. The end cover 326 is provided so that it is convenient for the user to dump dust.

[0073] As shown in FIG. 3, a filter 330 is further provided in the functional housing 320 and disposed between the inlet 322 and the outlet 323. In this example, the filter 330 is a folded filter paper and may be provided in the functional housing 320 and cover the outlet 323 to prevent dust from flying out from the outlet 323 along with the airflow to cause air pollution. The airflow with the dust entrained therein enters the cavity 321 through the inlet 322 and is filtered by the filter 330, the dust is collected in the functional housing 320, and the filtered airflow is discharged out of the functional housing 320 through the outlet 323.

[0074] In this example, to be convenient to mount and replace the filter 330, a filter holder 327 for mounting the filter 330 is further provided, and correspondingly, a limiting member mating with the filter holder 327 is provided in the functional housing 320. The filter holder 327 includes a support seat and blocking arms. The support seat is provided with a hollow opening allowing the dust removal airflow to enter the filter. On the one hand, the dust removal airflow is allowed to smoothly enter the filter 330. On the other hand, it is convenient for the user to smoothly remove the filter holder 327 through the hollow opening. The blocking arms are disposed on a periphery of the filter 330 and used for supporting and shaping the filter 330, and at the same time, the blocking arms of the filter holder 327 abut against an inner wall of an upper housing of the functional housing 320 to achieve the upper limit of the filter holder 327. The limiting member may be a rib plate provided on an inner wall of the functional housing 320, where the rib plate is engaged with the support seat of the filter holder 327 to achieve the lower limit of the filter holder 327. In this manner, the filter holder 327 is fixedly supported in the functional housing 320.

[0075] During installation, the filter 330 is clamped in the filter holder 327, and then the filter holder 327 together with the filter 330 is inserted upwards into the top of the functional housing 320 through the opening 325 at a lower end of the functional housing 320 and is engaged with the limiting member in the functional housing 320. During disassembly, the filter holder 327 is pulled downwards and taken out through the opening 325 of the functional housing 320.

[0076] In this example, referring to FIGS. 3 to 5, the functional housing 320 is snap-fit with the body housing 310, where a pair of snap-catches 329 are provided at a rear end of the top of the functional housing 320 (a rear end refers to an end connected to the body housing). At the same time, as shown in FIG. 6, a pair of snap-grooves 3121 are provided on an upper portion of the air channel chamber 3123 of the main barrel 312 on the body housing 310, and the snap-catches 329 of the functional housing 320 are suitable for being inserted into the snap-grooves 3121.

[0077] In the example of the present application, as shown in FIGS. 5 and 6, an auxiliary fastener 325 is further provided at the bottom of the functional housing 320, that is, the auxiliary fastener 328 is provided outside the

end cover 326 of the functional housing 320. As shown in FIG. 5, the auxiliary fastener 328 is a groove provided on the end cover 326, where a boss 3131 corresponding to the groove is provided on the base 313 of the body housing 310, as shown in FIG. 6.

[0078] During assembly, the functional housing 320 is inserted onto the body housing 310 from a side of the body housing 310, the pair of snap-catches 329 of the functional housing 320 are inserted into the snap-grooves 3121, and the boss 3131 on the base 313 is clamped into the groove of the end cover 326. Therefore, the functional housing 320 more stably mates with the body housing 310.

[0079] With reference to FIGS. 4 and 5, the functional housing 320 in the example of the present application includes an outer housing 3211 and an inner housing 3212 that are integrally arranged, where the inner housing 3212 surrounds an outer side of the electric motor chamber 3122 of the main barrel 313, and the outer housing 3211 encloses the cavity 321 with the inner housing 3212.

[0080] As an alternative example, the inner housing 3212 and the end cover 326 may not be provided. The outer housing 3211 directly surrounds the outer side of the electric motor chamber 3122 of the main barrel 312, and the outer housing 3211 encloses the cavity 321 with an outer wall of the electric motor chamber 3122. In this case, the opening enclosed by the outer housing 3211 and the electric motor chamber 3122 may be configured to be either the inlet or the outlet.

[0081] In this example, the functional housing 320 is a hollow structure shown in FIG. 5, where the hollow structure is configured to be the cavity 321 for collecting dust, and the inlet 322 and the outlet 323 are provided on the functional housing 320 and separately communicate with the cavity 321. The inlet 322 is provided at a rear end of the functional housing 320, and the outlet 323 is provided on an outer side of the outer housing 3211 of the functional housing 320 corresponding to the filter 330.

[0082] As shown in FIGS. 1 and 8, the sanding tool 100 further includes a dust removal assembly 600, where the dust removal assembly 600 is disposed in the body housing 310 and disposed between the baseplate assembly 200 and the functional housing 320, and a channel for guiding an airflow from the baseplate dust suction opening 210a of the baseplate assembly 200 into the functional housing 320 is formed in the dust removal assembly 600.

[0083] Referring to FIG. 8, the dust removal assembly 600 includes a guide portion 610 and a conveying support 620, where the guide portion 610 is provided with a dust inlet 611, and the guide portion 610 is disposed on the baseplate assembly 200 and communicates with the baseplate dust suction opening 210a on the baseplate assembly 200. The conveying support 620 communicates with the dust inlet 611 of the guide portion 610. The conveying support 620 forms the dust removal channel 620a, the conveying support 620 is provided with a dust

outlet 621, the dust outlet 621 interfaces with the inlet 322 of the functional housing 320, and the dust removal channel 620a is disposed between the dust inlet 611 and the dust outlet 621. The guide portion 610 may be integrally formed with the conveying support 620, or the guide portion 610 and the conveying support 620 may be separately formed and assembled. The dust removal assembly 600 may be made of metal or plastic, which is not limited.

[0084] As shown in FIG. 8, the guide portion 610 is an annular disc body and mounted on the baseplate assembly 200, a through hole 610a is provided at the center of the guide portion 610, and the baseplate dust suction opening 210a on the baseplate assembly 200 communicates with the through hole 610a. In addition, the eccentric bearing and the fan assembly 800 are mounted on the baseplate assembly 200 through the through hole 610a. The conveying support 620 is substantially arranged vertically. The conveying support 200 includes at least one dust outlet 621. The conveying support 620 is disposed in the air channel chamber 3123 of the main barrel 312. The air channel chamber outlet 3124 corresponding to the dust outlet 621 of the conveying support 620 is provided on an outer wall of the air channel chamber 3123. The air channel chamber outlet 3124 is provided on a lower side of the snap-groove 3121, and the dust outlet 621 communicates with the inlet 322 of the functional housing 320 through the air channel chamber outlet 3124.

[0085] As shown in FIG. 8, the conveying support 620 may be a tubular support. A channel penetrating through up and down is provided in the conveying support 620, an opening at a lower end of the channel communicates with the dust inlet 611 on the guide portion 610, and an opening at an upper end of the channel is configured to be the dust outlet 621, where the lower end refers to an end facing the baseplate assembly 200, and the upper end refers to an end facing away from the baseplate assembly 200.

[0086] The fan assembly 800 is connected to the drive mechanism 400 and driven by the electric motor to rotate. The fan assembly 800 rotates and forms a negative pressure state in the body housing 310, dust generated during the sanding of the baseplate assembly 200 is sucked, the dust is driven by a rotating airflow generated by the rotation of the fan assembly 800 to enter the functional housing 320 from the baseplate dust suction opening 210a via the dust removal assembly 600, and finally, the airflow is discharged from the outlet 323 after filtered by the filter 330 in the functional housing 320 and the dust is left in the functional housing 320.

[0087] In the sanding tool 100 in the present application, the cavity 321 for collecting dust is provided in the housing assembly 300, thereby simplifying the structure of the whole machine, and the collection of dust can be achieved without a dust collection bag or a dust collection device additionally connected, thereby avoiding the installation and removal of an external dust collection de-

vice, simplifying an operation manner, and improving the use experience of the user. At the same time, the functional housing 320 and the body housing 310 together form a main machine housing, and the functional housing 320 is integrated into the main machine housing so that the appearance of the main machine is beautiful and prevented from being changed due to a dust collection requirement, and the dust collection function is satisfied on the basis that the original function is not affected. At the same time, since the housing assembly 300 is provided with the cavity 321, the inconvenience to operate the main machine due to the installation or connection of a relatively bulky dust container is avoided.

[0088] As shown in FIGS. 12 to 15, in this example, a support bracket 700 is further provided in the body housing 310, where an end of the support bracket 700 is connected to the body housing 310 and the other end of the support bracket 700 is connected to the baseplate assembly 200. As shown in FIGS. 7 and 12, in the example of the present application, an end of the support bracket 700 is mounted on the baseplate assembly 200, the other end of the support bracket 700 abuts against the base 313 of the body housing 310, and the support bracket 700 is used for supporting and connecting the body housing 310 and reducing the vibration of the tool. At the same time, the support bracket 700 resists torque of the baseplate assembly 200 relative to the body housing 310, thereby reducing the wiggles of the tool. The baseplate 210 in this example is triangular-like so that three support brackets 700 are separately mounted at three top corners. The number of support brackets is not limited to three. For example, two or four support brackets may be provided when the baseplate is circular or square.

[0089] Referring to FIGS. 13 to 15, the support bracket 700 includes a support seat 710, a mounting seat 720, a central release member 730, and a floating arm, where an upper end of the support seat 710 abuts against the body housing 310, the mounting seat 720 is fixedly connected to the baseplate 210, the mounting seat 720 is axially spaced apart from the support seat 710, and the floating arm directly or indirectly connects the support seat 710 to the mounting seat 720.

[0090] A mounting space for mounting the support bracket 700 is provided on the baseplate 210, the mounting seat 720 is fixedly disposed in the mounting space of the baseplate 210, the top of the support seat 710 abuts against the bottom of the base 313 of the body housing 310, screw holes 760 are provided on two sides of the mounting seat 720, and the mounting seat 720 is fixedly connected to the baseplate 210 through screws. The fixed connection is not limited to a screw connection. The mounting seat may be fixedly connected to the baseplate by means of clamping, plugging, or the like, and the fixed connection between the mounting seat and the baseplate is not limited here.

[0091] The central release member 730 is fixedly connected to the support seat 710 directly or indirectly. In this example, the central release member 730 is con-

nected to the support seat 710 or the mounting seat 720 through the floating arm.

[0092] The support bracket 700 in the example of the present application further includes a relief portion, where the relief portion includes a first through hole 711 disposed on the support seat 710 and a second through hole 721 disposed on the mounting seat 720, an axis of the second through hole 721 is parallel to an axis of the first through hole 711 or the second through hole 721 is disposed coaxially with the first through hole 711, and the relief portion provides space for the movement of the central release member 730 and the floating arm. Alternatively, no relief portion may be provided. In this case, the floating arm and the central release member are disposed between axial end surfaces of the mounting seat 720 and the support seat 710.

[0093] The floating arm allows the support seat 710 and the central release member 730 to move relative to each other when the support bracket 700 receives an axial and/or radial force. In other words, the floating arm also allows the support seat 710 and the mounting seat 720 to move relative to each other when the support bracket 700 receives the axial and/or radial force so that the baseplate 210 twists relative to the body housing 310 through the support bracket 700 and the support bracket 700 can withstand axial and radial forces.

[0094] The floating arm in this example includes a floating connecting arm 740 and a floating support arm 750. The floating connecting arm 740 connects the central release member 730 to the support seat 710 and the floating support arm 750 connects the central release member 730 to the mounting seat 720.

[0095] The central release member 730 is a cylinder extending along an axial direction of the first through hole 711 and the second through hole 721 and is substantially disposed vertically in a space extending vertically between the first through hole 711 and the second through hole 721. The central release member 730 may be disposed obliquely to the axis of the first through hole 711 or the second through hole 721.

[0096] In the example of the present application, the central release member 730 is connected to the support seat 710 through the floating connecting arm 740 and connected to the mounting seat 720 through the floating support arm 750. The central release member 730 is connected to the mounting seat 720 through the floating support arm 750 so that the central release member 730 is indirectly fixed to the baseplate 210. At the same time, the central release member 730 is windingly connected to the support seat 710 through the floating connecting arm 740 so that the support seat 710 is indirectly connected to the mounting seat 720, and the support bracket 700 is configured to be a floating structure in which a lower end is fixed and an upper end is floatingly connected to the lower end.

[0097] The support bracket 700 is configured to be the preceding floating structure so that on the one hand, the support bracket 700 can withstand the axial force of the

body housing 310 relative to the baseplate assembly 200 so as to eliminate or reduce the axial vibration of the whole machine, and on the other hand, the support bracket 700 can withstand the radial force generated when the baseplate assembly 200 rotates relative to the body housing 310 so as to reduce the wiggles of the whole machine, thereby reducing the vibration and wiggles of the whole machine and improving the user's tactile feeling.

[0098] In the example of the present application, the floating connecting arm 740 is connected to the support seat 710 and a lower end of the central release member 730, and the floating support arm 750 is connected to the mounting seat 720 and an upper end of the central release member 730. As shown in FIGS. 14 and 15, in this example, an end of the floating connecting arm 740 is connected to an inner edge of the first through hole 711 of the support seat 710 and the other end of the floating connecting arm 740 is connected to the lower end of the central release member 730. An end of the floating support arm 750 is connected to an inner edge of the second through hole 721 and the other end of the floating support arm 750 is connected to the upper end of the central release member 730.

[0099] In this example, the floating connecting arm 740 includes multiple bent sections extending radially towards the center of the first through hole 711, and similarly, the floating support arm 750 includes multiple bent sections extending along a radial direction of the first through hole.

[0100] Referring to FIG. 15, the floating connecting arm 740 is used as an example. The floating connecting arm 740 includes a first radially extending section 741, a second radially extending section 743, and an axially extending section 742, where the radially extending section 741 includes a part extending substantially along the radial direction of the first through hole 711, the axially extending section 742 may extend obliquely or parallel to the axis of the first through hole 711, and the axially extending section 742 is connected to the first radially extending section 741 and the second radially extending section 743 at two ends. The first radially extending section 741 is connected to the inner edge of the first through hole 711, the axially extending section 742 is connected between the first radially extending section 741 and the second radially extending section 743, the second radially extending section 742 is connected to the lower end of the central release member 730, and the transition connection between the first radially extending section 741 and the axially extending section 742 and the transition connection between the second radially extending section 743 and the axially extending section 742 may be smoothly bent arc-shaped sections.

[0101] The floating support arm 750 has substantially the same structure as the floating connecting arm 740, and their difference only lies in different connection positions of two ends of the floating support arm 750, which is not described in detail herein.

[0102] In the example of the present application, three floating connecting arms 740 and three floating support arms 750 are provided and staggeredly spaced, that is, one floating connecting arm 740 and one floating support arm 750 are spaced apart from each other. The number of floating connecting arms 740 and the number of floating support arms 750 each are not limited to three.

[0103] As an alternative example, the floating connecting arm and the floating support arm each include multiple overlapping sections overlapping along the radial direction of the first through hole, or the floating connecting arm and the floating support arm each include multiple extending sections extending along the radial direction of the first through hole, which is conducive to improving the deformation paths of the floating connecting arm and the floating support arm, thereby improving the vibration resistance and wiggle resistance effects.

[0104] As an alternative example, the floating connecting arm may be configured to be a straight arm directly connected between the central release member and the support seat and the floating support arm may be configured to be a straight arm directly connected between the central release member and the mounting seat, that is, no curved section is included.

[0105] The floating connecting arm 740 and the floating support arm 750 connected between the mounting seat 720 and the support seat 710 are provided so that an axial distance between the mounting seat 720 and the support seat 710 is reduced without reducing effective deformation paths, and an axial stiffness and a radial stiffness of the support bracket 700 are not reduced on the basis of reducing a height of the support bracket 700, thereby ensuring the vibration resistance and torsion resistance of the whole machine.

[0106] Meanwhile, the whole machine has a reduced height and reduced dimensions, which is conducive to the compactness and miniaturization of the whole machine, and the center of gravity of the whole machine is lowered after the height is reduced, which is more conducive to improving the user's feeling of manipulation. In this manner, the whole machine is easier and more convenient for the user to operate.

[0107] In this example, an axial height of the support bracket 700 is H, where $6\text{ mm} \leq H \leq 20\text{ mm}$. In this example, the axial height H of the support bracket 700 is about 15 mm. The axial stiffness of the support bracket 700 is K1 and the radial stiffness of the support bracket 700 is K2, where the axial stiffness K1 refers to an ability of the support bracket 700 to resist elastic deformation when the support bracket 700 receives an axial force, and the radial stiffness K2 refers to an ability of the support bracket 700 to resist elastic deformation when the support bracket 700 receives a radial force. In the example of the present application, $20\text{ N/mm} \leq K1 \leq 500\text{ N/mm}$. For example, it is also feasible that $80\text{ N/mm} \leq K1 \leq 300\text{ N/mm}$ or $100\text{ N/mm} \leq K1 \leq 130\text{ N/mm}$. $5\text{ N/mm} \leq K2 \leq 30\text{ N/mm}$, and optionally, $6\text{ N/mm} \leq K2 \leq 15\text{ N/mm}$. Therefore, $0.67 \leq K1/K2 \leq 100$, and optionally, $5.3 \leq K1/K2 \leq 50$.

[0108] If a unit axial stiffness is K which is a ratio of the axial stiffness K1 of the support bracket 700 to the axial height H of the support bracket 700, that is, $K = K1/H$, $1\text{ N/mm}^2 \leq K \leq 83.3\text{ N/mm}^2$, where optionally, $5.3\text{ N/mm}^2 \leq K \leq 25\text{ N/mm}^2$.

[0109] In the example of the present application, the support bracket 700 is an integrally formed member, such as an integrally formed plastic member.

[0110] FIGS. 16 and 17 show another example of the support bracket. In this example, a support bracket 700' is not provided with the mounting seat and the floating support arm. In this embodiment, the support bracket 700' includes a support seat 710', a central release member 730' and a floating connecting arm 740', where the central release member 730' is connected to the support seat 710' through the floating connecting arm 740'. A relief portion includes a first through hole 711' disposed on the support seat 710' and provides space for the movement of the central release member 730' and the floating connecting arm 740'.

[0111] In this example, the central release member 730' is directly connected to the baseplate assembly 200. The central release member 730' is provided with a screw hole 760', where the screw hole 760' is disposed substantially along an axial direction of the first through hole 711', and the central release member 730' is fixedly connected to the baseplate 210 through a screw.

[0112] In this example, the floating connecting arm 740' is a curved arm, where an arm length of the floating connecting arm 740' is greater than an axial height of the support seat 710'. The floating connecting arm 740' may include multiple overlapping sections overlapping along an axial direction of the central release member 730' and/or multiple overlapping sections overlapping along a radial direction of the central release member 730'. In this example, the floating connecting arm 740' includes axially overlapping sections overlapping along the axial direction of the first through hole 711'. An end of the floating connecting arm 740' is connected to an upper end of the central release member 730' and the other end of the floating connecting arm 740' is connected to the support seat 710'.

[0113] In other words, in this example, the floating connecting arm 740' also includes multiple radially extending sections and multiple axially extending sections that are connected to form the curved floating connecting arm 740', where the radially extending sections may overlap along the radial direction and the axially extending sections may overlap along the axial direction. The radially overlapping sections and the axially overlapping sections may not be included as long as the floating extending arm 740' is windingly connected between the central release member 730' and the support seat 710'.

[0114] As an alternative example, the support seat 710' may not be provided with the relief portion. In this case, the central release member and the floating connecting arm are disposed at the bottom of the support seat 710'.

[0115] FIG. 18 shows a sanding tool 900 in a second

example of the present application. In this example, the sanding tool 900 has the same baseplate assembly, housing assembly, drive mechanism, fan assembly, and power supply as the sanding tool in the first example. The difference between the sanding tool 900 in this example and the sanding tool in the first example may be different dust removal assemblies. Only differences between this example and the first example are described below, and for a detailed description of the remaining same content, reference may be made to the description in the first example.

[0116] In this example, a dust removal assembly 91 is at least partially disposed in a body housing 92, and the dust removal assembly 91 is formed with or connected to a dust removal channel so as to guide an airflow from a dust suction opening of the baseplate assembly to a functional housing.

[0117] As shown in FIGS. 18 to 22, the dust removal assembly 91 includes a guide portion 911 and a conveying support 912, where the guide portion 911 is provided with a dust inlet 911a, and the guide portion 911 is disposed above the baseplate assembly and communicates with the dust suction opening on the baseplate assembly. The conveying support 912 communicates with the dust inlet 911a of the guide portion 911, and the conveying support 912 is provided with a dust outlet which interfaces with an inlet of the functional housing 93. The guide portion 911 may be integrally formed with the conveying support 912, or the guide portion 911 and the conveying support 912 may be separately formed and assembled. The dust removal assembly 91 may be made of metal or plastic, which is not limited.

[0118] In this example, the conveying support 912 is detachably connected to the body housing 92. Optionally, the body housing 92 is further provided with an accommodation cavity 921 into which the conveying support 912 is insertable. In this example, in order to ensure the overall sealing property of a dust channel, the conveying support 912 is an integral structure inserted from a single side of the accommodation cavity 921. In other examples, the conveying support 912 may be a combined structure inserted from multiple sides of the accommodation cavity 921.

[0119] The accommodation cavity 921 communicates with the guide portion 911, and when the conveying support 912 is mounted to the accommodation cavity 921, the conveying support 912 communicates with the dust inlet 911a of the guide portion 911. The conveying support 912 includes a mating opening 912a mating with the dust inlet 911a and further includes a first dust outlet 912b and a second dust outlet 912c that mate with inlets of the functional housing 93. Optionally, the functional housing 93 includes a first dust inlet mating with the first dust outlet 912b and a second dust inlet mating with the second dust outlet 912c. The mating opening 912a of the conveying support 912 communicates with the first dust outlet 912b and the second dust outlet 912c separately. In fact, the conveying support 912 can form two channels,

and dust removal channels communicating with the first dust outlet 912b and the second dust outlet 912c are converged to the mating opening 912a.

[0120] In an example, the conveying support 912 is configured to extend basically along a direction of a first straight line. The conveying support 912 includes a limiting portion 912d capable of being clamped to the body housing 92, and the limiting portion 912d protrudes along an extension direction of the conveying support 912. Exemplarily, a limiting member mating with the limiting portion 912d is formed in or connected to the body housing 92. The limiting member is configured to be displaced along a direction perpendicular to the extension direction of the conveying support 912 to mate with the limiting portion 912d so as to clamp the conveying support 912. The first dust outlet 912b extends to a preset distance along a second direction perpendicular to the direction of the first straight line to directly mate with the first dust inlet. A sealing device is further provided at a position where the first dust outlet 912b mates with the first dust inlet, so as to prevent dust from escaping from the position where the first dust outlet 912b mates with the first dust inlet. The second dust outlet 912c opens along a third direction perpendicular to the direction of the first straight line. The second direction is parallel to the third direction. The body housing 92 is formed with a connecting end mating with the second dust outlet 912c, that is, a second housing dust outlet 912d. The second housing dust outlet 912d extends along the third direction, extends inwardly to be connected to the second dust outlet 912c, and extends outwardly to mate with the second dust inlet. In this example, the second housing dust outlet 912d abuts against or is clamped with the second dust outlet 912c and is clamped with the second dust inlet at the same time. The second housing dust outlet 912d is provided so that the second dust outlet 912c can have a flat structure and be disposed in the same plane as the conveying support 912, thereby facilitating the removal of the conveying support 912. Sealing devices are provided at a position where the second housing dust outlet 912d is connected to the second dust outlet 912c and a position where the second housing dust outlet 912d is connected to the second dust inlet, where the sealing devices may be soft rubber-coated structures and used for sealing the connection positions so as to avoid the escape of dust and reduce the wear caused by vibration.

[0121] As shown in FIG. 18, in this example, the body housing 92 includes a base parallel to the baseplate assembly, and the functional housing 93 is disposed on the base and detachably connected to the base. The base may be a catch, an elastic steel ball, or another structure and a corresponding connecting groove is provided on the functional housing 93.

Claims

1. A sanding tool, comprising:

- a baseplate assembly comprising a baseplate for mounting a sanding member;
 a housing assembly disposed on the baseplate and comprising a body housing;
 a drive mechanism disposed in the body housing, wherein the drive mechanism drives the baseplate assembly to move;
 a fan assembly mounted to the drive mechanism; and
 a support bracket disposed between the body housing and the baseplate;
 wherein the support bracket comprises a support seat, a central release member and a floating connecting arm, wherein the support seat is disposed between the body housing and the baseplate, the central release member is fixedly connected to the baseplate directly or indirectly, the floating connecting arm is connected between the central release member and the support seat, and the floating connecting arm allows the support seat and the central release member to move relative to each other when the support bracket receives an axial and/or radial force;
 the housing assembly further comprises a functional housing, wherein a hollow cavity is formed in the functional housing, the functional housing is provided with an inlet and an outlet that communicate with the cavity, the inlet communicates with a dust removal channel of the sanding tool, the outlet is configured to discharge gas in the cavity, and the fan assembly is used for forming a dust removal air path moving towards the inlet; and
 the functional housing is disposed on a side of the body housing and a projection of the functional housing on a plane where the baseplate assembly is located is located within the baseplate; and a ratio of an area of a projection of the functional housing on the baseplate to an area of the baseplate is greater than or equal to 0.15 and less than or equal to 0.95.
2. The sanding tool of claim 1, wherein the ratio of the area of the projection of the functional housing on the baseplate to the area of the baseplate is greater than or equal to 0.5 and less than or equal to 0.95.
 3. The sanding tool of claim 1, wherein an axial height of the functional housing is greater than or equal to 0.3 and less than or equal to 0.85.
 4. The sanding tool of claim 2, wherein the functional housing comprises an auxiliary grip at a top end of the functional housing and the auxiliary grip is an inwardly indented recess on the functional housing.
 5. The sanding tool of claim 1, wherein the functional housing is snap-fit with the body housing, and the functional housing is further provided with an auxiliary fastener that mates with the baseplate.
 6. The sanding tool of claim 1, wherein the functional housing comprises an outer housing disposed on a periphery of the body housing and mating with the body housing to form the cavity.
 7. The sanding tool of claim 1, wherein the functional housing comprises an outer housing and an inner housing, the outer housing encloses the inner housing, the cavity is formed between the outer housing and the inner housing, and the inner housing is disposed outside the body housing.
 8. The sanding tool of claim 7, wherein an opening is formed between the outer housing and the inner housing, and the functional housing further comprises a cover plate covering the opening.
 9. The sanding tool of claim 1, wherein a filter and a filter holder for mounting the filter are disposed in the functional housing, wherein the filter is disposed on a moving path of the dust removal air path.
 10. The sanding tool of claim 1, further comprising a dust removal assembly disposed between the baseplate assembly and the functional housing, wherein the dust removal channel is provided with the dust removal assembly.
 11. The sanding tool of claim 10, wherein the dust removal assembly comprises a guide portion and a conveying support, the guide portion is provided with a dust inlet, the guide portion is disposed on the baseplate assembly and communicates with a baseplate dust suction opening on the baseplate assembly, the conveying support communicates with the dust inlet of the guide portion, the conveying support is provided with a dust outlet, and the dust outlet interfaces with the inlet.
 12. The sanding tool of claim 11, wherein the conveying support is at least partially disposed in the body housing, the conveying support is detachably connected to the body housing, and the conveying support is detachable from the body housing.
 13. The sanding tool of claim 1, further comprising a direct current power supply, wherein the drive mechanism is disposed between the direct current power supply and the functional housing.
 14. A sanding tool, comprising:
 - a baseplate assembly comprising a baseplate for mounting a sanding member;
 - a housing assembly disposed on the baseplate

- and comprising a body housing;
a drive mechanism configured to drive the baseplate assembly to move; and
a support bracket disposed between the body housing and the baseplate;
wherein the support bracket comprises:
- a support seat disposed between the body housing and the baseplate;
a central release member fixedly connected to the baseplate directly or indirectly; and
a floating connecting arm connected between the central release member and the support seat and allowing the support seat and the central release member to move relative to each other when the support bracket receives an axial and/or radial force.
15. The sanding tool of claim 14, wherein the central release member is a cylinder extending along a direction perpendicular or oblique to the support seat.
16. The sanding tool of claim 14, wherein the central release member is provided with a screw hole and fixedly connected to the baseplate through a screw.
17. The sanding tool of claim 14, wherein an arm length of the floating connecting arm is greater than an axial height of the support seat.
18. The sanding tool of claim 14, wherein the support seat supports the body housing, an end of the floating connecting arm is connected to an upper end of the central release member, and another end of the floating connecting arm is connected to the support seat.
19. The sanding tool of claim 14, wherein the support seat supports the body housing, and the floating connecting arm is windingly connected to the support seat and an upper end of the central release member.
20. The sanding tool of claim 14, further comprising a mounting seat and a floating support arm, wherein the mounting seat is axially spaced apart from the support seat, the mounting seat is fixedly connected to the baseplate, and the mounting seat is connected to the central release member through the floating support arm.
21. The sanding tool of claim 20, wherein the floating connecting arm is connected to the support seat and a lower end of the central release member, and the floating support arm is connected to the mounting seat and an upper end of the central release member.
22. The sanding tool of claim 20, wherein the floating connecting arm and the floating support arm are staggeredly spaced.
23. The sanding tool of claim 20, wherein the support bracket further comprises a relief portion that provides space for movement of the floating connecting arm, wherein the relief portion comprises a first through hole disposed on the support seat and a second through hole disposed on the mounting seat, wherein an axis of the second through hole is parallel to an axis of the first through hole or the second through hole is disposed coaxially with the first through hole.
24. The sanding tool of claim 23, wherein the floating connecting arm is connected to an inner edge of the first through hole and the floating support arm is connected to an inner edge of the second through hole.
25. The sanding tool of claim 20, wherein the floating connecting arm comprises a plurality of bent sections extending along a radial direction of the central release member and the floating support arm comprises a plurality of bent sections extending along the radial direction of the central release member.
26. The sanding tool of claim 14, wherein the support bracket is integrally formed.
27. The sanding tool of claim 26, wherein an axial height of the support bracket is greater than or equal to 6 mm and less than or equal to 20 mm.
28. A sanding tool, comprising:
- a baseplate assembly comprising a baseplate for mounting a sanding member;
a housing assembly disposed on the baseplate and comprising a body housing;
a drive mechanism configured to drive the baseplate assembly to move; and
a support bracket disposed between the body housing and the baseplate;
wherein the support bracket comprises:
- a support seat, wherein an upper end of the support seat abuts against the body housing;
a central release member fixedly connected to the baseplate directly or indirectly; and
a floating connecting arm connected between the central release member and the support seat, wherein a ratio of an axial stiffness of the support bracket to a radial stiffness of the support bracket is greater than or equal to 0.67 and less than or equal to 100.

29. The sanding tool of claim 28, wherein the central release member is provided with a screw hole and fixedly connected to the baseplate through a screw.
30. The sanding tool of claim 28, wherein the support bracket further comprises:
- a mounting seat axially spaced apart from the support seat and connected to the baseplate; and
 - a floating support arm connected to the central release member and the mounting seat.
31. The sanding tool of claim 30, wherein the floating connecting arm is connected to the support seat and a lower end of the central release member, and the floating support arm is connected to the mounting seat and an upper end of the central release member.
32. The sanding tool of claim 30, wherein the floating connecting arm and the floating support arm are staggeredly spaced.
33. The sanding tool of claim 30, wherein the floating connecting arm comprises a plurality of bent sections extending along a radial direction of the central release member and the floating support arm comprises a plurality of bent sections extending along the radial direction of the central release member.
34. The sanding tool of claim 28, wherein the support bracket is integrally formed.
35. The sanding tool of claim 34, wherein an axial height of the support bracket is greater than or equal to 6 mm and less than or equal to 20 mm.
36. A sanding tool, comprising:
- a baseplate assembly comprising a baseplate for mounting a sanding member;
 - a housing assembly disposed on the baseplate and comprising a body housing;
 - a drive mechanism configured to drive the baseplate assembly to move; and
 - a support bracket disposed between the body housing and the baseplate;
- wherein the support bracket comprises:
- a support seat, wherein an upper end of the support seat abuts against the body housing;
 - a central release member fixedly connected to the baseplate directly or indirectly; and
 - a floating connecting arm connected between the central release member and the support seat, wherein a ratio of an axial stiffness of the support bracket to a height of the support bracket is greater than or equal to 1 N/mm² and less than or equal to 83.3 N/mm².
37. The sanding tool of claim 36, wherein the central release member is provided with a screw hole and fixedly connected to the baseplate through a screw.
38. The sanding tool of claim 36, wherein the support bracket further comprises:
- a mounting seat axially spaced apart from the support seat and connected to the baseplate; and
 - a floating support arm connected to the central release member and the mounting seat.
39. The sanding tool of claim 38, wherein the floating connecting arm is connected to the support seat and a lower end of a cylinder, and the floating support arm is connected to the mounting seat and an upper end of the cylinder.
40. The sanding tool of claim 38, wherein the floating connecting arm and the floating support arm are staggeredly spaced.
41. The sanding tool of claim 38, wherein the floating connecting arm comprises a plurality of bent sections extending along a radial direction of the central release member and the floating support arm comprises a plurality of bent sections extending along the radial direction of the central release member.
42. The sanding tool of claim 36, wherein the support bracket is integrally formed.
43. The sanding tool of claim 42, wherein an axial height of the support bracket is greater than or equal to 6 mm and less than or equal to 20 mm.
44. A sanding tool, comprising:
- a baseplate assembly comprising a baseplate for mounting a sanding member;
 - a housing assembly disposed on the baseplate and comprising a body housing;
 - a drive mechanism disposed in the body housing, configured to drive the baseplate assembly to move and comprising an output shaft supported on the baseplate by a support that rotates about an axis of rotation;
 - a fan assembly connected to the drive mechanism; and
 - a support bracket disposed between the body housing and the baseplate;
- wherein the support bracket comprises a sup-

port seat, a central release member and a floating connecting arm, wherein the support seat is disposed between the body housing and the baseplate, the central release member is fixedly connected to the baseplate directly or indirectly, and the floating connecting arm is connected between the central release member and the support seat and allows the support seat and the central release member to move relative to each other when the support bracket receives an axial and/or radial force;

the housing assembly further comprises a functional housing, wherein a hollow cavity is formed in the functional housing, the functional housing is provided with an inlet and an outlet that communicate with the cavity, the inlet communicates with a dust removal channel of the sanding tool, the outlet is configured to discharge gas in the cavity, and the fan assembly is used for forming a dust removal air path moving towards the inlet; and

the baseplate has an initial center of mass line passing through an initial center of mass of the baseplate, wherein the initial center of mass line is perpendicular to the baseplate, and the axis of rotation is farther away from the functional housing than the initial center of mass line;

wherein the sanding tool further comprises a center of mass mover disposed on the baseplate to move the center of mass of the baseplate to a corrected center of mass line that coincides with the axis of rotation.

45. The sanding tool of claim 44, wherein a distance between the corrected center of mass line and the initial center of mass line is greater than or equal to 5 mm and less than or equal to 35 mm.

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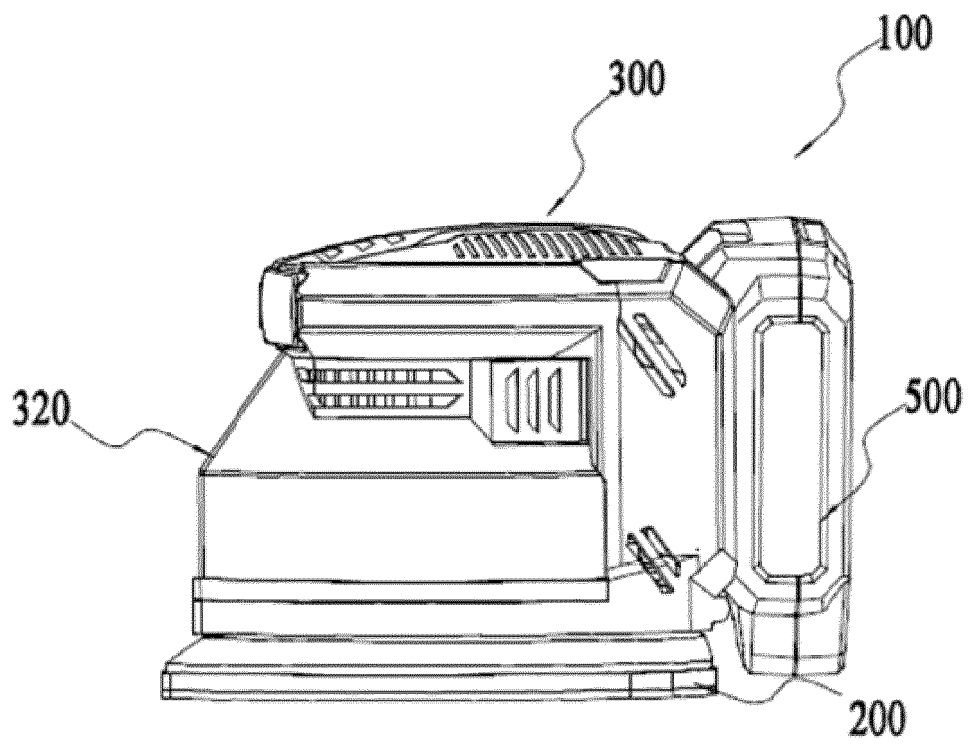


FIG. 1

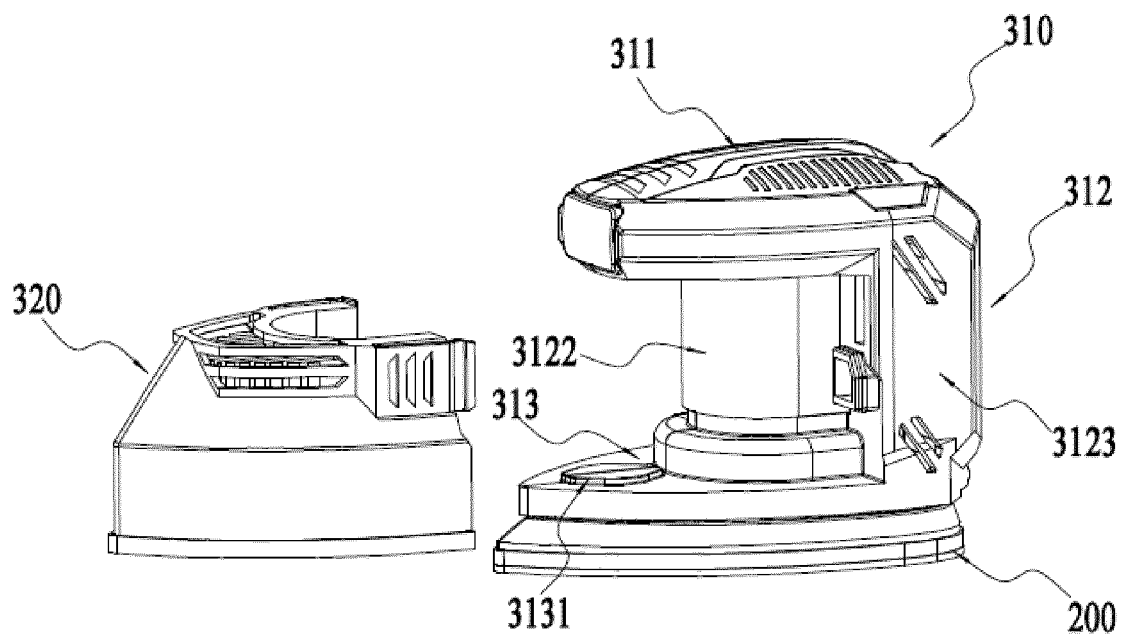


FIG. 2

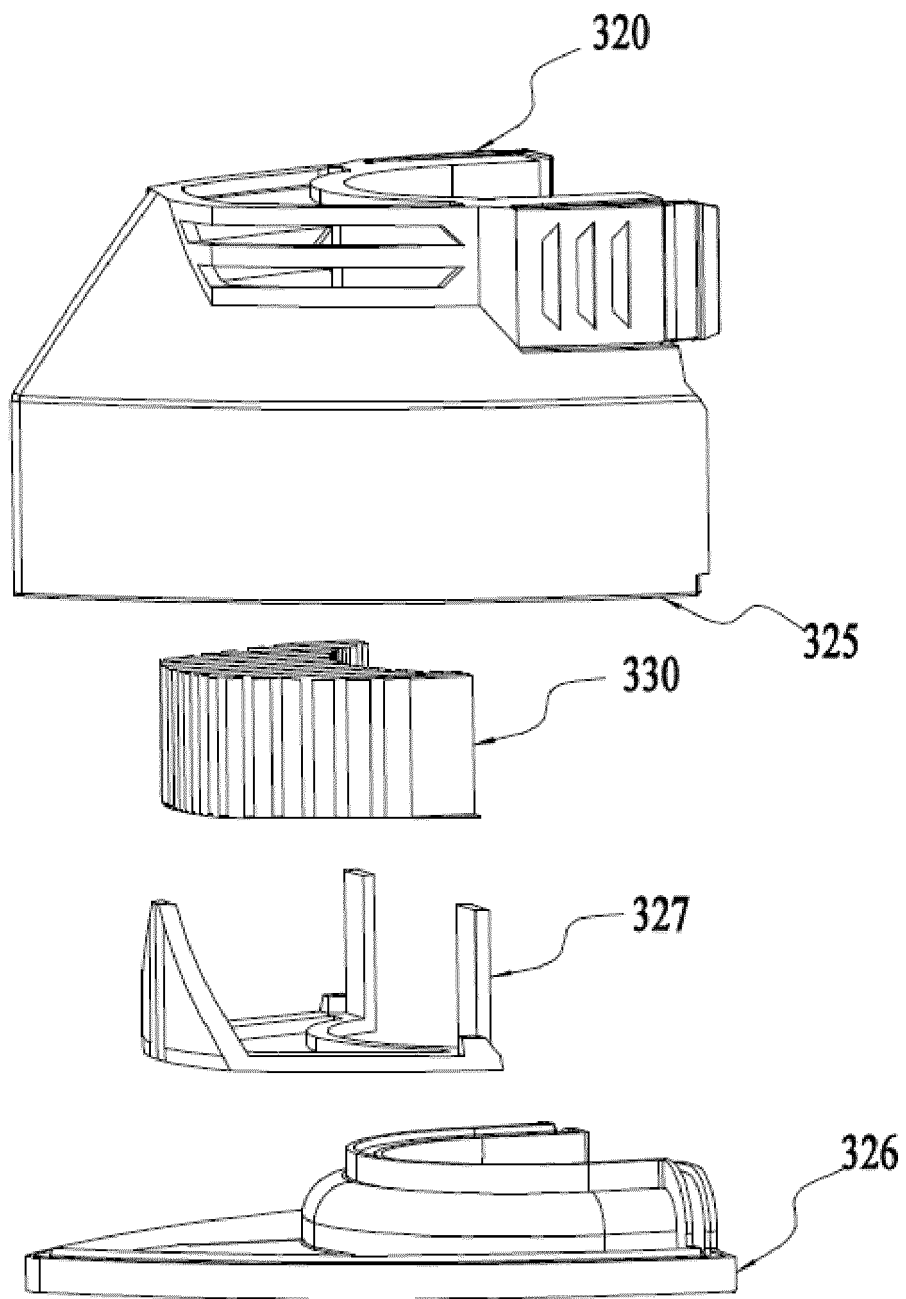


FIG. 3

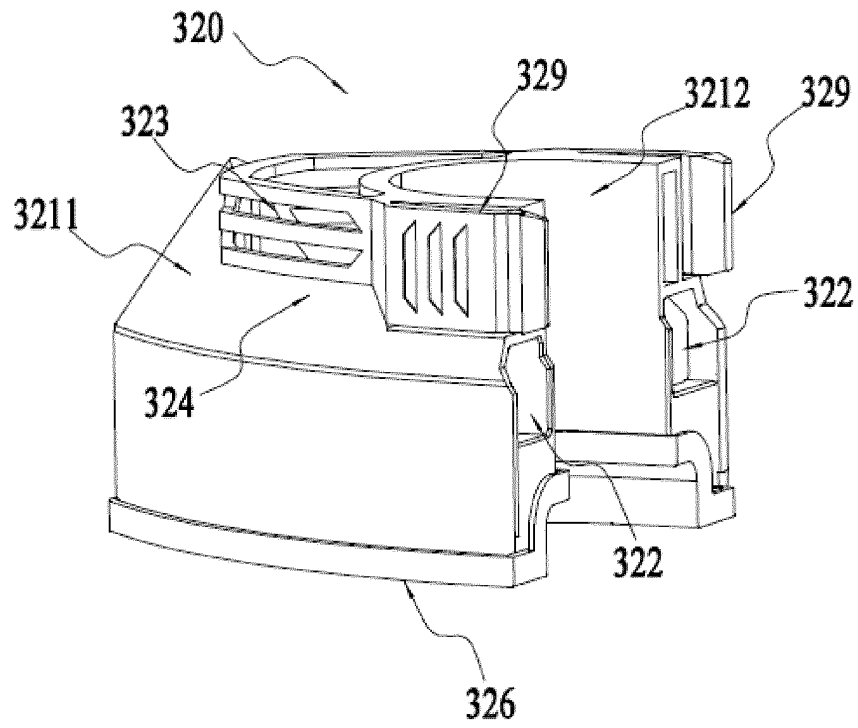


FIG. 4

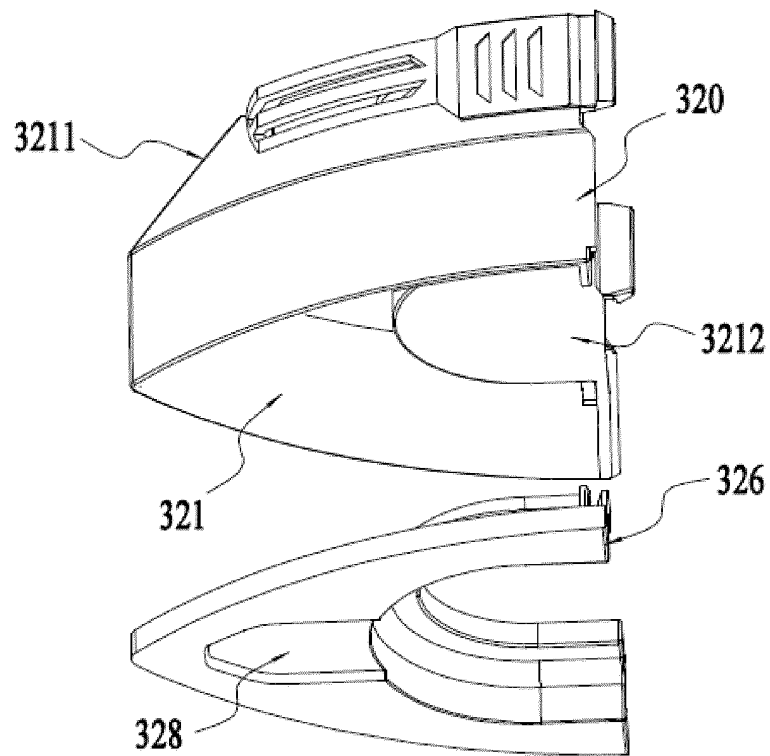


FIG. 5

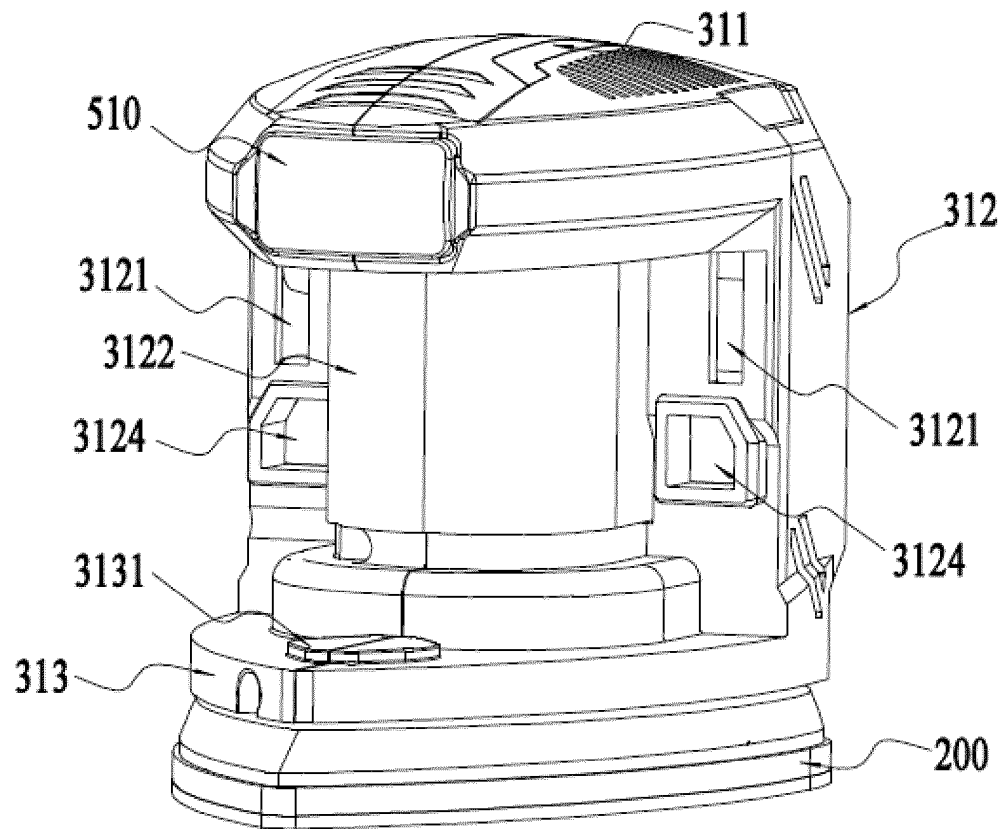


FIG. 6

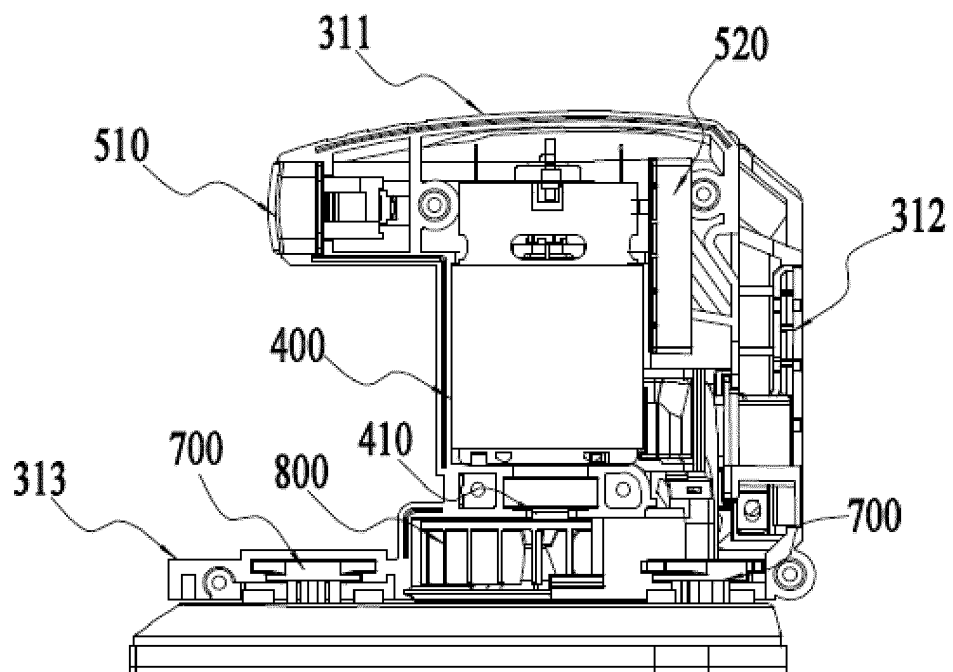


FIG. 7

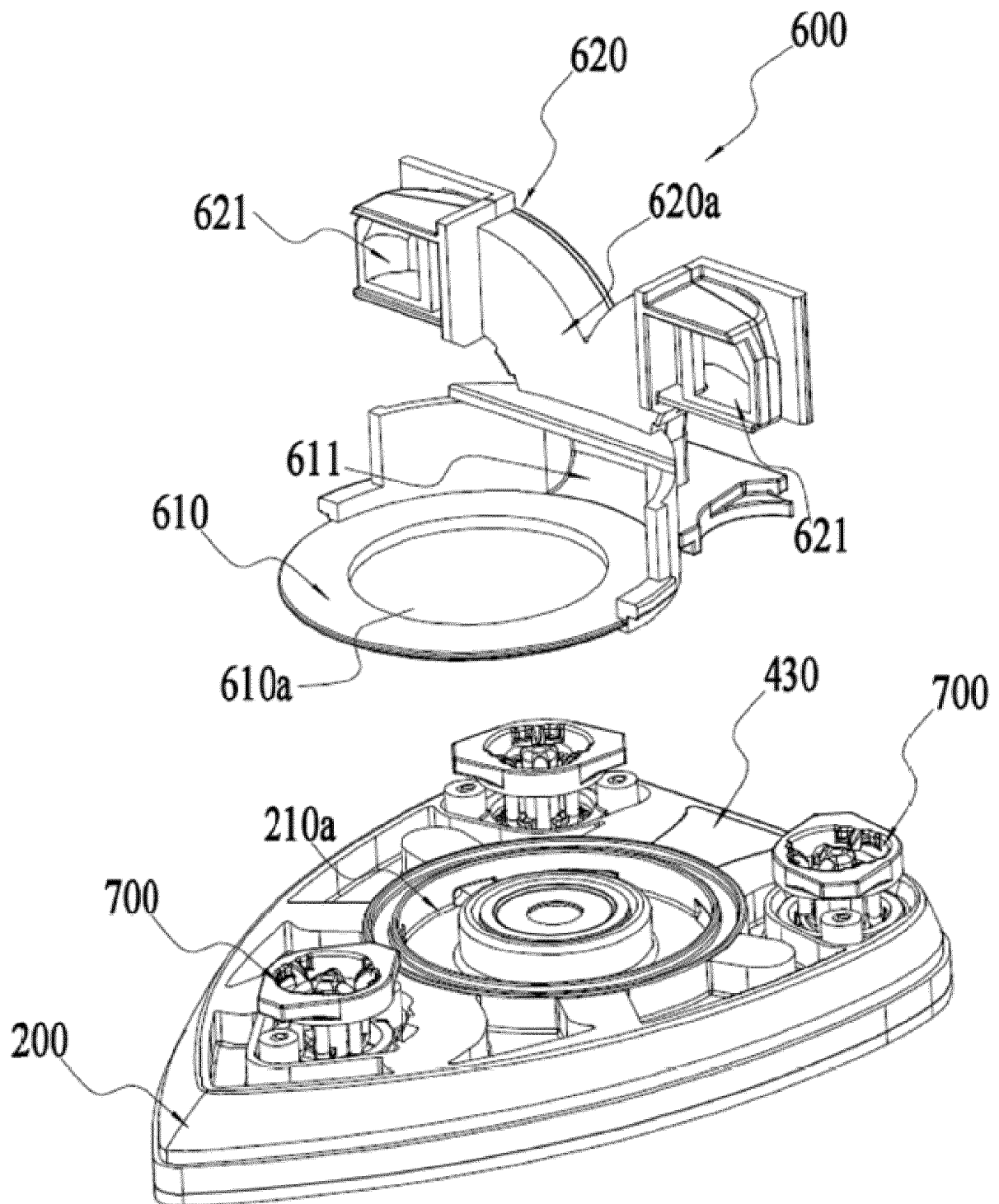


FIG. 8

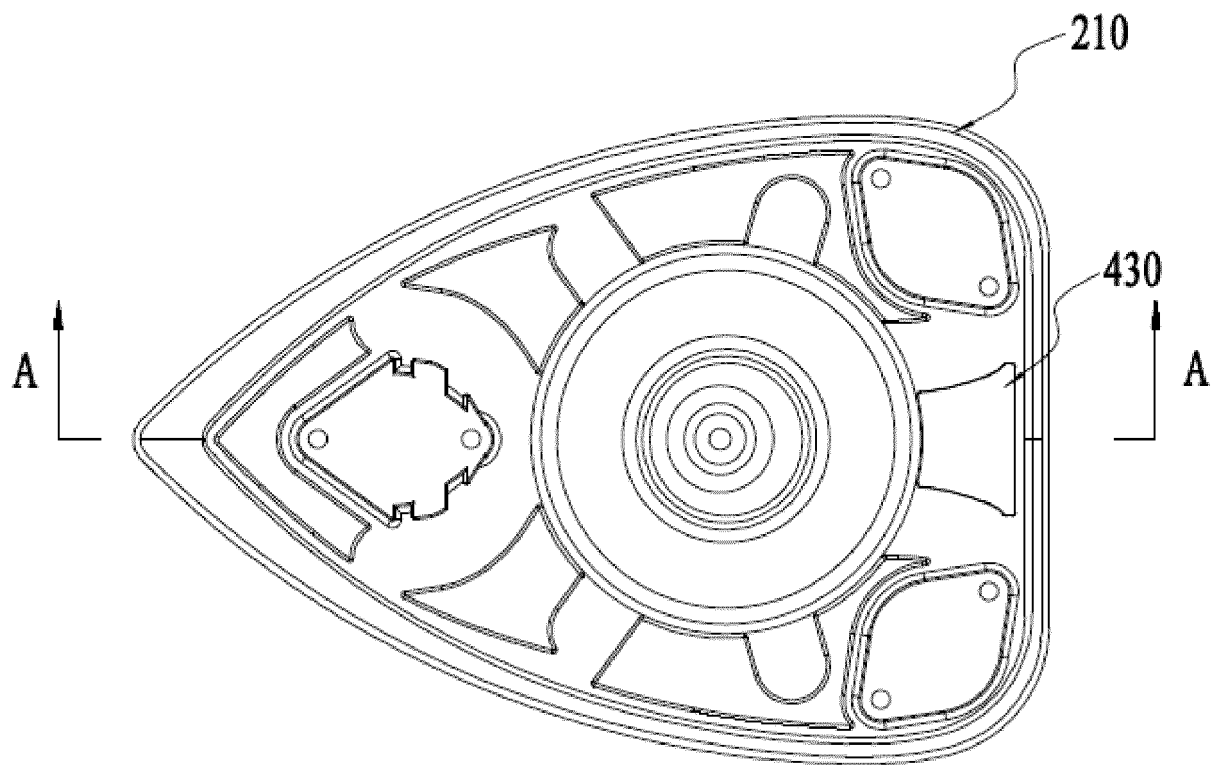


FIG. 9

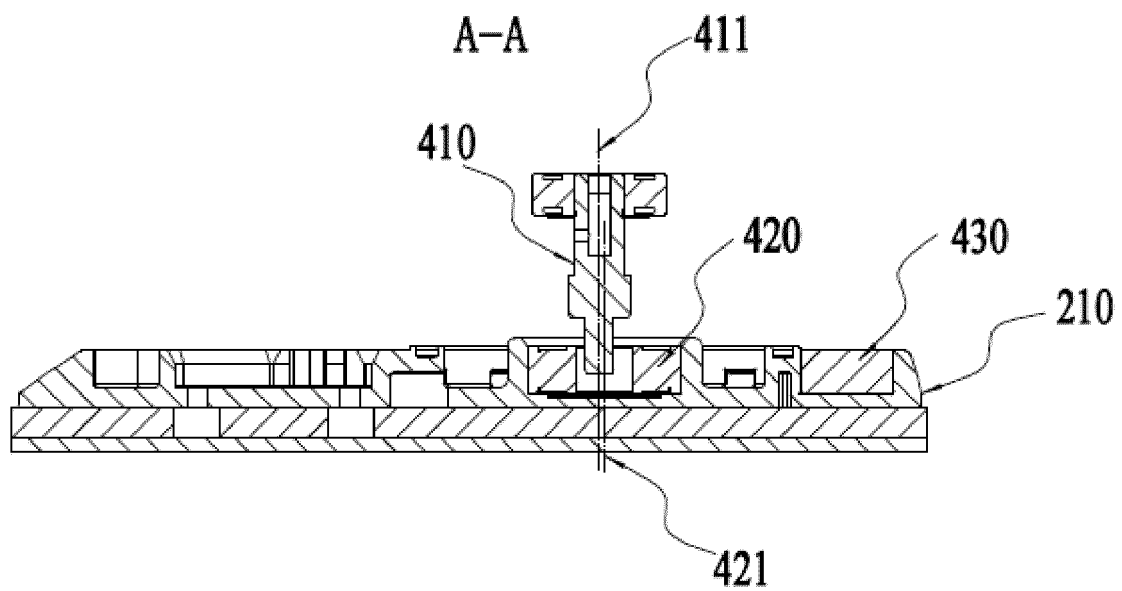


FIG. 10

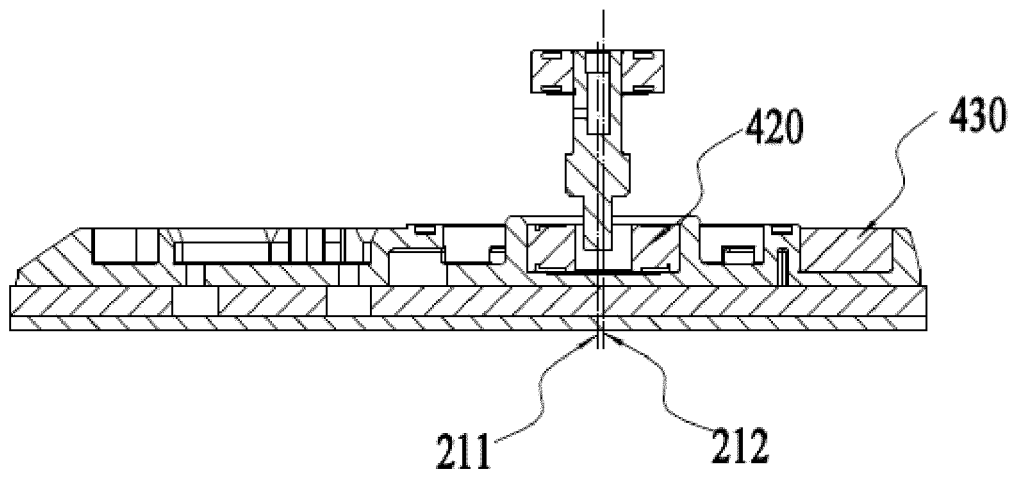


FIG. 11

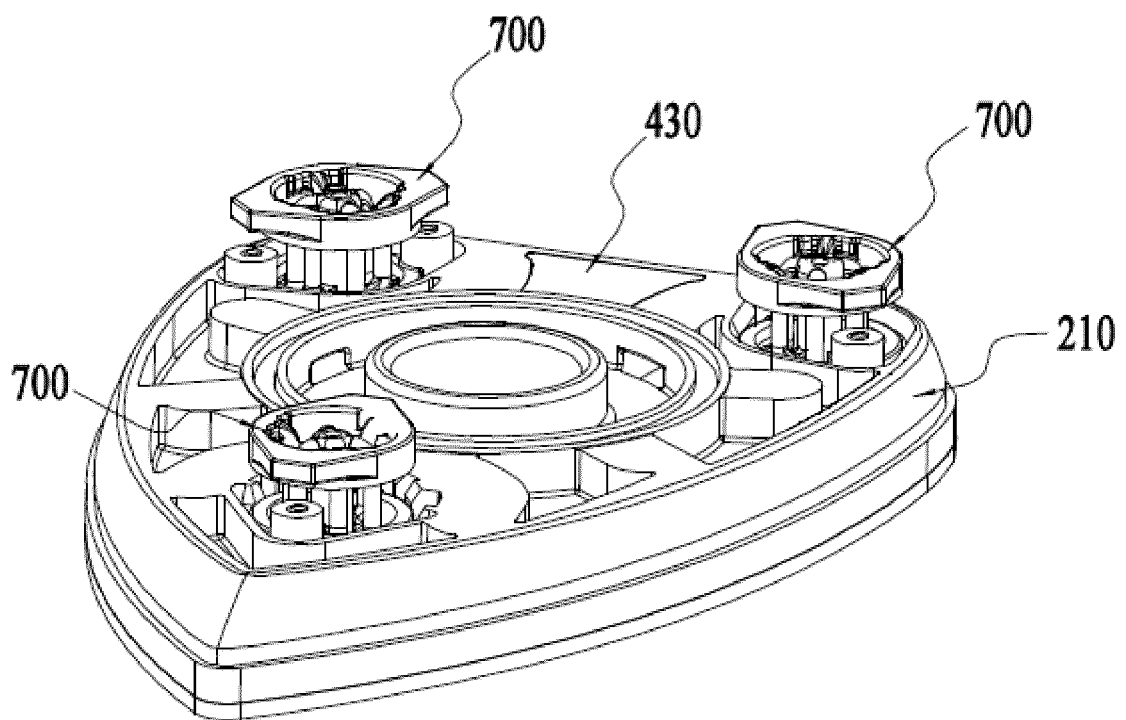


FIG. 12

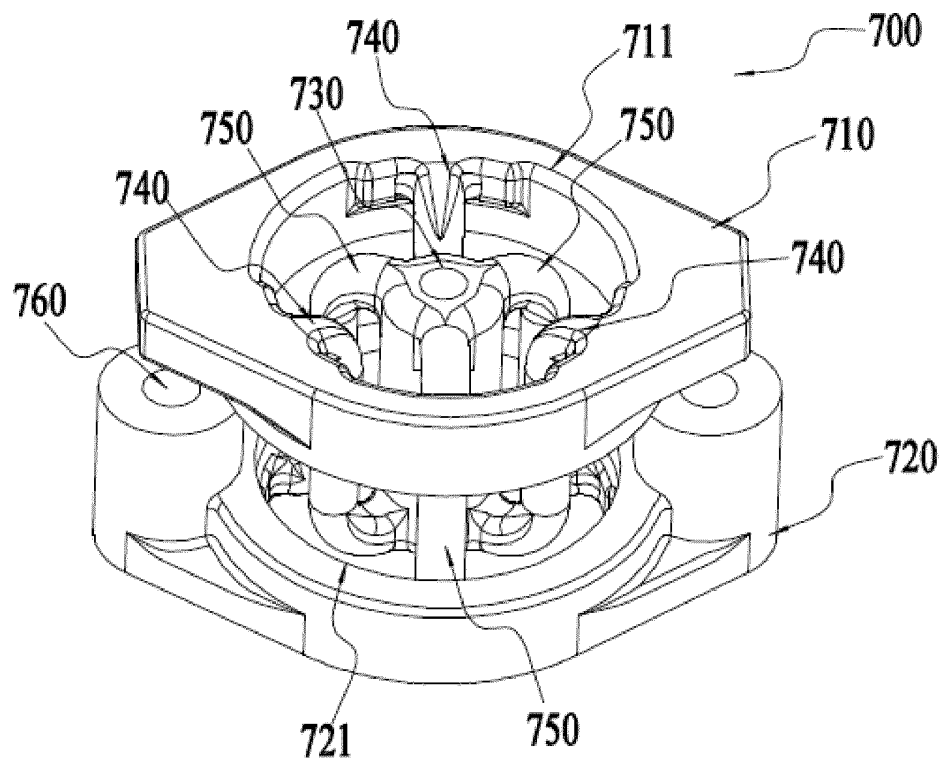


FIG. 13

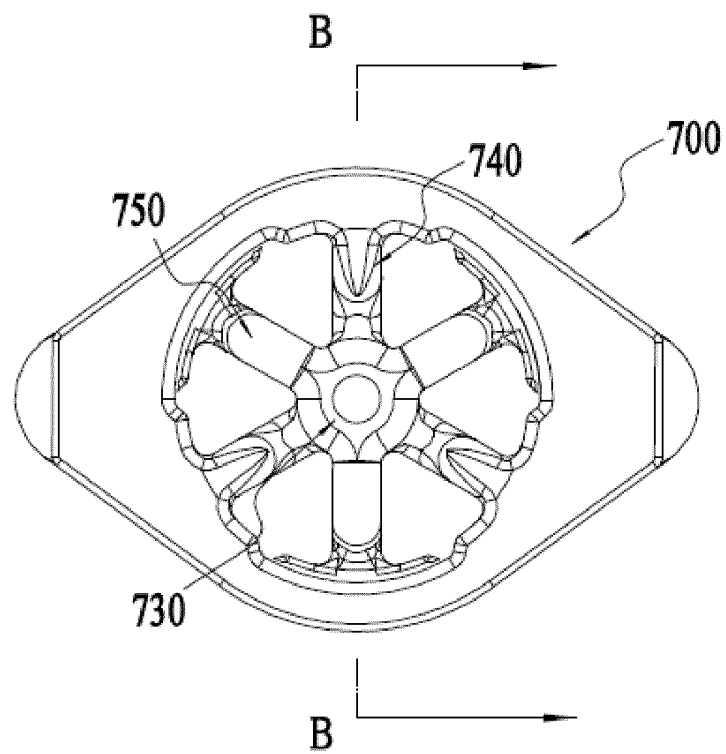


FIG. 14

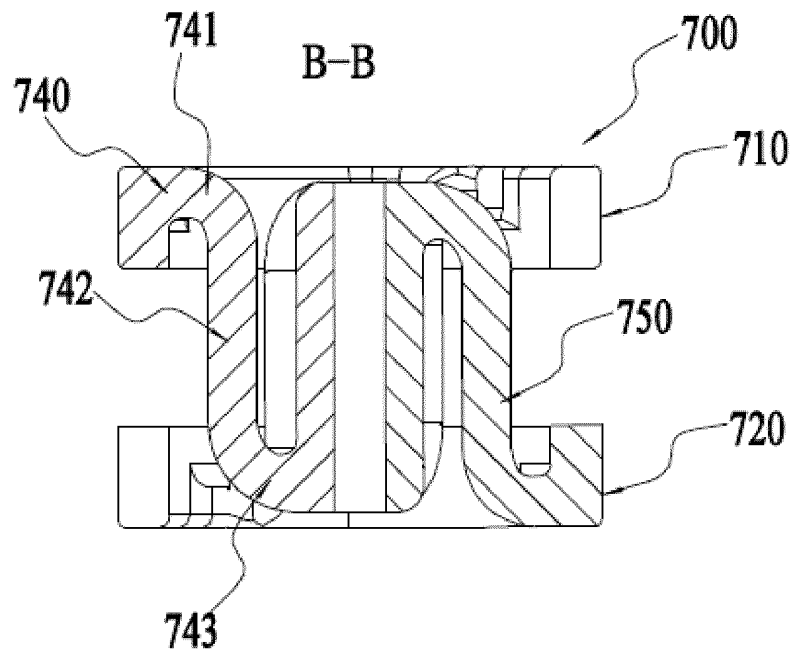


FIG. 15

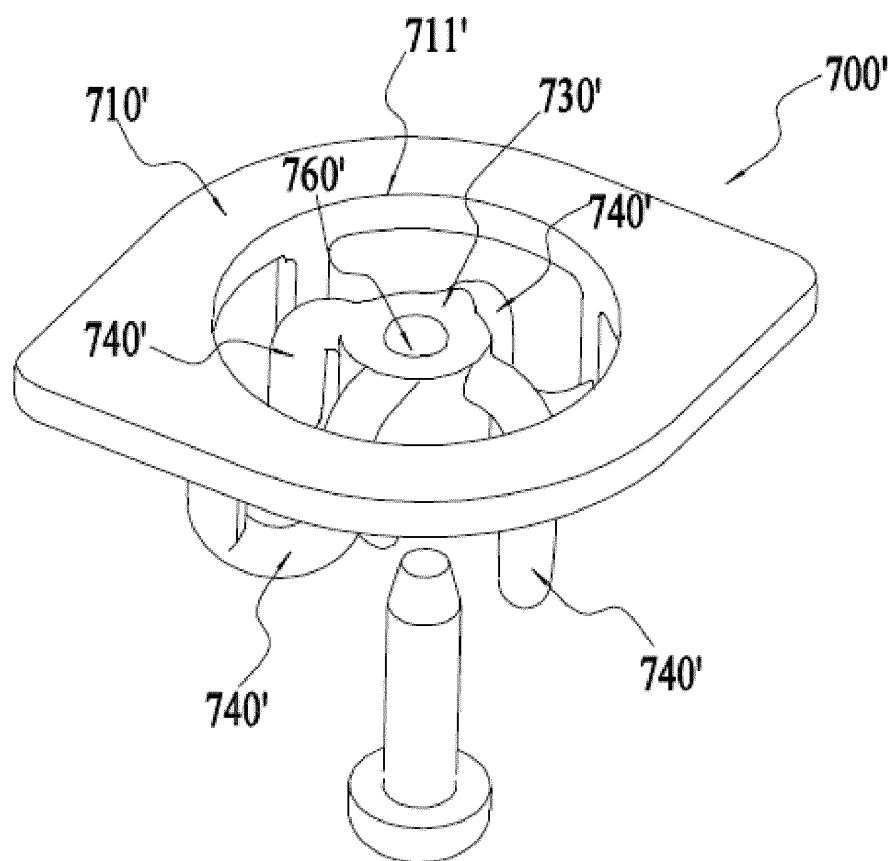


FIG. 16

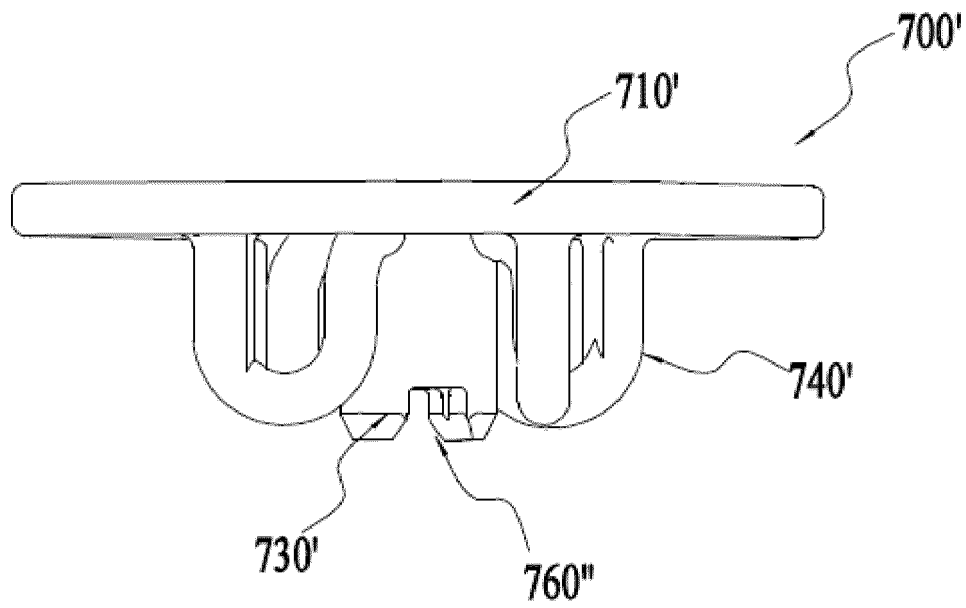


FIG. 17

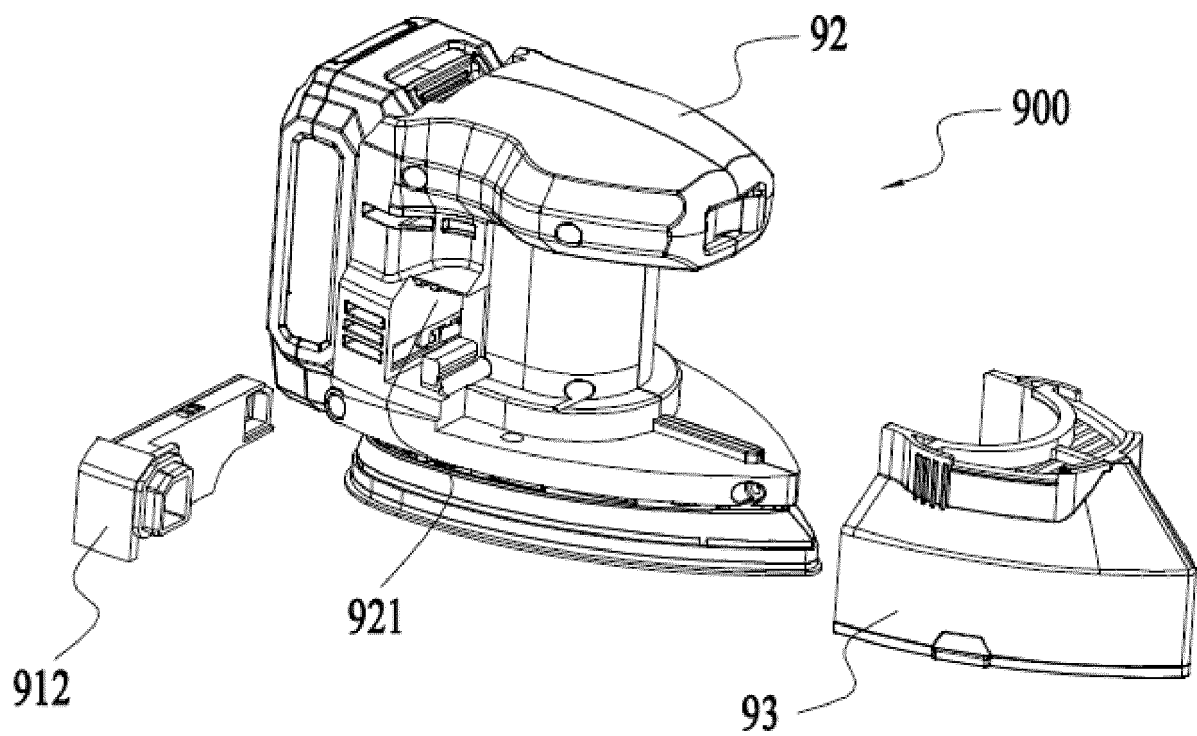


FIG. 18

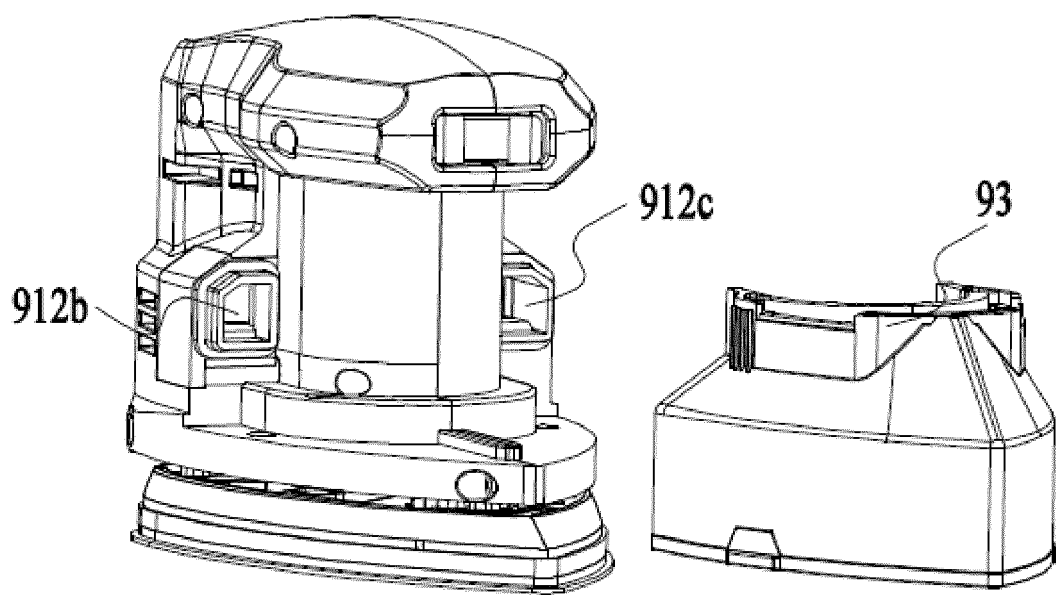


FIG. 19

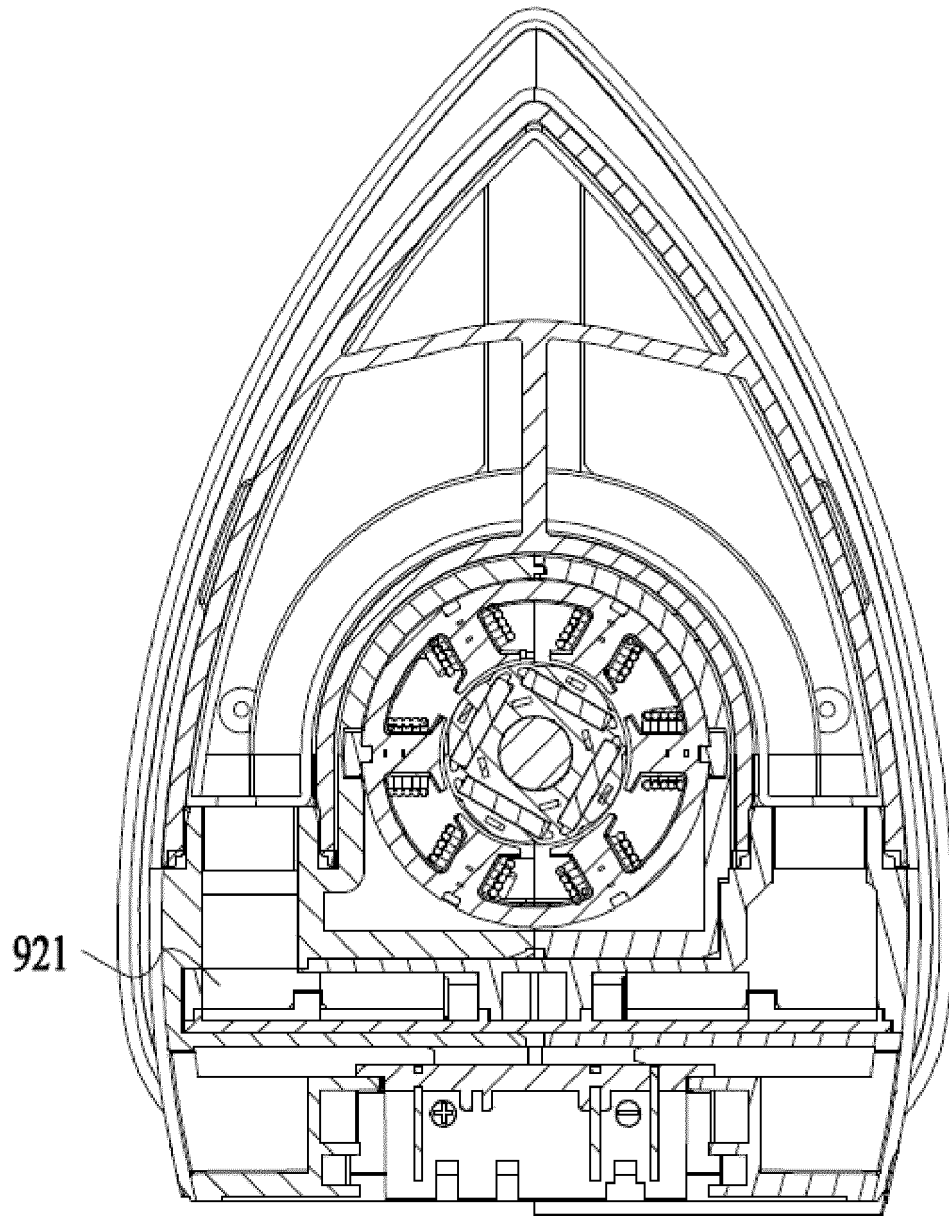


FIG. 20

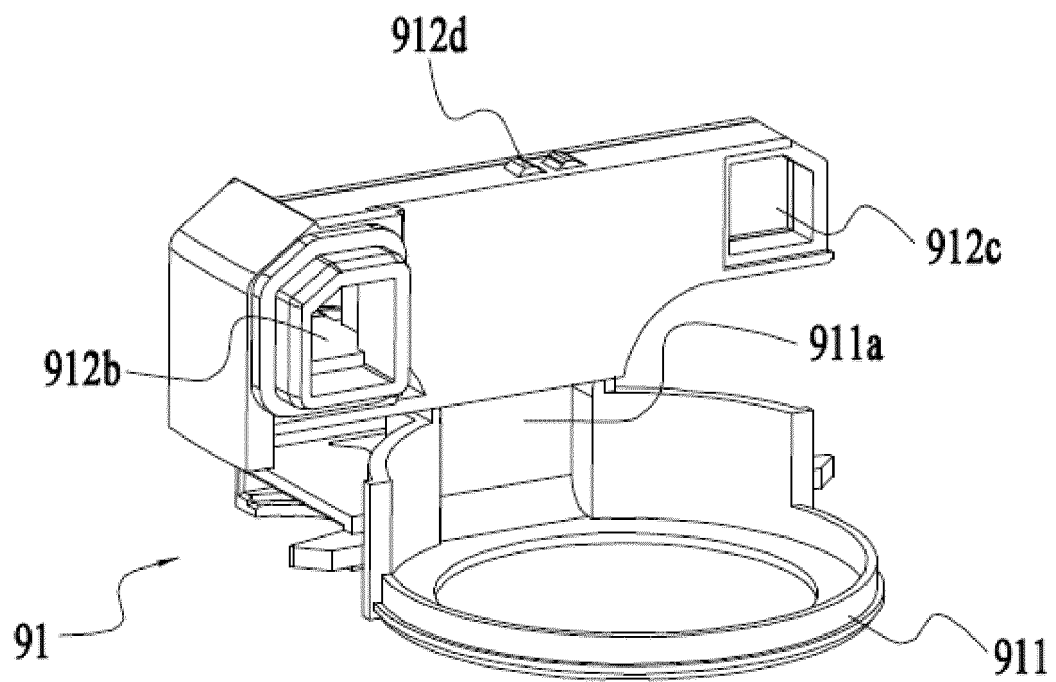


FIG. 21

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/101766

A. CLASSIFICATION OF SUBJECT MATTER

B24B 23/00(2006.01)i; B24B 41/04(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B24B 7/-; B24B 23/-; B24B 41/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS; CNKI; VEN; CNTXT; TWTXT; DWPI; USTXT; EPTXT; WOTXT: 南京德朔, 打磨, 砂光机, 轴向, 径向, 中心释放, 浮动, 弹性, 灰尘, 粉尘, 质心, 偏心, sand+, axial, radial, center, releas+, float+, flexible, movable, dust, powder, centroid, eccentric+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 104608052 A (NANJING CHERVON INDUSTRY CO., LTD.) 13 May 2015 (2015-05-13) description, paragraphs 8-19, and figures 1-13	1-45
A	CN 107030608 A (NANJING CHERVON INDUSTRY CO., LTD.) 11 August 2017 (2017-08-11) entire document	1-45
A	CN 102107375 A (BEIJING UNIVERSITY OF TECHNOLOGY) 29 June 2011 (2011-06-29) entire document	1-45
A	CN 2663080 Y (ZHU, Wenhua) 15 December 2004 (2004-12-15) entire document	1-45
A	CN 201776673 U (POSITEC POWER TOOLS (SUZHOU) CO., LTD.) 30 March 2011 (2011-03-30) entire document	1-45
A	GB 677518 A (FAST INC DU) 20 August 1952 (1952-08-20) entire document	1-45

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

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“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

06 August 2021

Date of mailing of the international search report

27 August 2021

Name and mailing address of the ISA/CN

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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2012227520 A1 (KEITH ROGER C) 13 September 2012 (2012-09-13) entire document	1-45

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2021/101766

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)		Publication date (day/month/year)
CN	104608052	A	13 May 2015	None		
CN	107030608	A	11 August 2017	None		
CN	102107375	A	29 June 2011	None		
CN	2663080	Y	15 December 2004	None		
CN	201776673	U	30 March 2011	None		
GB	677518	A	20 August 1952	None		
US	2012227520	A1	13 September 2012	WO	2013165549 A1	07 November 2013

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 202010601000 [0001]
- CN 202121256254 [0001]